

Geofencing in the GCC and China: A Marketing Trend That's Not Going Away

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Abstract

This research discusses an emergent marketing trend which is revolutionizing the way in which bricks and mortars retailers are reaching their consumers. This emergent marketing trend falls into the mobile marketing classification and is identified as geofencing. Geofencing is identified as the development of a virtual boundary around a predetermined area be it a single building, shopping center or a section of a municipality. This boundary is developed through the combination of geolocation technology involving GPS, smartphones and the integration of other communication based services such as text, email and social media and so forth. A case study involving the use of a geofence by a bike-sharing company in China, ofo, is utilized to demonstrate how geofencing can be integrated into particular business models. In this case, ofo uses geofencing to monitor specific bike inventories by area and to ensure that its consumers in each area return the inventory to the appropriate market. This case, in turn, is then compared to how geofencing can be developed and applied in a market as diverse as the Gulf Cooperation Council or the GCC which consists of six member states with Saudi Arabia being the largest and most important. In this instance, the use of a geofence and geofencing technology is shown to be relevant with respect to Saudi Arabia's retail sector which is burgeoning at a rapid pace. Geofencing allows retailers to notify consumers directly via SMS, MMS, email or social media notification of some sort of specials, sales or discounts at a given retailer when the consumer passes near that retailer. Finally, this report also discusses the direction that this geofencing technology within the context of marketing is taking and may take in the future. This includes some discussion about the integration of augmented reality into the framework of geofencing and so forth.

1. Introduction and Overview

Marketing, just as with any other specialty, has been deeply affected by the rapid advances in technology over the past several decades. Technological advances have revolutionized industries across the board such that many of them are virtually unrecognizable compared to previous iterations. Or worse, many industries have simply disappeared due to rapid technological advances which have either made them uncompetitive or worse still, irrelevant. In this regard, marketing is a central element of any for-profit product or service provider that depends upon the retail market. It is even requisite for non-profits seeking to ensure that their message is communicated to specific audiences and so forth. Increasingly, mobile marketing has become the focus of a great many if not most retail service providers globally.

Traditionally, digital marketing has been primarily focused on web-based solutions. However, over the past several years, research has indicated that these e-commerce based sales have been shifting from web to mobile. Mobile marketing primarily involves the consumption by consumers of some form of electronic advertising on mobile platforms either through the mobile web or via some type of app. For instance, in the United States (US), one of the largest retail markets, an estimated \$123 billion in retail sales originated via mobile platforms which amounts to approximately 32% of all web-based or web-facilitated sales in the US and this figure represents a 39% yearly increase over the prior period.¹ In order enter into this this type of rapidly expanding marketing space, retail service providers of all kinds are now gravitating to mobile-based marketing solutions of which geofencing is one of the most emergent solutions.

As mentioned, mobile marketing and advertising takes a variety of forms such as the use of geofencing. The full

¹ Graden, K. (2016). 3 Trends You Need to Know for Your Mobile Advertising Strategy. *Advertising, Marketing, Marketing Cloud, Mobile: Salesforce.com* (online). Retrieved from: <https://www.salesforce.com/blog/2016/05/mobile-advertising-trends.html>

range of the different and often-times competing types of mobile marketing channels, strategies and types is summarized in the appendices section of this project. However, one of the earliest forms of mobile marketing was the simple text-based SMS or short-messaging service message and the later MMS or multi-advertising messaging service. Both of these forms of mobile advertising sent some sort of advertising message directly to the targeted consumer via cell phone or smartphone number.² This early form of mobile marketing is, uniquely enough, ideally suited to the emergent mobile marketing strategy involving geofences. This is because the overall efficacy of these earlier forms of mobile marketing has always been based on their reliability, cost effectiveness and ease of use. This format is simple enough to integrate into the geofence technology and provides a direct link with the targeted consumers who enter into or pass out of an established geofence. Traditionally, some consumers may have resented these unsolicited text messages perhaps but with geofencing they always appear only when they are relevant to the lived experience of the targeted consumer. Therefore, among the many emergent trends within the marketing and marketing communications (marcom) field is the concept of geofencing. Geofencing is also referred to as data location, data locality or geotracking among other related terms. However, geofencing is probably the most accurate term because of the concept of locality, tracking and location based marketing strategies encompassed within a predetermined area as the term suggests.

That said, geofencing references the efforts of a firm to both track consumers and to place those same consumers inside of a fixed or structured market defined by place. Thus, geofencing refers to the development and use of a geofence as a means to capture consumers who enter into some sort of predefined geographical area. Geofencing occurs through the application of location-based technologies such as global positioning satellite or GPS services, radio frequency identification or RFID applications, Wi-Fi, near field communications or NFC and cellular networks to track consumers' locations, trigger specific actions when these consumers enter into or exit virtual areas defined by the predetermined boundaries of the geofence.³ Basically, a geofence is a defined market area which is able to identify when targeted consumers enter or leave that defined market area. Once identified the marketer/firm is then able to present them with some sort of transaction opportunity be it a purchase, a service or information of some kind.

Based on this recognition of what geofencing is comprised of, this report attempts to accomplish several core outcomes with respect to this marketing trend. Specifically, this report first works to fully explore the primary characteristics of what constitutes the concept of geofencing. Once this is accomplished, a case study of a geofencing solution is presented that is based within the Chinese marketplace and then one is explored in the Gulf Cooperation Council or the GCC. This is used for comparative purposes so that improved best practices in geofencing solutions can be developed for important Middle Eastern markets such as Saudi Arabia, among others. Finally, some discussion is made within this analysis regarding the future direction of geofencing as a technology dependent marketing solution. Geofencing is still developing in terms of its full marketing potential but it is fairly understood that any business, retail or otherwise, that is location dependent has to embrace geofencing to one degree or another in order to remain fully relevant. In conclusion, this report is summarized briefly with a review of the report's findings.

