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FROM REACH TO INTERACTION: A BEHAVIOURAL ANALYTICS STUDY OF ENGAGEMENT DYNAMICS IN INSTAGRAM ADVERTISING

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ABSTRACT

Instagram has increasingly emerged as a prominent platform for online advertising, and the performance of campaigns is often measured in terms of visibility metrics like reach and impressions. The problem with these metrics is that they do not provide effective insights into the interaction between audiences and advertising content. The research work tries to focus on this issue in the context of Instagram advertising based on the concept of behavioral analytics. In this paper, the authors present an analysis performed on a large dataset of Instagram advertising posts, defining engagement as a composite behavioral measure based on likes, comments, shares, and saves. Several analytical approaches were taken analysis of engagement rate distributions, differences across media formats, variations among content categories, traffic source influences, temporal engagement patterns, and engagement-level segmentation. The engagement rate distribution strongly skews, which indicates that audience interaction with the assessed posts varies greatly. Comparisons across media types and content categories show relatively negligible changes in average engagement levels. This means that format or thematic focus, per se is not good enough to trigger higher interest and engagement from people. Engagement trends over time are stable, indicating that the behavioral patterns observed are reliable and consistent. Moreover, the analysis of traffic sources highlights the relevance of platform navigation pathways, with profile visits and reels feeds contributing more substantially to engagement than other entry points. The findings show that Instagram advertising engagement is directed by diverse and not equally distributed behavioural responses rather than by exposure alone. The study contributes to digital advertising by addressing the limits of reach-based metrics and by understanding engagement as a multidimensional outcome influenced by platform dynamics and user selectivity.

KEYWORDS: Instagram advertising, consumer engagement, behavioural analytics, engagement dynamics, social media metrics, platform discovery pathways, digital advertising effectiveness, interaction heterogeneity

1. INTRODUCTION

The rise of social media has transformed the communication process for organizations. However, the current trend is such that most organizations use social media to market their goods and services. Among all the social media sites available, Instagram is the most popular platform used for advertising. The reason is primarily because it uses pictorial elements such as photos and videos, allowing users to react to them. Because of these reasons, Instagram advertising is a very popular subject of study for digital marketers and media researchers (Dwivedi *et al.*, 2021; Pahari, 2024).

Even though many people turned towards Instagram for advertising, the success of the advertising is still mostly measured using reach, impression and the number of followers. The measurement only shows how many people saw the advertisement. It does not tell whether the user interacted with the ads or not. Most of the users just scroll past advertisements without giving any response. Earlier research also shows that high reach does not always lead to a good engagement rate, such as likes, comments, or shares (Abdul Rahman *et al.*, 2022; Rahayuningrat *et al.*, 2024). This shows the relevance of studying how people react to the ads they encounter, instead of only counting how many people saw that ad.

1.1 Understanding Engagement as User Behaviour

Instagram engagement is basically how users interact with a particular post. This can be through likes, comments, sharing, and saving. The degrees of interest differ depending on the actions undertaken. One can easily like a picture, but it is much deeper to comment on a picture and save one. Therefore, one should not mistake engagement for just numbers. A variety of research has reached a consensus on how engagement is a better indicator of advertising success than reach (Eslami *et al.*, 2022; Kim *et al.*, 2023).

Various past research works have concentrated on engagement-related to specific areas such as influencer marketing or personalized advertisements (Ao *et al.* 2023, Chandra *et al.* 2022). The research is beneficial, but they do not state a concrete reason why certain advertisements have more interaction than the rest. The data employed in this research illustrates the fact that the level of engagement is not the same for all advertisements. Certain advertisements receive little to no engagement, whereas a few get a tremendous amount of interaction. This demonstrates the fact that the behavioral patterns of an Instagram user vary from post to post.

1.2 From Reach to Interaction in Instagram Advertising

Instagram provides flexibility to the advertisers to post their advertisements using various formats such as photos, videos, carousel, or Reels. The advertisements further can be categorized based on their type, including fashion, food, travels, technology, or lifestyle. Various advertisers think that if they choose the right format or topic, they can automatically enhance the engagement. Various previous research works have further examined the influence of the type of content or visual on Instagram engagement (Abdul Rahman *et al.*, 2022; George *et al.*, 2025).

