Customer Perception Towards Push Notification Marketing Strategies Practiced By Companies

*Aalok Agashe**
*Dr Boopathy S***

ABSTRACT
The study revealed that a majority of people, irrespective of their age group, are unhappy with the frequency with which mobile applications send notifications daily. Often, users miss out on important notifications because they are buried under the pile of not-so-useful notifications. Moreover, the research found that the content used in push notifications needs to be appropriate and not offensive, as it can have a significant impact on user perception. It is important to note that while push notification marketing can be a powerful tool for businesses to engage with their customers, it needs to be used judiciously. Too many notifications can lead to user fatigue, resulting in users turning off push notifications or even uninstalling the application altogether. On the other hand, notifications that are not relevant or contain inappropriate content can leave a negative impression on the user. The study also found that different application categories send varying numbers of push notifications. For instance, social media applications tend to send the most number of notifications, followed by e-commerce and news applications. This finding can be useful for businesses to fine-tune their push notification strategy and ensure that they are sending the right messages to their customers at the right time. In conclusion, push notification marketing is a valuable tool for businesses to engage with their customers. However, it needs to be used judiciously, keeping in mind the preferences and perceptions of users of different age groups. This study highlights the importance of understanding user behavior and preferences while designing push notification marketing campaigns. By doing so, businesses can ensure that they are not only reaching out to their customers but also engaging with them in a meaningful way. With further research and analysis, it is possible to gain deeper insights into user perceptions and preferences, leading to more effective push notification marketing strategies.

Keywords: *Push notification marketing, User perception, Appropriate content, Application categories, User behavior*

INTRODUCTION

Push notification marketing has become a popular marketing strategy over the years due to its effectiveness in reaching customers on mobile or desktop devices. Push notifications are based on "push" technology, which enables companies to send brief messages to customers that can promote products, provide discounts, or announce new features. This approach has been successful because it can deliver attention-grabbing messages directly to users' home screens or notification centers, where they can be easily viewed and acted upon. One of the primary advantages of push notifications over traditional email marketing is their higher open rate. According to a study by Localytics, push notifications have a 90% open rate, while email marketing only has a 25% open rate. This indicates that push notifications are a more effective way of reaching customers and communicating important messages. To ensure the effectiveness of push notification marketing, companies must personalize their messages to make them more relevant to their target audience. Personalization can be achieved by using the user's name, location, or other relevant data. This creates a sense of familiarity and makes the message more likely to be read and acted upon. Timing is also a critical factor in the success of push

Aalok Agashe*, Student, School of Business Management, CHRIST (Deemed to be University, Bengaluru)
Dr Boopathy S **, Assistant Professor, School of Business Management, CHRIST (Deemed to be University, Bengaluru)

notification marketing. Notifications should be sent at the right time when the user is most likely to be receptive to the message. For instance, if a company promotes a lunch special, the notification should be sent during lunch hours. This increases the chances of the user taking action and making a purchase. Another important aspect of push notification marketing is A/B testing. This involves sending two versions of a message to a subset of users to determine which message is more effective. By analyzing the results, companies can optimize their messaging and targeting for better results. This approach helps companies refine their push notification marketing strategy and improve the ROI of their marketing efforts. However, it is essential to use push notifications sparingly to avoid overwhelming or annoying users. Companies should strike a balance between the frequency and relevance of notifications. Too many notifications can lead to users opting out or uninstalling the app, resulting in a loss of potential customers. Therefore, companies should ensure that their notifications benefit users and provide valuable information.

Problem Statement: To understand whether the push notification marketing strategies used by companies are liked or disliked by customers in reality and if they feel these notifications are large in number.

RESEARCH OBJECTIVES:

1. To understand the profile of customers who prefer Push Notification Marketing.
2. To analyze the customer perception towards push notification marketing strategies used by companies for promotion.
3. To determine the impact of push notification marketing on the buying behavior of the customers.
4. To identify the applications that make the most use of Push Notifications.

Scope of Research

The aim of this study is to find out the correlation between different age groups and how they perceive Push Notification Marketing strategies. It also aims to find out whether the customers feel the number of notifications has an impact on their buying behavior. This study also aims to find out whether the customers like the content of these notifications or if it is vague and offensive. Apart from this, this study aims to find out which application, in particular, sends the most number of notifications to customers and whether customers like it or not. The scope of this research is that while filling out the questionnaire, the customers can also get a better understanding of which application is sending them notifications, how many applications are there on the mobile phone, and how many of them are useless. This can help them make the necessary changes to their mobile phone system and settings by giving and denying certain permissions to some of the applications.

