



# Specific Applications of Location Based Marketing

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## Abstract

As digital dependency continues to grow, marketers increasingly leverage this trend through advanced marketing strategies like location-based marketing (LBM). This study examines the problem of effectively engaging target customers using LBM by analyzing how mobile devices and applications facilitate customer tracking through data collection on location and preferences. Using a systematic review methodology, the research investigates various LBM applications and technologies, illustrating their impact on customer engagement and marketing effectiveness. Findings reveal that specific LBM strategies, enabled by GPS, Wi-Fi, and Bluetooth technologies, significantly enhance real-time customer interaction and personalization. These insights emphasize LBM's potential in modern digital marketing practices.

## Keywords

Location-Based Marketing, Digital Marketing, Customer Engagement, GPS Tracking, Data Collection, Personalization

## 1. Problem Statement

With the increasing popularity of LBS and LBA, consumers are concerned largely about their privacy or even the security of data. While location-based, users also tend to be rather apprehensive about how their personal information is collected, stored, and used by the service providers. Research<sup>1</sup> indicates that such privacy concerns may greatly impede user acceptance of LBS/LBA and adversely impact the efficiency of personalized marketing campaigns. For instance, several studies<sup>2</sup> have shown that consumers who perceive a high level of privacy risk are more likely to reject personalized ads, leading to a paradox where the very technologies intended to increase user involvement may actually drive away potential customers.

Secondly, the literature review reveals that certain research on how to maximize LBS/LBA in real-time and location-based customer activities is rarely researched, especially when customers are on-premise<sup>3</sup>. While general mobile marketing strategies are well contextualized, the underlying mechanisms of LBS/LBA differ entirely because they work in a real-time context. The lack of attention to real-time involvement confines business enterprises from fully exploiting location information since existing frameworks fail to consider the subtlety in consumer behavior associated with physical locations<sup>4</sup>.

There is also an emergent need for developing an integrated construct that measures privacy concerns related to LBS/LBA. Currently, there is no construct that has unified measured the influence of privacy concerns arising from consumer behavior vis-à-vis the adoption of these technologies<sup>5</sup>. Such a construct could enable future research to understand how perceptions of privacy influence users' interactions with LBS/LBA and allow marketing strategies that will be effective yet cognizant of the consumer's privacy<sup>6</sup>.

The rapid development of particular technologies in LBS/LBA customer engagement considers AR and NFC among the up-and-coming opportunities, as well as their increasing ability to offer more engaging, interactive, and personalized marketing experiences<sup>7</sup>. However, this accelerating evolution with these technologies necessitates updated research in consideration of their implications for consumer engagement and privacy. Traditional marketing models fail to capture the dynamic and personalized nature of the interactions in LBS/LBA. Their failure points to adapting the marketing frameworks to digital and location-based marketing functionalities<sup>8</sup>.

As LBS/LBA continue to evolve, marketers must devise strategies that better align with the unique nature of these technologies, enabling them to reach out and engage consumers more effectively while also being mindful of their privacy concerns<sup>9</sup>.

Future research into strategies that could mitigate privacy concerns and increase user acceptance of new technologies is crucial to fully realizing the potential of LBS/LBA in modern digital marketing<sup>10</sup>. In so doing, the researchers will be in a better position to contribute to more effective marketing strategies with respect to consumer privacy and improve engagement through location-based technologies<sup>11</sup>.

## 2. Theoretical Underpinning

The privacy calculus theory puts forward a view in which consumers make a cost-benefit analysis in their decisions related to their usage of location-based services and location-based advertising. Therefore, this theory proposes that individuals evaluate the perceived advantages of using these services, such as personalized offers and enhanced convenience, against the potential risks associated with privacy concerns, which may include potential misuse of location data. Gutiérrez et al. (2019) provide insight into how perceived privacy risks influence consumer decisions by identifying intrusiveness as a significant inhibiting risk factor in engaging users in mobile location-based advertising. Their findings emphasize that when the consumers perceive the risk of invasion of privacy outweighs the benefits, their willingness to adopt LBS/LBA diminishes. This underscores the necessity for service providers to incorporate privacy concerns into their marketing strategies, as suggested by Gutiérrez et al. in 2019<sup>12</sup>.

The Technology Acceptance Model offers a deeper understanding of consumers' adoption behavior towards LBS/LBA technology, with a particular emphasis on perceived useful factors and ease of use. According to TAM, customers are more likely to accept and have greater participation in technology if they can perceive its benefits and if it is easy to use<sup>13</sup>. This model effectively explains consumer intentions and willingness to participate in location-based marketing, providing valuable insight into the potential role of perceived additional benefits in enhancing user acceptance. It has also been found that consumers are most likely to oppose the emergence of privacy concerns if they perceive a clear added value from LBS/LBA in improving their shopping experience. This, in turn, can clearly enable increasingly active use of these technologies<sup>14</sup>.

Complementing this framing, the task-technology fit model has been used to evaluate how well LBS/LBA technologies fit user needs within specific contexts. TTF suggests that technology can only be effective if it offers timely and relevant information based on a user's location. Users can increase the rate of adoption and effectiveness in real applications when LBS/LBA can provide personalized content that is matched with consumer preference and situational context<sup>15</sup>. The planned behavior theory adds more detail by showing that behavioral intention is influenced by attitude, subjective norms, and perceived behavioral control<sup>16</sup>. This theory thus resonates well with understanding consumer intentions to either accept or reject LBS/LBA technologies, as it highlights how social influences and individual attitudes towards privacy may shape decision-making processes.

If users perceive that social norms in relation to LBS/LBA use are favorable, there is a greater likelihood of them adopting this technology even in the presence of privacy concerns. Consumer behavior theories, once again, validate the allure of LBS/LBA in the realm of personalization. In this regard, the personalization enabled by these technologies aligns with consumer preferences for customization, which are aimed at enhancing user satisfaction and engagement. However, this personalization also introduces privacy concerns, as consumers may feel uncomfortable with the extent of data collection required to deliver such tailored experiences<sup>17</sup>.

The balance between the desire for personalized marketing and the apprehension regarding privacy risks is a critical area for further exploration. In essence, each of these theories significantly contributes to the research objectives by providing a robust theoretical framework that addresses privacy concerns, evaluates technology acceptance, and influences consumer behavior in response to location-based marketing. When combined, these theories establish a clear foundation for investigating the interactions between theories of privacy calculus, technology acceptance, task-technology fit, planned behavior, and consumer behavior, which in turn influence consumers' engagement in location-based marketing<sup>18</sup>.

## 3. Methodology

This systematic review design shall dive into the existing literature on LBS and LBA, with a focus on consumer engagement and privacy concerns. Data was obtained from secondary sources that included peer-reviewed journal articles, industry reports, and academic publications. A thorough search was conducted in databases like JSTOR, Scopus, and Google Scholar based on relevant keywords related to location-based marketing and digital privacy. After that, from 2000 onward, the studies were selected as relevant to LBS/LBA applications, privacy issues, and consumer behavior based on criteria developed during structured screening and selection.

A coding scheme was then developed consisting of categories to group findings into themes, including but not limited to the following: perceived privacy risks, user control, and consumer acceptance. Thematic analysis was performed to establish trends within the literature, and findings have been organized around theoretical frameworks, such as the Privacy Calculus Theory and the Technology Acceptance Model. PRISMA guidelines have been taken into consideration to make the results more reliable, adding that only methodologically sound studies were included in this

review. Since no primary collection of data was involved, the research adhered to ethical guidelines for the proper citation and representation of the reviewed studies.

This systematic review was carried out using the PRISMA-Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines to ensure maximum transparency and reliability. The studies had to be related to LBS and LBA, focusing on consumer concerns about privacy and personalization. To give weight to modern practices of digital marketing, we only considered articles published after the year 2000. We searched several databases using keywords such as "location-based marketing," "digital privacy," and "LBA adoption." The retrieved records first underwent title and abstract screening, followed by full-text reviews of those that passed this first step and met the eligibility criteria. A flow diagram was developed in order to outline an overview of studies that were included or excluded during each step of the selection process. Although the review did not undertake a formal assessment of the risk of bias, the inclusion of only peer-reviewed and methodologically sound studies aimed to minimize the potential for bias. This systematic approach aimed to provide a comprehensive review of the literature, thereby enhancing the reliability and validity of the findings.