However, the results of this study show that the difference in engagement between formats and content categories is very small. This means that format or topic alone cannot decide engagement. Instead, how users come across the advertisement is more important. The study shows that ads viewed through profile visits and Reels feeds receive better engagement. This highlights the role of Instagram's design and recommendation system in shaping user interaction. The regression results further show that reach and impressions explain only a very small part of engagement. This proves that just reaching more people does not guarantee interaction and shows the need to focus more on user behaviour in Instagram advertising.

2. LITERATURE SURVEY

2.1 Instagram Advertising in Digital Marketing Studies

Instagram has evolved into an important platform for digital advertising, mainly because it employs photos and videos and attracts a great number of users. Indeed, the way in which companies use Instagram posts, Stories, Reels, and sponsored ads to promote their products has been examined in a large number of publications. Studies explain that Instagram enables the company to increase brand visibility and connect with its audiences better through appealing visual displays. For that, Instagram advertising has grown fast and become one of the hot topics in marketing and communications studies. In fact, most of the previous research on Instagram advertising has been focused on general performance measures like reach, impressions, and follower growth. From a literature review and bibliometric studies, it can be observed that researchers often adopt these measures while determining advertising success. Though the above-mentioned pieces of research are quite beneficial for recognizing the trends, the major reliance is put on the secondary information. As a

result, the research lacks the capability to shed much light on the behavior as well as the advertisement reaction of the users on the platform of Instagram.

2.2 Engagement as an Indicator of User Behaviour

Engagement on social media can be described as a set of actions taken by users on seeing the content. Engagement on Instagram is measured by likes, comments, shares, and saves. Engagement actions are determined by different levels of interest and participation by users. Various research pieces highlight that engagement is a better metric for recognizing effectiveness rather than reach, highlighting active participation by users (Eslami et al., 2022; Kim et al., 2023). But most research pieces highlight engagement in a restricted context. Most research pieces on engagement consider a specific type or highlight engagement with respect to different factors like influencers or interactivity (Ao et al., 2023; George et al., 2025). While these pieces are quite informative and helpful, they fail to reveal reasons for variation in engagement levels across different pieces of advertising content.

2.3 Influence of Content Type and Visual Format

Nevertheless, there are a few people who have studied the impact of varying content on engagement on Instagram. It is shown through studies that photos, videos, carousels, and Reels have the ability to generate varying levels of engagement on Instagram. The importance and impact of images, creativity, and interactive elements are found to affect levels of engagement on platforms like Instagram significantly (Abdul Rahman et al., 2022; Kim et al., 2023). In light of this particular information, creators and advertisers feel, at times, that by choosing a different format, increased engagement can be ensured. However, some research demonstrates higher levels of engagement for different formats such as videos or some kind of interactive elements on a posting, yet both different and some minor variations among different formats are depicted by some research studies (Rahayuningrat et al., 2024).

2.4 Personalization and Influencer-Based Advertising

Personalization and influencer marketing represent topics frequently analyzed in social media advertising research. According to research, use of personalization on advertisements as well as influencer marketing is helpful in gaining user attention and building trust (Chandra et al., 2022; Elrizal & Astuti, 2024). This is because influencers are perceived as helpful in building engagement and purchase intentions, mainly among

the younger population (Ao et al., 2023). Nonetheless, most research undertaken on social media interaction is limited to their scope. This is because they mainly target either specific groups like Gen Z or specific sectors like fashion (Ao et al., 2023). Additionally, most research is based on surveys, as opposed to user interaction (Reena & Kulkarni, 2020). Due to their limited scope, there is a gap in research on real interaction on Instagram as presented by personalization, influencer marketing, and other aspects.

2.5 Role of Platform Design and Content Discovery

However, recent literature has begun to identify the importance of design in relation to engagement. For example, Instagram relies on algorithms and recommendation tools to deliver content via various routes including Explore, Reels, and user profiles. It is suggested that user engagement routes may impact engagement probability (Dwivedi et al., 2021; Pahari, 2024). However, remarkably few investigations have explored engagement influenced by traffic sources. The literature is mostly inclined towards either content-related aspects or user-related aspects. This literature is relatively important because it helps identify why certain advertisements may have relatively higher engagement rates even when the content and type are similar.