Hypothesis of Research

H_1: There is no significant difference in perception of push notification between age groups.

H_2: There is no significant correlation between the content of push notifications and the perception of customers.

H_3: There is no significant correlation between a number of notifications and the perception of customers.

Variables of the study

The variables in this study are as follows:

Variable 1: Age group: The respondents will be divided into 5 age groups; below 18, 18-30, 30-40, 45-60, and above 60. This will help in identifying which age groups are positively perceiving the notifications and which are negatively perceiving them.

Variable 2: Content of notifications: Many people see these notifications differently and have different opinions on them. Thus this variable will help to understand are these notifications have good content or vague content

Variable 3: Number of notifications: Not everyone receives the same number of notifications as everyone has a different set of applications installed on their mobile phones. Thus this variable will help us determine which application sends the most number of notifications and how many people are liking these many notifications and how many are not.

Variable 4: Perception of customers: This is the most important variable of all as it will be used to prove all the hypotheses and is what I am measuring in this research.

Instrument Design

In this research, I have used a 5-Point Likert Scale where all the questions in the questionnaire had only 5 options to choose from which made it better for scoring and analysis purposes. In scoring, a few questions were used for reverse scoring and some for regular scoring for a better analytical purpose.

Method of data collection

Data collection was done using Google Forms. Google Forms is a tool where a questionnaire can be circulated via a link and collect responses. A questionnaire was formed which covered the required topics for the analysis to be performed. Primary data: Structured questionnaire, secondary data: Journals, articles, previously published paper

Sample size and sampling technique

The total metro area population of Bengaluru is 13,608,000 and that of Pune is 6,975,000 which total comes down to 20,583,000. Size of Sample: 316. Sampling Technique: Snowball Sampling and Convenient Sampling. Selecting participants for a convenient sample entails choosing people who are open and reachable.

Statistical design

The aim of this study is to find out the correlation between different age groups and how they perceive Push Notification Marketing strategies. Thus the design of this study is a "Correlational Study". In this study, I aim to find the relationship between all age groups and how they perceive the reception of different notifications.

Analysis

Table 1- Cronbach Alpha Value

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha based on standardized items	Number of items
0.752	0.758	16

The table shows Cronbach's Alpha Value calculated to check the Reliability of the study. This is carried out only on the first 50 respondents to check if the research is reliable or not and to make any necessary changes if required.

Hypothesis 1: There is no significant difference in perception between the age group of customers towards push notifications.

Table 2- Descriptive Statistics of Age Groups

STATISTICS				
SR no	Age Group	Mean Score	Standard Deviation	Percentage
1	Below 18	55.5	9.289	16.73694
2	18-30	52.13	5.452	10.45847
3	30-45	52.93	7.725	14.59475
4	45-60	55.04	4.996	9.077035
5	Above 60	54.92	3.861	7.030226

A descriptive statistics test was carried out on each age group of respondents individually to get the mean of all age groups and the standard deviation of all age groups. When the standard deviations of all age groups were compared, it was found that the deviation was very large in all age groups. It ranged from 3.861 to 9.289.

Table 3- T-Test of all age groups

T Test			
SR no	Age Group	t value	p value
1	Below 18	16.899	<.001
2	18-30	101.205	<.001
3	30-45	43.872	<.001
4	40-60	131.279	<.001
5	Above 60	51.284	<.001

t value is equivalent to the number of standard deviations away from the mean of the distribution. The t-test value is considered to be of significance if it is greater than 1.96, here all the age groups have a significant t-value. The significance level is used for stating the generalizability of the results in the population. Here the p-value obtained is <.001 for all the age groups. The t-value obtained for all age groups is also inconsistent and it ranges from 16.899 to 131.279.

Table 4- Correlation between all age groups

Correlation	
Perception	0.082

The table above shows the results of the Correlation between all age groups. The master total (perception) should be between 0 to 1 but inclining more towards 1. Here the total is .082 which is less significant.