2. Geofencing in Practice

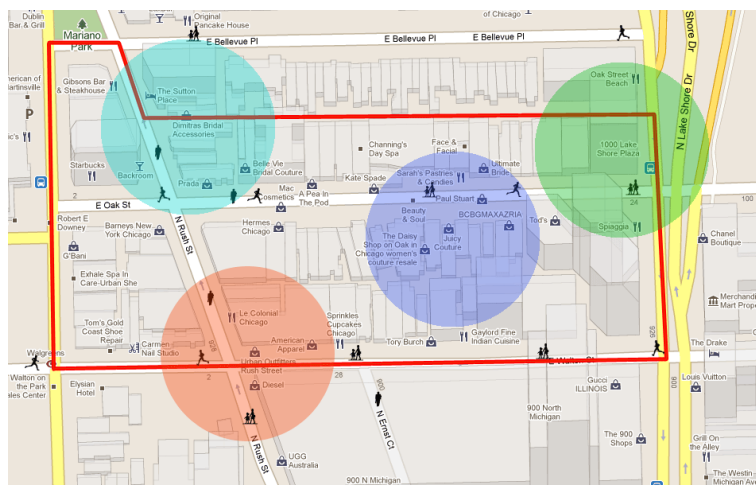
The technological strategy of geofencing within the marketing purview accomplishes several things from a marketing perspective. There are a number of different configurations that can be associated with a geofence but they all tend to align with a series of similar outcomes. These outcomes are typically some sort of push notification from the advertiser to the consumer, the delivery of targeted text messages or targeted advertisements through social media platforms, vehicle tracking data, the activation or disablement of specific technologies and similar solutions.⁴ In this regard, a geofence is actually not a single technology solution. Rather, a geofence is a compendium of a number of different technologies that are fused together through both backend technologies on the marketer/producer side and frontend technologies like social media on the consumer side. Thus, as the image presented below demonstrates, the geofence is nothing but a virtual boundary that consumers enter into or exit from:

² Dix, S., Phau, I., Jamieson, K., & Shimul, A. S. (2016). Investigating the Drivers of Consumer Acceptance and Response of SMS Advertising. *Journal of Promotion Management*, 1-18.

³ Cardone, G., Cirri, A., Corradi, A., Foschini, L., Ianniello, R., & Montanari, R. (2014). Crowdsensing in urban areas for city-scale mass gathering management: Geofencing and activity recognition. *IEEE Sensors Journal*, 14(12), 4185-4195.

⁴ Brown, R. L., & Harmon, R. R. (2014, July). Viral geofencing: an exploration of emerging big-data driven direct digital marketing services. In *Management of Engineering & Technology (PICMET), 2014 Portland International Conference on* (pp. 3300-3308). IEEE.

Figure 1: A Retail Oriented Geofence⁵



As consumers either walk into or drive through the geofence boundaries, the retailers that have ascribed to the geofence can have their advertisements or information delivered to consumers that are near them. This information may occur when a consumer is walking past a restaurant and the restaurant has its daily specials delivered via text to the consumers. Likewise, it might involve retailers sensing consumers near their location and having product reviews served to those consumers through their respective social media platforms and so on. Alternatively, it can be a geofence that is setup in order to notify a company when and where a certain item leaves a predetermined area such as warehouse, storage yard or rail or container yard and similar.

Still, this research project addresses geofencing from the perspective of the marketing function. Thus, some uses and applications of geofences are not fully appropriate for this discussion. Geofencing is a novel emergent marketing trend that is still in its relative infancy. Chiefly, the virtual nature of geofencing ensures that many potential retailers or service providers simply overlook its importance within the competitive landscape if one's business depends upon local foot-traffic of any sort. Geofencing as a way to capture the consumer is extremely effective because of its ability to link geolocation with retail location in a seamless but completely non-intrusive way. The fact is, consumers do not know when they enter or leave a geofence other than the appearance of some sort of activated communication that they receive via text, email, social media or otherwise. Geofences are meant to be a kind of utility service in that the consumer is meant to believe that the sudden appearance of an advertisement or offer right when it is most relevant is almost magical in its presence. The rationale to link geolocation with retail locations involves a series of important developments related to mobile technology itself:⁶

1. The adoption of smartphones on a global basis is growing at some 12-13% annually worldwide
2. The indoor location/positioning market is expected to surpass 36% growth through 2019 and to be worth some \$4.5 billion
3. The mobile mapping industry is expected to surpass \$26 billion

The growth and development of these types of geolocation fueled technologies is leading, in turn, to rapid developments in completely new conceptual business models.

These new conceptual business models may be associated with completely novel forms of businesses or perhaps simple reconfigurations of existing ones. Such emergent business models would have been previously impossible to imagine without the development of mobile technology in tandem with cellular technology. In some sense, geofencing is the melding of virtual technologies with those of physical properties in that the actual markets to which geofences are applied remain grounded in the bricks and mortar environment. The ultimate purpose of a geofence may vary substantially from one application to another but the fundamental concept of a predetermined market area remains universal across all applications of the technology. Such is the case with geofencing and the ride sharing business model for example which itself is fundamentally technology dependent upon mobile platforms.

⁵ Andrews, M., Goehring, J., Hui, S., Pancras, J., & Thornswood, L. (2016). Mobile promotions: A framework and research priorities. *Journal of Interactive Marketing*, 34, 15-24.

