Election Ad Spending Analysis

In [35]:
```
import pandas as pd
```

In [36]:
```
advertisers = pd.read_csv("C:\\Users\\Dell\\OneDrive\\Desktop\\excel books\
locations = pd.read_csv("C:\\Users\\Dell\\OneDrive\\Desktop\\excel books\\e
results = pd.read_csv("C:\\Users\\Dell\\OneDrive\\Desktop\\excel books\\ele
```

In [37]:
```
advertisers.tail(10)
```

Out[37]:

	Page ID	Page name	Disclaimer	Amount spent (INR)	Number of ads in Library
20822	100192222859401	Hakki Pikki Adivasi Karnataka	These ads ran without a disclaimer	≤100	1
20823	110409798750264	Ana Garcia	These ads ran without a disclaimer	≤100	2
20824	242822678921546	Adem	These ads ran without a disclaimer	≤100	2
20825	109172399106517	El Grupo Informático	These ads ran without a disclaimer	≤100	2
20826	228947769047192	Giả Khai	These ads ran without a disclaimer	≤100	1
20827	104633268709556	If You Don't Bark	These ads ran without a disclaimer	≤100	2
20828	118271861357765	Story time	These ads ran without a disclaimer	≤100	1
20829	218017134738366	know_sacred_wisdom	These ads ran without a disclaimer	≤100	1
20830	270489126793	Energy Globe Award	These ads ran without a disclaimer	≤100	1
20831	114025938452734	FactFusion	These ads ran without a disclaimer	≤100	1

In [38]:
```
locations.head()
```

Out[38]:

	Location name	Amount spent (INR)
0	Andaman and Nicobar Islands	377858
1	Andhra Pradesh	100819732
2	Arunachal Pradesh	1385654
3	Assam	17478091
4	Bihar	53619242

In [39]:
```
results.head()
```

Out[39]:

	_id	State	PC_Name	Total Electors	Polled (%)	Total Votes	Phase
0	1	Andaman & Nicobar Islands	Andaman & Nicobar Islands	315148	64.10	202018	1
1	2	Arunachal Pradesh	Arunachal East	375310	83.31	312658	1
2	3	Arunachal Pradesh	Arunachal West	517384	73.60	380783	1
3	4	Assam	Dibrugarh	1659588	76.75	1273744	1
4	5	Assam	Jorhat	1727121	79.89	1379749	1

In [75]:
```
results['State']=results['State'].replace(to_replace='Andaman & Nicobar Isl
```

In [76]:
```
results['State'] = results['State'].str.strip().str.lower()
```

In [77]:
```
locations['Location name'] = locations['Location name'].str.strip().str.low
```

In [78]:
```
merged_data = results.merge(
    locations,
    left_on='State',
    right_on='Location name',
    how='left'
)
merged_data
```

Out[78]:

	_id	State	PC_Name	Total Electors	Polled (%)	Total Votes	Phase	Location name	Amount spent (INR)
0	1	andaman and nicobar islands	Andaman & Nicobar Islands	315148	64.10	202018	1	andaman and nicobar islands	377858.0
1	2	arunachal pradesh	Arunachal East	375310	83.31	312658	1	arunachal pradesh	1385654.0
2	3	arunachal pradesh	Arunachal West	517384	73.60	380783	1	arunachal pradesh	1385654.0
3	4	assam	Dibrugarh	1659588	76.75	1273744	1	assam	17478091.0
4	5	assam	Jorhat	1727121	79.89	1379749	1	assam	17478091.0
...	...	...	...	...	...	...	...	...	...
538	545	west bengal	Jadavpur	2033525	76.68	1559330	7	west bengal	77244996.0
539	546	west bengal	Joynagar	1844780	80.08	1477298	7	west bengal	77244996.0
540	547	west bengal	Kolkata Dakshin	1849520	66.95	1238256	7	west bengal	77244996.0
541	548	west bengal	Kolkata Uttar	1505356	63.59	957319	7	west bengal	77244996.0
542	549	west bengal	Mathurapur	1817068	82.02	1490299	7	west bengal	77244996.0