Table 5- Correlational Study between all age groups

Groups		V1	V2	V3	V4	V5
V1	Pearson Correlation	1	0.093	0.143	0.056	0.128
	N	16	16	16	16	16
V2	Pearson Correlation	0.093	1	.952**	.912**	.986**
	N	16	16	16	16	16
V3	Pearson Correlation	0.143	.952**	1	.962**	.985**
	N	16	16	16	16	16
V4	Pearson Correlation	0.056	.912**	.962**	1	.947**
	N	16	16	16	16	16
V5	Pearson Correlation	0.128	.986**	.985**	.947**	1
	N	16	16	16	16	16

This table indicates the correlational study between all age groups. Here,

V1 indicates: Age group of below 18
V2 indicates: Age group of above 60
V3 indicates: Age group from 30-45
V4 indicates: Age group from 18-30
V5 indicates: Age group from 45-60

The Pearson Correlation value ranges from -1 to 1 where a value near to -1 indicates negative correlation and a value near to 1 indicates positive correlation. A value close to 0 indicates a less/insignificant correlation between groups. Here the ** marked values are important as they are near to 1 and indicate a positive correlation.

When the standard deviations of all age groups were compared, it was found that the deviation was very large in all age groups. It ranged from 3.861 to 9.289. Hence we can say they are not significant. The t-value obtained for all age groups is also inconsistent and it ranges from 16.899 to 131.279. The Correlation value between V1 and all other age groups is not significant, which means the behavior is not the same and they perceive notifications in different ways than others.

Accepted Alternate hypothesis: There is a significant difference in perception between the age group of customers towards push notifications.

Hypothesis 2: There is no significance in the content of notifications received by the customers.

Hypothesis 3: There is no significance of the number of notifications received by the customers.
Table 6- Descriptive Statistics of content and number of notifications.

Statistics				
SR no	Group	Mean	Standard Deviation	Percentage
1	Content of notifications	20.87	3.518	16.85673
2	Number of notifications	31.97	3.436	10.74758

tification and a number of notifications. The mean score obtained for the content of notifications is 20.87 and the Standard Deviation is observed to be 3.518. The mean score obtained for the number of notifications is 31.97 and the Standard Deviation is observed to be 3.436.

Table 7- T-Test of content and number of notifications

T Test			
SR no	Group	t value	p value
1	Content of notifications	103.598	<.001
2	Number of notifications	164.374	<.001

the number of notifications is 164.374. The significance level is used for stating the generalizability of the results in population. Here the p value obtained in both, the content and number of notifications is <.001.

Table 8- Correlation of content and number of notifications

Correlation		
SR no	Group	Master Total
1	Content of notifications	0.835
2	Number of notifications	0.835

ifications related questions and number of notifications related questions separately. The master total should be between 0 to 1 but inclining more towards 1. Here the total is .835 in both cases which is more significant.

Hypothesis 2

Here, the correlation between the content of notification and perception of the customers was done and the value obtained was very significant (0.835).

The correlation between the content of notification and perception of the customers was done and the value obtained was very significant (0.835). Hence this hypothesis can be accepted and alternate hypothesis can be rejected

Accepted Null Hypothesis: There is no significance in the content of notifications received by the customers

Hypothesis 3

Here, the correlation between the number of notifications and perception of the customers was done and the value obtained was very significant (0.835).

The correlation between the number of notifications and perception of the customers was done and the value obtained was very significant (0.835). Hence this hypothesis can be accepted and alternate hypotheses can be rejected.

Accepted Null Hypothesis: There is no significance of the number of notifications received by the customers

INTERPRETATION

The purpose of this research is to find out how customers perceive the Push Notification Marketing strategies used by various applications. It is aimed at understanding how customers feel about these notifications, whether they are too repetitive, too full of content, etc.
The variables used in this research are as follows:

1. Age group: the respondents were divided into 5 different age groups which was used to identify how age group wise the perception of push notification changes

2. Content of the notifications: the content used by companies in the notifications can be perceived in different ways by customers hence it is used as a variable.

3. Number of notifications: many customers like receiving notifications while many do not, hence it is another variable in this study.