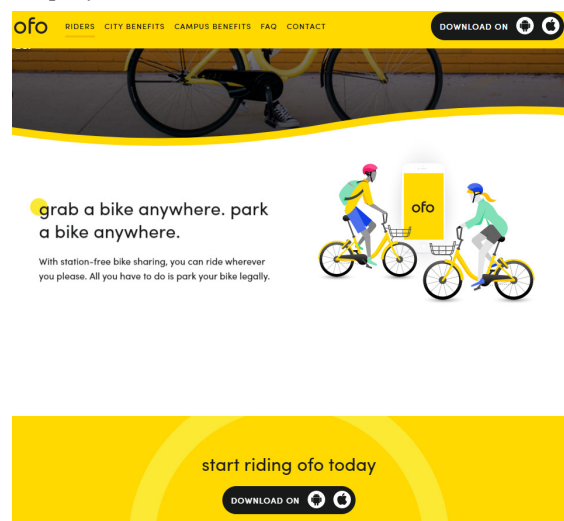
⁶ Cardone, G., Cirri, A., Corradi, A., Foschini, L., Ianniello, R., & Montanari, R. (2014). Crowdsensing in urban areas for city-scale mass gathering management: Geofencing and activity recognition. *IEEE Sensors Journal*, 14(12), 4185-4195.

3. Geofencing as a Business Model In China

Geofences and geofencing as a marketing strategy has the capacity to function as a distinct or unique form of business facilitator. The technology associated with geofencing allows for the creation or, at the very least, complete rethinking of existing businesses. One such business model that has been deeply transformed by geofencing involves shared transportation models such as bike sharing companies. These are ride sharing and ride service businesses that excel in inner-city environments and dense urban areas where alternative modes of transportation are extremely viable. In China, where many of the largest urban areas in the world are located, some 102 cities boast a population higher than one million residents and this figure is expected to keep expanding.⁷ Therefore, alternative means of inner-city transportation is not just an environmentally sustainable benefit but a necessity of daily life. Many ride-sharing companies have been established around the world and certainly many of these involve bike sharing platforms. These firms tend to accomplish several key missions with profitability being the first mission and environmentally sustainable business models being the second.

In China, ofo is the market's leading bike sharing company that initially utilized simple web-based technology to support its services. However, this business model then quickly adopted geofencing as a means to manage each of its market fleets across its more than 180 individual markets in China.⁸ What initially set ofo apart from its competitors both within China and without is that the firm began with a dock-less bike sharing business model. The company, ofo, based its entire business model on its mobile app which consumers download onto their smartphones. A series of bikes are placed within a predetermined or pre-identified area and the consumer downloads the ofo app in order to access them. This is accomplished through the use of a Bluetooth activated lock on the bikes which is unlocked with a QR code that is generated when the consumer pays for the service. The mobile app works in conjunction with geofencing and other location-based data along with mobile payment integration to support anywhere pickup and drop-off services of its bikes:

Figure 2: ofo Bike Sharing Company in China



The ofo app contains a number of critical data-points through which it is able to mediate its services. These data-points include consumer data, payment information and usage history among other data. As previously mentioned, the app generates a QR code which the consumer then scans on the bicycle lock connected with ofo bikes via Bluetooth. This in turn signals a bike to unlock while the geofence is used to identify which bikes belong in which areas in the form of a home zone.⁹ Thus, while consumers in each market are free to travel anywhere with their ofo bikes, in order to release them from their ofo accounts for payment reconciliation, they must be returned to their home zone. Still, all of these bikes are managed and maintained within the same geofence boundaries but since ofo is a dock-less bike-sharing service, the consumers are free to leave the ofo bike wherever they are within the geofence area.

Without the technological application of geofencing it would be virtually impossible to enforce this type of

⁷ More than 100 Chinese cities now above 1 million people. (2017). *The Guardian*, 03(20), p.8-11.

⁸ About. (2018). *ofo corporate website* (online). Retrieved from: <https://www.ofo.com/cn/en/about>

⁹ Burgess, M. (2017). ofo is bringing its dockless bike sharing tech to London. *Wired Magazine*, 09(05), pp.09-13.

outcome without the use of physical docks. Yet, the entire success of ofo and its major competitors in China is that the company's ride sharing platform does not require physical docks. The benefit to this is evident in several ways. Firstly, physical docks contribute heavily to a firm's cost as well as to its ongoing operating expenses vis-à-vis their maintenance, care and replacement. Likewise, on the consumer side, requiring consumers to return to some sort of physical dock greatly undermines the convenience factor of the ride sharing experience.

The benefit of the geofencing technology for ofo and its competitors is that it is a completely non-intrusive. That is, it is a non-intrusive method to monitor whether or not its consumers return bikes to their home areas without adopting the expense of costly docking stations, expensive locking mechanisms and unsightly facilities.¹⁰ This is because a geofence is completely virtual through which consumers enter into and exit out of in a completely seamless manner. It should be noted that within the geofenced area, consumers can actually leave the company's bikes anywhere that there is a public bike stand due to the dock-less format of the service. The advantages in terms of convenience, operating cost reductions and overall resource independence is self-evident for ofo and its consumers. Typically, geofencing solutions such as ofo's tend to be managed in the following way and to result in the following outcomes:¹¹

Table 1: Inputs-Timespans-Outcomes in a Geofence

Event	Timespan	Outcome/Result
a. Dangerously parked or left in a nuisance manner	3 hour time period	Geofence informs firm staff where a bicycle is causing an unreasonable hazard (such as being parked across a road, carriageway and similar nuisance locations). These bicycles can then be relocated within a predetermined time period. Furthermore, the geofence allows municipalities to locate nuisance bicycles as well and to inform the company where its inventory has been removed to.
b. Bicycle reported as being in dis repair or unsafe	Immediate (upon site verification within the geofence) 1-7 days (depending on the seriousness of the damage/disrepair)	Upon site verification of an unsafe bicycle within the geofence, the bike-sharing firm can immediately deactivate the bicycle from service and send technicians to its location inside the geofence.
c. Significant damage to a bicycle	Immediate Removal from a geofence (upon verification) 1-7 days (depending on the seriousness of the damage or disrepair)	Upon identification and verification of a severely damaged bicycle, the ride-sharing firm can immediately deactivate the identified bicycle. The bicycle can be removed from its inventory and replaced
d. Inappropriate bicycle concentration levels by geofence	1-7 days (depending on seriousness)	The ride-sharing staff can work to proactively redistribute its bicycles according to usage/demand patterns within each geofence as well as at specific sites inside of each geofence
e. Illegally placed bicycle	1-7 days (unless a bicycle issue is escalated by community stakeholders such as business owners)	Removal and impounding by municipality staff