## 4. Specific Applications of Location Based Marketing

### 4.1 Online and Offline Applications

#### 4.1.1 Location-Based Services

Consumers are increasingly relying on mobile phones as their primary technological gadgets. Many people nowadays seem to be unable to function properly without their smartphones. As a means of keeping in touch, many individuals consider it an extension of themselves<sup>19</sup>. Marketers stand to benefit greatly from the widespread use of this technology in the near future. The ability to contact anybody at any time and place is provided by this technology. It gives enterprises the ability to engage and communicate with customers at the most relevant moments. Mobile phone use by consumers has become more widespread, giving firms the ability to better personalize and time their information in a way that was before impossible<sup>20</sup>.

The vast majority of mobile phones include GPS (Global Positioning System), which is the most prevalent tracking technology<sup>21</sup>. Customers may use this service to identify nearby Wi-Fi hotspots, get directions, or learn how to get about town using public transit. Organizations, on the other hand, might utilize it for marketing and customer service<sup>22</sup>. Customers who utilize Location-Based Services (LBS) get marketing (or merely service) information that enhances their relationship with the LBS provider's product, brand, or organization by making use of the device's precise location<sup>23</sup>. Consumers will be exposed to tailored marketing material when it is most relevant to them and when they are most likely to notice it<sup>24</sup>. There are two primary approaches within location-based services: location-based services (LBS) for enhancing customer experience through relevant information and location-based advertising (LBA) for targeting customers with location-specific promotional content. Location-Based Services provide users with helpful services based on their location, such as navigation or finding nearby amenities, while Location-Based Advertising uses the same location data to deliver personalized advertisements in real-time, enhancing marketing effectiveness<sup>25</sup>.

People monitoring has grown simpler and more relevant for marketing because of the widespread usage of cellphones, which contain several methods for tracking people, including GPS, Wi-Fi, mobile internet, Bluetooth, etc. According to research conducted in the Netherlands, 81% of Dutch people aged 18 to 80 regularly use a smartphone<sup>26</sup>. Previous study indicates that distance influences social and economic behavior<sup>27</sup>. As a method of near communication and marketing that relies on the premise that "all things are linked; however, close things are more related than distant things," mobile marketing has a distinct edge. The internet revolution has already removed a portion of the distance barrier in the field of online marketing<sup>28</sup>.

The internet has made it much simpler for businesses to connect with their customers on a broad and personal basis. As a result, customers have found it much simpler to connect with firms that may be on the other side of the globe. There have been a lot of press releases touting the internet's capacity to create a "Flat World" or "Death of Distance"<sup>29</sup>. Because of its capacity to offer more relevant advertising based on location, mobile marketing and location-based services (LBS) are seen as the next stage in this growing marketing landscape. For conventional marketing, the shopping style, brand trust and value are significant motivators for mobile marketing, according to<sup>30</sup>. (Pandey, 2011) More studies should be done to establish how to reach clients on the ground effectively through mobile marketing, amid rapidly changing dimensions of interaction in the digital space. Despite the popularity of its usage, mobile marketing has a considerable knowledge gap as far as its application in real time or location-based engagement is concerned. While recent research has explored the use of mobile marketing in general (e.g., Solomon, 2016; East, 2017), few studies have specifically addressed real-life interaction techniques. Filling this gap may therefore be a way to provide further insight and suggestions toward improving mobile marketing strategies in an effort to increase customer engagement within a physical environment<sup>31</sup>.

Hosbond and Skov (2007)<sup>32</sup> focused efforts on the transformative power of LBM through micromobility marketing. Their research demonstrated that location-based marketing utilized supermarket shopping trollies to reach customers at the moment of maximum receptiveness. Finally, serious research into location-based marketing (LBM) emerged in the early 2000s, focusing on new forms of advertising based on digital information specific to the user's location. One of the first to introduce this "new" phenomenon was MacInnis in 2009<sup>33</sup>; he demonstrated its usefulness for businesses in understanding how they achieve a greater understanding of the larger market segment.

With the rapid growth in smartphone adoptions over the last decade, the applicability of LBM also grew, as firms can now use mobile data in order to offer customers experiences tailored to their needs. Indeed, Mathur, Lee, & Moschis (2006)<sup>34</sup> confirm that the adaptability of LBM is increasing as firms utilize mobile data to provide customers with experiences more tailored to their needs. Mathur et al. (2006) stated that life-changing events enable consumers to change behaviors and create specific marketing opportunities for firms that apply location-based approaches.

Despite the rapid evolution of LBM, there are still significant gaps in the understanding of how such strategies may be utilized in order to optimize customer engagement in a physical environment. Recent research by Solomon 2016 and East 2017 indicates that emerging technologies such as augmented reality and near-field communication might pave the way for additional enhancement of these interactions and provide businesses with new means through which they may interact in real time with customers. With LBM, that gap between a firm's advertising and targeted viewers has shrunk further and further to reach just the right people at the right time and place. This personalization will permit more direct and engaging marketing experiences, a hallmark feature of modern LBM approaches.

However, in their traditional form, LBM applications often lack accuracy and can even be intrusive, as defined by Kallier (2021)<sup>35</sup>. In contrast, mobile LBM applications depend on GPS, Wi-Fi, and Bluetooth for controlling an interactive, information-based experience that allows customers to be more participative and satisfied. This paper has, therefore, been conducted to explore some of the modern applications of LBM, considering the efficiency of various technologies in real-time customer contacts and additional business value they create. The contribution of this study to the elimination of existing knowledge gaps allows a better understanding of the full potential of LBM as a strategic tool within digital marketing.

#### **4.1.2 Location-Based Advertising**

With the help of advanced technologies like geofencing, beacons, social media geotargeting, proximity messaging, AR experiences, and location-specific promotions, LBS enables advertisers to reach out to users with personalized advertisements and promotions at all opportune moments about their location, improving everything from customer engagement to relevance<sup>36</sup>. Throughout this chapter, a special emphasis was placed on location-based advertising, and its role was discussed. A new approach for businesses to contact their target audience, location-based services provide several benefits over conventional marketing and may be a wonderful tool for engaging with customers and giving targeted marketing offers. Location-based services<sup>37</sup>. Consumers may get the most from LBS in terms of convenience. Fast and relevant to their current location, it is most likely to satisfy their requirements at that specific moment<sup>38</sup>.

There is no need for users to do anything other than download an app or configure their phone to use it. As a result of adding advertising to location-based services, it is possible that the advantages of this sort of mobile services/marketing will be further enhanced. Customers' experiences with LBS might be improved and their chances of success increased by advertising that presents them with a helpful offer like a discount or free-gift<sup>39</sup>. In contrast to location-based services, location-based advertising operates in a different way. To further enhance LBS and boost sales for the advantage of the business, LBA might be utilized in conjunction with LBS. According to the literature, price promotions and premium promotions such as a free gift, are the most popular sorts of advertising promotions<sup>40</sup>. It is possible that Location-Based Advertising might be harmful due of its invasiveness and irritation<sup>41</sup>. (Yakup, 2012) It is possible for the customer to see it as unwelcome or obtrusive and even believe that the company is violating their privacy or personal space<sup>42</sup>.

Consumers' psychological reactions may be unwelcome as a result of this form of "forced exposure". When a user enters a certain geographic place, an LBA popup appears on their smartphone. As an example, when someone walks by a Starbucks, a pop-up message reads come have a coffee at Starbucks and get the second cup on the house, or something similar. LBS material is sent to the user through a vibrating/sounding notification on their phone. The customer must now determine whether to take advantage of this offer. For an offer based on a person's location, they must be prepared to give up some of their personal information in exchange for it. When it comes to mobile marketing, this is seen as a critical component<sup>43</sup>.

#### **4.1.3 Consumer Intention to Use Mobile Marketing**

There are numerous similarities between mobile marketing and conventional marketing. There isn't a lot of information available on mobile marketing yet since it is such a recent development. Because of this, researchers have looked at the aspects that affect overall marketing approaches to examine how they affect LBS and mobile marketing. Organizations are eager to learn whether or not customers intend to utilize mobile marketing in the near future. Numerous variables determine whether or not people intend to utilize mobile advertising<sup>44, 45</sup>. (Kallier, 2017) As a starting point, the general attitude toward mobile advertising is critical. In addition, the perceived usefulness of the data that may be provided via mobile advertising is crucial. Finally, they discuss the significance of reducing consumer fears about privacy and risk perceptions. The first thing that might affect consumer interest in mobile marketing is their attitude about it. This is one of the most important elements in determining whether or not a consumer intends to employ mobile marketing<sup>46</sup>.