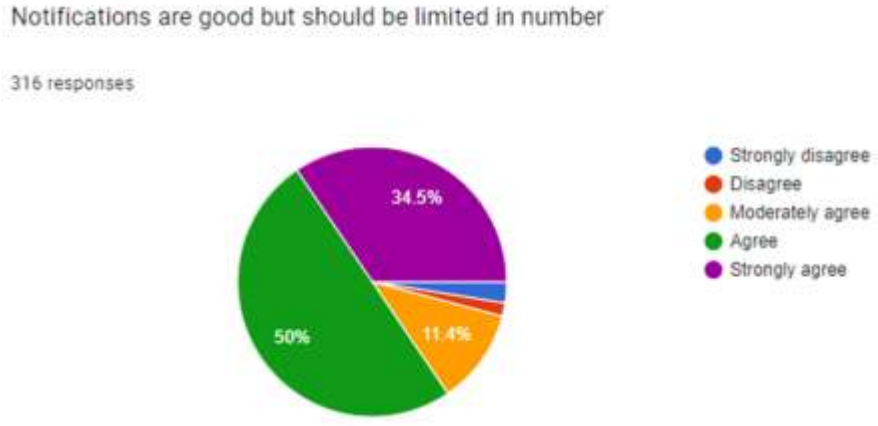
4. Perception of customers: the most important variable is how different customers perceive these notifications.

A questionnaire was circulated among the people of Pune and Bangalore using snowball and convenience sampling methods. A total of 316 responses were recorded in this questionnaire. Apart from that, there are many different reference articles, journals, and papers. Following are some results of the questionnaire.

Figure 1: Influence of notifications on buying behavior

The above pie chart mentions the percentage of people who end up purchasing/buying the product because of the push notification marketing strategies. This pie chart shows that more than 34% of people (108) never get influenced by these notifications and almost 39% of people (122) rarely end up buying these products. Only 4% of the people (13) end up buying the products and are highly influenced by the notifications.

Figur**e 2**- Response on limitation to number of notifications.

