

## Shopping Analytics: Exploring the contemporary facets of the shopping mall

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**Abstract**—The mall retail culture is pivotal in developing economies such as India, it would be challenging to ignore the factors which impel achieving success of the retailer. This study carried out the ambiance of the urban conglomerate of Pune's mall culture. Quantitative research is adopted to comprehend the latent variable that can be embodied in predictive analytics for better decision-making. A study was done to determine the mall location characteristics that contributed and how they affected store success. The major goal is to comprehend the variables that affect mall location for retailer success, particularly when using the idea of predictive analytics in the modern retail environment. The management of retailer profit/income achievement & the mall location factors are discussed. Identified the elements that are thought to fit into the analytical component of the influence of the retailer on consumer perceptions and behavior. The recent study on urban retail mall junction makes extensive use of analytics. It is vital to consider the numerous dynamics which may enhance the effectiveness the of location strategy that could be adopted.

**Key Words**—Retailer, Location Factor of Mall, Predictive Analytics, Customer preference, Decision Making.

### I. INTRODUCTION

There has been substantial research done in investigating the reasons for retailer's success and impact of retail presence in mall, with store environment especially Indian customers (Hayden, Lee, McMahon, & Pereira, 2002)<sup>[1]</sup>, price and brand (Graff, 2006<sup>[2]</sup>; Hayden et al., 2002<sup>[3]</sup>; Vance and Scott, 1994<sup>[4]</sup>, culture (Lichtenstein, 2010<sup>[5]</sup>; Tong and Tong, 2006)<sup>[6]</sup>, as well as technology (Basker, 2007)<sup>[7]</sup>. Because the location is well accepted as the primary key to retail success (Litz & Rajaguru, 2008)<sup>[8]</sup>, some of the researchers paid more attention to examining the locational strategies of retailers.

Biswas (2008)<sup>[9]</sup> has investigated factors such as the demographic characteristics of the population, income of the population, and market potential of the area, to predict the success of the location of the retailer. The majority of researchers have concentrated on the macro aspect of the retail location, and only a few investigations have been conducted at the micro level. This paper intends to shed light on factors influencing mall location as well as retailer placement within combined malls.

Edward J Fox (2007)<sup>[10]</sup> estimated models of consumer spending at the retailers based on two magnitudes of retail location: (i) proximity to consumers, i.e., travel times, and (ii) proximity to other stores, i.e., agglomeration.

### II. LITERATURE REVIEW

Malls can now be called the hub of entertainment, from movie watching to gaming to shopping, you name it and all of it is available in malls nowadays. Customers are drawn to shopping centers that offer them locational advantages. It is among the most crucial aspects of successful mall management. Monika Gupta et al (2019)<sup>[11]</sup> explain very clearly the use of analytics and use of tools like clustering which would ultimately help the mall owners and the shop owners in a particular mall but doesn't point out the use of analytics in the locational strategy of the mall which would in turn attract the customers.

Arpita Khare<sup>[12]</sup> talks about the shopping malls' locational benefits. It talks about how small towns in India can be the hotspots of mall locations. It also clearly defines that it's not important that the metropolitan cities can be the main area for opening of malls in India. Also, mall owners would likely prefer their malls to be in areas on the outskirts of the cities nowadays due to the population increase and increase in population density in the cities. This study greatly contributes to our understanding of how a mall's location affects its success.

An important factor in a mall's success is its location. Locational success also depends upon the economic hubs of the country. These economic hubs are the areas where malls can locate themselves and earn high profits. To learn how a

specific site works for their mall, malls can employ analytics and its many tools. Locational factors also have a tendency to depend upon the income levels of a particular locality. But one of the main locational strategies that malls have to look into is the issue of enough parking space. Customers prefer going to malls that have enough parking space rather than the opposite happening. So, it becomes necessary that malls are built in a way that helps in the containment of pollution in an area as well as making sure of not resulting in any traffic relating incidents because of parking issues. The study done on this matter by El Samena et al (2017) clearly and very specifically highlights the fact that how parking space is a very must for malls and that the mall's location generally depends upon the parking space it can provide for its customers.<sup>[13]</sup>