It is evident that geofences improve the overall management and operation of these types of ride-sharing services. Without a mature geofencing solution, ofo's products would ultimately experience a series of detrimental outcomes that would not be sustainable. These include an extremely high level of product turnover,

¹⁰ Bowden, A. (2017). Oxford ofo users who park bikes outside 'geo-fence' area will be getting a phone call. *Road.cc* (online). Retrieved from: <http://road.cc/content/news/228129-oxford-fo-users-who-park-bikes-outside-geo-fence-area-will-be-getting-phone>

¹¹ Zhang, L., Zhang, J., Duan, Z. Y., & Bryde, D. (2015). Sustainable bike-sharing systems: characteristics and commonalities across cases in urban China. *Journal of Cleaner Production*, 97, 124-133.

fail to deliver an appropriate ROI on a per unit basis and would be difficult to integrate into major the major municipalities that the company targets. Essentially, geofencing allows ofo and similar firms to segment what are extremely dense market areas.

This dock-less business model is completely facilitated through technological solutions that allow bikes to be dropped off anywhere by the consumers. At first, the concept of geofencing was not applied to ofo's business model but as the firm rapidly expanded, many of its major market administrations throughout China including Beijing, Shanghai and Guangzhou among others began to implement restrictions on the industry due to the sheer mass of abandoned ofo bikes. By some estimates as many as 13 million bicycles were introduced into Chinese cities through bike sharing companies over the past year and ofo in particular found that by implementing geofencing technology, bikes brought into and out of restricted areas are more easily monitored and managed.¹² Hence, geofencing provides ofo with a critical mechanism to not just improve its supply and distribution of its bikes but to also manage its bicycle volume by market in a much more efficient manner. The magnitude of the problem of poor management of bicycle fleets is readily apparent in ofo's Xiamen market in China. In Xiamen, the unmanaged distribution of shared bikes offered through companies including ofo resulted in a massive loss of inventory for these firms as seen in the following image.¹³

Figure 3: Image of Discarded/Impounded Shared Bikes



According to the source, there are in excess of a 120,000 bikes in this single image. This amounts to at least half a million (US\$) in inventory at about \$4.20 a bike which is probably a conservative estimate in wholesale cost. The bikes that ofo utilizes are built especially for the firm and according to its own specifications. This also includes the bespoke locking mechanisms that keep them from being stolen or utilized without paying. Of course, ordering these bikes in such high volume allows ofo and its competitors to benefit from cost reductions achieved through volume rates. Rare is the company that can profitably afford to replace its revenue producing resources every year or so which is why it does not behoove ofo to have so many of its bicycles end up being impounded by whatever municipality they are placed in.

The integration of geofencing with ofo's business model providing dock-less bicycle transportation services is a perfect fit for the company as well as the industry. Every urban market that ofo is in can be subdivided into virtual segments through geofencing with a preassigned bicycle inventory placed within each geofenced area. Since the service already integrates GPS data and other location based data, the service will be aware of how many bikes are currently in each geofence, how many are in service or parked, where each in-service bicycle is geographically and finally what the revenue is for each individual bike. Additionally, ofo and similar bike sharing platforms are already set up to implement a fine or fee-based penalty for those users who drop a bike off in the wrong geofence or out of area.¹⁴ The penalty works to dissuade consumers from

¹² Yuniar, R. (2017). Are China's bike-sharing services oversharing? *South China Morning Post*, 10(02), pp.04-07.

¹³ Christian, B. (2017). As bikes pile up in China, ofo has its sights set on further expansion. *Wired Magazine*, 12(04), pp.17-24.

¹⁴ Abdullah, Z. (2017). Bike-sharing firms to use tech to tackle parking issues. *The Straits Times* (online). Retrieved from: <http://www.straitstimes.com/singapore/transport/bike-sharing-firms-to-use-tech-to-tackle-parking-issues>

haphazardly removing the bike from a particular area but monetizes the event if they are left out of area.

Also, the inadvertent clustering of bikes at specific locations within a geofence may occur at seemingly random points. Yet, geofences allow marketers to actually understand why such clustering might occur such as at subway stations or bus stations perhaps. These types of results occur because within each individual geofence there are unique usage patterns which can be identified through the data generated by the geofence itself. In some sense, geofences work to compartmentalize what would otherwise be difficult to manage markets. This is in fact why companies such as ofo have adopted geofencing solutions because of the demands that municipalities are placing upon them in order to better control, distribute and manage their inventories.

Geofences ensure that each market segment based on geolocation is assigned sufficient inventories of bikes and that these inventories are not allowed to bottleneck. Bottlenecks, just as they do with traditional supply chains, do nothing but increase cost, tie up inventory and narrow operating margins. All of these outcomes related to bottlenecks are detrimental to a firm's growth and profitability. Yet, with a properly set up and managed geofence, company staff will be aware of these adverse events. Subsequently, geofences support the necessary analysis which allows marketers to be able to address the issue before its bikes are impounded. At any rate, there are several key data-points that are facilitated through the use and implementation of a geofence such as the following:¹⁵

1. The overall number of registered consumers of the service
2. The overall total number of unit trips taken
3. Transaction origin and consumer destinations along with the duration of each trip taken in terms of time and also distance
4. The overall number of bicycles that is deployed in each geofence and their locations
5. Bicycle redistribution data and distribution patterns
6. Firm data regarding damaged bicycles, misplaced or missing bicycles and the number of helmets available, missing or damaged
7. ofo customer service contact information, service response data and final denouement of each issue

This data ensures that the geofence application and the data generated from it improves the overall service experience for both the consumer and the municipalities in which the service resides.

