



# Geofencing in proximity marketing for entrepreneurs: validation as an effective tool to attract competitor customers

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## Abstract

In an increasingly saturated market, brands are adopting innovative strategies to attract customers, particularly those who are already loyal to competing businesses. Traditionally, retail marketing has relied on promotions and price reductions, tactics that often diminish profit margins without securing long-term customer loyalty. This study presents a quasi-experimental field investigation within the domain of digital marketing, employing a geolocation tool to analyze participants' geographic behavior in real time. This approach enables more precise segmentation for the implementation of a targeted digital advertising campaign. Geofencing technology was utilized to monitor users and identify mobile devices, while the D&V 360 platform was employed for the management and execution of the campaign. This combination ensured effective reach and accurate measurement of key performance metrics. The findings offer concrete evidence of the potential of Geofencing technology in the competitive marketing landscape, indicating that it can be a valuable tool for optimizing resources and enhancing the effectiveness of marketing efforts, particularly for entrepreneurs.

**Keywords** Digital marketing · Digital advertising · Geolocators · Proximity marketing · Advertising effectiveness

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## Introduction

Technological advancements have led to a broad array of location-based services, including real-time traffic updates, personalized recommendations, and geographically targeted advertising (Mohammadi et al., 2011). One of the most commonly used methodologies in the business realm is Geofencing, which is based on the technological development of Global Positioning System (GPS) and satellite navigation systems. These systems are capable of accurately defining virtual boundaries and enabling real-time monitoring of user activity (Shah et al., 2022). The patent for the application was filed with the United States Patent Office on June 12, 2014, under the title: “Geofencing System and Method”. The authors describe it as a computerized method executed by a device that has a processor functionally connected to a memory, which includes the following steps:

1. Storing a set of geofences in memory along with the addresses of servers associated with each of these geofences.
2. Receiving current location data from a mobile device, where this data reflects the current position of the mobile device.
3. Comparing this location data against each of the multiple geofences to determine if data should be obtained from one or more of the servers associated with those geofences.
4. If affirmative, obtaining data from one or more servers and transmitting this data back to the mobile device. Geofences are geographically defined virtual boundaries created by Global Positioning Systems (GPS). These boundaries allow for the establishment of a perimeter or specific areas on a digital map and are used to monitor when a device equipped with GPS enters or exits a defined area. The Geofencing methodology allows, with the support of a mobile phone (see Image 1), the use of geofences to obtain data about multiple virtual spaces, generate real-time location data, and determine whether data should be obtained from one or more servers to subsequently transmit it back to the mobile device.

The Geofencing methodology is a highly versatile technology with multiple applications across various sectors. It is applied in different areas such as navigation (Kim & Atkins, 2022; Ullah et al., 2020), security (Caggiani et al., 2023; Fu et al., 2020; Stevens et al., 2019), task automation, or the localization of people or assets (Lin et al., 2018). In recent years, it has become a valuable tool in designing marketing and advertising strategies, allowing companies to locate and track consumers in real-time. Unlike network proximity rules, which focus on the proximity of users to network infrastructure, this technology specializes in delineating specific areas, such as the vicinity of a store or a residential neighborhood, using polygonal boundaries to interact with users (Namiot and Sneps-Sneppe, 2013). This technology enables a variety of applications, including activating specific actions when a device enters or exits these areas (Bosch, 2018). Proximity-based marketing uses Geofencing to send relevant and personalized content to consumers when they are within a specific location or event, such as a large retail space or a fair. The central objective of this strategy is to capture the consumer's attention at the right moment and learn from their

consumption habits, generating valuable geohabit data for strategic planning. It also allows for highly precise geographic segmentation, targeting and monitoring consumers in specific areas so that advertisers can devise campaigns in targeted sectors, increasing the effectiveness of their impact and often reducing the advertising budget by focusing on areas with higher conversion potential (Greenwald et al., 2011).

This methodology represents an innovative and efficient approach to designing marketing and advertising strategies (Vizcaino et al., 2021), allowing advertisers to interact with consumers more directly and effectively (Brown & Harmon, 2014). The data it provides on consumption habits enables the analysis of consumer behavior in the studied areas, including factors such as time spent in a location, response to promotions, and movement within a shopping center. This data gives entrepreneurs a significant advantage in developing real-time contextual advertising by adapting messages and offers according to consumer activity and preferences (Miller, 2020). This capability enhances the relevance of campaigns and consumer engagement. Fig. 1