The individuals who have a good attitude toward mobile marketing are more likely to seek out information and intend to utilize mobile services and marketing, according to them. 9 The second aspect often highlighted in mobile marketing literature is the influence of information. Whether or whether a user perceives an application's Information Influence as positive or negative is a determining element in how they see mobile marketing and its apps. In the realm of



marketing research, this concept has been used numerous times in the past to gauge the general public's impression of mobile marketing.

To provide just two examples, the idea of information effect has been backed by several research, such as those conducted<sup>47</sup>. Several studies have shown the advantages of mobile marketing and location-based services (LBS). When opposed to conventional marketing, LBS/LBA has two major advantages: personalization and location. As a result of mobile marketing, it is now possible to tailor messages to individual customers and provide relevant information at the proper moment. Studies<sup>48</sup> on the impact of relevant information on sales show that these variables are linked and that relevant information has a positive impact on sales. GPS-enabled mobile phones provide additional advantages by knowing where the customer is and when he or she prefers to receive a message. Researchers have shown that personalisation and locatability may have a substantial impact on attitudes about mobile marketing and LBS<sup>49</sup>.

In the same way that any marketing strategy has risks, mobile services and marketing have their own set of risks. There are a number of reasons for this, but one of the most important is the belief that consumers have about risk<sup>50</sup>.

#### **4.1.4 Development of a Construct to Assess Privacy Concerns In LBS/LBA**

The underlying construct was developed due to a variety of emerging concerns about privacy in LBS and location-based advertising and measured the extent to which consumers' privacy worries influence their decision to use such technologies. The development of this construct stemmed from a deficiency in previous literature, which, upon review, revealed a lack of appropriate instruments to measure the impact of privacy on user acceptance and behavior toward LBS/LBA. MacInnis, 2009<sup>51</sup>, referred to general concerns about privacy but did not give a focused framework for understanding how those concerns affect real-time location-based marketing.

Research by Zhou (2017)<sup>52</sup> and Gutiérrez, O'Leary, Rana, Dwivedi, and Calle (2019)<sup>53</sup> identifies the role of consumer privacy concerns in the adoption of location-based advertising. These studies identify perceived privacy risk, the extent of control that consumers believe they have over their personal information, and trust in the companies collecting and using their location data. Ryu (2023)<sup>54</sup> further supports this view by noting that generally, according to the theory of privacy calculus, consumers' decisions about the disclosure of personal information for mobile location-based advertising are based on their perception of risk versus benefit.

The need for this construct became obvious as researchers such as Schade, Piehler, Warwitz, and Burmann (2018)<sup>55</sup> realized that while consumers were indeed interested in personalized marketing, they often demurred because of significant fears of data misuse, intrusive surveillance, and lack of transparency. This construct provides a practical method for businesses to empirically explore how privacy concerns influence user behavior, allowing them to enhance their LBS/LBA strategies and foster consumer trust.

This construct considers these privacy issues more directly, drawing from the insights of technology acceptance models and privacy calculus theory, unlike previous research that treated them as secondary. This concept fills in a big gap in the research by giving us a way to test empirically the relationship between privacy concerns and LBS/LBA adoption. This will help us learn more about the role of privacy in location-based advertising.

What level of confidence do consumers have in the security of their personal data while utilizing mobile marketing? When it comes to measuring this, a few studies<sup>56</sup> have investigated the relationship between mobile marketing and privacy concerns and the literature on this issue is discussed later. Last but not least, the irritation/intrusion of LBS/LBA is considered as a possible negative impact on customers' inclinations to utilize LBS/LBA. There is a possibility that LBS/LBA might result in harm<sup>57</sup> ( Barhemmati, 2015).

#### **4.1.5 Limitations and Future Research Directions**

This study acknowledges several limitations. First, the construct developed to assess the concerns of privacy in LBS and LBA represented a useful tool for empirical analysis; the results obtained were limited by previous studies and data sources. Many references are foundational yet not recent, which may dampen the applicability of the insights to current digital marketing practices. For instance, MacInnis 2009 and Mathur, Lee, & Moschis 2006 are starting to show signs of aging. The paper focuses in large part on privacy concerns as the main determinant of adopting LBS/LBA, perhaps at the exclusion of other influential factors such as consumer experience with technology, cultural differences, and technological improvements. These factors deserve more elaboration in subsequent studies, explaining how they may interact with privacy concerns to assert some claims about user behavior across diverse demographic and geographic contexts.

Another limitation of this study is its reliance on secondary data. While this makes theoretical sense, primary data findings, when paired with survey, experimental, or even case study approaches, could provide more concrete insights into how local businesses support LBS/LBA in practical settings. For any future studies, recommendations include attempts to conduct such empirical research, preferably in disparate contexts, that could test the validity of the proposed construct regarding generalizability.

The fast-changing nature of the technologies involved in mobile suggests a number of other areas of investigation. Further research may look at the impact of new technologies, such as AR and NFC, on location-based marketing. Another area could be developing a strategy for Find that minimizes perceived privacy risk without sacrificing personalization; this could be achieved by investigating transparency and data control issues in consumer decision-making. The fact that consumers make a trade-off for benefits supports the importance of the concerns about privacy, as

can be seen in studies such as Zhou (2017) and Ryu (2023). The detailed analysis of such trade-offs may provide truly valuable insights for both marketers and policymakers.

#### 4.1.5 Location Based Strategies and Techniques

##### 4.1.5.1 Strategies

Mobile location-based service/marketing requires precise location data in order to give high-quality tailored content. The provider of the LBS must have access to this information. In addition, it must be more or less particular depending on the purposes that are being pursued with this data. Accuracy of information is critical when determining a plan for LBS and LBA. Choosing between low and high precision location data is an important consideration for any firm considering using LBS.

As an example, since it pertains to a particular area rather than a normal tiny spot of 10 meters, providing "location-specific news" requires lower precision. Higher precision is essential for navigation and tracking reasons, and the position has to be more precise<sup>58</sup> (Bednarik, 2010). In the modern day, GPS devices can reliably pinpoint a person's position to within a few meters in most cases. Previous research has shown that LBS is more effective than conventional marketing in terms of results.

Recent research on the benefits of LMP, Location-Based Mobile Promotion, technologies found that LMP outperformed traditional marketing in terms of impact and effectiveness.<sup>59</sup> (Kallier, 2017) As a result, it's thought that it encourages people to make hasty decisions and purchases<sup>60</sup>. Data from over 3 million real-world consumers was used to conduct the research, which revealed the potential worth of mobile marketing. An immediate and beneficial effect on sales was seen, and it persisted for up to nine days after that. As explained in this theoretical framework, there are several approaches to integrate LBS inside an organization. Location-Based Services (LBS) To better serve clients, mobile marketing might be a useful, inventive, and cost-effective technique for spreading information locally<sup>61</sup> (Macinnis, 2009). According to one research, paid, earned, and owned media play the most important roles in recalling, informing, and heightening pleasure<sup>62</sup> (Constantinides, 2014). LBS has a good chance of succeeding since it adheres to these three fundamental marketing impacts. By delivering a message when the user enters a certain geographic area, it may remind customers of important information.

A variety of features may be added to LBS to deliver the services clients want while also informing them about any current specials or special events taking place in the business. Consumers are the focus of this approach, which focuses only on providing information and increasing their buying experience. A kind of location-based service that aims to inform

Advertising with a Geographic Focus: A Practical Guide Location-Based Advertising (LBA) is a second use of LBS. Product, brand, or other aspects of the company are the focus of this kind of material. Brand-building, promotional and product-recommendation material are some examples of this sort of information. In order to improve traffic and sales, LBA is most often utilized to give special discounts to customers that live nearby. If a customer sees an advantage to this technique of advertising, they may be more likely to use it<sup>63</sup> (Bumsed, 2009). The apparent benefits outweigh the disadvantages, such as the loss of privacy and the possibility that their precise position may be monitored. According to these findings, there are primarily two forms of LBA. Indirectly helpful monetary promotions are the first kind of promotion; they give a discount to customers who purchase an advertised product therefore not being directly beneficial but only once a purchase is made.

