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Mobile marketing and consumer perceptions of brand equity

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Abstract

Purpose – The purpose of this paper is to investigate the impact of SMS (Short Message Service) advertising on consumer perceptions of Au Bon Pain's brand equity in Thailand.

Design/methodology/approach – The experimental study was based on a 4×2 between-subjects design, with four levels of message types (personalization, interactivity, general, and no message control) and two levels of permission (with and without permission). Structural equation modeling was utilized to test the hypotheses.

Findings – SMS marketing is found to have a significant positive impact on brand awareness and perceived quality. Personalized, interactive, and general messages are effective for building brand awareness, and general and personalized messages positively influence perceived quality. With the right choice of message, explicit permission enhances the effects of SMS marketing on brand association.

Research limitations/implications – The experiment was conducted over a period of one month, with three SMS ads sent to each subject. Future research could extend the trial period and increase the number and variation of ads to confirm validity of the results.

Practical implications – As text message ads have a strong impact on brand awareness, marketers should focus on using text messages as reminders or updates rather than for complete marketing campaigns. They should also focus on offering permission-based customers personalized information.

Originality/value – This is among the first mobile marketing experiments in a real-life setting. Real text-based promotions from an existing brand (Au Bon Pain) were tested on consumers. This approach creates a natural ad-processing situation for participants, thus increasing the internal validity of the experiment.

Keywords Thailand, Mobile communication systems, Advertising, Consumer behaviour, Mobile marketing, Mobile advertising, Brand equity, Short message service, Permission marketing

Paper type Case study

1. Introduction

The mobile phone has recently emerged as a potential new channel for marketing communications, drawing enormous interest from both marketers and consumers to mobile marketing (Karjaluoto *et al.*, 2004). One avenue of mobile marketing that has received significant attention is short message service (SMS) marketing.

SMS is an application that allows mobile users to send a text message of up to 160 characters between mobile devices (MMA, 2008). Sending short messages is also commonly known as "texting" or "text messaging". To date, SMS has become the most popular of all mobile applications (Carroll *et al.*, 2007; Salo *et al.*, 2008). In 2010, the number of text messages sent globally reached 6.1 trillion, or about 600,000 text messages are sent every second (International Telecommunication Union, 2010). From the aspect of business, a recent survey found that the percentage of mobile users in major European countries who received SMS ads in 2007 approached nearly 100 percent (M: Metric, 2009).

The phenomenal success of SMS marketing is attributed to several of its key features including its personal and unobtrusive nature, simplicity, support for interactive communications and near real-time delivery, relatively low cost, and location-based

potential (Doyle, 2001). Such unique characteristics allow firms to respond to customer needs more efficiently (Anckar and D'Incau, 2002) and to create unprecedented forms of products and services with the potential to change the nature of competition in the industries (Watson *et al.*, 2002).

Marketing via SMS not only creates opportunities but also presents several challenges that must be resolved before such opportunities can be fully explored. As marketers consider the branding effect to be the most critical outcome, and given that the mobile phone is a very personal item, sending commercial messages via this channel can easily irritate customers and be seen as a violation of their privacy. Consequently, customers may develop a negative attitude toward the advertised brand (Barwise and Strong, 2002; Scharl *et al.*, 2005) and not respond to the message (Tsang *et al.*, 2004).

Despite a growing body of literature on mobile marketing, there is limited understanding of the influence of SMS marketing on branding. Most of the research has focused on consumer attitude toward mobile advertising and antecedents of consumer adoption of mobile services (Hung *et al.*, 2003; Wu and Wang, 2005; Kim *et al.*, 2007). Some studies that investigate the relationship between SMS advertising and branding were developed without a strong theoretical basis, making the results inconclusive and non-comparable (Barwise and Strong, 2002; Rettie *et al.*, 2005).

Against this backdrop, this study aims to explore the impact of SMS marketing on brand equity by using the well-known brand equity conceptual framework proposed by Aaker (1991) and extended by Yoo *et al.* (2000) as the basis for analysis. Specifically, this research examines how different types of SMS ads affect Thai consumer perceptions of Au Bon Pain's (ABP) brand equity.

Moreover, this study aims to verify the importance of customer permission by determining whether permission enhances the branding ability of mobile ads. To this end, customer response to SMS ads will be empirically compared between two groups of respondents – those who give explicit permission to the brand to send the ads and those who receive the ads without having given any permission.

SMS marketing in Thailand has been growing significantly, thanks to the popularity of the application itself and the high penetration of mobile phones (Rittippant *et al.*, 2009). However, its effectiveness is still unclear as many firms use text message advertising only because it is a convenient medium, without considering consumer permission. This is mainly due to the fact that anti-spam regulations in Thailand have not yet been implemented. Such an environment makes Thailand the perfect setting for investigating the potential of SMS marketing in both permission and non-permission-based scenarios.

The rest of this paper is structured as follows. In Sections 2-4, the concepts of SMS marketing and brand equity are explained, along with the nature of their interrelationship. In Section 5, the experimental design is discussed in detail, followed by the findings of the study in Section 6. Conclusions and a discussion of the findings are provided in Section 7, in which the study's limitations and suggested direction for future work are also addressed.

2. SMS marketing
SMS has now become an integral part of many firms' marketing mix and is effectively used in various applications, such as advertising, games, coupons, and information services. For example, Estee Lauder promoted its new product by inviting consumers to receive free samples using SMS coupons sent to their mobile phones (Kim and Jun, 2008).