### Theoretical framework

Proximity marketing is a strategy that uses location technology to analyze consumers in relation to their specific geographic location and shopping habits. Pintado and Sánchez (2012) define it as a valuable communication tool for advertisers, as it allows them to create and launch advertising campaigns on mobile platforms, enabling companies to achieve proper positioning and exercise greater control over their campaigns. The location and context of users and buyers constitute essential components of marketing strategy. According to Hoyer et al. (2018: 22): "Consumers do not make purchase decisions in isolation; their choices are influenced by the immediate

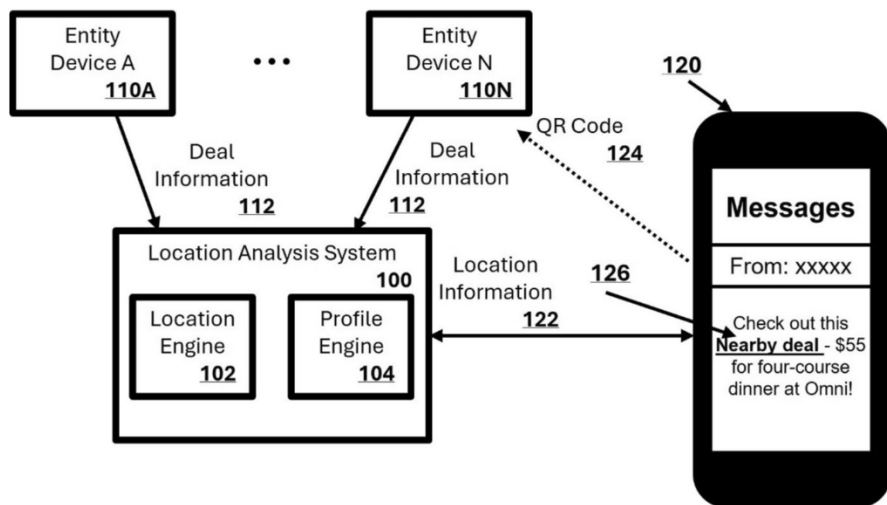


Fig. 1 Prepared by the authors based on “Location and Notification Activation System Based on Geofences,”

physical environment and the social context in which they find themselves." Thus, proximity marketing addresses these variables as it is based on "localized wireless distribution of advertising content associated with a particular place" (Rojas & Bolaños, 2012: 52). This marketing strategy, focused on the location of the consumer or user, allows companies to establish more direct and contextually relevant interactions with their audience (Serna-Zuluaga et al., 2024), leading to higher conversion rates and consumer loyalty (Leek & Christodoulides, 2009).

Consumer behavior theories emphasize the importance of context in decision-making (Solomon, 2018), as it facilitates the emotional connection between product and subject (Núñez-Cansado et al., 2020). Consumers do not act in isolation; their decisions are heavily influenced by their immediate environment. Contextual relevance and situational cues increase receptivity when information is perceived as personally relevant and contextually appropriate (Petty et al., 1983). Proximity marketing fundamentally leverages this premise by targeting consumers at specific moments and locations where their willingness to interact with a brand or make a purchase may be heightened. Consumers tend to respond more favorably to messages they perceive as relevant to their specific needs, motivations, and desires. By targeting consumers in strategic locations and opportune moments, such as near a store or during a specific event, companies can capitalize on the consumer's emotional state, thereby increasing the likelihood of a favorable response. Cheng and Ji (2016), in their analysis of Marketing Intelligence applications in Smart City environments, suggest that businesses and advertising agencies should implement systems that support geo-conquesting actions. This would effectively impact consumers in areas dominated by competitors, leveraging the infrastructure and data available in a Smart City to maximize audience reach and targeting accuracy.

The ability to send personalized messages or offers in real-time not only increases brand visibility in competitive areas but also opens new avenues for customer acquisition through the intelligent and strategic application of geolocation technology. This strategy helps reduce costs, as it allows for the optimization of advertising resources, reduction of operational expenses, and more effective segmentation (Berman et al., 2021). It also presents clear advantages in terms of measurement, providing accurate, real-time data on campaign impact. Furthermore, it represents a significant improvement in customer experience. These strategies have emerged from the evolution of retail marketing practices and are now offered by numerous companies serving both small and large retailers, as well as event organizers. Companies like Carrefour use Beacon technology in Romania, with over 560 devices distributed across 28 supermarkets, to analyze consumer shopping habits and deliver personalized promotions via mobile phones (Saldivar Sucasaca, 2019). Some authors had already anticipated the potential growth of these tools in marketing strategies, which would allow companies to optimize retail space (Rayport & Sviokla, 1994).