Non-monetary promotions, such as getting a gift for responding to stimulus material, are the second kind of advertising that is directly useful. This is because they are the most common and popular types of promotions<sup>64</sup>. (Pandey, 2011) It is conceivable that the stimulus material would be more sensitive to these two advertisements. Important research found that monetary promotions are regarded as a decreased loss, but nonmonetary promotions are viewed as a benefit for customers<sup>65</sup> (Viksne, 2016). Nonmonetary promotions, on the other hand, give an unforced and free promotion, which may be the reason why consumers feel compelled to purchase a product in order to profit from this promotion.

It is expected that monetary incentives will be more successful in this study, despite the fact that previous field experiments have shown this to be true. In their article on the efficacy of price cuts and premium promotions<sup>66</sup>. (East, 2017) According to the authors' argument, price promotions are expensive for companies and have unintended consequences for customers, including a decrease in consumer reference prices and a decrease in the perceived quality of a product or service.

They<sup>67</sup> found that at higher benefit levels, price discounts outperform premiums, but at lower benefit levels, premiums outperform discounts. Promotional tools were shown to be evaluated similarly at moderate levels. Consumers are less likely to digest information extensively when a large discount is given because they sense less ambiguity in the offered bargain<sup>68</sup> (Barhemmati, 2015). Customers see a free service as a direct benefit of a premium campaign, even if they decide not to take any further action on the deal. Consumers are not required to take any risks or do any actual work in order to gain any advantage.

The price indirectly advantageous promotion of LBA's advertising and marketing stimulus material resulted in a discount on the advertised items when the customer acted on it. Because the advantage to the customer can only be realized when they accept the offer and purchase the offered goods, this sort of marketing is considered indirect in nature<sup>69</sup> (Halvorsen, 2013).

A price promotion, rather than a premium promotion, has greater perceived advantages in the minds of customers, according to research. Because, as Palazon & Delgado-Ballester<sup>70</sup> found in their research, a price promotion is more likely to benefit customers. However, consumers may see a premium promotion as advantageous in a more direct way than they may see a price promotion as helpful, hence the premium promotion may be more effective<sup>71</sup> (Belk, 2017).

In light of the higher perceived benefits of premium promotions and their ability to lower consumers' uncertainty and risk beliefs, and the fact that the premium promotion was directly beneficial in this study compared to the price promotion that was only truly beneficial when consumers actually purchased a product in the store, this study found that premium promotions were more beneficial than price promotions in this study<sup>72</sup> (Belk, 2017).

#### 4.1.5.2 Teaser Techniques

Including a teaser is critical. Consumers may be more responsive to an educational service, such as an event or an intriguing element in a shop, with the inclusion of a teaser like a pricing or premium offer. A teaser increases product interest, particularly for well-known companies, according to research on SMS advertising<sup>73</sup>. The inclusion of a spokesperson did not have a significant impact on persons who had a negative attitude about receiving SMS advertisements. Research shows that teasers might be effective if utilized in the appropriate way on the right people. If the message was relevant and elicited recognition of the brand or product, the impact may be much greater<sup>74</sup>.

#### 4.1.5.3 Coupon Proneness

Coupons elicit a variety of reactions from shoppers. When walking through a crowded retail street, you'll frequently see this in action as people throw out leaflets to passersby. Individuals who come into the category of "value seekers" are those that actively seek promotions and feel accomplished when they save money and get a freebie as a thank you present<sup>75</sup>. Coupon-using customers may also be more amenable to LBS and LBA since they regard them as more advantageous.

Customers who are more receptive to obtaining discounts also have a fear of spam and may feel a loss of control while receiving offers such as LBS advertising, as shown by research<sup>76</sup>. Those who hunt for and collect coupons and are prone to promotional communications have a double-edged sword in that they may be hampered by their apprehension about spam and a sense of helplessness over getting these messages. As a whole, the perceived worth and advantages of a coupon/promotion define its value<sup>77</sup>.

#### 4.1.6 Consumer Privacy Concerns

There has been a surge in the popularity of personal marketing among marketers, as it has been shown to not only impact customers and improve sales but also enhance customer loyalty, increase brand engagement, and boost overall customer satisfaction. However, as a consequence of these customized approaches, an increasing number of customers are expressing concern about their privacy. Zhou (2017) addressed the privacy concerns associated with LBS and mobile LBA, while Gutiérrez et al. (2019) delved into the concept of a "location-aware future." Zhou found evidence that users are becoming increasingly cautious about the use of their data, while Gutiérrez et al. identified the intrusiveness of LBS/LBA publicity as a key risk factor. These studies spark interest in future research that aims to enhance these aspects, such as transparency and control in LBS/LBA, and explore the potential of emerging technologies like blockchain to enhance data security. It is predicted that customers would be continuously aware of their whereabouts and that they might be tracked through cameras, phones, and other electronic gadgets in the "location-conscious future."<sup>78</sup>

Consumptive movements can be encouraged and rewarded using location-based services. As a result, LBS are technologies that are proactive rather than reactive<sup>79</sup>. It is only with people's consent that they may track their location and use that data to provide advertising and services to them. It was never going to operate without the support of the public and adherence to LBS principles<sup>80</sup>.

The usage of mobile location-based services LBS enables marketing to be more tailored and contextually relevant. Such as when a customer enters a shop, for example. The user must, however, accept and feel comfortable providing their personal information in order to fully utilize mobile LBS such as the access to and usage of the user or customer's location data through their smartphone. For this simple reason, location-based services LBS might provide privacy risks that are distinct from those of conventional marketing.

Internet users are concerned about the collecting of their personal information, their ability to manage the information gathered, and how that information will be used, according to the findings of this survey. These characteristics and how they are managed by an organization affect the level of risk. Consumers who place a high value on privacy have been shown to be less receptive to customized offers and less inclined to participate in them, according to research. Consumers who are more concerned about their privacy are less open to the potential advantages of LBS and are more cautious of its use<sup>81</sup>.

Using a pre-test, in his research, Blenkhom was able to see whether they had selected the correct metrics for gauging user sentiment regarding location-based services and advertising. Twelve customers participated in this preliminary investigation by filling out a short survey form. The subjects of this study were internet privacy issues, the advantages of promotions, and coupon inclination. A Likert scale with a maximum of five points was used to gauge the sentiments of this diverse group of individuals. Appendix A contains an example of a pre-test Transparency in the use and disclosure of personally identifiable information, there were five sorts of personal information that were identified,



according to the research: demographics; lifestyle; purchase-related; personal identification; and financial information. There were some additional LBS and LBA variables that weren't part of their model that were examined as part of the pre-test. Those who are willing to share fall into one of three categories: low, medium, or high willingness. Affective experience Participants in the pre-test were offered a variety of incentives in order to get a better idea of which marketing strategy results in the most positive impressions from customers<sup>82</sup>.

According to research on promotion efficacy<sup>83</sup>, the participants were asked to score these promotion variables. In other words, the value of this promotion includes its monetary or savings benefits, its superiority in terms of quality, its ease of use, its appeal to consumers, and the likelihood that they would take action in response to it. A "low" price promotion offers a 5% discount on all products, a "medium" price promotion offers a 10% discount on a specific product group, a "high" price promotion offers a 25% discount on a specific product, a premium promotion includes a free cup of coffee or tea at the restaurant, and a combination of the low-price promotion and the premium promotion. Coupon susceptibility the participants in this study were shown a variety of coupon offer situations in order to acquire an overall sense of how likely they are to accept online coupons.

They used a Likert scale of 1 to 5, with 1 being the least appealing and 5 being the most enticing (5). This was done to see how LBS fares in comparison to other marketing efforts. You may get a coupon by handing it to a street marketer, handing it to a cashier at a store's entry, using an online coupon from a company's website, or using an offline coupon from a magazine or newspaper<sup>84</sup>.