McDonald's offered quizzes and competitions via SMS to raise brand awareness and increase sales among young consumers (Kavassalis *et al.*, 2003). In addition, many retailers have now adopted text messaging as a regular channel for customer service, such as promotional updates and for tracking orders (Shankar *et al.*, 2010).

When designing an SMS campaign, there are several types of messages available to reach consumers, each defined by its unique features. These include personalized, interactive, or even plain messages with no added features. Personalized mobile advertising refers to the tailoring of promotional messages sent to mobile devices based on a combination of user parameters, such as demographic profile, preference, context, and content (Xu, 2007). Personalization offers a wide array of benefits for marketers, including maintaining customer relationships (Kannan *et al.*, 2001), influencing consumer attitudes toward an ad (Xu, 2007), improving a company's marketing performance (Vesanen, 2007), and increasing campaign response rates (Barutcu, 2007).

Mobile interactive campaigns can be defined as advertisements delivered to portable devices, particularly mobile media, through a synchronized download or wirelessly (Laszlo, 2009). Mobile devices allow for greater interactivity than any other tool because of their "always on" connectivity and short set-up times (Schierholz *et al.*, 2007). The business value of interactivity lies in its ability to enhance customer relations (Ha and James, 1998), build customer databases, and to instantly measure the results of a campaign (Barwise and Farley, 2005). With such benefits, marketers tend to incorporate interactivity into their mobile marketing campaigns when opportunity allows. Such campaigns include sweepstakes, competitions, voting, and surveys (Pousttchi and Wiedemann, 2006).

Despite its many advantages, SMS is limited to 160 alphanumeric characters and a text-only format. This makes the creation of informative and attractive content highly challenging, particularly when advanced applications that allow for rich media experience, such as MMS and JAVA, are gaining acceptance among advertisers and marketers (Salo *et al.*, 2008).

The potential of SMS marketing in branding is broadly discussed in the literature. Okazaki and Taylor (2008) conducted a survey of 53 senior executives of multinational corporations to test factors affecting MNC decision-making for adopting SMS advertising. Findings suggest that perceived brand building performance is the strongest positive driver of intention in using mobile advertising. Based on the content analysis of 30 mobile marketing campaigns in Europe, Pousttchi and Wiedemann (2006) conclude that SMS marketing is an effective tool for building brand awareness, changing brand image, and enhancing brand loyalty. Dickinger *et al.* (2004) and Kavasslis *et al.* (2003) conclude that SMS marketing is highly applicable for creating brand awareness, and businesses are now using greater degree of text message advertising than other direct marketing tools.

Permission is regarded as one of the critical factors for mobile marketing acceptance and success (Bamba and Barnes, 2007; Barnes and Scornavacca, 2004). Permission-based SMS is defined as a situation where the target customers of mobile messaging give marketers their permission to receive messages (Salo *et al.*, 2008). Permission is important for mobile marketing because it reduces customer irritation. Without permission, messages are perceived as spam. The impact of mobile spam is enormous, as it negatively influences consumer attitudes and lower response rates toward the messages (Scharl *et al.*, 2005), creates negative word of mouth (Salo *et al.*, 2008), and lowers brand perception (Barwise and Strong, 2002). These adverse consequences further emphasized the necessity of incorporating permission into this study.

3. Brand equity and its dimensions

Brand equity is a highly complex concept that has been defined in many ways. However, the bottom line of most definitions lies in the concept of "added value" given to a product by a brand, which was first proposed by Farquhar (1989). There are two approaches toward interpreting this added value: either as the value of a brand to the firms (financial perspective) or the value of a brand to the customers (consumer-based perspective).

In accordance with the objectives of this study, the customer-based perspective was adopted. Several definitions of brand equity from this perspective have been suggested. For example, Keller (1993, p. 2) defines brand equity as "the differential effect of brand knowledge on consumer response to the marketing of the brand". Brand knowledge is composed of two components: brand awareness and brand image. Cobb-Walgren *et al.* (1995) conceptualize brand equity with three dimensions: brand awareness, brand associations, and perceived quality. In a more recent study, Kim and Kim (2004) consider brand loyalty, perceived quality, and brand loyalty as the main components of brand equity. Tolba and Hassan (2009) introduce a brand equity model on the basis of the hierarchy of effects model and suggest three components of brand equity: knowledge equity, attitudinal equity, and relationship equity.

Among numerous brand equity models in the literature, this study adopts the one constructed by Aaker (1991) which is the most commonly cited. It has also been empirically tested in many studies in many contexts (Atilgan *et al.*, 2005; Pappu *et al.*, 2005; Yoo and Donthu, 2001, 2002). Aaker (1991, p. 15) views brand equity as:

> [...] a set of brand assets and liabilities linked to a brand, its name and symbol that adds to or subtracts from the value provided by a product or service to a firm or the firm's customer.

This conceptualization suggests that brand equity is a multidimensional concept consisting of four core dimensions: brand awareness, brand association, perceived quality, and brand loyalty.

Brand awareness refers to "the ability of a potential buyer to recognize or recall that a brand is a member of a certain product category" (Aaker, 1991). Brand awareness is a prerequisite of brand communications because it is a brand node in a customer's memory to which other information about the brand is able to attach (Aaker, 1991). Without brand awareness, brand image and brand attitudes cannot be formed in a customer's memory (Macdonald and Sharp, 2003).