543 rows × 9 columns

In [82]:
```
merged_data[merged_data['Amount spent (INR)'].isna()].count()

#nan_values=merged_data[merged_data['Location name'].isna()]
#nan_values
```

Out[82]:
```
_id                 23
State               23
PC_Name             23
Total Electors      23
Polled (%)          23
Total Votes         23
Phase               23
Location name        0
Amount spent (INR)   0
dtype: int64
```

In [69]:
```
merged_data['State'].unique()
```

Out[69]:
```
array(['Andaman & Nicobar Islands', 'Arunachal Pradesh', 'Assam', 'Bihar',
       'Chhattisgarh', 'Jammu and Kashmir', 'Lakshadweep',
       'Madhya Pradesh', 'Maharashtra', 'Manipur', 'Meghalaya', 'Mizoram',
       'Nagaland', 'Puducherry', 'Rajasthan', 'Sikkim', 'Tamil Nadu',
       'Tripura', 'Uttar Pradesh', 'Uttarakhand', 'West Bengal',
       'Karnataka', 'Kerala', 'Dadra & Nagar Haveli and\nDaman & Diu',
       'Goa', 'Gujarat', 'Andhra Pradesh', 'Jharkhand', 'Odisha',
       'Telangana', 'Ladakh', 'Haryana', 'NCT OF Delhi', 'Chandigarh',
       'Himachal Pradesh', 'Punjab'], dtype=object)
```

In [70]:
```
locations['Location name'].unique()
```

Out[70]:
```
array(['Andaman and Nicobar Islands', 'Andhra Pradesh',
       'Arunachal Pradesh', 'Assam', 'Bihar', 'Chandigarh',
       'Chhattisgarh', 'Dadra and Nagar Haveli', 'Delhi', 'Goa',
       'Gujarat', 'Haryana', 'Himachal Pradesh', 'Jammu and Kashmir',
       'Jharkhand', 'Karnataka', 'Kerala', 'Lakshadweep',
       'Madhya Pradesh', 'Maharashtra', 'Manipur', 'Meghalaya', 'Mizoram',
       'Nagaland', 'Odisha', 'Puducherry', 'Punjab region', 'Rajasthan',
       'Sikkim', 'Tamil Nadu', 'Telangana', 'Tripura', 'Unknown',
       'Uttar Pradesh', 'Uttarakhand', 'West Bengal'], dtype=object)
```

In [64]:
```
merged_data['Location name'].unique()
```

Out[64]:
```
array([nan, 'Arunachal Pradesh', 'Assam', 'Bihar', 'Chhattisgarh',
       'Jammu and Kashmir', 'Lakshadweep', 'Madhya Pradesh',
       'Maharashtra', 'Manipur', 'Meghalaya', 'Mizoram', 'Nagaland',
       'Puducherry', 'Rajasthan', 'Sikkim', 'Tamil Nadu', 'Tripura',
       'Uttar Pradesh', 'Uttarakhand', 'West Bengal', 'Karnataka',
       'Kerala', 'Goa', 'Gujarat', 'Andhra Pradesh', 'Jharkhand',
       'Odisha', 'Telangana', 'Haryana', 'Chandigarh', 'Himachal Prades
h'],
      dtype=object)
```