A large part of this proximity marketing relies on technologies such as Near Field Communication (NFC), a short-range tool that allows interaction with consumers (Medina-Chicaiza et al., 2019), or iBeacon technology; small devices strategically placed within stores that transmit messages via short-range Bluetooth (Saldivar Sucasaca, 2019). These technologies are limited by "network proximity rules," unlike Global Positioning System (GPS) technology, which offers highly accurate

geolocation, broader coverage, and allows for the integration of other technologies (Martínez et al., 2020). These tools provide the advantage of real-time localization, increasing the value of the service by enhancing the customer's perceived benefit. The geographical personalization of offers in commercial environments can significantly optimize both emotional responses and behavioral traits related to the brand, as well as improve perceived value and purchase intention. Grewal et al. (2022) highlight that "the power of proximity marketing lies in its ability to offer highly personalized content to consumers based on their precise location and insights into their behavior, allowing for more effective and contextually relevant interaction." This personalization not only enhances the relevance of the message but also helps create a deeper emotional connection by demonstrating that the company understands and values the consumer's individual preferences. The development of geolocation technologies in strategic planning enables the implementation of personalized campaigns based on the consumer's exact location, knowledge of their consumption habits (Grewal et al., 2022), and their perceptual experiences. This data can support a better understanding of consumer decision-making, leading to more effective and cost-efficient marketing efforts.

## State of the art

The geofencing strategy falls within proximity marketing as it revolves around technology that enables real-time consumer localization and tracking. Its evolution in relation to marketing strategies has been significant, from its early implementations to contemporary applications, particularly in the advertising sector. Geofencing has progressed from basic monitoring and tracking as evidenced by earlier patents (Humphries & Ngo, 2007), to its current integration with mobile devices, real-time analytics, and automation. This evolution is reflected in recent developments, such as systems and methods for Geofencing-based solutions for advertising and messaging, applicable across various environments (Gauglitz et al., 2021). Thus, when a person enters a specific area, a brand can send a notification to their mobile device or an advertisement and collect data based on their location (Suganya, 2022). The application of Geofencing extends beyond marketing, reaching into various other fields. In the environmental sector, this technology is used to address urban challenges related to air and water quality, as demonstrated by studies from Konomi and Sasao (2016). Additionally, Thomas and Sarhadi (2024) have integrated Geofencing into airspace management for unmanned aerial vehicles, enhancing operational efficiency and safety. In the field of communication, Ivanov and Velkova (2022) implemented this technology in an outdoor museum to provide personalized content to visitors based on prior classification, thereby showcasing the versatility of Geofencing in delivering real-time, customized services. Similarly, Alfayad (2018) highlights its utility in logistics, particularly in inventory control, as evidenced in the management of bike-sharing systems, where Geofencing ensures the return of these vehicles to their designated locations.

In the marketing realm, geofencing is experiencing significant advancements, further enhanced when combined with advanced technologies such as Artificial Intel-

ligence (Juarez-Varon et al., 2024). This synergy allows companies to analyze large volumes of data through machine learning algorithms, facilitating the identification of the most appropriate content to customers, as well as determining the optimal channels and timing for dissemination. This approach not only improves the understanding of customer preferences and behaviors but also enables more accurate predictions of future actions (Haleem et al., 2022). To evaluate the effectiveness of geofencing compared to traditional advertising methods, Qayum and Sohail (2016) conducted a comparative study of outcomes obtained through two conventional channels and geofencing. The findings revealed a significant increase, close to 300%, in sales results when using geofencing technology, highlighting its potential as a highly effective marketing tool and demonstrating its added value in the contemporary advertising landscape. Proximity marketing also known as "location-based mobile marketing," can be implemented through two main approaches: Geofencing and network proximity rules. While Geofencing establishes virtual boundaries to send messages to mobile devices within specific geographic areas, network proximity rules rely on the closeness of a device to specific points within the network infrastructure, such as antennas or Wi-Fi routers.

In the marketing context, it is crucial to understand that geofencing is a facet of location-based marketing, which employs "location-based mobile marketing" strategies. Bernritter et al. (2021) emphasize that the effectiveness of this field is achieved through integrating three crucial components: location segmentation, behavioral segmentation, and the type of promotion offered. This triad underscores the importance of a holistic approach in proximity marketing. Geolocation not only allows for the delivery of targeted messages to specific users but also leverages the vast contextual data provided by mobile devices, thereby enriching marketing strategies with a layer of hyper-contextualization (Tong et al., 2020). This is essential for designing campaigns that effectively impact users based on their movement patterns and anticipated behavior, as suggested by Ghose et al. (2019). The goal is not only to reach the user but also to understand and predict their future actions. In an effort to refine these strategies, studies such as that of Garzon et al. (2016) focus on optimizing and quantifying the reliability of location-based services. This research proposes a specific web service to assess the accuracy of proactive geolocation systems, concluding that location precision, local infrastructure, and environmental conditions are key determinants of geofence detection effectiveness, thereby highlighting the complexity demand for precision in location-based marketing.