2.6 Limitations of Reach-Based Evaluation in Prior Research

In fact, many studies have continued focusing on reach and impressions as core metrics of successful advertising because of their simplicity in calculation, which was generally accepted (Azizah et al. 2024; Shaheen, 2025). It should be noted, nevertheless, that reach and impressions alone indicate how many people were made aware of an advertisement, without necessarily indicating user interest in it. In fact, some studies have concluded that it's not possible, based on reach alone, to interpret behavioural involvement (Abdul Rahman et al. 2022). It has recently been indicated, in fact, that there often exists a weak connection between reach and involvement (Sanchez & Ramos, 2025). The problem, as it seems, has been offset in this study which focuses, instead, on behavioural involvement, like in this study, which explores, instead, how involvement has been achieved through reach, using a huge set of Instagram advertising data.

3. MATERIALS AND METHODS

3.1 Research Design and Approach

This quantitative study shall delineate the exact reaction of people towards Instagram

advertisements. The main purpose shall be to study likes, comments, shares, saves, and other forms of user-generated actions rather than just studying the number of reaches and impressions. There are no surveys or interviews taken from people in the study. It makes use of actual data taken out from Instagram advertising records to comprehend real user behavior on the platform.

The study follows a behavioural analytics approach. It looks at how engagement varies with content type, content category, traffic source, and time. The study is mainly comparative, observing the patterns of engagement. It does not try to predict any results or test any complex theory. This helps in clearly understanding how the interaction happens after people see advertisements on Instagram.

3.2 Data Source and Dataset Details

The data employed within the research comes from the advertising analytics on Instagram. The dataset includes information on a wide array of advertising postings on the platform. This information ranges from the reach of the posting to the likes the posting has received. However, the posting must contain complete data to ensure the accuracy of the analysis. The data provides various forms of advertisements such as pictures, videos, carousels, and Reels. The content areas covered in this data are various and include fashion, food, travel, technologies, and lifestyle. Such variety helps in conducting a fair comparison. In this data, names and details of users are not included. Hence, privacy and ethics policies are kept properly in place.

3.3 Measurement of Engagement and Other Variables

Coming from this background, engagement in this case is measured in terms of the number of likes, comments, shares, and saves of the post. These activities reflect the various levels of engagement of the users. For instance, posting comments is easier compared to sharing or saving. By integrating all these activities, there is sufficient engagement details for each post.

Reach and impression metrics are utilized to measure the number of people exposed to the ad. Other metrics like the content type, content categories, traffic source, and the posting date are also available. The engagement rate is determined by the comparison between the engagement and reach metrics. This assists in the comparison of different visibility levels of the posts.

3.4 Data Cleaning and Preparation

The data was examined carefully before analysis. The posts containing missing information or erratic details were deleted. Duplicates were also omitted from the dataset. The dates of postings were adjusted for correct interpretation, such that engagement with time could be examined conveniently. There would be no confusion between the categories. Engagement level categories included the levels of low, high, medium, and very high. This was useful because one could easily compare the levels of engagement on the posts. This made sure that it was ready to be analyzed.

3.5 Methods Used for Data Analysis

There were different variations of basic approaches for engagement behavior analysis. First, basic calculations and graphical representations were employed to understand how engagement is distributed. The aim was to visualize engagement for different types of content, categories, sources of traffic, and time. These were in bar graphs, pie graphs, line graphs, and histograms.

The analysis was done to check if there are changes in engagement over time. The engagement segmentation technique was applied to divide the posts into groups depending on the level of engagement. The traffic source analysis technique was applied to check where traffic comes from for the advertisements. All these assisted in understanding engagement patterns without using models.

3.6 Reliability, Validity, and Ethical Care

The data in this study is reliable because the data comes straight from the Instagram analytics tool. Engagement metrics are gathered in the same manner for every post. The use of more than one form of engagement adds to the reliability of the data because measures more than one form of user behavior.

The validity of the study is that it focuses on actions that are carried out by users rather than on opinions or hypotheses. The concept of engagement is properly defined on the basis of previous research. The study conducted is ethically sound because it makes use of grouped and anonymous data and does not use any personal data from the users.

4. RESULTS AND ANALYSIS

4.1 Engagement Rate Pattern in Instagram Advertisements

First, it analyzed how engagement was distributed among different advertisements on the Instagram platform. The engagement metric was obtained by adding likes, comments, and shares. The data

obtained revealed that most of the advertisements registered very low levels of engagement, with a few posts recording very high levels. This implies that users did not respond equally to all the posts. Most users just passed by without leaving a comment or a like. The data obtained clearly revealed a discrepancy in engagement levels. Only a few posts registered a significant response from users. Even if a post was posted before many users, it did not mean that users would respond to it.