It might be said that companies such as ofo are bike-sharing companies to be sure. However, it could also be said that companies like ofo are also mobile marketing companies as well. Geofencing is after all a mobile marketing strategy designed to facilitate the interchange of bicycles as a response to pent up demand for alternative transportation solutions. ofo and similar firms rely on geolocation as a means to both locate customers but also to manage inventories. In ofo's case, its best practices with respect to geofencing and inventory management through geolocation platforms ensures that its operating margins can be maintained a sufficient level to secure long-term growth. This same application of geofencing technology is one that has a great deal of potential in major international markets such as the GCC and its member states.

4. Applications in GCC Markets

The GCC is a vibrant international market with a significant amount of trade and commerce being conducted within its member states. Many of the same opportunities with respect to geofencing and the use of geofences exist within the GCC markets as they do in any other advanced market. The GCC is an overall market that is ahead of the curve in many respects of other leading economies in its adoption of technology, adaptation of geolocation-based applications and mobile marketing solutions. Individual markets within the GCC such as Dubai, Bahrain and Saudi Arabia along with the United Arab Emirates have highly sophisticated retail markets with significant international travel and investment. The GCC is perhaps, collectively, the Middle East's most significant and developed market made up of six member states:

¹⁵ Kaplan, D. H., & Knowles, M. J. (2015). Developing a next-generation campus bike-share program: examining demand and supply factors. *Planning for Higher Education*, 44(1), 63.

Table 2: GCC Member States¹⁶

GCC Member States	Population	Characteristics
Bahrain	1.2 million	Per capita GDP about \$51,000
Kuwait	2.8 million	Per capita GDP about \$71,000 & an estimated 6% of global petroleum reserves
Oman	3.4 million	Per capita GDP an estimated \$46,000 & reliance on tourism
Qatar	2.3 million	Per capita GDP some \$125,000 & approximately 13% of the global natural gas reserves
Kingdom of Saudi Arabia	28.5 million	Per capita GDP in the area of \$55,000, 16% of global petroleum reserves & largest GCC member state
United Arab Emirates	6 million	A per capita GDP of about \$68,000, some 92 billion barrels of proven petroleum reserves & large tourism industry

Almost all of the GCC member states and especially Saudi Arabia with its Vision 2030 program are intent on diversifying their economies as a means to lessen petroleum dependence. Thus, the GCC as a whole is an extremely vibrant marketplace in which the governments of its member states actively support technology as a means to stimulate economic growth away from petroleum related industries.

For its part, countries such as Saudi Arabia within the GCC and similar GCC markets are making great strides in developing outside industries such as retail and service based industries. While there exist opportunities within the GCC for ride-sharing firms like ofo, the introduction of an identical type of business model based on bicycles would be difficult within the Middle East as a whole. This is because there are certain cultural and legal restrictions within most Middle East countries that prohibit or at the least limit female use of bicycles in an unsupervised manner.¹⁷ While many of these restrictions are changing and Saudi Arabia has made impressive advances in terms of improving gender equality, a geofence within the context of a bike sharing platform would not be necessarily ideal for both cultural reasons as well as environmental reasons—chiefly, the weather does not support this type of travel during all but the coolest of evenings and nights. However, the retail sector and what is referred to as collaborative communities within the GCC and in particular in Saudi Arabia are extremely receptive to emergent marketing trends such as geofencing and geofences.

In Saudi Arabia especially, mobile based marketing solutions such as geofencing are very effective. This is because the Saudi population as a whole has embraced mobile and all the advantages that come with mobile based retailing and marketing services. For instance, smartphones and mobile platforms are so prevalent and so integrated into the retail sector that some 90% of all Saudis have utilized their smartphones to price check, review products and query social media for purchase advice while another estimated 81% of these consumers have stopped or changed a purchase due to this type of mobile resourcing.¹⁸ Clearly, the introduction

¹⁶ Samarah, W., & Rahman, M. A. (2017). The Gulf Cooperative Council's Approach to Economic Strength: A SWOT Analysis of GCC's Countries and Regional Development. *Middle East Review of Public Administration (MERPA)*, 3(3).

¹⁷ Sarofim, S., & Tolba, A. (2015). Islamic Marketing: A Conceptual Framework for Political, Cultural, and Religious Interrelatedness. In *Islamic Perspectives on Marketing and Consumer Behavior: Planning, Implementation, and Control*(pp. 130-148). IGI Global.

¹⁸ Makki, E., & Chang, L. C. (2015). Understanding the effects of social media and mobile usage on e-commerce: An

and use of geofencing within GCC markets such as Saudi Arabia has the potential to further stimulate the retail sector in a way that would otherwise be difficult to achieve. There is already a significant amount of research arguing that Saudi Arabia as a market is receptive to emergent phenomena such as collaborative consumption and the business models based on it.¹⁹ Bike sharing and other collaborative business models in which consumers basically reuse products or services are highly suited to the introduction of geofences because they allow retailers to alert consumers who are in a position to avail themselves immediately of them.