Most research on geofencing focuses on the analysis of front-foot traffic, referring to the creation of geofences in areas immediately in front of a business to target passersby. Wang et al. (2019) highlight the advantage of using coupons to incentivize purchases in these contexts, emphasizing the ability to dynamically modify geofence locations. This adaptability allows companies to respond in real-time to fluctuations in pedestrian and vehicular traffic. However, the effectiveness of these strategies tends to diminish as the distance between the user and the point of interaction increases, as evidenced by Danaher et al. (2015), who also suggest shortening coupon validity periods to create a sense of urgency. Ho et al. (2020) explore the relationship between distance and conversion, reporting a 17.64% decrease in conversion rate for each additional mile between the consumer and the establishment. This finding

underscores the critical role of proximity in geofencing-based marketing strategies. Fong et al. (2015) conducted a comparative study using two groups differentiated by the timing of promotional message delivery: one received the promotion while passing by the establishment and the other received it one week later.

The results showed greater effectiveness when interacting with customers in real time, particularly when they were near or inside the business, reinforcing the idea that timing and location are key factors in maximizing the effectiveness of geofencing campaigns. A geofencing action by a brand is fundamentally a strategy to attract customers, positioning itself within the company's competitive landscape. There is extensive literature highlighting the importance of competitive analysis to achieve a market advantage (Porter, 1987; Bobillo et al., 2010; Martín-de-Castro et al., 2006; Whitehill, 1997; Slater, 1996). Mohammadi et al. (2011) note that most companies adopt Porter's general strategies—differentiation, focus, and cost leadership—although there is a lack of studies focusing on specific tactics aimed at directly capturing competitors' customers through geofencing. Karray and Martín-Herrán (2009) investigated the competitive dynamics between a national and a private brand in terms of advertising and pricing, concluding that price reduction was the only effective strategy for the retailer to attract customers. Although price modification or the use of coupons are common tactics, they can significantly reduce profit margins (Shaffer y Zhang, 1995; Bawa y Shoemaker, 1989). At the same time, Arora et al. (2020) highlight that monitoring competitor behavior on social media represents an innovative approach to gaining competitive advantages. The key lies in outperforming competitors by improving services quality, fostering loyalty, and personalizing the customer experience (Anani, 2010), elements that can be effectively supported through strategic geofencing. Research on strategies aimed at attracting competitors' customers often focuses on how companies can reach consumers who are potential clients of rival brands. This focus does not diminish the relevance or effectiveness of such approaches. For example, Yoon and Jeong (2017) suggests that with strategic advertising planning, it is possible to attract customers from competitors. While they present four competitive strategies that influence advertising costs, they do not specify the channels or media through which these strategies should be executed. Morikawa (2021) argues that brands often choose between price-focused and quality-focused approaches to attract new customers, noting that the latter tends to be more profitable in the long term. Nonetheless, perspectives like those of Hauser and Shugan (2008) advocate for a defensive marketing strategy as the most effective option for a brand. Additionally, Gordon et al. (2008) demonstrate how competitive analysis can be fundamental to brand development in the public health sector, providing valuable insights into customers preferences and behavior.

Fong et al. (2015) highlight the effectiveness of geo-conquesting, a strategy that employs geofencing to direct marketing efforts at competitors' locations. Their study demonstrated that targeting areas near competitors' points of sale or other strategic zones can enhance campaign effectiveness, especially when combined with significant discounts, thereby attracting customers who would otherwise be difficult to reach. This approach offers the advantage of accessing a new market segment without negatively impacting revenue from the existing customer base, thus mitigating the risk of market cannibalization. In a study conducted by Ding et al. (2023),

the effectiveness of offering higher discount coupons to consumers located near the establishment itself (defensive strategy) was compared to those near the competition (offensive strategy). The results indicated that the offensive strategy could reduce revenues in a monopolistic market context compared to a duopolistic one. Xia et al. (2021) theoretically explored the use of mobile coupons as a competitive tool, although they did not provide empirical evidence regarding the practical application of geo-conquesting. Nevertheless, they emphasize the relevance of this tactic within the theoretical framework of market competition.