In [11]:
```
import matplotlib.pyplot as plt
import seaborn as sns
```

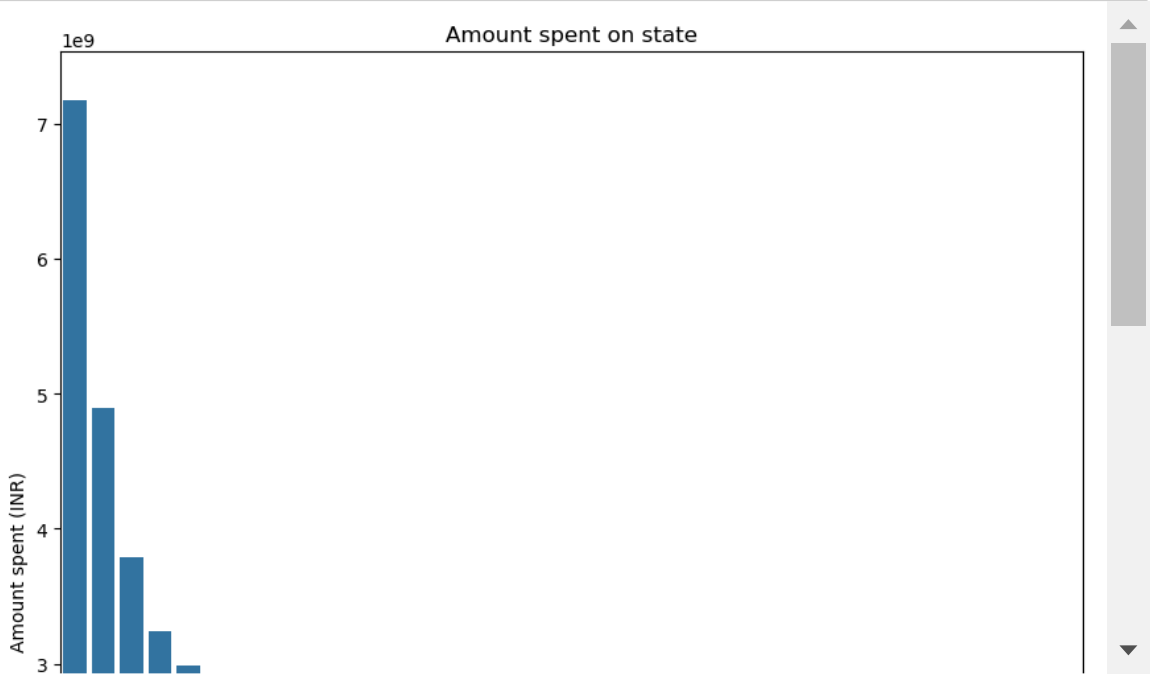
In [12]:
```
Amount_spent = merged_data.groupby('State')['Amount spent (INR)'].sum()
Amount_spent = Amount_spent.sort_values(ascending=False)
```

In [83]:
```
Amount_spent=pd.DataFrame(Amount_spent)
Amount_spent
```

Out[83]:

State	Amount spent (INR)
uttar pradesh	7.173450e+09
maharashtra	4.892020e+09
odisha	3.785298e+09
west bengal	3.244290e+09
tamil nadu	2.988282e+09
andhra pradesh	2.520493e+09
bihar	2.144770e+09
karnataka	1.166463e+09
madhya pradesh	1.159796e+09
rajasthan	1.031708e+09
gujarat	1.010635e+09
telangana	9.264348e+08
kerala	4.536240e+08
haryana	4.168341e+08
assam	2.446933e+08
jharkhand	2.293219e+08
chhattisgarh	1.628361e+08
himachal pradesh	4.804646e+07
uttarakhand	3.570448e+07
jammu and kashmir	3.287530e+07
chandigarh	6.507258e+06
sikkim	4.379297e+06
goa	4.328418e+06
tripura	3.714918e+06
arunachal pradesh	2.771308e+06
manipur	2.667186e+06
meghalaya	1.768440e+06
puducherry	1.535672e+06
nagaland	5.991700e+05
mizoram	4.810520e+05
andaman and nicobar islands	3.778580e+05
lakshadweep	1.984700e+04
punjab	0.000000e+00
nct of delhi	0.000000e+00
dadra & nagar haveli and\ndaman & diu	0.000000e+00
ladakh	0.000000e+00

In [14]:
```
plt.figure(figsize=(10,10))
sns.barplot(data=Amount_spent,x='State',y='Amount spent (INR)')
plt.xticks(rotation=90)
plt.title('Amount spent on state')
plt.show()
```