## 5. Marketing Mix and Location-Based Marketing

### 5.1 Marketing Mix, Four P's

The marketing mix, largely emanating from the 4 Ps by Jerome McCarthy in 1960—including product, price, place, and promotion—provides a sequential framework for the creation of effective marketing strategies<sup>85</sup>. In fact, these are also consumer-oriented strategies<sup>86</sup>. This, however, is a model adopted by many industries due to its focus on the connection of these elements in influencing consumers: the product must fulfill the need of the consumer, the price will show value, place makes it accessible, and promotion communicates how much value there is in the product<sup>87</sup>. Due to the resultant oversimplification of the simplicity of the 4 Ps, there have been various criticisms against it; therefore, the inclusion of an expanded model, the 7 Ps, which is made up of people, processes, and physical evidence, is in high demand to meet modern complexities in marketing and digital trends<sup>88</sup>.

Marketers refer to the 4P's as the "marketing mix." According to studies, a corporation uses a variety of marketing techniques and factors in order to achieve its marketing goals<sup>89</sup>. For example, the Marketing Mix method to marketing may be utilized to help execute marketing plans. Controllable factors that may be employed by enterprises to satisfy the changing demands of the target group are based on Marketing Mix concepts. Variety, quality, list price, and promotion and distribution methods are examples of typical modifiable factors.

Using the function on the model, firms may determine the best combination of factors to meet the demands of their consumers while also maximizing the company's performance and profit. the only mix that creates a turnover for the organization; all other Ps in the model are tied to costs; and "Pricing is problematic since the various goods have demand and cost relationships and are susceptible to varied degrees of competition" in this model<sup>90</sup>.

Additionally, working with the model requires dealing with sub-mixes of each P. It is possible to further break down the Promotion variable into a promotional mix, which consists of elements such as sales promotion, advertising, sales force, public relations, and direct marketing<sup>91</sup>.

Advertisement may be further split down into an advertising media mix, which determines how much focus is put on television commercials, radio advertisements and newspaper advertisements as well as the Internet.

#### 5.1.1 Product

Depending on the firm's strategy and competitiveness, each company has one or more product lines, and the length of each line varies. There are two ways to expand sales and market share: by stretching the lengths such as number of goods and/or filling the lengths such as number of product features of the product line. The product line may also be analyzed to determine which product lines to expand, retain, harvest, or divest.

While warranties, services, and returns all cost money, the quality of a product or brand is a variable that may be a benefit in conveying the message of the product or brand<sup>92</sup>.

#### 5.1.2 Price

As previously said, pricing is a difficult problem to solve. In terms of both internal and external characteristics, production and marketing expenses need to be addressed, as well as the requirement of the market, competitiveness and so forth. Prices aren't only about discounts, interest, and leasing. It's all about figuring out the best strategy for the business while also exceeding the expectations of the consumer<sup>93</sup>.

#### 5.1.3 Promotion

Advertising and sales promotion are under the purview of the Promotion department. It's a win-win situation when these two factors interact. In combination with a feature promotion, a price promotion enhanced product sales by 19% according to conducted research has stated<sup>94</sup>. Adding POP, Point-of-Purchase to the campaign, and such demonstrations,



had the most impact. Depending on the product and market, certain tools will work better than others. Differentiation in the following key categories is key when discussing promotional tools: Promotional Methods for the General Public, Small and Large Businesses, and the Sales Force<sup>95</sup>.

### 5.1.5 Place

This category "Place" contains significant factors, such as channel and location. The purpose of the channels is to get products from the manufacturer to the customer. The concept of location encompasses not just physical locations but also virtual ones such as web pages on the Internet. Channel functions and flow are simple for me to grasp when discussing channels. Ordering and payment establish a backward flow from the corporation to the client, whereas physical or promotional activities provide a forward flow<sup>96</sup>.

With the Vertical Marketing System, and Horizontal Marketing System which was known for its popularity, or the Multi-channel Marketing System which was used more frequently, we find it more difficult to grasp, govern and incorporate these systems into a company's strategy. If you're able to manage all of the independent factors in this model, it is believed you'll have a decent chance of success in terms of sales volume<sup>97</sup>.

## 5.2 Seven Ps

An additional three Ps (Product, Pricing, Promotion and Placement), for a total of seven, are used in services marketing in addition to the traditional four. This is known as the expanded marketing mix<sup>98</sup>. These include:

### 5.2.1 People

Every employee that interacts with consumers has an influence on the entire customer experience. Humans are critical to the success of a service because, in the customer's perspective, they are inseparable from the product or service they are providing. As a consequence, they must be well-trained, motivated, and of the suitable personality type to be successful. 'People' may also include other customers, who might have an impact on a customer's service experience<sup>99</sup>.

### 5.2.2 Process

In order to achieve customer satisfaction, it is important to understand the steps involved in delivering a service as well as the behavior of the individuals who participate in those steps<sup>100</sup>.

### 5.2.3 Physical Evidence

Services are intangible because they cannot be experienced before they are supplied, unlike products. Therefore, prospective clients may perceive a higher level of danger while determining whether or not to employ a certain service. When it comes to increasing the likelihood of a business's success, it's critical to provide prospective consumers the opportunity to try out the product or service before committing to it. Case studies, testimonies, and demonstrations may all serve as valid proof in this regard<sup>101</sup>.

## 6. Influencing Factors on User Acceptance of Location-Based Advertising outside and Inside Retail Stores

### 6.1 Location-Based Marketing and the New Possibilities of Beacons

With the 2007 release of Apple Inc.'s first-generation iPhone, customers were able to compare the rich Internet experience they were accustomed to from their fixed line Internet connections for the first time when they began using mobile Internet services. Smartphones running Google Inc.'s free Android operating system have made mobile Internet services more accessible to a wider audience than Apple's iPhone, which had a high price point.

Lin and Bautista's survey revealed that almost 70% of the respondents cited contextual relevance as one of the main drivers in their perceived value for LBA<sup>102</sup>. On the other hand, privacy concerns were identified as one of the main dampeners by over 60% of the respondents; therefore, advertisers need to be conscious and ensure that such problems are overcome<sup>103</sup>.

A conducted study estimated that by 2020, 90% of the world's population over the age of 6 would already own a mobile phone<sup>104</sup>. Moreover, people are also spending an increasing amount of time staring at a screen that they hold in their palm. Call time is not included in the daily smartphone use time of the typical UK citizen, which amounts to approximately 2 hours and 26 minutes on average<sup>105</sup>.

Smartphone users in the United States spend an average of 2 hours and 57 minutes a day using their devices, which is more time than they spend watching television (2h 48min)<sup>106</sup>. The fact that people see cellphones as a very personal technology makes the sheer amount of time, they spend on them much more intriguing for marketers<sup>107</sup>.

Depending on their particular interests, individuals may also communicate with their peer groups through a variety of instant messaging applications, preferred social networks, or other platforms. In the age of smartphones, many aspects of people's life were profoundly affected, including employment, personal relationships, and media consumption. As video-on-demand and broadband Internet emancipated viewers from the constraints of television scheduling, cellphones now allow them to access media at any time and from any location they want<sup>108</sup> (Kallier, 2017).

Traditional media such as television, radio, and newspapers are seeing a steady decline in daily use; in 2014, consumers in 26 of the 32 nations studied already spent more time online than they did with traditional media<sup>109</sup> (Constantinides,

2014). Even while data show that media consumption has shifted, it is surprising that advertising expenditure has not followed suit. Only 4% of overall ad expenditure goes toward mobile advertising despite the fact that mobile media usage accounts for 20% of total media consumption. Due to a lack of targeting options in conventional media, mobile advertising may be delivered more precisely owing to unique device identifiers like Android's Advertising Identifier or Apple AD ID, which can be used to send advertising to particular devices<sup>110</sup>.

Because of new targeting options that make mobile advertising more appealing for marketers, advertisers are anticipated to change their budgets to line with the prominence of the medium. Smartphones are also commonly utilized when traveling, as shown by the data. According to studies, more than 40% of mobile search inquiries contain a local connection. If people are willing to accept location-based advertising and see it as beneficial rather than invasive, it may be a lucrative industry<sup>111</sup>.

Location-aware advertising is expected to be an important success factor for retailers in the near future, and has the potential to generate significant revenues for service providers, wireless carriers, application developers, and integrator. This is why several authors stress that location-aware advertising will be a critical success factor for retailers in the near future<sup>112</sup>.