On the other hand, Molitor et al. (2024) investigated "push" and "pull" mobile notification strategies in the context of geo-conquesting. They found that sending push notifications to potential customers near competing establishments can significantly increase the effectiveness of advertising campaigns. This approach is particularly effective in areas with high commercial density, where competition for consumer attention is intense. These findings suggest that geo-conquesting, especially when integrated with mobile notification strategies, represents a promising tactic for increasing brand visibility and appeal in highly competitive environments. The theoretical literature review emphasizes the effectiveness of geofencing near points of sale, particularly when combined by economic incentives such as promotions. Although there is evidence supporting its effectiveness near competitor location, research on this specific context remains limited. Moreover, there is a lack of studies focused on users who have previously interacted with direct competitors, defined as consumers who have visited competing establishments. A distinctive advantage of geofencing, which has received limited attention in prior research, is its ability not only to identify users within a defined area but also to track whether those users subsequently visit the point of sale of the brand implementing the strategy. This tracking capability offers a unique opportunity to evaluate the conversion of geolocated users into actual customers.

The present research focuses on determining the effectiveness of geofencing in converting visitors from competing establishments into customers of the brand's point of sale. The main objective is to quantify what percentage of users impacted by geofencing actions near competitors end up visiting the brand's establishment, thus providing a concrete conversion metric and demonstrating the practical utility of this strategy in the current competitive context.

## Objective

Geofencing is a technology that uses geolocation to create a virtual perimeter around a specific location. When a user enters or exits this defined area, specific actions can be triggered, such as sending notifications or advertisements. In the digital age, brands are looking for more effective methods to engage their target audience. Digital advertising enables audience segmentation and message personalization, both of which can contribute to higher conversion rates. The benefits of geofencing include: precise targeting, as it allows companies to reach users in specific locations, which is ideal for local businesses; real-time interaction, enabling brands to deliver relevant offers or messages at the right moment, when the users are near their store or events;

and result measurement, as it facilitates tracking customer behavior and allowing companies to analyze the effectiveness of their campaigns in real time.

The objectives are:

To assess the effectiveness of implementing a digital advertising campaign using the geolocation tool Geofencing.

To implement geofencing effectively, it is important to define the target audience by identifying who the ideal customers are and where they are located, create engaging content by developing messages and offers that resonate with the intended audience, and establish geographic perimeters by determining the specific areas where the campaign will be activated. Evaluating effectiveness involves data analyzing performance data using metrics such as click-through rates, conversions, and in-store traffic to assess the campaign's impact, as well as gathering customer feedback by collecting opinions and comments from users to better understand the customer experience and adjust future campaigns.

## Methodology

A quasi-experimental field study is conducted in the realm of digital marketing, focusing on geographic behavior analysis using the Geofencing tool developed by the company GeoQ (Business Human, 2024). The research aims to identify and select points of interest and potential customers based on defined inclusion criteria, utilizing a geolocation tool that allows real-time geographic delimitation for the implementation of the advertising campaign. Once the participants are selected, a digital advertising campaign is implemented, and its results are evaluated to measure its effectiveness and the behavior of the subjects. Advanced geolocation technologies and mobile traffic analysis (Geofencing) were employed for user monitoring and mobile device identification, enabling the identification and segmentation of users who visited the selected establishments through the analysis of real-time consumer movement and behavioral patterns. The D&V 360 tool was used for managing and executing the advertising campaign, ensuring effective coverage and accurate measurement of results. Due to the operational characteristics of the geofencing technology employed (GeoQ and D&V 360), it was not technically feasible to obtain historical physical visit records equivalent in precision and filtering to those collected during the campaign. The system only allows retrospective tracking up to 30 days prior to the start of the campaign, and exclusively for the purpose of initial audience segmentation.

To address this limitation, we implemented a pre-exposure segmentation filter excluding any users who had visited the target brand within the 30 days prior to the campaign. Only devices that had visited competitor locations during that period were eligible for inclusion. This approach, inspired by established quasi-experimental “segmented pre-exposure” designs commonly applied in field evaluations, ensured a homogeneous baseline for the exposed group, such that any subsequent visit to the brand’s store would necessarily occur after exposure to the advertising stimulus.

In addition, a non-exposed control group was incorporated, comprising devices meeting the same inclusion criteria but deliberately withheld from campaign expo-

sure. This control group provided a functional baseline for estimating the incremental effect attributable to the campaign. The methodological design is structured in three phases:

- o 1st Phase: Sample Selection
- o 2nd Phase: Campaign Implementation
- o 3rd Phase: Data Analysis

### **1st Phase: Sample Selection**

In the selection of the supermarket sample, convenience sampling adjusted to geographical requirements was applied. The research is conducted on the island of Tenerife (Spain), an area that allowed for a representative sample in relation to the number of supermarkets in the locality. First, the 81 establishments of the Hiperdino brand in the study region were identified, along with 127 locations of competitors, resulting in a total universe of 209 establishments marked as points of interest. This selection allowed for broad and representative coverage of the brand's area of influence and its competitive landscape. The selection of subjects is carried out through convenience sampling, following prior monitoring of users in the areas of interest and applying inclusion and exclusion criteria to filter out individuals whose presence in the area was not related to shopping activities. The inclusion criterion is established based on the time spent at the location. To this end, filters were implemented according to duration of stay, with a minimum of 5 min and a maximum of 2 h. By geolocating all competitor points of sale, users who had visited those establishments—but not Hiperdino stores—during the 30 days prior to the campaign launch were included in the study.