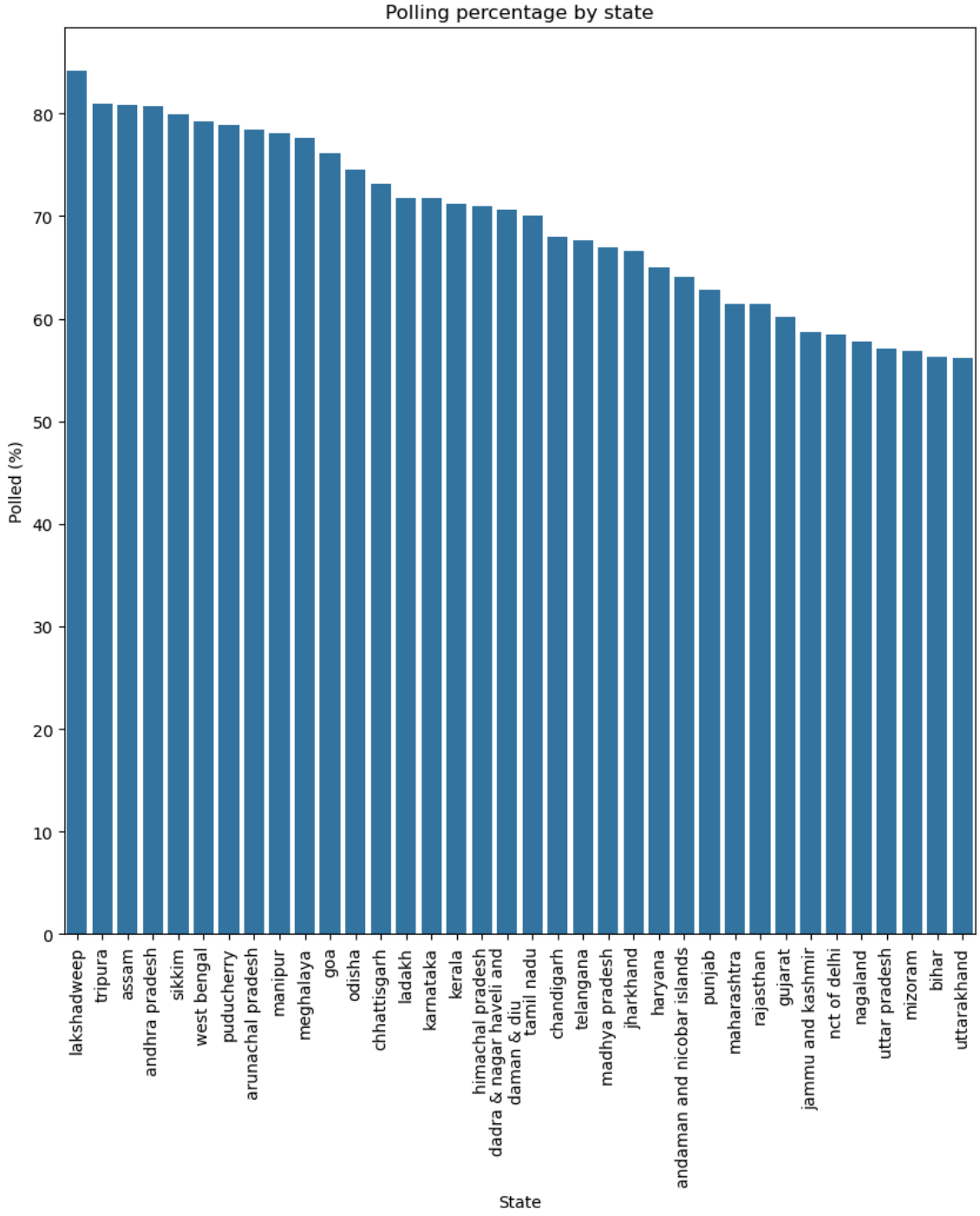


In [15]:
```
state_voter_turnout = merged_data.groupby('State')['Polled (%)'].mean()
```