Brand association is defined as "anything linked in memory to a brand" (Aaker, 1991). Brand association is closely related to brand image, which is consumer perception about a brand as reflected by brand association (Aaker, 1991; Keller, 1993). Brand association and brand image can differ among individuals and do not necessarily reflect what a brand actually is (Sjodin and Torn, 2006). To enhance brand equity, associations should be strong, favorable, and unique (Keller, 1993).

Perceived quality refers to "the customer judgment about a product's overall excellence or superiority" (Zeithaml, 1988). Perceived quality is not the actual quality of the product; it varies among individuals because the criteria that individual consumers use to make judgments about the quality of a product differ (Aaker, 1991). Benefits of perceived quality can be found for both consumers (e.g. reason to buy) and firms (e.g. differentiating brand and price premium).

Brand loyalty is the core of brand equity (Aaker, 1991). Conceptual definitions of brand loyalty can be classified into three perspectives: behavioral, attitudinal,

or composite (Rundle-Thiele and Bennett, 2001). Behavioral definitions describe brand loyalty as an outcome of repeated purchase behavior, whereas attitudinal definitions evaluate a consumer's level of brand loyalty on the basis of the consumer's intentions to be loyal to the brand (Pappu *et al.*, 2005). Composite definitions measure brand loyalty by both repeated purchase and intention to buy. In this study, we adopt the attitudinal definition of brand loyalty proposed by Yoo and Donthu (2001), which refers to brand loyalty as "the tendency to be loyal to a focal brand, which is demonstrated by the intention to buy the brand as a primary choice".

4. Conceptual framework and research hypotheses

The research framework of this study is based on the conceptual framework of brand equity proposed by Aaker (1991) and later extended by Yoo *et al.* (2000). Aaker proposed that brand equity is a multidimensional construct that creates value for both the customer and the firm. Yoo *et al.* expanded upon this concept by suggesting that brand equity and its dimensions are affected by any marketing action of firms.

On the basis of these concepts, this study proposes a hypothesized conceptual model that examines the effects of SMS marketing on brand equity. The model in Figure 1 shows SMS marketing being composed of three variables, representing three types of text messages. Brand equity consists of four dimensions. Each dimension is a dependent variable expected to be affected by SMS marketing. Permission is included as a moderator of the relationship between SMS marketing and brand equity. Participant age, gender, and brand familiarity are added as control variables as they are said to have an influence on consumers' brand perception (Alimen and Cerit, 2010; Lee *et al.*, 2010).

Aaker's and Yoo *et al.*'s model is chosen as the basis for the research framework of this study because it uses the commonly accepted conceptualization of brand equity and has been adopted in many studies (Baldauf *et al.*, 2003; Kim *et al.*, 2003; Kim and Kim, 2004; Atilgan *et al.*, 2005; Pappu *et al.*, 2006; Gil *et al.*, 2007; Tong and Hawley, 2009; Chen and Tseng, 2010; Xu and Chan, 2010). In addition, the measurement scale for this model was already in place. It has also been variously proven to be reliable, valid, methodical, and applicable across cultures and product categories (Buil *et al.*, 2008). Finally, this scale has been frequently applied in many studies, thus allowing for meaningful comparison of findings.
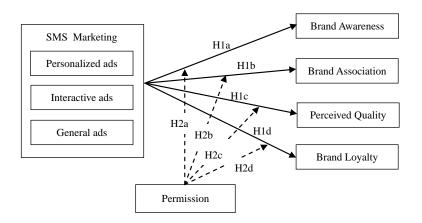

Figure 1.
Research framework

Effects of SMS marketing on dimensions of brand equity

The use of SMS marketing can provide advertisers with a greater ability to enhance consumer exposure to a brand, thus increasing brand awareness. For example, SMS-based push advertising assures high consumer exposure to a brand because messages are likely to reach their target almost every time. After reaching customers, the messages are stored in their mobile phones and can be read at their convenience. Moreover, unlike e-mail, SMS does not have a subject line. Therefore, the message is guaranteed to be opened before being deleted (Rettie *et al.*, 2005). Another advantage of using mobile ads to enhance brand awareness is the viral effect. Given that SMS is easy to use and relatively low cost (Doyle, 2001), forwarding messages among friends is a common practice. This is beneficial not only in terms of increased brand awareness but also peer influence (Scharl *et al.*, 2005).

The effectiveness of mobile advertising on brand awareness also appears in the empirical results. In a study of permission-based SMS advertising with young adults in the UK, Barwise and Strong (2002) found that 81 percent of respondents read all messages, 69 percent were able to recall more than half of the advertised brands, and 14 percent recalled more than two-thirds of the brands. Rettie *et al.* (2005) analyzed consumer acceptance of 26 different text marketing campaigns and found that 89 percent of respondents read the messages, 31 percent responded in some way, and 5 percent forwarded at least one message to friends. Moreover, 36 percent indicated that they were more likely to purchase a brand after receiving promotional messages. On the basis of these arguments, the following hypothesis is proposed:

H1a. Customers who receive SMS marketing messages, regardless of message type, will experience higher brand awareness than those who do not receive any messages.