4.2 Engagement Based on Media Type

The research has also examined engagement levels for various forms of media such as images, videos, carousels, and Reels. The mean engagement levels for all such forms are extremely similar. There is no format which gives a considerably greater level of engagement than the other forms. There is a slight increase in engagement levels for Reels and videos, but this is a meagre increase only. The above findings clearly prove that merely depending upon a certain form does not necessarily result in greater engagement levels. Even if a certain form is quite alluring, people cannot be made to act accordingly all the time.

4.3 Engagement Across Content Categories

Following that, engagement metrics are examined on various categories of content such as fashion, food, travel, technology, and lifestyle. Analysis reveals that the difference in engagement on these categories is small. There was no category that scored significantly higher on the engagement level. This highlights that it's not the topic of the content alone which helps in engagements. There may be some posts in a particular topic which have higher engagements, and there may be some which have lower engagements. This highlights that user interest varies from post to post. The topic alone cannot define the engagements.

4.4 Role of Traffic Source in Engagement

The study analyzed how users reach ads through different traffic sources, such as profile visits, Reels feed, Explore page, and all others. The results reflect that ads seen via profile visits and Reels feed gain more engagement compared to ads seen through other paths. That is to say, the route through which users locate an ad plays a significant role. While users go on actively browsing profiles or watching Reels, they are most likely to interact. In other words, this shows how strong the layout and recommendation system of Instagram is in governing user engagement.

4.5 Engagement Behaviour Over Time

Engagement was also studied across different time periods. The results show that engagement levels remain mostly stable over time. There were no sudden increases or decreases in engagement. This steady pattern shows that user behaviour on Instagram is consistent. Engagement does not change much from month to month. This also proves that the results of this study are reliable and not affected by temporary changes.

4.6 Engagement Level Groups

The advertisements have been classified into low, medium, high, or very high levels of engagement. The majority of the posts have been classified under low and medium levels of engagement. The majority of the posts have not been classified under high or very high levels of engagement. This presents an obvious indication that very low levels of engagement have been noticed. Not many postings have been successful in achieving very high levels of interaction.

4.7 Relationship Between Reach and Engagement

The study also checked whether reach and impressions can explain engagement. The results show that reach and impressions explain only a very small part of engagement. Even ads with high reach do not always receive high interaction. This proves that reach alone is not enough to understand engagement. Seeing an ad does not mean users will like or comment on it. Engagement depends on deeper user interest and behaviour, not just visibility.

4.8 Overall Findings from the Analysis

Overall, the results show that Instagram engagement is uneven and behaviour-based. Differences between formats and categories are small, while traffic source and user choice play a bigger role. Engagement remains stable over time but is achieved by only a few posts.

These findings clearly support the idea that interaction is different from reach. Engagement reflects real user behaviour shaped by platform design and user interest. This study shows why Instagram advertising should be analysed beyond reach and impressions.

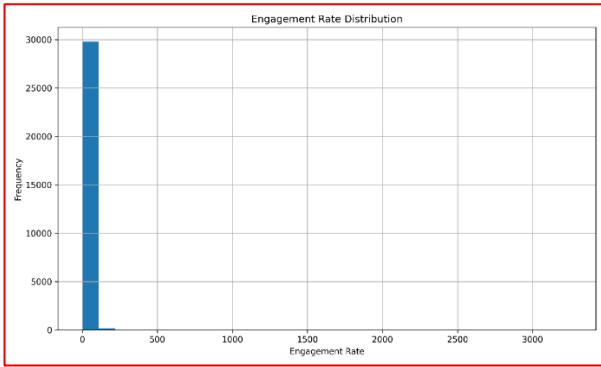


Fig 2. Engagement Rate Pattern in Instagram Advertisements

Figure 2 shows how engagement rates are spread across Instagram ads. It clearly shows that most ads get very little response, and only a few ads receive high interaction from users.