In [16]:
```
state_voter_turnout = state_voter_turnout.sort_values(ascending=False)
```

In [17]:
```
state_voter_turnout=pd.DataFrame(state_voter_turnout)
```

In [18]:
```
plt.figure(figsize=(10,10))
sns.barplot(data=state_voter_turnout,x='State',y='Polled (%)')
plt.xticks(rotation=90)
plt.title('Polling percentage by state')
plt.show()
```



In [19]:
```
results
```

Out[19]:

	_id	State	PC_Name	Total Electors	Polled (%)	Total Votes	Phase
0	1	andaman and nicobar islands	Andaman & Nicobar Islands	315148	64.10	202018	1
1	2	arunachal pradesh	Arunachal East	375310	83.31	312658	1
2	3	arunachal pradesh	Arunachal West	517384	73.60	380783	1
3	4	assam	Dibrugarh	1659588	76.75	1273744	1
4	5	assam	Jorhat	1727121	79.89	1379749	1
...	...	...	...	...	...	...	...
538	545	west bengal	Jadavpur	2033525	76.68	1559330	7
539	546	west bengal	Joynagar	1844780	80.08	1477298	7
540	547	west bengal	Kolkata Dakshin	1849520	66.95	1238256	7
541	548	west bengal	Kolkata Uttar	1505356	63.59	957319	7
542	549	west bengal	Mathurapur	1817068	82.02	1490299	7

543 rows × 7 columns

In [20]:
```
advertisers.head()
```

Out[20]:

	Page ID	Page name	Disclaimer	Amount spent (INR)	Number of ads in Library
0	121439954563203	Bharatiya Janata Party (BJP)	Bharatiya Janata Party (BJP)	193854342	43455
1	351616078284404	Indian National Congress	Indian National Congress	108787100	846
2	132715103269897	Ama Chinha Sankha Chinha	Ama Chinha Sankha Chinha	73361399	1799
3	192856493908290	Ama Chinha Sankha Chinha	Ama Chinha Sankha Chinha	32294327	680
4	109470364774303	Ellorum Nammudan	Populus Empowerment Network Private Limited	22399499	879

In [21]:
```
#advertisers['Amount spent (INR)'] = advertisers['Amount spent (INR)'].asty
```

In [22]:
```
advertisers['Amount spent (INR)']=advertisers['Amount spent (INR)'].replace
```

In [23]:
```
advertisers['Amount spent (INR)']=advertisers['Amount spent (INR)'].astype(
```

In [24]:
```
party_ad_spend = advertisers.groupby('Page name')['Amount spent (INR)'].sum
```

In [25]:
```
party_ad_spend = pd.DataFrame(party_ad_spend).head(5)
party_ad_spend
```

Out[25]:

Page name	Amount spent (INR)
Bharatiya Janata Party (BJP)	193854342
Ama Chinha Sankha Chinha	112412941
Indian National Congress	108787100
Ellorum Nammudan	23806041
BJP Odisha	19573782

In [ ]:

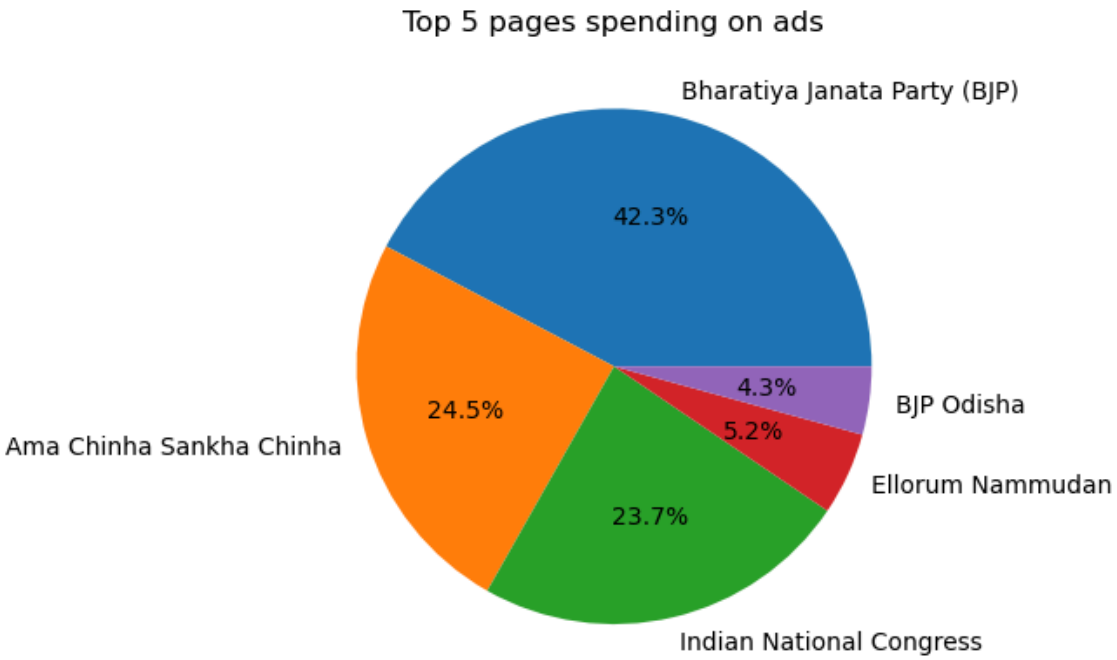
In [ ]:

In [26]:
```
labels = party_ad_spend.index
sizes = party_ad_spend['Amount spent (INR)']


plt.pie(sizes, labels=labels, autopct='%1.1f%%', startangle=0)


plt.title('Top 5 pages spending on ads')


plt.show()
```