Though e-commerce is on the increase, in Western Europe conventional stationary retail still accounted for 90.5% of total retail sales of products, which makes it appealing for marketers to approach customers immediately at the point of sale<sup>113114</sup> (Yakup,2012). For marketers, it's a goal to enhance the conventional buying experience by establishing a connection between online and physical purchasing. Beacon technology may connect the internet and offline worlds by providing interior location monitoring, but standard, satellite or cell-ID based systems for location-based advertising may be restricted inside. Apple Inc. introduced the iBeacon standard in 2013 for iOS devices with iOS 7 or higher and Android devices running version 4.3 or higher, which allows developers to easily implement this technology<sup>115</sup>.

Customers may be contacted at any time and from any location using this technology, allowing marketers to target their messages to the specific person they're hoping to reach. Direct engagement with customers is also possible via location-based advertising (LBA), which eliminates time and geographical restrictions. In the future, a consumer culture is expected to emerge that will dictate the conditions under which most consumers are willing to share their data with businesses<sup>116</sup>.

Advertising that is geographically targeted to a user's precise location has the potential to be seen as beneficial by LBA users. However, there is a chance that marketers may intrude on the privacy of individuals and make them feel uncomfortable. When it comes to using data for marketing purposes, consumers must see a value for themselves and feel comfortable and open about the use of their personal information, while the company that wants to utilize data marketing must provide an environment of safety and openness<sup>117</sup>.

## 6.2 Literature Review from a Marketing View

One billion individuals have smartphones in 2012. There are now 1.6 billion smartphone users worldwide, and this number will likely reach two billion by the end of 2015 or the beginning of 2016. Smartphone use is anticipated to rise by 15% annually by 2018, even if the pace of increase slows<sup>118</sup>. (Belk, 2017) People's habits have changed dramatically as a result of the widespread use of cellphones. A whopping 61% of German smartphone users say they use the Internet on the fly every day. Smartphones are now more common than any other electronic item, and people's attachment to them is more intimate than that of any other<sup>119</sup> (Halvorsen, 2013).

Smartphones are used for a wide range of activities, including communication, entertainment, creativity, and usefulness, as well as making online transactions. People rely on their smartphones to help them make better decisions. To find out whether it's quicker to take the subway or the bus, or to compare costs between online and brick-and-mortar businesses, they utilize navigation tools like Google Maps or Waze. The average daily time spent on a smartphone is 2 hours and 26 minutes, according to a recent poll<sup>120</sup>.

Because it is viewed as personal and dependable, having an open line of contact with consumers for lengthy periods of time is attractive to both marketers and advertising agencies. Digital natives who are the consumers who grew up with the Internet, are more likely to switch their media channel up to 27 times every nonworking hour, according to research<sup>121</sup>. This is due to the fact that individuals are no longer concentrating their media consumption on a single medium, such as television or radio, but rather on their smartphones or tablets.

Research predicts that as more people switch exclusively to mobile devices, this impact will get stronger<sup>122</sup>. Marketers will likely move their advertising spending from conventional media to the mobile channel because of the growing relevance of mobile devices. Mobile advertising is expected to account for more than half of all new ad expenditure worldwide between 2014 and 2017. When people near a certain location view an ad, they are more likely to consider it relevant and helpful, making geo-targeted mobile advertising one of the most promising kinds of mobile advertising<sup>123</sup>.

In order to get the most bang for their marketing buck, organizations must develop ways to catch their target audience's attention via advertising. One of these kinds is location-aware advertising. Defining the words used in location-aware advertising can help us better understand this issue. "A collection of activities that allows firms to connect and engage with their audience in an engaging and relevant way over any mobile device or network" is how mobile marketing is defined in the business world. As a subset of mobile marketing, mobile advertising refers to the practice of targeting prospective consumers with advertisements that appear on their mobile devices.

Advertising on mobile devices may be defined as "any paid message delivered by mobile media with the purpose to affect the attitudes, intentions and behavior of people targeted by the commercial messaging," according to study<sup>124</sup>. Mobile advertising comprises banner advertising, in-app advertising, text message advertising, and many more types - one of which is location-aware advertising<sup>125</sup>. Until now, there has been no standard definition for location-aware advertising. But the fundamental feature of LAA is the use of consumer location and other variables to offer advertising that is relevant at the right time and in the right place for each individual customer. It is LAA's goal to build excitement and generate greater Click through Rates compared to the industry average, which is up to five times higher in contrast to mass advertising<sup>126</sup>. Marketing may be made more effective by using LAA in conjunction with big data analysis to learn more about prospective clients and their preferences.

The initiation in push and pull may be used to split location-aware advertising. It is termed pull advertising when a person actively searches for information such as the location of a nearby restaurant and gets an ad for a nearby restaurant on his or her smartphone in response.

According to Google's research, 88% of German smartphone users look for nearby information when they need it. 78 percent take action after seeing the search result - they call the shop or buy something. In combination with the possibilities of big data and strong algorithms, LAA becomes an extremely powerful tool<sup>127</sup>.

A smartphone's location-based data is more valuable than that of a desktop computer in this scenario because of the additional information it provides. It is possible to do information searches on a smartphone regardless of the time or location. Customers' search activity may be linked to their specific location and time, allowing us to make inferences about where and when they require certain information.

These results may be utilized to develop personalized user profiles that can be used to communicate with consumers in a personalized manner. Modern technologies like big data analysis enable marketers to not only construct profiles for groups of consumers, but for individual customers as well. Contextual, tailored advertising may be sent to the appropriate person at the right time and in the right place thanks to the linking and integration of information from many sources<sup>128</sup>. When a user enters a predetermined geolocation, he or she gets pushed with advertising, which is a kind of push-based location-based advertising, LAA.

When a smartphone's GPS coordinates are combined with digital geographic information, it is feasible to tell when the device enters or exits a specific region. For example, geofencing is already employed in security-related situations. To ensure that their automobiles are only used in one nation, car rental businesses connect their vehicles with GPS transmitters and designate the permissible driving region in their system. The firm is alerted whenever a vehicle departs the designated region. Similarly, security transport businesses utilize the same approach to plan their vehicles' itineraries in advance. The mechanism alerts the firm as soon as a truck deviates.

Marketers are more interested in people entering a certain area, such as the area within walking distance of a retail store, than customers leaving that region for the purposes of location aware advertising. Use GPS or cell tower triangulation to build up geo-fences that can track a smartphone's whereabouts. There are limitations, however, to these technical techniques when it comes to identifying cellphones inside of closed facilities. Wi-Fi, ultrasound, and Beacons are a few of the more inventive methods that may be utilized to locate cellphones inside of closed structures.<sup>129</sup>

### 6.3 Literature Review from a Technological View

The tracking of a smartphone may be accomplished using a variety of technical means. Following is a list of the most prevalent ones<sup>130</sup>.

#### 6.3.1 GPS

The Global Positioning System (GPS) is a satellite navigation system operated by the United States government that was launched in July 1995. 30 satellites are now circling the planet in a medium earth orbit at a height of around 20,200 kilometers, transmitting data on its location and time as they do so. Receiver stations can pick up the signal and establish their location in real time since the system is openly accessible by the United States government. To put it another way, a GPS satellite broadcasts a radio signal that includes its current location and time. Receiver devices like smartphones may then determine their own location independently of the satellite.

An estimate of the location is obtained by calculating the time it takes for the signal to travel from the satellite to the receiver. It becomes more accurate as the receiver gets closer to the satellites. At least three satellites' worth of data are required to compute an exact location on a flat map. To locate oneself in a three-dimensional space, you'll need the coordinates of at least four satellites. GPS is now precise to within a meter thanks to a variety of accuracy-enhancing devices. A drawback of GPS is its susceptibility to weather conditions, such as snow or wet leaves, and its inability to work within enclosed structures<sup>131</sup>.

#### 6.3.2 Cell ID

The location of a mobile phone may be determined using a mechanism that is not reliant on satellites. To determine a phone's location, cell tower triangulation utilizes the cell towers that the phone is currently connected to. Using a unique Cell ID, each base transceiver station ties a database to the transceiver's location data. The approximate location of a phone may be determined by determining which cell it is using, how strong the signal is, and how far away it is from other cells. When using a flat map, it is necessary to have at least three cell towers within the phone's range. As cell tower

density increases, so does the precision of this technology; in urban areas, where network cells are smaller and one transceiver may often span several kilometers, the system performs more accurately than in rural regions<sup>132</sup>.