The unique characteristics of SMS marketing help increase customers' positive experiences with the brand, which could result in strong, favorable, and unique brand associations. For example, mobile coupons enable customers to interact with the brand more conveniently, because they need not worry about carrying or losing physical coupons (Banerjee and Yancey, 2010). Offering time-sensitive notifications can protect customers from unnecessary hassles caused by a lack of valuable information, thereby increasing customer satisfaction with the brand (Nysveen *et al.*, 2005). Moreover, brands that employ mobile marketing campaigns are usually perceived as innovative and high-tech (Ferris, 2007), leading to customer perceptions of unique brand associations. In the same study by Barwise and Strong (2002), SMS advertising is proven to improve consumer attitudes toward a brand. Accordingly, we hypothesize that SMS marketing will have a positive influence on brand association:

H1b. Customers who receive SMS marketing messages, regardless of the message type, will experience higher brand association than those who do not receive any messages.

Little of the existing literature addresses the direct relationship between SMS marketing and consumer perception of brand quality. However, in banking services, it is commonly found that perceived IT-based service options such as telephone or internet banking enhance customer perception of overall service quality (Zhu *et al.*, 2002; Joseph and Stone, 2003). This is due to customers attaching higher quality to IT-based services,

which allow greater convenience, ease of use, and speedier transactions. Given that mobile devices are capable of providing such benefits, it is reasonable to expect that SMS marketing will have the same level of capability in improving perceived quality.

Evidence that supports the relationship between SMS marketing and perceived quality can also be found in a study by Nysveen *et al.* (2005). The authors conclude that a brand's use of SMS/MMS as an additional marketing channel helps increase consumer satisfaction because it offers consumers greater convenience in communicating with the brand. Since satisfaction is a function of perceived quality (Anderson and Sullivan, 1993), it can be inferred that the positive impact of SMS/MMS on brand satisfaction as suggested above would lead to a greater level of consumer perception of brand quality. Therefore, the following hypothesis is proposed:

H1c. Customers who receive SMS marketing messages, regardless of message type, will experience higher perceived quality than those who do not receive any messages.

The role of SMS marketing in the development of brand loyalty is clearly evident in the literature. For example, by employing interactive campaigns, Britain's Channel 5 enables their registered viewers to text answers to a question displayed at the end of the film they are watching. As a result, the campaign receives an 80 percent response rate, indicating a loyal audience for the program (Kavassalis *et al.*, 2003).

Customer relations management (CRM) via the mobile medium, or mobile CRM (mCRM), is another area where the potential of mobile marketing on brand loyalty building can be specifically applied. Sinisalo *et al.* (2007) suggest that the key characteristics of the mobile medium for CRM are flexibility, interactivity, and personalization. The authors also report the growing popularity of mCRM in Europe by illustrating that Finnair, the national airline of Finland, allows their loyal passengers to check in for flights in advance via SMS instead of waiting in line at the counter.

The potential of SMS marketing used for increasing brand loyalty can be realized by the effectiveness of e-mail marketing in brand loyalty enhancement. Merisavo and Raulas (2004) published empirical results establishing that e-mail is an effective tool for building brand loyalty as it allows marketers to contact their customers at any time. Given that e-mail marketing and SMS marketing share several facilitating qualifications for being regular marketing communication channels (e.g. low cost, easy to use, and wide dissemination), it is reasonable to expect that the same impact would apply to SMS marketing in building brand loyalty. Therefore, it is expected that:

H1d. Customers who receive SMS marketing messages, regardless of message type, will experience higher brand loyalty than those who do not receive any messages.

Moderating effects of permission
Although evidence in the literature of the moderating effects of permission on relationships between mobile marketing and brand perception is limited, several studies reveal that permission has a positive impact on the effectiveness of SMS promotion. Given that brand building is one of the domains commonly used to measure the success of advertising, it is reasonable to expect that permission would improve the branding ability of SMS advertising. The following are some examples indicating the significance of permission in the effectiveness of SMS advertising.

Tsang *et al.* (2004) empirically examine consumer attitudes toward SMS advertising and show that in general, consumers have a negative attitude toward SMS advertising. However, their attitude becomes more favorable when the advertisement is sent with consent. Barwise and Strong (2002) suggest that explicit permission is one of the main issues that advertisers should consider if they expect to have effective SMS advertising campaigns in the long term.

In an exploratory study, Barnes and Scornavacca (2004) developed a model suggesting that user permission is one of the predictors for the acceptance of SMS marketing. This notion is later empirically confirmed by Carroll *et al.* (2007). Similarly, Scharl *et al.* (2005) suggested that consumer permission is highly important for the effective SMS advertising.

The aforementioned impact of permission on branding indicates the necessity of incorporating permission into this research model. It is expected that permission would strengthen the relationship between mobile marketing and brand equity. Therefore, the following hypotheses are proposed:

H2a. Effects of SMS marketing on the brand awareness of customers who give their permission to receive messages will be more favorable than for customers who do not give permission.

H2b. Effects of SMS marketing on the brand association of customers who give their permission to receive messages will be more favorable than for customers who do not give permission.

H2c. Effects of SMS marketing on the perceived quality of customers who give their permission to receive messages will be more favorable than for customers who do not give permission.

H2d. Effects of SMS marketing on the brand loyalty of customers who give their permission to receive messages will be more favorable than for customers who do not give permission.

