Instagram user analytics

Project Description

This project focuses on analysing Instagram user interactions and engagement using MySQL Workbench. The goal is to extract meaningful insights that support the product and marketing teams in making informed decisions about user retention, campaign strategies, and platform improvements.

Approach

1. Explored the database structure, including tables like users, photos, likes, tags, photo_tags, comments, and follows.
2. Created SQL queries to answer the given tasks.
3. Analysed outputs to derive actionable insights as asked.
4. Compiled queries, outputs, and conclusions in a structured report.

Tech-Stack Used

1. **MySQL Workbench:** Used for writing and executing SQL queries.
2. **SQL:** Structured Query Language for data extraction and analysis.

Queries and Outputs

```
SELECT * FROM users;
select * from photos;
select * from comments;
select * from likes;
select * from follows;
select * from tags;
select * from photo_tags;

/*marketing analysis
loyal user reward(five oldest users)
inactive user engagement(users with no photo post)
contest winner declaration(details of user with most likes on the single photo)
hashtag research(top five used hastags)
ad campaign launch(day of the week with most user reg)
*/
/*investor metrics
user engagement(avg posts/user and total photos/total users)
bots and fake accounts(users who liked every single photo)
*/
```

Marketing analysis:

```sql
-- loyal user reward
select username, created_at
from users
order by created_at asc
limit 5;

-- inactive user engagement
select u.username
from users u
left join photos p on u.id=p.user_id
where p.id is null;

-- contest winner declaration
select u.username, p.id, count(l.photo_id) as like_count
from photos p
join likes l on p.id=l.photo_id
join users u on p.user_id=u.id
group by p.id,u.username
order by like_count desc
limit 1;



-- hashtag research
select h.tag_name, count(*) as tag_count
from photo_tags pt
join tags h on pt.tag_id=h.id
group by h.tag_name
order by tag_count desc
limit 5;

-- ad campaign launch
select dayname(created_at) as registration_day, count(*) as user_count
from users
group by registration_day
order by user_count desc
limit 1;
```

```
107
108     -- loyal user reward
109     select username, created_at
110     from users
111     order by created_at asc
112     limit 5;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fet

username	created_at
Darby_Herzog	2016-05-06 00:14:21
Emilio_Bernier52	2016-05-06 13:04:30
Elenor88	2016-05-08 01:30:41
Nicole71	2016-05-09 17:30:22
Jordyn.Jacobson2	2016-05-14 07:56:26

```
114     -- inactive user engagement
115     select u.username
116     from users u
```

Result Grid | Filter Rows: | Export: | Wrap Cell Con

username
Jaclyn81
Rocio33
Maxwell.Halvorson
Tierra.Trantow
Pearl7
Ollie_Ledner37
Mckenna17
David.Osinski47
Morgan.Kassulke
Linnea59
Duane60
Julien_Schmidt
Mike.Auer39
Franco_Keebler64
Nia_Haag
Hulda.Macejkovic
Leslie67
Janelle.Nikolaus81
Darby_Herzog
Esther.Zulauf61
Bartholome.Bernhard
Jessyca_West
Esmeralda.Mraz57
Bethany20

```sql
-- contest winner declaration
select u.username, p.id, count(l.photo_id) as like_count
from photos p
join likes l on p.id=l.photo_id
join users u on p.user_id=u.id
group by p.id,u.username
order by like_count desc
limit 1;

-- hashtag research
select h.tag_name, count(*) as tag_count
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

username	id	like_count
Zack_Kemmer93	145	48

```sql
-- hashtag research
select h.tag_name, count(*) as tag_count
from photo_tags pt
join tags h on pt.tag_id=h.id
group by h.tag_name
order by tag_count desc
limit 5;

-- ad campaign launch
select dayname(created_at) as registration_day, count(*)
from users
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

tag_name	tag_count
smile	59
beach	42
party	39
fun	38
concert	24

```
136
137     -- ad campaign launch
138 •   select dayname(created_at) as registration_day, count(*) as user_count
139     from users
140     group by registration_day
141     order by user_count desc
142     limit 1;
143
144     -- user engagement
145 •   select count(id)/count(distinct user_id) as avg_posts_per_user
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

registration_day	user_count
Thursday	16

Investor metrics:

```
-- user engagement
select count(id)/count(distinct user_id) as avg_posts_per_user
from photos;

select (select count(*) from photos)/(select count(*) from users)
as photo_per_user;

-- bots and fake accounts
select u.username, count(l.photo_id) as total_likes
from users u
join likes l on u.id=l.user_id
group by u.id
having total_likes= (select count(*) from photos);
```

```
143
144     -- user engagement
145 •   select count(id)/count(distinct user_id) as avg_posts_per_user
146     from photos;
147
148 •   select (select count(*) from photos)/(select count(*) from users)
149     as photo_per_user;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

avg_posts_per_user
3.4730

```
146     from photos;
147
148 •   select (select count(*) from photos)/(select count(*) from users)
149     as photo_per_user;
150
151     -- bots and fake accounts
152 •   select u.username, count(l.photo_id) as total_likes
153     from users u
154     join likes l on u.id=l.user_id
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

photo_per_user
2.5700

```
150
151     -- bots and fake accounts
152 •   select u.username, count(l.photo_id) as total_likes
153     from users u
154     join likes l on u.id=l.user_id
155     group by u.id
156     having total_likes= (select count(*) from photos);
157
158
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

username	total_likes
Aniya_Hackett	257
Jaclyn81	257
Rocio33	257
Maxwell.Halvorson	257
Ollie_Ledner37	257
Mckenna17	257
Duane60	257
Julien_Schmidt	257
Mike.Auer39	257
Nia_Haag	257
Leslie67	257
Janelle.Nikolaus81	257
Bethany20	257

Insights

1. Most loyal users can be approached for rewards or brand ambassador opportunities.

2. For inactive users, targeted email campaigns should be made to encourage them to share their first post.
3. Promoting the content of contest winner for user with most likes on a single photo can inspire others to participate in similar contest.
4. Hashtag research helps partner brands align their marketing strategies.
5. Ad campaign launch analytics could help team schedule ads and running those in high-traffic days.
6. User engagement helps in taking actions regarding feature improvements and content incentives.
7. Bot accounts detection helps in tacking fake accounts, helping authentic engagement and platform integrity.

Results

1. Successfully identified key user behaviours.
2. Provided actionable insights for marketing and product teams.
3. Highlighted areas of concern for investor reporting.