The exclusion criterion involves eliminating those users who, in addition to being present at competitor locations, were also detected at Hiperdino establishments during the analysis period. Excluding these individuals ensures a more representative sample, thereby increasing the validity of the results. The monitoring period extends to a full 30 days, during which all users who passed through any of the selected establishments were tracked. At the end of the monitoring month, a target audience of 126,000 mobile devices was identified, corresponding to users who met the inclusion criteria. Based on this data, the advertising campaign was subsequently designed. At the end of the monitoring month, a target audience of 126,000 mobile devices was identified, corresponding to users who met the inclusion criteria. Based on this data, the advertising campaign was subsequently designed. While the control group represented a smaller share of the total sample, its composition mirrored that of the exposed group in terms of geographic location, competitive visitation history, and temporal inclusion criteria. This design sought to isolate the effect of the campaign from habitual visitation patterns. In the control group, 23 store visits were recorded, compared to 488 in the exposed group, enabling the estimation that 177 visits were directly attributable to the campaign, while the remainder may have been influenced by habitual traffic or external factors.

## Phase 2: Implementation of advertising strategy

Unlike previous research that employed push notifications, this study implemented a digital display advertising strategy. A display banner advertising campaign was designed, targeting the identified mobile devices, using the D&V 360 platform. The campaign was planned to generate 1,000,000 impressions over a three-week period. This strategy allowed for impacting users during their web browsing in a non-intrusive and segmented manner. The brand's seasonal brochure was promoted through the campaign, directing users to the corresponding section of the company's website.

## Phase 3: Results analysis

Advanced geolocation technologies and mobile traffic analysis were employed for user monitoring and mobile device identification. The D&V 360 platform was used for managing and executing the advertising campaign, ensuring effective coverage and accurate measurement of results. All applicable privacy and data protection regulations were strictly observed throughout the monitoring process and campaign execution. The collected data was fully anonymized and used exclusively for research and analytical purposes. The dissemination of the advertising campaign was monitored in real-time, allowing continuous adjustments and optimization during its implementation.

The following key metrics were analyzed:

- o Impressions: Represent the total number of times the advertisement is displayed on users' screens. This metric does not necessarily indicate that the user interacted with or visually acknowledged the ad, but simply that it was published on a webpage visited by the user.
- o Reach: Refers to the total number of unique devices on which at least one impression was delivered during the advertising campaign. Unlike impressions, reach does not account for repeated views from the same device.
- o Clicks: Indicate the total number of times users interacted with the advertisement by clicking on it. This number reflects the user interest in the advertising content.
- o Click Through Rate (CTR): Calculated as the percentage resulting from the number of clicks divided by the number of impressions. This metric assesses the effectiveness of the advertisement in capturing user interest.
- o Viewability: Denotes the percentage of ad impressions that are actually visible to the user.

## Variables of physical visits to establishments

Visits: Refers to the total number of occasions on which users entered physical establishments during the study period. This metric is used to evaluate the success of the campaign in attracting traffic to the stores.

**Duration of Stay:** Measures the total time a user spends inside an establishment during a single visit. This data provides insights into the level of engagement and interest of the customer in the location.

**Average Visit Time (Minutes and Seconds):** Represents the average time that users spend in the establishment during their visits. It is expressed in minutes and seconds and is obtained by dividing the total accumulated stay time by the number of visits.

**Visit Frequency:** Indicates the average number of times a user visits the establishments within a defined time frame. This value helps understand customer repeat behavior and their loyalty to the brand.

**Number of Centers:** Refers to the total number of brand’s establishments monitored during the study. This variable provides contextual information about market size and the geographical scope of the analysis.

**Received Visits:** Refers to the total number of visits recorded at specific brand locations as a result of the advertising campaign. This metric is essential for evaluating the campaign’s effectiveness in attracting customers from competitor locations to the brand’s establishments.

**Results**

After three weeks of the advertising campaign, data was collected that provided valuable insights not only to validate the success of the action but also to offer relevant insights to the brand about its target audience. As shown in the data presented in Table 1, the campaign generated over one million impressions, reaching 101,179 unique users. The Click Through Rate (CTR) was 0.44%, which represents the percentage of clicks on impressions, and resulting in over 4,400 clicks that directed users to a webpage created specifically for this action. The campaign achieved a high average frequency of impact, with nearly 100,000 users viewing the creative an average of 10 times. It is worth noting that a campaign impression can appear anywhere on the webpage’s URL and is not necessarily visible to the user. In this case, 65.46% of impressions were effectively viewable, reflecting a high visibility rate and a significant impact on the audience.