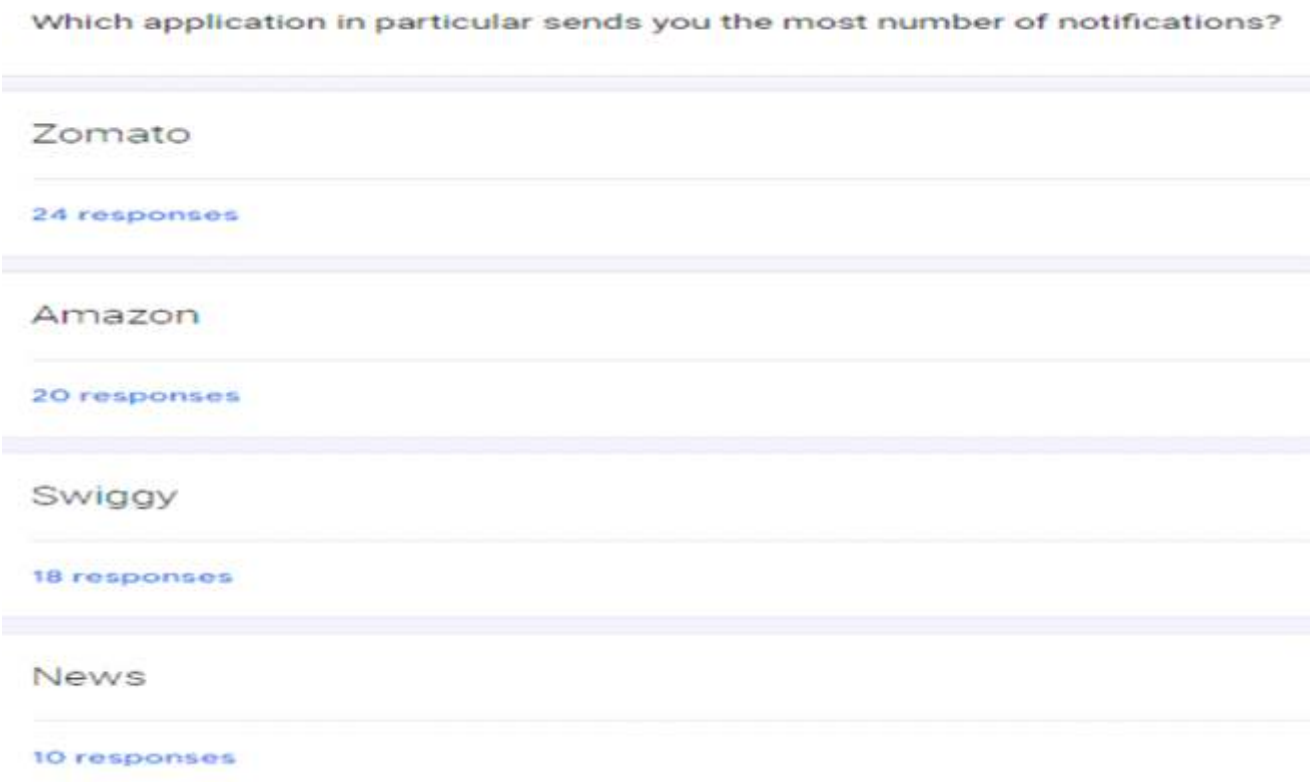


The pie chart mentions the responses given to the statement 'notifications are good but should be limited in number'. More than 84% of the respondents (267) agree and strongly agree with this statement and believe that notifications, if sent in limited numbers, are a good way of marketing.

Figure 3- Ranking of applications on the number of notifications they send.

The image above is the question on ranking done by respondents based on the number of notifications applications send to them. It is observed that News applications and Food delivery applications like Swiggy and Zomato send the most number of notifications according to 164 respondents (51.8%) as they are voted the most for 1st preference. Online shopping applications like Amazon and Myntra are selected by 116 respondents (36.7%) as the most popular among people for their 2nd preference. In 3rd preference, respondents have juggled between News, Food delivery, and online shopping applications as these categories of applications send the most notifications. In the 4th preference, people have chosen Health and Fitness tracking applications to send more notifications (52 respondents). Online payment applications like Gpay and Paytm have been chosen as 5th preference by 53 respondents (16.7%) and Ticket booking applications like Bookmyshow, Redbus, etc have been chosen as 6th preference by 93 respondents (29.4%).

Figure 4- Most notifications sent by an application



This image shows the most responses received on particular applications which send the most number of notifications. Zomato sends the most number of notifications according to 24 respondents and in line are Amazon (20 respondents), Swiggy (18 respondents) and News applications (10 respondents).

SUMMARY OF FINDINGS

This paragraph describes the methodology of a research study. The study starts with the formulation of objectives and hypotheses that were aligned with the aim and scope of the research. This means that the researchers had a clear idea of what they wanted to achieve with their study and what their research questions were. To gather data, the researchers used two sampling methods - convenience and snowball. A convenient sampling method involves selecting participants who are readily available and easy to access. Snowball

sampling, on the other hand, involves identifying initial participants and then asking them to refer other potential participants. The researchers received a total of 316 responses to their questionnaire. After collecting the data, the researchers scored the responses using regular and reverse scoring methods to obtain the total scores of each individual. Regular scoring assigns a higher score to a higher response, while reverse scoring assigns a higher score to a lower response. The researchers then conducted three statistical tests using SPSS software - descriptive statistics, T-Test, and correlation. Descriptive statistics were used to summarize the data and provide an overview of the sample. T-Test was used to compare the means of two groups, and correlation was used to examine the relationship between the two variables. Finally, the researchers used a few questions from the questionnaire to check if the study objectives were met. This implies that the researchers evaluated whether the data they collected were relevant to their research questions and helped them achieve their study objectives.

CONCLUSION

From the analysis and findings, we can conclude the following things from this research.

1. The respondents were 61% male and 39% female.
2. Nearly 61% of the people have less than 50 applications on their mobile phones.
3. The application category that sends the most number of notifications is food delivery applications like Swiggy and Zomato.
4. The application that sends the most number of notifications is Zomato according to most of the respondents.
5. Most of the respondents feel that the number of notifications is too much and that important messages are being missed because of them.
6. It is evident that respondents prefer less number of notifications but they should be better in quality and not the opposite.
7. There is a difference between how respondents of different age groups perceive these notifications.
8. The content and the number of notifications one receives matters a lot as it varies from person to person as to how they will perceive them.

From the interpretation, we can also understand that nearly 75% of people do not buy or rarely buy the products offered by companies that are marketing through push notification marketing. Almost 85% of the respondents agree/strongly agree with the statement 'notifications are good but should be limited in number'. People receive too many notifications daily and feel like they should receive fewer notifications than what they do today. It is also observed that more than 50% of respondents feel that the applications they have from the food delivery category like Swiggy, Zomato, etc send them the most number of notifications combined as they serve 24x7. The application that sends the most number of notifications according to respondents is Zomato, which is the most common answer among all.