### 6.3.3 WIFI

In open areas, a WLAN's range is typically 30 to 100 meters, but this decreases dramatically when the signal is confined inside a building's walls, which interfere with the signal. In order to use a WLAN connection to estimate the location of a smartphone, a smartphone must be within the WLAN's range. The intensity of the WLAN signal that the phone receives determines the accuracy; this is shown by the phone's received signal strength indicator (RSSI)<sup>133</sup>.

Wireless fingerprinting is a more accurate method of using Wi-Fi 1 for positioning. Using established profiles of locales, this approach determines which Wi-Fi signals are within range and how strong they are.<sup>134</sup> In order to use this approach, location fingerprints must first be set up, either by the user or by a service provider via collecting Wi-Fi location fingerprints. This method is accurate up to a few meters<sup>135</sup>.

### 6.3.4 Ultrasound

Shop kick, a customer loyalty firm, uses a less prevalent, but effective, strategy. They needed a system that could function within closed buildings and tell the difference between a user passing by a store and one entering it since their business model relies on paying customers for visiting certain partner businesses. Shop kick uses ultrasounds that can't pass through walls to reward just those customers who are really in the store. High-frequency ultrasounds may reach up to 46 meters within a shop, making them impossible for people to hear. It is possible to use a smartphone's built-in microphone to process the noises. The software can tell which shop a consumer is at based on the distinct noises that each location makes. It's a term used to describe devices capable of exchanging data through WLAN<sup>136</sup>.

### 6.3.5 Terrestrial Transmitters

Locata, a business based in Australia, has created a locating system based on the principles of GPS, but with fixed transmitters on buildings and cell towers. Positioning can be calculated nearly instantaneously and is precise to within a few millimeters because to the stronger signals emitted by the transmitters.

This technology can be used indoors because it has a signal that penetrates walls. Terrestrial transmitters are only helpful in locations where GPS coverage is weak or inside, although they may still be beneficial. Receiver devices that can pick up the signals and work with them are now only of interest to professional clients such as governmental entities or transportation corporations (about \$2,500 vs. \$5 for a conventional GPS receiver).<sup>137</sup>

### 6.3.6 Bluetooth Beacons

In the 1990s, the Bluetooth Special Interest Group<sup>3</sup> created the technical standards for short-range data transfer through radio communication, which is now an industry standard. A primary use case was to allow data to be exchanged between mobile devices and PCs without the need for wires. Since its inception, the Bluetooth standard has been continually improved to boost transmission speed and the maximum size of a packet. The most recent version of the Bluetooth Special Interest Group's core standard, 4.2, was approved on December 2nd, 2014.

Bluetooth Smart was introduced to the specification in April 2010 when Version 4.0 was published. It is also known as Bluetooth Low Energy (BLE) or Bluetooth LE (BLE) and restricts the range and speed of data transmission so that energy consumption levels may be reduced dramatically, compared to the previous standard. Consequently, the usage of Bluetooth Low Energy (BLE) is targeted towards long-lasting devices with less data to transfer (e.g. wearable devices). Manufacturers of Bluetooth-enabled devices are not required to include Bluetooth Smart in their products.

Therefore, Bluetooth Smart devices can't always interact with Bluetooth devices that use Bluetooth 4.0 because of this. The term "Bluetooth Smart-ready" refers to devices that can connect with each other using both the traditional Bluetooth standard and Bluetooth Smart. A Bluetooth transmitter and a Bluetooth Smart transmitter must be included in the device for this to work. A proprietary standard for indoor navigation developed by Apple Inc. in 2013 is called iBeacon, which is based on the BLE technology (Apple Inc., 2015). The technology's name stems from the fundamental concept of its operation. Similar to a lighthouse, a transmitter broadcasts a signal at regular intervals without knowing whether or not it is being received. Establishing an area around an item using this technology allows devices such as smartphones to identify when they enter or leave the territory and estimate the distance to the transmitter. This technology may be used for a variety of purposes.

This technology may be used in LBA to notify users when they reach a predefined region through their smartphone's home screen after an app has been loaded and permission to share their location data has been granted. Only the following data is sent via BLE, and it is arranged into a three-level hierarchy: One of the 16-byte UUIDs of Major and Minor both have two bytes each Using the Universally Unique Identifier (UUID), a collection of beacons might be referred to as a firm, for example. The next level is indicated by the major, which might be the site of a company's many retail outlets. As the Minor put it, "the lowest level" might distinguish the many sections in a single shop. Because the transmitter only provides the previously mentioned 13 alphanumeric values, an app installed on the smartphone is required to supply the necessary background logic in order to locate the device. Aside from what is already supplied, the smartphone utilizes the Received Signal Strength Indicator (RSSI) to estimate the proximity to the beacon as well as its accuracy. The proximity estimate is more accurate when there is a stronger signal.



There are four possible states of perceived proximity: immediately, close, distant, and unknown. This signifies that the phone is in close proximity to the broadcasting beacon. In Apple's technical documentation, the term "extremely near" is not defined in depth. While the state 'close,' which indicates a distance of one to three meters from the beacon, is described as 'nearby'. The status 'far' indicates that proximity estimation's precision is inadequate to give distance information.

However, this does not necessarily imply that the smartphone is distant from the beacon; rather, it suggests that proximity assessment is inaccurate, which might be due to a number of factors, such as a signal obstruction. An unknown status implies that either the device is unable to accurately establish its location to the beacon, or that the ranging process has just started. For example, if you want to know the location of your smartphone inside a two-dimensional space, you may use trilateration, which will not be covered in depth in this article. Trilateration relies on receiving signals from three separate beacons in order to establish the location of a smartphone. Additionally, four beacons in range are required to establish the location inside a three-dimensional room. A smartphone or other device may automatically pick up the signal from these beacons and compute its relative location if it has the appropriate software loaded. Another way to set off various sorts of contextual actions is via the usage of this method. Location tracking using Cell ID, GPS, and beacons all use the same triangulation principle, but beacons are the first to enable tracking inside of closed structures, which is a significant advance. Beacons, on the other hand, are designed for short-range position monitoring and operate just as well inside of buildings as they do outside of them<sup>138</sup>.

#### 6.4 Literature Review from a Psychological View

Location-based advertising has already been studied, and it has been found that factors such as entertainment, informativeness, irritation, privacy, credibility, personal relevance, incentives, subjective norms, and perceived behavioral control all play a role in a person's acceptance of this technology. In order to do acceptance study, it is required to examine the phrase "acceptance" more closely. Acceptance theory distinguishes between attitude and conduct based on the findings of the research.<sup>139</sup> (Bednarik, 2010) As a result, both the attitude toward and the conduct are included in acceptance. Several scholars have proposed theoretical models in the area of study on the adoption of new technology. Perceived behavioral control impacts behavioral intention whereas real behavioral control influences actual conduct, argues the theory of planned behavior (TPB)<sup>140</sup>.

### 7. Technology and Data in Location Based Marketing

#### 7.1 Navigation Based on Location

Organizations are just beginning to experiment with location-based services and advertising. Because of this, there is a lack of empirical research on the subject. LBS and LBA's impacts are now being examined in the present theoretical framework, which hopes to make predictions about what will happen in terms of the experiment and survey. Consulting studies on mobile marketing and components of LBS/LBA such as coupons and other kinds of direct promotion were used to conduct this investigation<sup>141</sup>.

#### 7.2 Information Influence

An organization's clients and target audience are likely to be gathered in great detail. Internet purchasing has made this information very important, particularly when a connection can be created between the online and physical customer. Data is often equated with power in the minds of business leaders. It's fairly uncommon for corporations to track the purchase habits of their customers online without their knowledge. According to LBS and LBA, a consumer's present location is used to target advertisements. In order to provide this service, the customer must consent to the organization's use of his or her personal information. For LBS and LBA to succeed, the customer must be ready to give up his or her location in order to reap the advantages.

To be able to provide customized and reliable marketing information, the company must first gather this information<sup>142</sup>. There may be a link between various types of personal information and customer purchase patterns when it comes to direct marketing, according to a study conducted.<sup>143</sup> Customers' willingness to trade personal information for shopping advantages was also evaluated using the trade-off approach. They discovered that consumers are more likely to give personal information if they believe they have some kind of control over the information they provide.