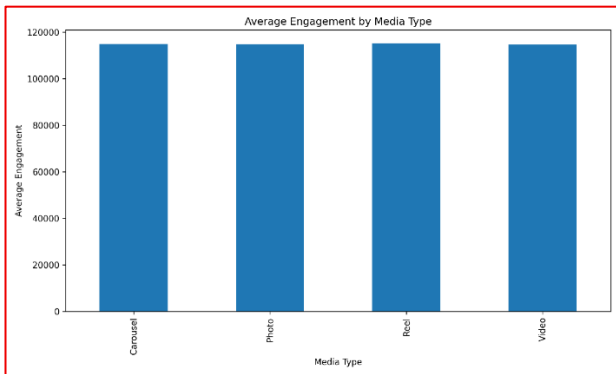


Fig 3. Average User Engagement for Different Types of Instagram Ads

Figure 3 shows the average engagement for different Instagram ad formats like photos, videos, carousels, and Reels. It shows that all formats get almost the same response, so no one format gives much higher interaction than the others.

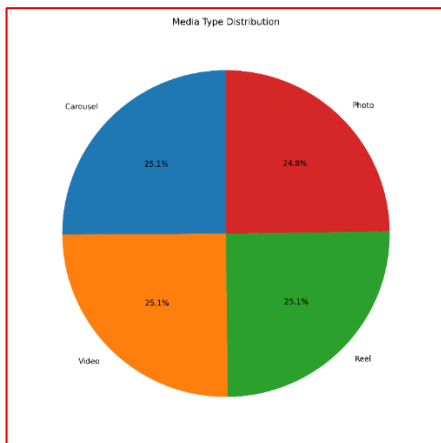


Fig 4. Use of Different Types of Instagram Advertisements

Figure 4 shows how different types of Instagram ads like photos, videos, carousels, and Reels are used. It clearly shows that all types are used almost equally, and no one type is used much more than the others.

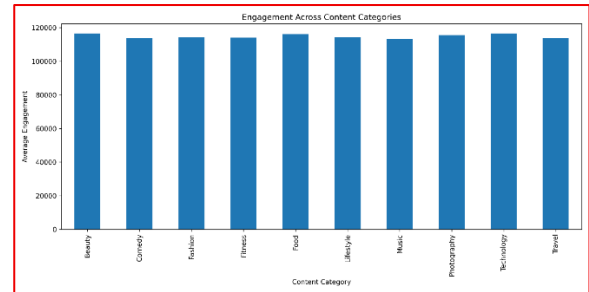


Fig 5. Use of Different Types of Instagram Advertisements

Figure 5 shows the average engagement for Instagram ads in different content categories such as beauty, food, travel, and technology. It clearly shows that engagement is nearly the same for all categories, which means no one category gets much more response than the others.

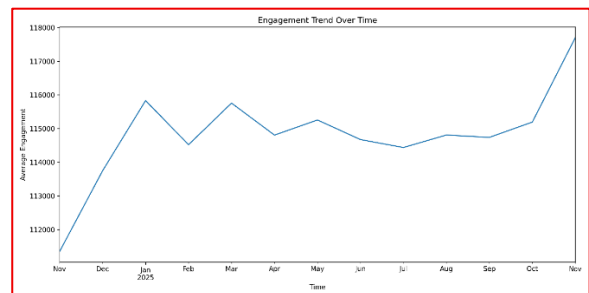


Fig 6. Monthly Engagement Trend of Instagram Advertisements

Figure 6 shows how the average engagement of Instagram ads changes from month to month during the given period. It shows that engagement is mostly steady, with only small rises and falls, which means people's interaction with ads stays almost the same over time.

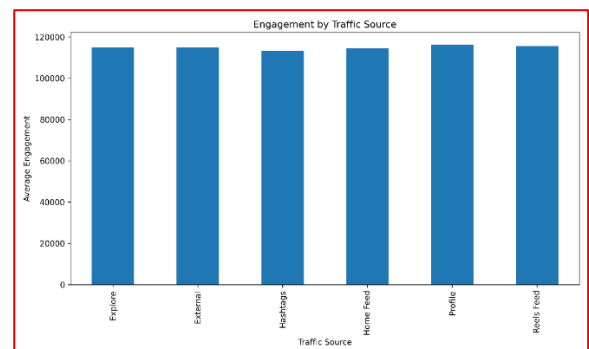


Fig 7. Average Engagement Across Different Instagram Traffic Sources

Figure 7 shows how engagement changes when people see Instagram ads from different places like Explore, Profile, or Reels feed. It shows that ads

coming from profile visits and Reels feed get a little more response, which means the way people reach the ad is important for interaction.