FUTURE SCOPE OF THE STUDY

The study will not be able to reach thousands of people out there who might be having issues with the notifications they receive daily from numerous applications. It is observed here that many people are not liking

the frequency with which the applications send notifications and a major concern is that important notifications might be missed. Another limitation was that some of the respondents were not completely consistent with their answers and might lead to an error. This type of study is also a bit time consuming as it takes a lot of time to collect primary data from a questionnaire. Thus in future, it can be carried out on a larger scale to determine even more accuracy and the exact number of people who are not in favor of so many notifications to be received daily by the same applications.

REFERENCES

- Adithya Madhusoodanan, A. K. (2021). *Machine Learning Approach to Manage Adaptive Push Notifications for Improving User Experience.* Retrieved from ACM Digital Library: https://doi.org/10.1145/3448891.3448956
- Dou, X. (2021, September). *Mobile contextual marketing in a museum setting* . https://doi.org/10.1108/JSM-02-2020-0049
- Galera, R. (2021). *Push Notification Marketing: How to Use It to Boost Customer Engagement.*
- Geyik, A. (2019). *Influence of Push Notification on consumer attitudes and purchase decision criteria.* Retrieved from ProQuest Dissertations: https://www.proquest.com/docview/2471433688?pq-origsite=gscholar&fromopenview=true
- Jill Freyne, J. Y. (n.d.). *Push Notifications in Diet Apps: Influencing Engagement Times and Tasks.*
- Kieran Fraser, B. Y. (2019). *Generation and Evaluation of Personalized Push-Notifications.* Retrieved from https://doi.org/10.1145/3314183.3323683
- Kuo, S.-C. C.-W. (2020). *Push Notification Advertising: An Empirical Investigation of Consumer Attitudes.*
- Loni, B. S., & van der Wees, M. (2019). *Personalized Push Notifications for News Recommendation.* Retrieved from https://proceedings.mlr.press/v109/loni19a.html
- Luchen Tan, A. R. (2016). *An Exploration of Evaluation Metrics for Mobile Push Notifications.* Retrieved from https://doi.org/10.1145/2911451.2914694
- März, A. L. (2021). *How you Remind Me! The Influence of Mobile Push Notifications on Success Rates in Last-Minute Bidding.* Retrieved from https://doi.org/10.1016/j.intmar.2020.08.002
- Perrea, M. A. (2020, May). *The influence of m-marketing tools on consumer buying process: evidence from the dining sector.* Retrieved from Emerald: https://www.emerald.com/insight/0959-0552.htm
- Rigollet, D. Ý. (2015). *Consumer Attitudes towards Push Notifications : As a Marketing Tool to Trigger Impulse Buying Behaviour in Smartphone Users.* Retrieved from http://urn.kb.se/resolve?urn=urn:nbn:se:lnu:diva-43622
- Rowan Sutton, K. F. (2020). *A Reinforcement Learning and Synthetic Data Approach to Mobile*

Notification Management. Retrieved from https://doi.org/10.1145/3365921.3365932

- Shanahan, L. L. (2020). *Mobile Push Notifications: A Review of the Literature and Future Research Directions.*
- Taylor, N. (2014). *Marketing with Mobile Push Notifications in a Location Specific Context* . Retrieved from Scholarworks: https://scholarworks.gvsu.edu/cgi/viewcontent.cgi?article=1184&context=cistechlib
- TIFFANY, P. (2020, September). *Comparing the Push Notification Message to Increase Purchase Intention in E-Marketplace Mobile Application* . Retrieved from IEEE Access: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9214831
- Tong, S. L. (2020). *Personalized mobile marketing strategies.* Retrieved from https://doi.org/10.1007/s11747-019-00693-3
- Valk, C. (2021). *Pushing the Right Buttons: The Impact of Personalization on Push Notification Click-Through Rates.*
- Wiele, T. v. (2019). *The Effect of Personalization and Content Type on Push Notification Engagement and App Retention.*
- Wohllebe, A. (2021, May). *Mobile apps in retail: Effect of push notification frequency on app user behavior* . Retrieved from real.mtak: http://real.mtak.hu/138580/1/IM_2021_02_Wohllebe.pdf
- Zhang, Y. H. (2019). *Effectiveness of Push Notifications in Mobile Marketing: An Experimental Investigation.*
- Zheng, Y. H. (2020). *Push Notification Marketing: A Review and Research Agenda.*
- Zotto, A. L. (2020). *Push Notifications in Mobile Marketing: A Communication Theory Perspective*