Malls should be established in a place where there can be a good scope for the shoppers increasing as well as footfall of the consumers. The mall owners must look at and analyze the situation and then determine the action plan for building the malls in a particular situation. The analyses can be done by interpreting and checking the various variables attached to the demography of the population of a particular area. The main aim should be to analyze the situation properly and accurately through the use of analytics and its tools. The mall owners should look for how the area demographics work for their ultimate plan and hence analyze it with analytical tools. The study conducted by Prof. N.H. Mullick (2014)[14] discusses all of these requirements for the construction of a mall. It discusses how creativity is essential for success and how analytics is one of the creative ways to conduct the necessary analyses. Before making a choice, mall owners and developers should consider the city's population density and other factors.

The major factor in a mall's ability to achieve its goal of making sizable profits is the response it receives from its patrons. The footfall of customers determines how well the mall is running. The footfall according to many assumptions and opinions depends upon the income levels of the consumers in a particular city or state or take for instance a district also. The foot traffic does rely on income level and is a major consideration when deciding whether to build a mall in a specific neighborhood or location. But it isn't just the one factor that is the most important. The financial strength can be looked into but not without the use of analytics. Analytics would help us analyze the potential customers. But also, the mall owners need to know about the demographics of the area. Analytics would help in this and clustering and classification tools are some of those many tools which can be used to get the demographics of a particular area. Dr. S. Yaaminidevi (2013) makes it abundantly evident that the customer's income or financial situation is a crucial aspect in determining the typical target market or target area for a specific mall in terms of its location, but he doesn't fully employ the new dimension of analytics in his study. This is the major idea that this study may emphasize.[15]

From the above analysis and research gap, this research formulated Objectives below

- To analyze the factors that impact the locational preference of malls using predictive analytics
- To determine the influence of Posh areas on mall locations
- To classify malls on the basis of different locations preferred.

### III. METHODOLOGY

#### A. Research Design

This study's data comes from shopping centers in Pune, Maharashtra, India. Due to the intricacy of the goal, the mall data, and the local clients who frequent certain malls, simple random sampling was particularly used to select malls in Pune. The research mainly focuses on how analytics, a rapidly developing field, might be used to the mall management sector. Basically, the study focuses on how a mall's locational strategy, a very important component of mall management can be determined by the use of predictive analytics (using regression) and can be helpful in increasing the footfall of customers in a particular mall. The major goals of this study are to classify malls according to their preferred locations, examine the effect of predictive analytics on mall locational preferences, and ascertain the impact of affluent regions on mall locations. I've used ANOVA and Wilcoxon Test for data analysis.

#### B. Data Collection Method

In this research, the data collection technique used is a stratified Sampling technique to collect the required data and conduct the research. Multiple questionnaires were prepared to collect the data. The sample size of the research conducted was 100 respondents comprising respondents from 50 shops in 4 malls in Pune, Maharashtra. The method used for collecting the

data was a simple random sampling Method. The 4 malls which were taken for the research purpose were Phoenix Market City, Seasons Mall, Westend Mall, and City Mall.

### C. Statistical Analysis

#### Hypothesis 1

H<sub>0</sub>: there is no significant impact on the income level of retail shops with the location of the mall

H<sub>a</sub>: there is a significant impact on the income level of retail shops with the location of the mall

#### Hypothesis 2

H<sub>0</sub>: there is no significant influence on the 'success of the shop' and by the 'factors of the location of the mall'

H<sub>a</sub>: there is a significant influence on the 'success of shop' and by the 'factors of the location of the mall'

Analytical Tools:

Alternatively

H<sub>0</sub> :  $\beta_1 = \beta_2 = \beta_3 = \beta_k = 0$  ,

H<sub>a</sub>: At least one  $\beta_i \neq 0$ ,  $i = 1, 2, k$

where  $\beta_i$  represents the population coefficient

The Y values you forecast from your multiple regression equation are not any closer to the actual Y values than you would anticipate by chance, which means there is no association between the X variables and the Y variable.

A notation will be as below

H<sub>0</sub>:  $B_1 = 0$

H<sub>a</sub>:  $B_1 \neq 0$ , where  $Y = B_0 + B_1X$

H<sub>0</sub>: The slope of the regression line is equal to zero.