5. Methodology
Research design
In order to test the hypotheses, a 4 (three mobile message types and control) × 2 (permission situation) between-subjects experimental design was developed. The participants were first split into two groups on the basis of their willingness to receive messages from the tested brand: permission group and non-permission group. They were then randomly assigned into one of the four conditions where they were exposed to one of the three message types (i.e. personalized, interactive, and general ads), or not exposed to any ads at all.

These three message types were selected because they represent unique characteristics of text messaging that allow marketers to create effective promotions in a mobile environment (Clarke, 2001; Kim and Jun, 2008). In addition, these three types are frequently employed in the profession, and are the types typically found throughout the extensive literature discussing case studies of mobile marketing campaigns (Kavassalis *et al.*, 2003; Kim and Jun, 2008).

General message type refers to a plain text message without any special features added. Personalized and interactive messages are those that are personalized based

on a recipient's name, and those that allow a recipient to text back to a predetermined number, respectively.

Stimuli development and manipulation
ABP, a bakery café chain, was chosen as the focal brand. Quick service restaurant chains, typified by ABP, were deemed appropriate because brand equity is the main criterion that customers use to differentiate one chain from another (Kim and Kim, 2004). Brand equity also enhances consumer confidence in quality of service (Berry, 2000).

ABP is a US-based bakery café chain offering a variety of products, including breads, sandwiches, soups, and salads. The first ABP store in Thailand was established in 1997. With its increasing popularity, ABP now owns and manages more than 40 cafés throughout Thailand.

The three ad campaigns used as stimuli for the experiment were developed by ABP management. The first campaign provided general information about ABP products. The second and third involved a free item with a purchase.

Each campaign was designed with three slight variations, representing the three types of messages. However, the essence of each campaign was equivalent across all types of messaging to control for potential confounds. In each campaign, copy for general ads was first created. Then personalized and interactive ads were developed by including the following statements into the general ad, respectively: "text ABP to 424681"and "a special offer for (recipient's name)". This modification was applied to every ad of all three campaigns. In sum, nine different types of messages and three different campaigns in three slightly different message formats were created (Table I).

Campaign no.	General message	Personalized message	Interactive message
1	Experience a variety of healthy ABP products including custom-made sandwiches, baked goods, soups, salads, and beverages at 39 branches in Bangkok	*A special offer for (recipient's name)* Experience a variety of healthy ABP products including custom-made sandwiches, baked goods, soups, salads, and beverages at 39 branches in Bangkok	Experience a variety of healthy ABP products including custom-made sandwiches, baked goods, soups, salads, and beverages at 39 branches in Bangkok. *More info, text ABP to 424681*
2	Free mocha brownie or banana white choc bar with purchase of any ABP products worth 100 b. Today until 8 February 2009	*A special offer for (recipient's name)* Free mocha brownie or banana white choc bar with purchase of any ABP products worth 100 b. Today until 8 February 2009	Free mocha brownie or banana white choc bar with purchase of any ABP products worth 100 b. Today until 8 February 2009. *Text ABP to 424681*
3	Free 8 oz. hot coffee with purchase of one bakery item or sandwich at ABP. Today until 22 February 2009	*A special offer for (recipient's name)* Free 8 oz. hot coffee with purchase of one bakery item or sandwich at ABP. Today until 22 February 2009	Free 8 oz. hot coffee with purchase of one bakery item or sandwich at ABP. Today until 22 February 2009. *Text ABP to 424681*

Table I.
SMS ad stimuli

All three campaigns were sent in the Thai language. To ensure that manipulations were successful, the ads were pre-tested with 45 consumers. The results reveal that each ad type was perceived in accordance with its purpose.

Sampling and procedures
Participants in the study were mobile phone users older than 18 years of age. A database of mobile users obtained from a media agency was used as a sampling frame from which two groups of sample were randomly drawn. The first sample was drawn to identify possible permission-based respondents. Subjects in this group received a phone call asking for their willingness to receive SMS ads. Only those who gave permission were included in the experiment. The second sample was selected for a non-permission-based group. Subjects in this group received the ads without any prior contacts. All recruited subjects were then randomly assigned to one of the four message type conditions.

All three messages were sent to each subject within a period of four weeks. Within three days after receiving the final message, subjects were telephone surveyed by trained interviewers. By the end of the study, 400 usable questionnaires with an equal number of respondents in each condition were obtained.

Measures
All items in this study were adapted from relevant literature and measured using a five-point Likert-type scale, with the anchors of strongly disagree (1) to strongly agree (5) (see the Appendix). Brand awareness was measured via a four-item scale adopted from Yoo *et al.* (2000). To measure brand association, nine items were derived from Yoo *et al.* (2000) and Villarejo-Ramos and Sanchez-Franco (2005). Perceived quality was measured by six items adapted from Dodds *et al.* (1991), Pappu *et al.* (2006) and Yoo *et al.* (2000). Finally, six items from Yoo *et al.* (2000) were employed to measure brand loyalty.

6. Data analysis and results
Respondent characteristics
The sample consisted of slightly more women (54.2 percent) than men (45.8 percent). The majority of respondents (71.5 percent) were in the age range of 20-39, and 23.5 percent were 40 years or older. Respondents were of high educational backgrounds, with more than two-thirds of the sample having completed at least an undergraduate degree. Only 2.2 percent did not enter tertiary education. Over one third reported monthly household income of at least €2,325, or $3,333 US. Overall, the socio-economic status of the sample reflected the profile of ABP targeted customers (young adult to middle-age, educated, with higher incomes).