The geofencing mobile marketing strategy is a multifaceted one that has resulted from considerable market research, technological development and a degree of creative insight. The mobile marketing strategy that encompasses geofencing developed by a firm's marketers encompasses not just the more traditional elements of mobile-driven advertising but also emerging trends in mobile marketing as well. This includes all aspects of geolocation and the technological infrastructure that supports it. Essentially, a firm's mobile marketing strategy based on the use of a geofence consists of primarily two distinct domains and a series of five specific components:^{20,21}

1. Established mobile advertising solutions
 - a) Give-a-ways and product specials (these are either free or discounted items): consumers that receive the firm's mobile marketing message within a geofence are incentivized to do so through this incentivization
 - b) A loyalty program: a traditional retail loyalty program that may have existed before the mobile marketing strategy can be easily integrated into the firm's geo-fencing architecture
 - c) SMS/MMS text or media messages: these notify consumers of specials, discounts and flash sales which are sent out via an existing SMS/MMS distribution channel through mobile pathways once a geofence trigger is received
2. Emergent and evolving mobile advertising solutions
 - a) Smartphone in-app order/pre-order/payment: the geofencing solution supports geo-location for mobile ordering and pre-paying for products at the nearest location within the geofence
 - b) An in-app or on-site personalization: the geofencing solution supports consumer customization such that interactive feedback can be supported, preferences can be modified and even consumer order history and tracking can be integrated

All of these various mobile marketing elements are integrated into a company's existing technology infrastructure as well as its existing marketing strategy. The outcome is an entirely seamless consumer experience within the geofence. This seamless experience is one that facilitates convenience, retailer cost control and can even contribute to new product development.

In one targeted application of geofencing technology, a marketing campaign for "Gentlemen Only" cologne located in Saudi Arabia utilized geofencing to generate primary and secondary actions on the part of the firm's consumers. "Gentlemen Only" relied on its marketing firm, Yoose, to create a series of geofences around four of its most important retail distribution sites identified as major malls throughout Saudi Arabia which tracked and notified consumers who entered into each of the geofences.²² The primary action achieved through this geofence marketing effort amounted to the notification of each consumer entering one of the geofences that they could click on the link and download a coupon for a free gift at the retailer's location. The geofence resulted in an initial primary action of a 0.95 click-through rate which is above average for digitally delivered marketing media. Likewise, once in the store to redeem the coupon for the free gift, the campaign achieved a 29.95% secondary action outcome in which on average these consumers spent \$125 inside the stores on other items. This outcome is directly linked to the use and integration of the geofences that "Gentlemen Only" developed for its retail markets in Saudi Arabia. Thus, whether geofences are utilized for firms competing in collaborative consumption industries or in traditional retail industries, the direct access to targeted consumers pays real dividends on a firm's marketing spend.

The information presented within this section reveals a few incredibly significant developments that are currently taking place within the realm of mobile marketing and advertising. Marketers are coming to recognize

exploratory study in Saudi Arabia. *International Management Review*, 11(2), 98.

¹⁹ Majid, A. Could a sharing economy transform Saudi Arabia? (2013). *Wamda* (online). Retrieved from: <https://www.wamda.com/2013/01/could-a-sharing-economy-transform-saudi-arabia>

²⁰ Andrews, M., Goehring, J., Hui, S., Pancras, J., & Thornswood, L. (2016). Mobile promotions: A framework and research priorities. *Journal of Interactive Marketing*, 34, 15-24.

²¹ Meola, A. (2016). Starbucks Plans to Spend Even More to Improve its Mobile App. *Business Insider*, 04(04), pp.07-12.

²² Geofenced campaign produced viral-like response. (2017). *GXPRESS* (online). Retrieved from: <http://www.gxpress.net/geofenced-campaign-produced-viral-like-response-cms-9134>

that not only are they finding it requisite to adopt and develop much more meaningful mobile advertising strategies but they are coming to find that how they target through these strategies is evolving as well. As the information indicated, marketing and communication material is consumed on more traditional desktop space is in decline. Simultaneously, there is increasingly the understanding that such change is largely due to a demographic element in which 20% of millennials have said that they do not use a PC at all and 97% have said that they use some form of mobile device to interact with their environment.²³ The primary observation that can be made then within these developments is that mobile advertising, marketing and sales is becoming a requisite aspect of the entire retail space regardless of the individual product or service. Consequently, geofencing is a marketing solution that bridges the divide between the consumer and place at the specific time in which the consumer is physically near the place the marketer is doing business.

5. Future Development in Geofencing

The overall technology behind and application of geofencing is still in its relative infancy as a marketing trend. The direction of this trend is clearly towards the removal of cost barriers, wider marketer access and more consumer control and so forth. However, as the technology of geofencing continues to advance one area that will become increasingly segmented within geofencing is the area of smart homes. There are beginning to be applications developed that allow smart applications and appliances within homes to link with geofencing solutions which trigger responses in the home of consumers such as automatic thermostat reductions when the consumer leaves the home.²⁴ Additionally, mobile payment will increasingly be linked with and facilitated through location based data generated within the context of geofencing technologies. Although the way in which this link ultimately becomes commercialized in a universal manner remains in flux, the fact that it will become a de facto way to engage in retail commerce is almost a given.

The topic of mobile payment itself is especially important because mobile payment mechanisms are directly involved in a company's ability to monetize their geofencing technology in some sense. All of the major mobile payment platforms such as Google Pay, Samsung Pay, Apple Pay, PayPal and others as well as major social media platforms including Facebook, Snapchat and Instagram are all going to integrate some sort of location based payment solution that feeds off of geofencing technologies.²⁵ Finally, another area in which geofencing solutions and technologies will continue to evolve lies with data itself. In the past, big data in the form of consumer related personal and private information has been viewed as the Holy Grail of marketing. Big data provided a key methodology for marketers to research and identify important new markets, segments, extensions as well as new products and services. Yet, geofencing technology actually supports the notion of a shift away from big data towards more consumer-friendly predictive data in which geolocation related data is utilized as a means to predict future consumer behavior.²⁶ This is geolocation data such as physical location history, purchases made at specific locations including data, time and length of the transaction and also who a consumer was with and what time of day and so on.