H<sub>a</sub>: The slope of the regression line is not equal to zero.

The above hypothesis, states that there exists a relationship which is a regression relation with location factors on the success of the shop. Since the above statement establishes a 'regression', in other terms we need to use multi-linear regression

In other terms, H<sub>0</sub>, the intercept is not statistically significant in the determination of the success of the shop.

TABLE I MODEL SUMMARY (VAR0001)

R		R Square	Adjusted R Square	Std. The error of the Estimate
	0.37	0.14	0.11	1.21

Table II: ANOVA (VAR0001)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	22.64	3	7.55	5.16	0.002
Residual	140.36	96	1.46		
Total	163	99			

TABLE III: COEFFICIENTS (VAR0001)

	Unstandardized Coefficients	Standardized Coefficients	Mean Square	t	Sig.
	B	Std. Error	Beta		
Reason for the success of the shop on the location of the mall	0.93	.032	0	2.91	0.005
percentage of success on mall location	0.16	0.07	0.2	2.08	0.04
advertisement as shop location	0.08	0.05	0.14	1.46	0.146
Shop location sales on festivals	0.17	0.08	0.21	2.18	0.032

The above test of multiple linear regression, substantiate with  $p\text{-value} < 0.002$ , and excluding variable 3 all factors prompt in rejecting the  $H_0$  hypothesis and accepting the alternative hypothesis. Therefore we conclude that there exists a significant relationship between the location factor successes of the shop.

Does opening a mall in the Porsche area increase the revenue of the shop?

Hypothesis :1

$H_0$ : there is no significant impact on the income level of retail shops with the location of the mall

$H_a$ : there is a significant impact on the income level of retail shops with the location of the mall.

Since the instrument is to collect the feedback is in the nature of 'categorical scale data', we are using the Wilcoxon test, instead of the T-test to check the statistical significance of the impact of income on the location of the retail store.

TABLE IV: WILCOXON TEST

Wilcoxon Test (alternative to one sample t-test)	
Given median:	4
Sample median:	4
W :	2180.5
Normal appr. z :	3.6087
p (same median):	0.00030775
Exact test not executed (N>12)	
Medians are significantly different	

With the above test statistic, we can notice that the P value is 0.000308 which is  $< 0.05$ , therefore we reject the Null Hypothesis and accept the alternative hypothesis 'there is no significant relationship between the income level of retail shop with the location of the mall', that there is a significant impact of location on the income of the retail store.

#### IV. RESULTS AND DISCUSSIONS

Preference for Malls in the city or outskirts of an area and preference for parking space in a mall

Knowing exactly where to build the mall is crucial. They favored the construction of malls within cities as opposed to those on the fringes of cities. The primary cause might be the way that people live today. They like malls to be located in cities so they can visit malls close by and so save their valuable travel time. This has a significant impact on how a mall is constructed. As we all know, the respondents, mostly wanted a huge parking area in malls and in cities, especially in metropolitan areas very congested, and due to this factor parking is a very big concern in the city area. In order to maximize foot traffic in the malls, mall developers must therefore use their abilities in a highly effective way to design a mall with enough parking space in the city area.

Complaints regarding the locational strategy of malls and what actually analytics means

Customers are the true kings in every industry, including shopping malls. The main factor that determines whether a mall is successful is the number of consumers it draws in. When asked if they ever get complaints about the mall's location, the answers said no. The majority of them reacted that they hardly ever or never got any complaints on the aforementioned category. This is due to the fact that the malls we used as examples had adequate parking, which greatly benefited the patrons given that the majority of these malls are situated in urban areas. Most of the shop owners used no analytics at all, which is a worry. Nearly 60% of the overall respondents didn't use any kind of analytics in their businesses, which amply demonstrates that analytics is still not widely known among Indians as a whole. When asked if they knew what analytics was, most of the consumers said they didn't, and only a small percentage said they knew a little bit about it. This suggests that the majority of people are unaware of what analytics actually are. Therefore, analytics should be the main technique or tool to be used by mall owners to succeed in the business or we can say the retail business.