Manipulation checks
A manipulation check was conducted to ensure that ad stimuli were perceived in accordance with their purpose. The analysis revealed that the intended manipulation was achieved. Subjects perceived the personalized ad ($M = 3.44$) as significantly more personalized than the interactive ad ($M = 2.53$, t-value $= 10.00$, $p < 0.001$) and the general ad ($M = 2.43$, t-value $= 11.20$, $p < 0.001$). Similarly, subjects evaluated the interactive ad ($M = 3.47$) as significantly more interactive than the personalized ad ($M = 2.53$, t-value $= 9.40$, $p < 0.001$) and the general ad ($M = 2.37$, t-value $= 11.00$, $p < 0.001$).

Scale purification
In examining the underlying dimensions of brand equity, exploratory factor analysis
(EFA) with a varimax rotation was conducted on the original 28 measurement items.
The results revealed four factors (15 items) for brand equity. These factors were
matched and corresponded to the original scales. Factor loadings of all items were
above the minimum criterion of 0.5 (Nunnally, 2005).

Analytical procedures
In analyzing the main data, structural equation modeling was chosen over traditional
methods of multivariate analysis of covariance (MANCOVA) and ANCOVA because of
the following three advantages outlined by Bagozzi and Yi (1989). First, the structural
equation method is covariance-based, thereby avoiding restrictive assumptions of
homogeneity in variances and covariances of the dependent variables across groups.
Second, this approach takes into account measurement error in the measures of
variables, which reduces the possibility of committing type II errors. And finally, this
approach provides powerful tests with covariates, which are treated as latent variables,
thus allowing for a correction for attenuation.

To test the hypotheses, this study employed a two-step approach (Anderson and
Gerbing, 1988). First, confirmatory factor analysis (CFA) using AMOS 7.0 was performed
on the scales obtained from EFA to assess convergent and discriminant validity of the
constructs. Second, on the basis of the CFA results, the proposed structural model was
derived to test the hypothesized relationships among the constructs. In this stage, a series
of multi-group analyses were also conducted to assess the moderating effect of permission.

Validity of the measures
A CFA with all 18 items revealed a good fit between the data and the measurement
model. Specifically, results in Table II indicate that all measured items significantly
loaded on their corresponding construct, which suggested high convergent validity
(Hair *et al.*, 2006). According to Fornell and Larcker (1981), discriminant validity is
achieved if the average variance extracted (AVE) of the construct of interest is greater
than the squared correlations between that construct and all other constructs in the
model. Results in Table III showed that the AVEs of each construct were greater than all
squared correlations. Therefore, discriminant validity of constructs in the model existed.

Estimation of structural model
On the basis of the CFA results, the full structural model was employed to test the
hypotheses regarding the relationships between SMS marketing and brand equity
dimensions. SMS marketing variables were incorporated into the model as three
dichotomous variables: personalization, interactivity, and general. The control group
was chosen as the reference level. Gender (female $= 0$, male $= 1$) and age (18-29 $= 0$, 30
and over $= 1$) were also included in the model as two dichotomous variables.

The results of the full structural model analysis are reported in Table IV. The
overall model exhibited a good fit: $\chi^2 = 285.286$, $df = 205$, $\chi^2/df = 1.392$, GFI $= 0.941$,
CFI $= 0.972$, and RMSEA $= 0.031$. Two of the four hypotheses concerning the impact
of text messages on brand equity dimensions were supported. As expected, all three
types of mobile messages are significantly related to brand awareness, with the
personalized message providing the strongest influence ($\beta = 0.265$, *t*-value $= 3.983$),

Scale items	Standardized loading	t-value	Cronbach's α	SCR	AVE
Brand awareness			0.71	0.73	0.48
BA1	0.67	–			
BA2	0.64	9.63			
BA3	0.76	10.07			
Brand association			0.84	0.83	0.50
BS1	0.71	–			
BS2	0.72	12.73			
BS3	0.82	13.98			
BS4	0.65	11.62			
BS5	0.62	11.13			
Perceived quality			0.79	0.79	0.48
PQ1	0.75	–			
PQ2	0.66	11.62			
PQ3	0.72	12.61			
PQ4	0.64	11.41			
Brand loyalty			0.83	0.83	0.63
BL1	0.78	–			
BL2	0.89	15.96			
BL3	0.70	13.80			
Fit indices of the model	$\chi^2 = 167.446$, df = 124, $\chi^2/df = 1.350$, $p = 0.006$, GFI = 0.955, AGFI = 0.938, CFI = 0.983, TLI = 0.979, and RMSEA = 0.030				

Table II.
CFA and scale reliability

Notes: SCR – scale composite reliability; AVE – average variance extracted

	Brand awareness	Brand association	Perceived quality	Brand loyalty
Brand awareness	*0.48*			
Brand association	0.14	*0.50*		
Perceived quality	0.22	0.26	*0.48*	
Brand loyalty	0.03	0.19	0.16	*0.63*

Table III.
Discriminant validity
analysis

Notes: The italicised diagonal values represent AVE; the off-diagonal values are the square of the correlations among the constructs

followed by the general ($\beta = 0.217$, t-value $= 3.282$) and the interactive ($\beta = 0.210$, t-value $= 3.180$). Therefore, *H1a* is supported. The personalized message ($\beta = 0.138$, t-value $= 2.266$) and the general message ($\beta = 0.209$, t-value $= 3.414$) also have a positive relationship with perceived quality of the brand, but the interactive message does not ($\beta = 0.085$, t-value $= 1.406$). Thus, *H1c* is partially supported.