When it comes to data collection, LBS is considered a self-regulatory method as users decide what they will and will not reveal. When it comes to the sort of information the organization is looking for, consumers' concerns and readiness to provide up personal data varies substantially. Personal data, such as names, addresses, demographic traits, and purchase histories, are believed to be the most important issues for consumers. Because of this, the purpose of this question must be obvious. Five forms of personal information are most typically sought by organizations<sup>144</sup> (Tyagi, 2004). Demographic information, likes and preferences, media consumption patterns, as well as identifying information such as name, address, and phone numbers for example, in addition to financial information such as salary, bank account balance. Consumers were found to be more eager to offer demographic and lifestyle data to marketers than financial or personal identifying data, according to the findings of the research.

Research on innovation adoption indicated that a person's attributes have a role in whether or not they accept an idea. People who are older are less likely to be inventive, for example. According to the study, males have a greater level

of personal innovation and a more favorable attitude toward results. Compared to males, women have a more analytical approach to research<sup>145</sup>.

In addition, female participants in the research were more concerned about the risks and downsides than male ones. It follows that males are more likely to employ mobile marketing than women, according to this survey. Finally, persons with a greater level of education are more likely to analyze results, and it is anticipated that those with a higher level of education are more likely to feel the good effects of LBS innovation.

### 7.3 Technology Acceptance Model Tam 1989

The Technology Acceptance Model provides two characteristics that seem to have a substantial impact on system usage to explain why individuals embrace or reject information technology. Perceived usefulness refers to a person's faith in a system's capacity to improve his or her work performance. Perceived ease of use refers to a person's perception of how much time and effort it takes to utilize a system. Perceived ease of use affects the viewed utility of a system to some degree, since a system that is difficult to use is perceived as less value, while both characteristics impact the intention to use it<sup>146</sup>.

### 7.4 Task-Technology Fit Adoption Model Ttf

Task-Technology fit (TTF) is defined as "the extent to which a technology aids a person in accomplishing his or her portfolio of duties".<sup>147</sup> It's just the user's judgment of the fit between the technology's capabilities and their wants that matters. Task, technology and user are all aspects that influence whether a person views a task as good or bad when it comes to the usage of this technology. As a result, the choice to utilize or not use a system is impacted by all three criteria. Consensus Theory of Technology Acceptance and Use University of Toronto at Urbana-Champaign. Using eight well-known models from the area of technology acceptance study.<sup>148</sup> Using the original data, as well as data from two additional investigations, the new model was shown to outperform the old models. A total of four major elements are included in the model to describe why users want to utilize the system. Performance expectations, effort expectations, and social influence are three of the 16 factors that are thought to have a direct effect on behavioral intention. Facilitating circumstances are thought to have a direct impact on the actual use of the product. Through the behavioral intention, the first three factors indirectly influence the user's use of the product.

### 7.5 Relation between Marketing, Technology and Psychology

All three of the above-mentioned areas have to be thoroughly researched before to the actual examination. The purpose of this study is to see whether the LBA technology utilized has an effect on the acceptability of users. A varied degree of precision may be achieved depending on the technology utilized for location tracking. Beacons, as opposed to GPS, which can only track within a few meters of an object and only in open air, provide far more precise location data even when an object is enclosed in a structure.

Advertisements that use this degree of precision are able to connect with their target audiences on a more intimate level. Because of this, the method in which various technologies interpret LBA is not always the same. By looking at user approval of both LBA in general and LBA using Beacon technology, the accuracy element will be addressed in this study. Because previous studies solely looked at the aforementioned psychological impacting elements, technological advancements provide a fresh viewpoint to the field's ongoing investigation. It is important from a marketing viewpoint to get insights into if and how the accuracy factor, dictated by the technology utilized, impacts user acceptability, so that future ads may be adjusted to use the technology with which consumers are most comfortable<sup>149</sup>.

## 8. Discussions

The paper proceeds to discuss the results obtained from the study concerning the two hypotheses, followed by a critical discussion about the acceptance or rejection of the null hypotheses based on related literature.

*Consumers' privacy concerns negatively impact their willingness to engage with location-based advertising (LBA).*

The findings from the systematic review also illustrate quite clearly that there is a significant correlation between the concerns of privacy and consumers' engagement with location-based advertising. Other related works, such as Gutiérrez et al. (2019) and Zhou (2017), specifically focus on the risk of privacy loss in influencing consumers' behavior within location-based advertising contexts. Consumers exercise caution when they perceive a lack of transparency or control over the use of their location data. Evidence supports their concerns, as privacy concerns do indeed hinder consumers from actively participating in location-based advertising. The result is subsequently consonant with the Privacy Calculus Theory, assuming that an individual weighs the perceived benefit of location-based marketing against the privacy risks.

Since this would imply that privacy concerns are strongly linked to consumer reluctance, any intervention of LBA would refute the null hypothesis that privacy concerns have no significant influence on the engagement with LBA. The result of this study again points to the conclusion that for improving consumer trust in and acceptance of LBA, privacy-related issues have to be addressed.

*Consumers' privacy concerns do not have a significant impact on their willingness to engage with location-based advertising (LBA).*

Another hypothesis was tested in whether personalization in LBA can overcome the concerns about privacy and drive user activity. The results confirm that the variables involved are related in some sort of nuanced relationship; indeed, personalization is a powerful 'carrot' attracting consumers, according to Schade et al. (2018); however, in cases where privacy-related notes are not taken into consideration, it loses much of its strength. These findings revealed that although consumers favor personalized advertising, they still remain very skeptical regarding divulging location information, especially when they are not well informed about what exactly is happening to their information (Zhou, 2017). This means that personalization per se is not sufficient to overcome the negative effects of privacy concerns. However, once businesses' transparency creates transparent data control options for consumers, they are more likely to engage with personalized LBA. Thus, the null hypothesis  $H_0$ —that increased personalization does not result in higher consumer engagement despite privacy concerns—is partially rejected; customization does increase engagement but only in the presence of enhanced privacy features.

## 9. Implications of Findings

The findings of this study provide important lessons to be learned from the current debate over personalization and privacy balance in LBA. As Ryu (2023) puts it, consumers are more likely to yield their privacy in return for benefits if the benefit of personalization outweighs the risks associated with privacy loss. However, this study further asserts the importance of proactively addressing privacy concerns if maximum engagement is to be attained. In fact, LBA should be leveraged with transparency, data security, and user control at the front and center of marketers' concerns. These findings also extend the Privacy Calculus Theory by showing personalization provides added value but does not compensate for the loss of privacy. Based on these findings, the best outcomes for LBA strategies will come from offering personalization while actively addressing privacy issues.

## 10. Relevance to Research Objectives

They were both closely related to the purposes of the study, which aimed to analyze the moderating roles of privacy concerns and personalization in LBA adoption. The nature of the results, wherein one hypothesis was accepted and the other partly rejected, underlines the complexity of decision-making by consumers in LBA contexts. These findings fill a gap in the literature; hence, they give a more delicate understanding of how the intersection of privacy concerns and personalization influences consumer behavior.

## 11. Future Directions for Research

While this research provides key knowledge, at the same time, it points out avenues through which further research can proceed. Further studies may delve into the balance between personalization and privacy concerns impinged by demographic factors, such as age and cultural differences. In addition, research into the impact of emerging technologies, such as blockchain, on heightening consumer confidence in LBA will be able to provide significant new inputs to this field.

## 12. Contribution to the Literature

It represents a contribution to the literature on LBA, informed by an improved privacy calculus theory and technology acceptance model. It evidenced that even if personalization increases user engagement, it cannot be utilized as a direct offset to privacy concerns unless transparency in data use is provided. This intuition underlines the most important fact that customer trust-pleting privacy measures form the basis for LBA adoption. The study further underlines that a balanced approach, one that can integrate personalization well with strong privacy protocols, shall add considerable depth to our understanding of consumer behavior in digital marketing contexts.

## 13. Limitations

The study, being a systematic review, has the inherent limitation of having to use secondary data only; these may not update in real-time consumers' views and opinions on LBA. Secondly, most of the studies focused on Western and urban settings, thereby limiting their generalizability across different cultures and regions. Future research could also be done by collecting primary data from other cross-cultural analyses. One can also explore emergent technologies like blockchain for conducting an exploratory analysis on how it can help solve privacy concerns and build trust in LBA.

## Author Contributions

The Article was written by Mohammad Hazimeh with Ahmad Ashaal assisting with some additions, and references as well as reviewing and advising on the

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