Visits to malls on day wise basis and shops which are most visited in a mall

As was very well mentioned above, going to malls is a terrific method for people to relax, and they are especially popular around the holidays. When asked these questions, the respondents stated that they typically went to malls on the weekends and on Sundays. Weekends are the most popular times for people to visit malls, which is a point that may be considered while developing a mall. If malls employ analytics in their work, this parameter can be quite helpful. They can benefit from using analytics in this regard. Additionally, the majority of the respondents who were asked if their store was the busiest at a specific mall said they weren't really sure but thought it might be. They made this statement because more store owners in the mall, which saw more consumer traffic, were able to say that their establishments were definitely the most frequented.

Determination of malls being in one area or scattered and the goal of visiting malls

Malls are now to be found everywhere, from big cities and towns to now even in smaller cities and towns. The biggest question thus for a person is to choose which mall to go to. The decision depends upon various parameters. It could be dependent upon the size of the mall or the locational factor, etc. When the respondents were inquired as to where they would want all the malls in a particular city to be, most of them weren't sure whether one area is fine or scattered fine. Both have their pros and cons. Malls in one area could mean a lot of traffic problems for the citizens and scattered could mean a lot of time wastage for people who love to go and explore different malls. So, the decision is mostly upon the mall owners whether they want to open malls in one area with the rival and go for the tough and cutthroat competition or go for a scattered approach and a less than cutthroat competition. In addition, when asked why they went to malls, the majority of the respondents said they did so for a variety of reasons, including shopping, dining, having fun, spending time with family, and playing games.

The success of shops based on the mall's location and choice of branches of shops in malls with favored locations

A shop owner would open one of its branches in a mall only if it would help him/her earn a good amount of profit. The number of shoppers entering the mall would likewise influence the shop in question's ability to draw in more consumers, to some extent. The stores there would experience losses if customers didn't visit a certain mall. When asked this question, the majority of the shop owners weren't sure if their store's success depended on the location of the mall or not, while a few also claimed that it did. Thus, it is evident from this that location plays a crucial role. When the shop owners were asked if their branch in a certain mall is more frequented than the other branch, the majority of them said that both branches had an equal amount of traffic from consumers and that they weren't sure which branch saw more foot traffic. This might be as a result of their unwillingness to disclose which of their branches has the most clients. But it's become evident from this conversation that location is a key component of the mall-making strategy.

## **V. IMPLICATIONS AND FINDINGS**

This study reveals some new information about how combining analytics with a mall's locational strategy can create a new look dimension that can ultimately help mall owners make large profits and strengthen India's economy. Malls are also a crucial link in India's retail chain. Following are a few results from this study:

- Shop owners in malls claim that most customers want malls to be located in urban areas rather than on the outskirts, yet when customers were asked preferred malls to be farther away from their neighborhoods.

- Customers prefer more parking space in malls and would prefer malls with more parking space rather than a mall which is good from the inside but doesn't have any parking space or less parking space.
- Many businesses provide unique services to their clients occasionally during holidays or other special occasions, but not on a regular basis. As we know, India is a land of festivals, so every shop owner decides to give certain special offers or schemes to its customers. Be it any discount offer or other offers, special offers are provided to customers in malls as well by shop owners.
- Customers typically prefer not to express their dissatisfaction with the mall's location to the owners of the mall in general. They rarely or never tell the shop owners because of this. However, if a mall's location is unfavorable to the public, fewer people will visit it, which will reduce the amount of money mall retailers make from their stores.
- Analytics is one of the most significant up-and-coming fields, but when questioned if they had heard of the phrase or what it meant, the majority of store owners and customers said they had not. This is a crucial discovery since the brand-new field would not successfully yield findings if it were not widely accepted.
- A mall's location also affects the success of a store within it since, on average, a mall that is located in an area that is well-known to its patrons would have more success.
- Most businesses in different malls didn't select them based on the convenience of their locations. The choice is not just based on the locational strategy.
- In Accordance with the shop owners surveyed, the opening of a mall in a Porsche neighborhood will boost mall sales. But it's clear that this is not a hard assertion
- Success of a mall is mostly determined by its location rather than by the mall's own brand.