Surprisingly there is no significant path between any of the mobile marketing messages and the dimensions of brand association and brand loyalty. Thus, *H1b* and *H1d* are not accepted.

Moderating effects of permission
The overall moderating effects of permission were examined by using a structural multi-group model. Consistent with the procedures outlined by Byrne (2010), the analysis began with the creation of the baseline model, in which all path coefficients are

Structural path	Standardized regression coefficient	t-value	Hypothesis testing
Brand awareness ($R^2 = 0.238$)			*H1a*: supported
Personalization → Brand awareness	0.265***	3.985	
Interactivity → Brand awareness	0.209**	3.168	
General → Brand awareness	0.216**	3.269	
Brand association ($R^2 = 0.394$)			*H1b*: not supported
Personalization → Brand association	0.030	0.494	
Interactivity → Brand association	0.022	0.369	
General → Brand association	0.021	0.340	
Perceived quality ($R^2 = 0.314$)			*H1c*: partially supported
Personalization → Perceived quality	0.136*	2.168	
Interactivity → Perceived quality	0.087	1.391	
General(Perceived quality	0.214***	3.399	
Brand loyalty ($R^2 = 0.305$)			*H1d*: not supported
Personalization → Brand loyalty	0.020	0.314	
Interactivity → Brand loyalty	0.034	0.558	
General → Brand loyalty	0.028	0.440	
Fit indices of the model	$\chi^2 = 285.286$, df = 205, χ^2/df = 1.392, $p = 0.000$, GFI = 0.941, AGFI = 0.921, CFI = 0.972, TLI = 0.965, and RMSEA = 0.031		

Note: Significant at: *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$

Table IV.
Structural model analysis

free to be estimated across two groups. Then the model was constrained by setting all hypothesized paths to be equal across both groups. The difference in χ^2-values between these two models ($\Delta\chi^2 = 18.03$, $\Delta df = 12$, $p = 0.114$) was slightly less than 18.5, indicating a difference significant at a level slightly above 0.10. Because the results of the test for overall moderating effects just fell short of the threshold, tests for the specific moderating effects of permission on each hypothesized relationship (*H2a-H2d*) were deemed appropriate.

On the basis of the approach presented by Jöreskog and Sörbom (1988), the tests for specific moderating effects of permission were conducted by independently constraining each path coefficient to be equal across two groups, and then allowing this path to be freely estimated. Again, the χ^2-values between these models were compared. As shown in Table V, of the 12 relationships analyzed, only the path between the personalized messages and brand association was significantly moderated by permission ($\Delta\chi^2 = 4.580$, $\Delta df = 1$, $p < 0.05$). Therefore, only *H2b* is partially supported.

7. Discussion and conclusions
The objective of this study was to investigate the effects of SMS marketing messages on Thai consumers' perception of ABP brand equity as well as to explore the moderating impact of permission on the relationship between SMS marketing and its branding ability.

Structural path	Non-permission-based respondent	Permission-based respondent	$\Delta\chi^2$ (df $= 1$)	Hypothesis testing
Brand awareness				*H2a*: not supported
Personalization → Brand awareness	0.148	0.399***	3.002	
Two-way → Brand awareness	0.178	0.280**	0.409	
General → Brand awareness	0.166	0.290**	0.655	
Brand association				*H2b*: partially supported
Personalization → Brand association	−0.094	0.180	4.580*	
Two-way → Brand association	−0.067	0.138	2.742	
General → Brand association	−0.060	0.018	0.402	
Perceived quality				*H2c*: not supported
Personalization → Perceived quality	0.161*	0.115	0.241	
Two-way → Perceived quality	0.105	0.077	0.093	
General → Perceived quality	0.326***	0.099	3.787	
Brand loyalty				*H2d*: not supported
Personalization → Brand loyalty	0.144	0.085	3.230	
Two-way → Brand loyalty	0.075	0.006	0.350	
General → Brand loyalty	−0.010	0.031	0.023	
Fit indices of the models	Unconstrained (baseline) model $\chi^2 = 445.442$, df $= 400$, χ^2/df $= 1.114$, $p = 0.058$, GFI $= 0.912$, AGFI $= 0.879$, CFI $= 0.983$, TLI $= 0.979$ and RMSEA $= 0.017$ Constrained model $\chi^2 = 463.471$, df $= 412$, χ^2/df $= 1.125$, $p = 0.040$, GFI $= 0.909$, AGFI $= 0.878$, CFI $= 0.981$, TLI $= 0.977$ and RMSEA $= 0.018$ $\Delta\chi^2$ (Δdf $= 12$) $= 18.03$, $p = 0.115$			

Note: Significant at: *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$

Table V.
Results of multi-group structural model analysis

The results indicate that text messaging has a significant positive impact only on brand awareness and perceived quality. This confirms Yoo *et al.*'s brand equity conceptual framework postulating that any marketing activities influence brand equity dimensions.

Effects of SMS marketing on dimensions of brand equity
As expected, customers who received any types of text messages were found to have a higher level of brand awareness than those who did not. This result confirms the potential of text messaging in strengthening a brand's presence in the consumer's mind, as suggested by Barwise and Strong (2002) and Rettie *et al.* (2005).