The identification of devices (Table 2) allowed tracking that users impacted by the advertising campaign who visited the brand’s establishments. Among these users, a total of 488 visits were recorded, demonstrating the campaign’s effectiveness in attracting physical traffic. Given the availability of a non-exposed control group,

**Table 1** Advertising campaign results. Source: prepared by the authors

Action	Impressions	Reach	Clicks	CTR	Visibility
Display Campaign	1,001,103	101,179	4,409	0.44%	65.46%

**Table 2** Store visits. Source: prepared by the authors

Acción	Visits	Visit Time (Minutes and Seconds)	Visit Frequency
Display Campaign	488	22:10	1.09

an exploratory comparison of visit rates was conducted between the exposed group (0.48%) and the control group (0.18%). Although the relatively small size of the control group warrants caution, the difference in proportions was statistically significant ( $p < 0.05$ ), supporting the interpretation of an incremental effect attributable to the campaign. Additionally, the average time spent in the establishment was 22 min and 10 s, indicating a significant level of visitor engagement. Analysis of the visit frequency, which was 1.09, indicates that some users returned to the establishment more than once during the study period.

Although the average duration of stay in the establishment was slightly over 20 min, most visits (almost 60%) lasted between 5 and 20 min (Table 3). About 33.50% of the visits lasted up to 40 min, and only 7.20% lasted as long as one hour. This data provides a detailed view of the behavior patterns of the visitors.

Regarding the centers, not all of them received visits during the study period. The distribution of visits among the monitored centers was uneven (see Table 4). Only one center received more than 30 visits, totaling 34. Eight centers received between 20 and 29 visits, accounting for 187 visits in total, while nine centers registered between 10 and 19 visits, summing up to 114 visits. The majority of centers (36) received between 1 and 9 visits, accumulating 153 visits, and 27 centers received no visits at all. This distribution indicates a high concentration of visits in a limited number of locations, alongside a significant proportion of centers with minimal or no recorded activity.

## Conclusions

The objective of this research was to quantify conversion in terms of physical store visits resulting from a geofencing-based advertising campaign aimed at attracting user visits from competitor locations. The campaign, executed over a three-week period, generated over one million impressions and reached 101,179 users. The Click Through Rate (CTR) was 0.44%, resulting in more than 4,400 clicks directed to a website created specifically for this action. This result closely aligns with the average CTR of 0.46% reported by Petrova (2023) for banner display advertising campaigns,

**Table 3** Duration of stay in the establishment. Source: prepared by the authors

Duration of stay	Visits	% Visits
From 5 to 20 min	289	59.30%
40 min	164	33.50%
1 h	35	7.20%

**Table 4** Visits received. Source: prepared by the authors

Duration of stay	Visits	% Visits
More than 30 Visits	1	34
Between 20 and 29 Visits	8	187
Between 10 and 19 Visits	9	114
Between 1 and 9 Visits	36	153
No Visits	27	0

suggesting that the campaign performed within the expected range for this type of digital strategy. The high average frequency of impact allowed nearly 100,000 users to view the campaign's creative content an average of 10 times. Notably, 65.46% of the impressions were effectively viewable, reflecting a high visibility rate and a significant impact on the audience (Table 1). The implementation of the geofencing campaign resulted in a concrete conversion outcome: significant increase in user traffic to the brand's location, with a total of 488 people visiting the establishment. This physical foot traffic serves as the primary metric for evaluating conversion effectiveness in this study. Additionally, the average time spent in the establishment was 22 min and 10 s, indicating a considerable level of visitor engagement. The visit frequency was 1.09, suggesting that some users visited the establishment more than once (Table 2). Although the average duration of stay in the establishment slightly exceeded 20 min, most visits (59.30%) lasted between 5 and 20 min. Approximately 33.50% of visits lasted up to 40 min, while only 7.20% extended to one hour. This data provides a detailed view of visitor behavior patterns (Table 3). Regarding the distribution of visits among the monitored centers, it was observed that not all locations received visits, resulting in an uneven distribution. Only one center received more than 30 visits, while the majority of the centers (36) received between 1 and 9 visits. A total of 27 centers received no visits at all, indicating a high concentration of visits in a limited number of locations and a considerable number of centers with few or no visits (Table 4).