## VI. CONCLUSION AND FUTURE DIRECTIONS

With the data in place, it is possible to draw the conclusion that customers prefer visiting malls for leisure activities, which might include shopping, dining, having fun with the family, etc. Customers frequently choose to visit shopping centers with ample parking so they won't have to spend time and energy parking their cars or worry about doing so in a no-parking zone. The next point that can be deduced is that mall owners need to be careful about where they open their mall. Location is a vital factor in determining how many people visit the mall's stores. As a result, the analysts use predictive analytics as a key analytical tool and choose preferable locations for mall construction.

Additionally, as analytics is a much larger field than it is defined in this paper, there is room for additional research on the linked issue. A considerably wider range of other analytical tools can be used in mall management. Mall management includes a variety of additional tactics that might be researched in addition to locational strategy.

## REFERENCES

- [1] Uchil, R., Thakkar, N. S., & Venugopal, "Drifting Through Diversity: A Study Of Buying Behavior Of Indian Consumers in Retail Stores", *International Journal of Management Research and Business Strategy*, Vol. 4(1), pp. 120-133, 2015.
- [2] Thomas O. Graff, "Unequal Competition Among Chains of Supercenters: Kmart, Target, and Wal-Mart", *The Professional Geographer*, vol. 58:1, pp. 54-64, 2006.
- [3] Hayden, Patrick, et al., "Wal-Mart: Staying on Top of the Fortune 500", Washington DC: The Graduate School of Political Management, George Washington University, 2002.
- [4] Li, Y., & Liu, L., "Assessing the impact of retail location on store performance: A comparison of Wal-Mart and Kmart stores in Cincinnati", *Applied Geography*, vol. 32(2), pp. 591-600, 2012.
- [5] Lichtenstein, N., "In the age of Wal-Mart: precarious work and authoritarian management in the global supply chain", *Globalization and precarious forms of production and employment. Challenges for workers and unions*, pp. 23-40, 2010.
- [6] Tong, X., "Creation of brand equity in the Chinese clothing market", (Doctoral dissertation, University of Missouri--Columbia), 2006.
- [7] Basker, E., "The causes and consequences of Wal-Mart's growth", *Journal of Economic Perspectives*, vol. 21(3), pp. 177-198, 2007.

- [8] Reginald A. Litz & Gulasekaran Rajaguru, "Does Small Store Location Matter? A Test of Three Classic Theories of Retail Location", *Journal of Small Business & Entrepreneurship*, vol. 21:4, pp. 477-492, 2008.
- [9] Kopalle, P., Biswas, D., Chintagunta, P. K., Fan, J., Pauwels, K., Ratchford, B. T., & Sills, J. A., "Retailer pricing and competitive effects", *Journal of Retailing*, vol. 85(1), pp. 56-70, 2009.
- [10] Fox, E. J., Postrel, S., & McLaughlin, A., "The impact of retail location on retailer revenues: An empirical investigation." Unpublished manuscript, Edwin L. Cox School of Business, Southern Methodist University, Dallas, TX, 2007.
- [11] Gupta, M., & Mittal, D. A., "Mall Shopper Clustering in Business Intelligence", *AIMA Journal of Management & Research*, vol. 6, pp. 3.
- [12] Khare, A., "Location and agglomeration factors predicting retailers' preference for Indian malls", *Journal of Marketing Analytics*, pp. 1-22, 2020.
- [13] ELSamen, A. A. A., & Hiyasat, R. I., "Beyond the random location of shopping malls: A GIS perspective in Amman, Jordan", *Journal of Retailing and Consumer Services*, vol. 34, pp. 30-37, 2017.
- [14] Mullick, P., "The success of shopping malls lies in the hands of mall developers: A study", *Indian Journal of Marketing*, vol. 43(6), pp. 40-46, 2014.
- [15] Yaaminidevi, S., "Study on consumer behavior towards shopping mall in Madurai city", *International Research Journal of Business and Management*, August 2013.
- [16] Anushree Tandon, "Managing Shopping Experience through Mall Attractiveness Dimensions An Experience of Indian Metro Cities", 2015.