In terms of areas that would benefit from future research relative to geofences and geofencing strategies, the area of augmented reality and the mobile gaming environment is quite important. Augmented reality makes reference to the idea that consumers are interacting with the physical place that they are in at a given point in time but that this interaction is mediated through some sort of mobile device which is most commonly a smartphone. Geolocation technology and specifically geofences seem to be ideally suited to some sort of augmented reality integration. These areas have been shown to be extremely popular among consumers and especially younger consumers although they are still an immature and unexplored area in relation to geolocation. The relevance of geolocation can be seen in the mobile game Pokemon Go which became hugely popular throughout 2016 and thereafter. Research has demonstrated that after Pokemon Go was introduced to global markets by the company Niantic, there were more than 45 million individuals that were deeply involved in playing the game and the firm exceeded \$500 million in overall company revenues in the two months following the game's release.²⁷ The point that is being made is that what set Pokemon Go apart from its game platform

²³ Goovaerts, D. (2016). Death of Desktop: 65% of Digital Media Consumed on Mobile. *Wireless Week* (online). Retrieved from: <https://www.wirelessweek.com/news/2016/03/death-desktop-65-digital-media-consumed-mobile>

²⁴ Guelzim, T., Obaidat, M. S., & Sadoun, B. (2016). Introduction and overview of key enabling technologies for smart cities and homes. In *Smart Cities and Homes* (pp. 1-16).

²⁵ An, Y., & Harvey, K. E. (2016). Branding and Mobile: Revolutionizing Strategies. In *Handbook of Research on Human Social Interaction in the Age of Mobile Devices* (pp. 248-283). IGI Global.

²⁶ Turow, J., McGuigan, L., & Maris, E. R. (2015). Making data mining a natural part of life: Physical retailing, customer surveillance and the 21st century social imaginary. *European Journal of Cultural Studies*, 18(4-5), 464-478.

²⁷ Hughes, M. (2016). 4 Reasons Why Pokemon Go was the Standout Mobile Game of 2016. *The Next Web* (online). Retrieved from: <http://thenextweb.com/apps/2016/12/30/4-reasons-pokemon-go-standout-mobile-game-2016/>

competitors is that it was both a mobile game platform and an app that supported augmented reality anchored in geolocation technology.

Basically, augmented reality is an area that has substantial potential for integration into geolocation services such as geofencing from a mobile marketing perspective. Since consumers playing augmented reality games like Pokemon Go are uniquely associated with place, this allows marketers to utilize these platforms for potential market expansion, further market penetration and opportunities to increase their consumer reach. Yet, augmented reality whether through mobile gaming platforms or other application platforms can be more effective for marketers if it is better understood in the context of mobile marketing and communication. Augmented reality as a concept can be described as being a technological platform which, “enhances the physical environment...by overlaying virtual elements...either through displays...or through the camera view on your smartphone.”²⁸ Certainly, the popularity of mobile apps and mobile games is a phenomenon that fluctuates in terms of popularity but geolocation as a mobile marketing platform depends upon unique consumer interactions based on place. Geofences bridge this gap between the consumer and place by ensuring that the marketing and communication collateral that the consumers receive is completely relevant in terms of time and place for the consumer. However, understanding the fact that different forms of augmented reality platforms such as mobile games and mobile apps holds enormous potential for marketers to reach existing and new consumers is critical. This is one area within the mobile marketing purview that would benefit greatly from further exploration from a marketing perspective.

One final area in which geofencing is currently still being developed from an application perspective is in the logistics and transportation industry. There are clear strategies within the logistics field that can be fully automated and completely reinvented through the application of geofencing solutions.

Figure 4: Logistics Geofencing Applications



Variances and subtle changes within the logistics and transportation industry can greatly affect, often negatively, a firm’s profitability and competitiveness. Hence, the logistics and transportation field benefits from automation and thus geofencing solutions can be used to accomplish the following types of efficiency outcomes:^{29,30}

1. Geofenced delivery areas that ensure that allows personnel at a delivery location to know when and from what direction a delivery is coming, how long it will take to get there and what is included in the delivery
2. Geofences can replace all employee time-keeping processes, efficiency record keeping, productivity charts and analytics designed to produce more efficient work schedules, methods and processes
3. Geofencing can be implemented on a micro or a macro scale meaning for geographic areas or for single-site warehouses and so forth that can be used to track product movement, location and dispensation

These and other outcomes involving geofencing technologies are impacting the logistics and transportation industry in a pervasive manner. In this fashion, regardless of the application of geofencing within any given

²⁸ Javornik, A. (2016). What Marketers Need to Understand About Augmented Reality. *Harvard Business Review*, 04(18), pp.11-15.

²⁹ Oliveira, R. R., Cardoso, I. M., Barbosa, J. L., da Costa, C. A., & Prado, M. P. (2015). An intelligent model for logistics management based on geofencing algorithms and RFID technology. *Expert Systems with Applications*, 42(15-16), 6082-6097.

³⁰ Rodriguez Garzon, S., & Deva, B. (2014, September). Geofencing 2.0: taking location-based notifications to the next level. In *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (pp. 921-932). ACM.

industry, it is an emergent technology that has significant upside on a firm's overall operations, branding and wealth creation.

6. Conclusions

For industry experts and marketers within the GCC and other Middle East countries like Saudi Arabia, who hope to mimic the success of key marketing trends such as geofencing in China, some caution must be observed. This is not to say that markets throughout the Middle East cannot benefit from the application of geofencing as a marketing solution. Rather it must be understood why geofencing and similar technologies related to sharing-based business models are so successful in China. In China's case, it has a long history and tradition of communal thinking in which the perpetuation of a cohesive society has always been a fundamental principle of Chinese society above individual notoriety.³¹ While some of this type of mindset may be changing due to Western influences throughout the country, social cohesion is still of fundamental importance in Chinese society.