These findings underscore the effectiveness of geofencing as a digital marketing tool, especially in competitive markets where the ability to attract and retain customers is fundamental to commercial success. This outcome supports the assertion made by Greenwald et al. (2011), who posited that advertisers could generate effective campaigns for specific sectors by targeting areas with a higher likelihood of conversion. However, one limitation of the campaign was its relatively short duration. Following Miller's (2020) approach, data about the time spent in the analyzed centers could have been used to redirect users to those locations where they spend more time and are more likely to generate higher purchase values. Although this geofencing action reinforces previous research on proximity marketing (Qayum & Sohail, 2016; Ghose et al., 2019), it does not fully exploit the potential of the tool. In contrast to Bernritter (2021), with whom it shares only the use of location-based segmentation, this study does not explore the other two crucial aspects: behavioral segmentation and the implementation of promotional strategies. Similarly, although it is distanced from geofencing, this study reinforces the argument made by Yoon and Jeong (2017), who argue that through strategic advertising planning, it is possible to attract customers from competitors brands.

This research, centered on geo-conquesting, represents a divergence from previous studies such as those by Wang et al. (2019), Danaher et al. (2015), and Ho et al. (2020), which primarily focused on maximizing traffic in the vicinity or within their own establishment through techniques like geofencing. Although the study by Fong et al. (2015) emphasized that promotional efforts near the point of sale tend to be more effective, it also demonstrated that geo-conquesting is a valuable strategy for capturing consumer attention near competitor locations. The present study demonstrates that such geo-conquesting actions can be successful in attracting customers, regardless of their distance from the establishment. This finding complements the work of Fong

et al. by providing further empirical support for the viability of geo-conquesting as a viable tactic for capturing demand in competitive locations. It suggests that mobile marketing strategies can expand their potential reach by not relying exclusively on physical proximity to the point of sale, allowing companies to attract consumers more effectively even when they are geographically distant from their own locations.

These findings underscore the effectiveness of geofencing as a digital marketing tool, particularly in competitive markets where the ability to attract and retain customers is essential to commercial success. This outcome supports the assertion by Greenwald et al. (2011), who posited that advertisers could generate effective campaigns for specific sectors by targeting areas with a higher likelihood of conversion. However, one of the limitations of the campaign was its duration. Following Miller's (2020) approach, information about the time spent in the analyzed centers could have been used to redirect users to those centers where they spend more time and, therefore, have a higher purchase ticket. Although this geofencing action reinforces previous research on proximity marketing (Qayum & Sohail, 2016; Ghose et al., 2019), it does not fully exploit the potential of the tool. Unlike Bernritter (2021), with whom it only coincides in the use of location-based segmentation, this study does not explore the other two crucial aspects: behavioral segmentation and the use of promotions. Similarly, although it is distanced from geofencing, this study reinforces the argument of Yoon and Jeong (2017), who argue that through strategic advertising planning, it is possible to attract customers from competitors.

This research, being centered on geo-conquesting, represents a deviation from previous studies, such as those by Wang et al. (2019), Danaher et al. (2015), and Ho et al. (2020), which primarily focused on maximizing traffic in the vicinity or within their own establishment through techniques like geofencing. Although the study by Fong et al. (2015) highlighted that promotions in locations close to the point of sale tend to be more effective, it also showed that geo-conquesting is a valuable strategy for capturing the attention of consumers near competitors' locations. This study demonstrates that such geo-conquesting actions can be successful in attracting customers, regardless of their distance from the establishment. This finding complements the work of Fong et al. by providing additional evidence that geo-conquesting is a viable tactic for capturing demand in competitive locations. This suggests that mobile marketing strategies can expand their potential reach by not relying exclusively on physical proximity to the point of sale, allowing companies to attract consumers more effectively even when they are far from their own locations.

However, this research must also acknowledge certain technical limitations, particularly those highlighted by Zandbergen and Barbeau (2011), who note that GPS accuracy can be significantly affected in urban environments due to factors such as signal reflection, obstruction by buildings, and multipath errors. Although these conditions are less extreme in the context in which the research was conducted, some urban areas may still experience distortions that affect geolocation accuracy. Additionally, it is important to consider the potential saturation of devices and network congestion in high-traffic environments such as shopping malls. As noted by Merry and Bettinger (2019), these conditions can introduce delays or inaccuracies in real-time GPS data collection, further affecting the reliability of geofencing-based measurements. Although advanced quasi-experimental techniques such as propen-

sity score matching or multivariable regression adjustment could further strengthen causal inference, their implementation was not feasible in this study due to the lack of access to socio-demographic or individual behavioural variables, as data were anonymised for privacy compliance. Instead, the design relied on strict temporal and spatial filters, controlled geographic segmentation, and direct measurement of post-exposure in-store visits, complemented by the inclusion of a non-exposed control group to enhance internal validity.

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