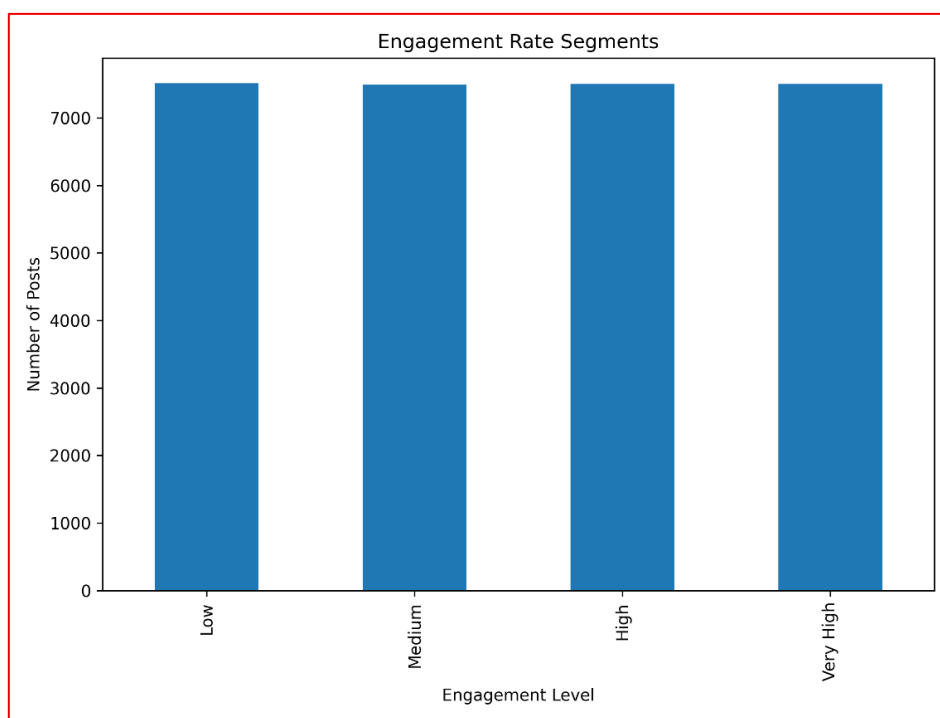


Fig 8. Distribution of Instagram Advertisement Posts Across Engagement Levels

Figure 8 shows how Instagram ads are divided into low, medium, high, and very high engagement based on how people reacted to them. It clearly tells us that all ads do not get the same response, and people interact differently with different posts.

5. DISCUSSION

5.1 Understanding Instagram Advertising Beyond Reach

This shows that reach and impression numbers alone are not sufficient in determining the engagement of users with Instagram adverts. In other scenarios, even though many users have viewed the advert, it is most likely that it will take few to like, comment, share, and save it. Many users may have just passed through the screen even when viewing the advert. This shows that even though users have viewed the advert, it does not mean they have shown interest in it.

The outcome indicates that reach does not quantify the same metric as engagement. Engagement will only be possible when the users feel a kind of connection or interest in the advert. The likes, comments, shares, and save number summarize the kind of act performed by the users. The low correlation between reach and engagement indicate that it is true that exposure numbers cannot determine the success for the advert. It aligns with all

previously stated literature that exposure is not necessarily a factor for interaction.

5.2 Unequal Engagement and User Choice

The above study makes it clear that reach and impression values are inadequate in deciding the engagement level of users towards Instagram advertisements. In other situations, even if most users are viewing an advert, it is most likely that few will like, comment, share, and save it. Most users will simply pass by the screen with the advert on it. It is an indication that if users view the advert, it does not necessarily mean that they are interested in it.

Results indicate that reach does not gauge the same metric as engagement. Engagement only takes place when there is a certain level of connection felt between the users and the advert. The act of clicking the like button, commenting, sharing, as well as saving the advert, portrays the actual undertaking by the users. The low correlation between reach and engagement reinforce the claim that the level of exposure does not actualize the success of the advert.

5.3 Small Role of Media Type and Content Category

Analysis of the study shows that all forms of media, such as images, videos, carousels, and Reel, are viewed almost equally. None of the media types

shows significant edge over the others. This indicates that just because some media types are very popular, there are no higher chances of engagement.