That said, sharing-based business models such as ride-sharing businesses, room-sharing businesses and even umbrella sharing businesses have come to dominate the marketplace. This economic success of sharing business models is evident in the data which indicates that sharing based transactions surpassed some US\$500 billion as recently as 2016 which accounted for a 103% increase over the previous 12-month period and overall growth to be sustained at 40% a year through 2025.³² Consequently, China and Chinese society has a true affinity for these types of sharing based business models and platforms. Understanding the importance of this type of social privileging of these types of sharing business models can greatly improve the way in which similar technologies including geofencing can be and are introduced into the Middle East.

There are certain elements within the geofencing mobile marketing strategy that tend to align it with established marketing theory. There is recent mobile marketing research that has effectively isolated certain traits or characteristics that are associated with effective mobile marketing strategies. These elements should be present in order for a mobile marketing solution such as geofencing to be fully sustainable even in the near-term. These particular traits that are apparent within the geofencing mobile marketing strategy include some or all of the following elements:³³

1. The presence of consumer choice. This is the choice to either opt-in or to opt-out in terms of the advertiser's products or services in which opting-in is typically rewarded with some form of gift, a give-a-way or perhaps an award while opting-out allows the consumer to remove him or herself from the retailer's communications entirely
2. Consumer notification in which a clear privacy statement and established privacy policy is made readily apparent to the consumer somewhere within the mobile marketing material to which the consumer is exposed during the notification process of the geofencing strategy
3. A value proposition for the consumer. This value proposition occurs when the targeted consumer receives a benefit for providing some sort of information, feedback or a visit. This can be material such as personal information, email addresses, mobile numbers and similar data or it can be personal visit to a store or similar
4. Established consumer accessibility and control. This consumer control is over the mobile marketing material or advertising process in whatever form it may take for the marketer vis-à-vis the geofence established to notify the consumer at the point of entry or exit

A failure to align a mobile marketing solution with these four core traits can work to alienate the consumer. Such alienation ultimately makes it difficult for the marketer to regain the consumer's trust. Once lost, such consumer trust is difficult to reestablish for any marketer and certainly within the retail sector in the context of a geofence trust is requisite. However, as ofo has demonstrated, this four-element premise within the mobile marketing domain can be adapted to virtually any retailing scenario. Companies within the GCC can integrate principles such as these to allow them to utilize geofencing as a mobile advertising solution as a means to strengthen the trust between their consumers and themselves.

Geofencing as a purely mobile advertising solution is one that is sustainable over the long-term because it is inherently anchored in place. Geofences and geofencing offers marketers in the retail sector with the

³¹ Hou, Z., Zhu, Y., & Bromley, M. (2013). Understanding public relations in China: Multiple logics and identities. *Journal of Business and Technical Communication*, 27(3), 308-328.

³² Nan, Z. & Yiran, Z. (2017). Report says China's sharing economy to grow 40% annually. *China Daily*, 03(23) (online). Retrieved from: http://english.gov.cn/state_council/ministries/2017/03/23/content_281475604274591.htm

³³ Bacile, T. J., Ye, C., & Swilley, E. (2014). From firm-controlled to consumer-contributed: Consumer co-production of personal media marketing communication. *Journal of Interactive Marketing*, 28(2), 117-133.

capacity to provide real functional service to their consumers at the specific point in time when they are physically positioned to act on the marketing premise being offered to them. Solutions such as geofencing as a mobile advertising solution based on some type of mobile app provides consumers with a highly targeted experience. This highly targeted experience is what is referred to as a “micro-moment” in which consumers receive instantaneous gratification for a product, service or an inquiry.³⁴ In this regard, an integrated geofence solution and corresponding mobile app accomplishes all of these elements and more. The mobile app for a retailer in GCC markets such as Saudi Arabia allows a local retailer’s consumers to find the closest location and perhaps even pre-order and pre-pay in advance so that they can receive their products as fast as possible. The geofence mobile marketing framework also allows consumers to customize their consumption experience in way that facilitates further and future transactions as well. Finally, geofencing as a mobile marketing solution also promotes convenience and forward integration of future technological innovation. This is because it is inherently based on virtual technologies that allow other digital services such as digital payments and digital wallets to be fully integrated.

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³⁴ DeMers, J. (2016). 4 Mobile Marketing Strategies that Will Boost Engagement and Sales. *Forbes Magazine*, 05(25), pp.14-17.

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Appendices

Mobile Advertising and marketing Form	Description
Text-based/SMS mobile advertising and marketing (geofence activated)	SMS (short messaging service) is a brief message distributed via cellular networks to phones
The mobile internet/web (geofence integration)	Mobile advertising and marketing formatted to appear on websites navigated to on mobile platforms (smartphones and tablets)
Near-field communications (Bluetooth, RFID) (geofence activated)	Advertising and marketing collateral is delivered automatically when consumer platforms that are near-field enabled are sensed
MMS mobile advertising and marketing (geofenced activated)	MMS (multi-media messaging service) content (pictures, video, GIFs) is delivered to MMS enabled platforms & services
Mobile device applications (Apps) (geofence integration)	Advertising and marketing material is delivered/supported by specific applications (apps) designed for particular companies or products/services
Barcode or QR Code advertising (geofence integration)	Barcodes & QR (quick response) codes are scanned by consumers with mobile platforms to access web-based advertisements
PPC mobile advertising (geofence activated)	PPC (pay-per-call) mobile advertising involving consumer-instigated calls or texts that are typically charged
Location-Based Advertising and marketing (geolocation)	GPS, web-based technology & similar technologies are utilized to identify current locations of consumers to which relevant advertisements are delivered
Mobile gaming (geofence integration)	Games designed specifically for mobile platforms that contain advertising tie-ins
Voice-based advertising and marketing (geofence activation)	Delivering prerecorded messages to consumers on their smartphones/cell phones