The significant effect of personalized and general messages on perception of brand quality supports the findings of previous studies in the service sector indicating a positive relationship between the use of technology and service quality (Zhu *et al.*, 2002;

Joseph and Stone, 2003). This shows that customers recognize benefits from SMS service, just like they do with other IT-related services; thus, they perceive the quality of the brand to be superior.

However, an insignificant relationship between the interactive message and perceived quality could be due to irritation caused by this particular type of message. Kannan *et al.* (2001) pointed out that a mobile advertising message requiring customer involvement could be perceived as intrusive and unappealing information. Moreover, customers might find this interactive campaign deceptive or underhanded because it does not give out all of the information for free but instead requires customers to pay for it indirectly in the cost of sending a return message.

Contrary to the predictions, SMS marketing messages were not a significant determinant of either brand association or brand loyalty. This unexpected result for brand association might be due to the nature of text messages in general. The strength of brand association is thought to depend on the quantity and quality of cognitive processing that a consumer devotes to the information. The greater the depth of processing, the stronger the brand association (Keller, 1993). Because of the size and format of text messages, text-based ads may not necessarily generate many strong brand associations on the basis of information processing levels. For brand loyalty, it could be that the experimental period was not long enough for such a relationship to be formed. Consistent communication is important for building brand loyalty because it induces the customer to be more involved with the brand (Merisavo and Raulas, 2004).

Moderating effects of permission
Of the 12 hypothesized relationships between SMS messages and brand equity, only one – that between the personalized message and brand association – is moderated by permission. The restricted role of permission in strengthening the influence of SMS marketing on branding could be because mobile spam is so common in Thailand that most mobile users are used to it and no longer perceive it as irritating; therefore, they barely reacted to it.

The stronger influence of the personalized message on brand association for permission-based customers could be explained by expectations that permission-based customers have on the content of the messages. As message relevance is one of the drivers of consumers' willingness to give permission to receive SMS ads (Bamba and Barnes, 2007; Tezinde *et al.*, 2002), permission-based customers might expect to receive personalized messages from the brand, while non-permission-based customers might not. Therefore, results suggest that permission-based customers perceive personalized SMS as more favorably than do non-permission-based customers.

Recommendations for ABP
The results of this study indicate that text messaging is an effective instrument for ABP in creation of brand awareness. ABP management should therefore consider integrating such promotions as part of their marketing strategy. Text messaging should be used primarily as a reminder, and for updates or confirmations, rather than for comprehensive marketing campaigns, with a focus on improving the efficiency of business processes or quality of service. For example, SMS can be used to confirm a customer's food or catering service order made via the company's web site or the telephone.

When designing SMS marketing campaigns, management should make sure the campaign creates the least possible irritation to customers. One of the strategies that can be employed to accomplish this task is using personalized or general messages. However, management should keep in mind that success in personalization requires a comprehensive and up-to-date database that reflects the true preferences, needs, and wants of customers, which is expensive.

The interactive ad is one of the most frequently used types of SMS marketing. However, under the push strategy used in this study, the campaign had limited influence. To enhance its influence, management could try it out under the pull strategy, in which a dialogue is initiated by the customer. For example, ABP could use text messages as a channel for consumers to vote for their favorite products, or suggest new sandwiches or drinks. However, management has to make sure that campaign incentives attract customer attention and are worth the cost of a reply message.

Although permission has a limited impact on brand equity development, it should be taken into account when a brand is designing their mobile marketing campaigns. Permission-based mobile marketing campaigns should focus primarily on using personalized information or services to maintain relationships with customers, and then reward their favorability toward the brand. Such messages can notify customers about the grand opening of a new branch in a nearby area, or about special offers in honour of a customer's birthday.

Limitations and future research

This study has some limitations that should be considered.

As previously mentioned, at the time the study was conducted, the concept of permission marketing was not widely adopted in Thailand. This situation inevitably affects the Thai perception of mobile spam. Hence, the results of this study might not be directly applicable to all countries.

In addition, as with other experimental designs, limitations of the study involve the internal validity of the findings. The experiment was conducted over a period of one month; it is difficult to say with certainty whether these findings would hold true if the trial period were longer. It is recommended that future research extend the trial period to ensure validity of the findings.

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Appendix. List of scale items for brand equity
Brand Equity
Brand awareness

I know what ABP look likes.

I can recognize ABP among competing brands.

I am aware of ABP.

When I think about bakeries, ABP is the first brand that comes to mind.

Brand association

Some characteristics of ABP come to mind quickly.

I can quickly recall the symbol or logo of ABP.

I have difficulty imagining ABP in my mind.

ABP has a strong image.

ABP has a strong personality.

ABP is a very good brand.

ABP is a very attractive brand.

ABP is an extremely likeable brand.

ABP is different from competing brands.

Perceived quality

ABP is of high quality.

The likelihood that ABP is reliable is very high.

ABP must be of very good quality.

ABP offers products of consistent quality.

ABP is a quality leader in its category.

The workmanship of ABP is very high.

Brand loyalty

I consider myself to be loyal to ABP.

ABP would be my first choice.

I will not buy other brands if ABP is available at the store.

If ABP were not available at the store, it would make little difference to me if I had to choose another brand.

When another brand is on sale, I will generally purchase it rather than ABP.

Only under extreme circumstances would I consider purchasing a brand of this product different from ABP.

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