Analogously, types of content such as fashion, food, travel, technology, and lifestyle involve relatively slight variations in the level of engagement. In other words, one type is not more favorable in terms of getting more responses. This implies that the type of content cannot determine engagement. For instance, within the same type of content, some content is successful while others are not.

5.4 Importance of How Users Find Advertisements

The implications from this study are clear: Clicks from profile visits and Reels are important because they result in higher engagement than clicks from other sources. This is because users are likely to engage when they proactively view content.

This finding underlines the importance of the design feature of the Instagram platform. When individuals view profiles or Reels, the individuals already have an interest and can more easily engage. This illustrates the point that engagement can be affected by more than the content of ads.

5.5 Stable Engagement Over Time

The analysis over time shows that engagement remains mostly steady across different months. There are only small ups and downs, but no big changes. This shows that user engagement behaviour is stable and consistent. This steady pattern proves that the study results are reliable. Engagement does not change suddenly due to short-term reasons. Instead, it reflects regular user behaviour on Instagram. This also shows that improving engagement needs strong content and better interaction methods, not just time.

5.6 Meaning of the Findings for Theory and Practice

From a theoretical perspective, this study demonstrates a clear distinction between reach and engagement. The study illustrates that engagement is an action-oriented outcome and is not just driven by exposure. As reach only accounts for a remarkably small portion of engagement, future research must delve deeper into user behaviors and platform-specific variables. From an applicative perspective, it is important to note that the results of this study benefit advertisers. Simply increasing reach will not contribute to increased engagement. Advertisers must pay greater attention to user exposure patterns and content-related browsing behaviors. It is obvious from this study that true success on Instagram is contingent

upon engagement, rather than mere reach.

6. CONCLUSION

6.1 Main Findings on Instagram Engagement

The objective of this research was to have a deeper knowledge about the Instagram advertising process in a manner broader than just focus on the reach and impressions. The data provided clearly illustrates the point that the more the people are exposed to the advertisements, the more they are not going to react to them. The majority of advertisements get fewer interactions in the form of likes, comments, shares, and saves even when they are viewed by a large number of followers. A few advertisements only achieve high levels of interaction.

The study also found that different ad formats like photos, videos, carousels, and Reels get almost the same level of engagement. This is while content categories such as fashion, food, travel, and technology do not exhibit major differences in engagement. That means choosing just any popular format or topic does not necessarily guarantee better interaction. User behavior plays a greater role than type of content. The engagement, the study shows, is a real action made by users and should be treated differently from reach numbers.

6.2 Importance of Platform Pathways and User Behaviour

The first major finding of the research is in regard to how the advertisements were seen by the users. The advertisements seen in profile visits and Reels feed perform better compared to those seen in other methods. This means that the willingness to click, comment, or share an advertisement increases if the person is accessing the content in a browsing or watching manner. This means that engagement is not dependent on the advertisement only but on the location as well.

From the regression analysis above, it is evident that reach and impressions have only managed to explain a very small aspect of engagement. This means that even though there may be adverts that have high reach and are very exposed to users, this does not mean much in terms of engagement. This clearly explains why success in adverts cannot just be measured by their reach.

7. FUTURE WORK

Even though this study offers very important outcomes, there still exists scope for further studies. Future studies can utilize advanced techniques to investigate invisible aspects like quality, relevance, emotions, and personalization. Such aspects cannot be

viewed straight from analytics, but sometimes, they have a very strong impact upon viewer engagement. Inquiries into such aspects can provide very important light upon why certain advertisements perform better compared to others. Future studies may incorporate both data analyses and surveys or interviews. This shall assist in understanding viewer opinions behind actions taken in terms of viewer engagement. Future studies may also investigate long-term effects of viewer actions, which may be caused because of certain updates made to Instagram.

Future research could also involve the comparison of Instagram to other social media platforms such as Facebook or YouTube. This will aid in determining the

similarity or difference in engagement actions on the platforms. Research will be beneficial to advertising businesses which may use more than one social media. Furthermore, future research may link engagement with outcomes such as brand trust, purchase intention, or revenue. The present study concentrated on interaction behavior. It is significant to understand how engagement translates into outcomes for businesses as well. Future research may examine engagement variation by various regions, cultures, and generations. The present study may serve as a foundation for future research aiming at grasping online advertising success through user interaction instead of mere online reach.

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