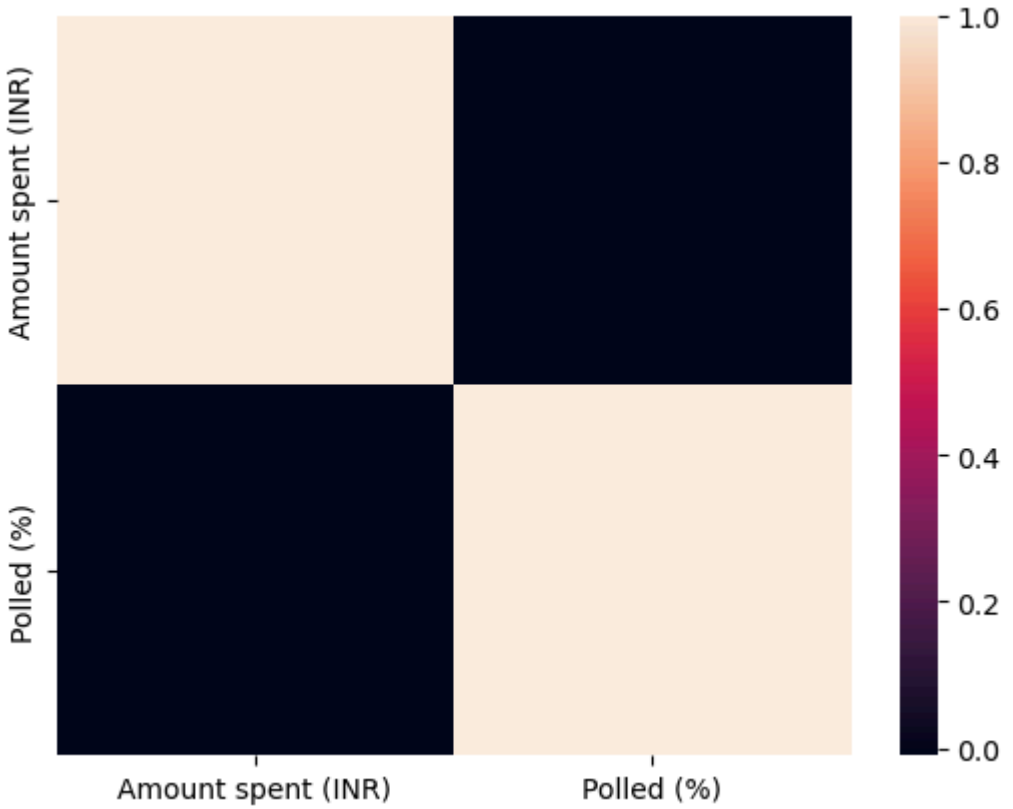


In [27]:
```
correlation = merged_data[['Amount spent (INR)', 'Polled (%)']].corr()
print(correlation)
```

```
                    Amount spent (INR)  Polled (%)
Amount spent (INR)            1.000000   -0.009803
Polled (%)                   -0.009803    1.000000
```

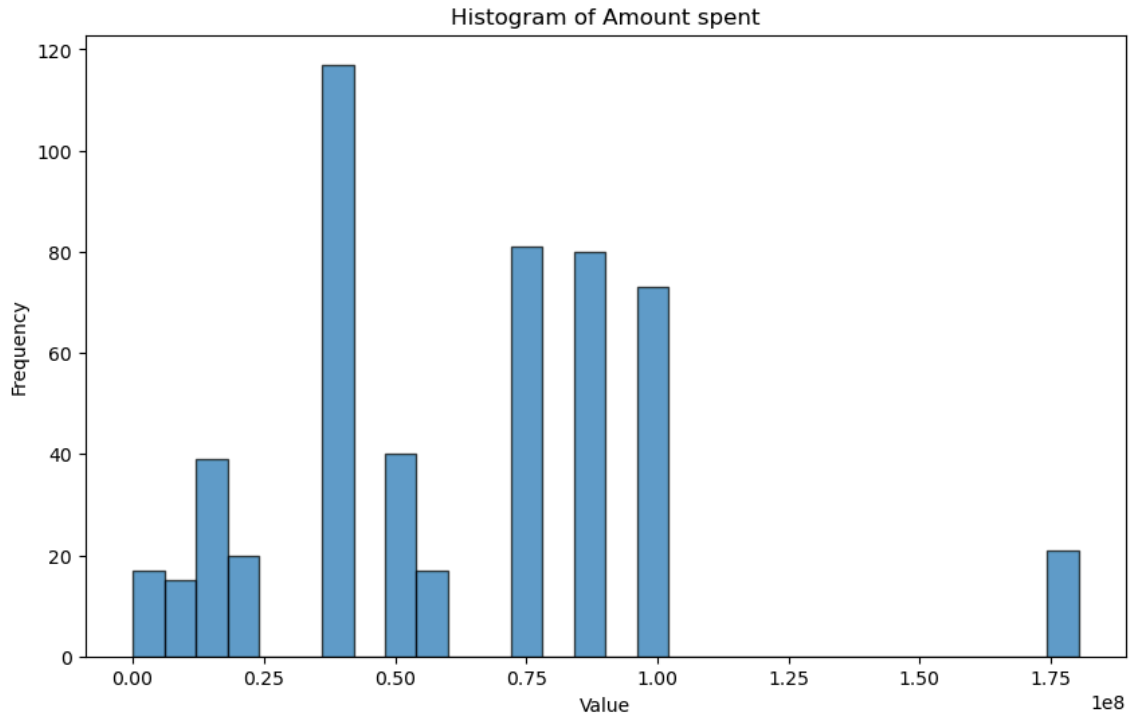
In [28]:
```
sns.heatmap(correlation)
```

Out[28]: <AxesSubplot:>



there is no corelation

In [85]:
```
plt.figure(figsize=(10, 6))
plt.hist(merged_data['Amount spent (INR)'], bins=30, edgecolor='black', alp
plt.xlabel('Value')
plt.ylabel('Frequency')
plt.title('Histogram of Amount spent')
plt.show()
```



In [30]:
```
merged_data.head()
```

Out[30]:

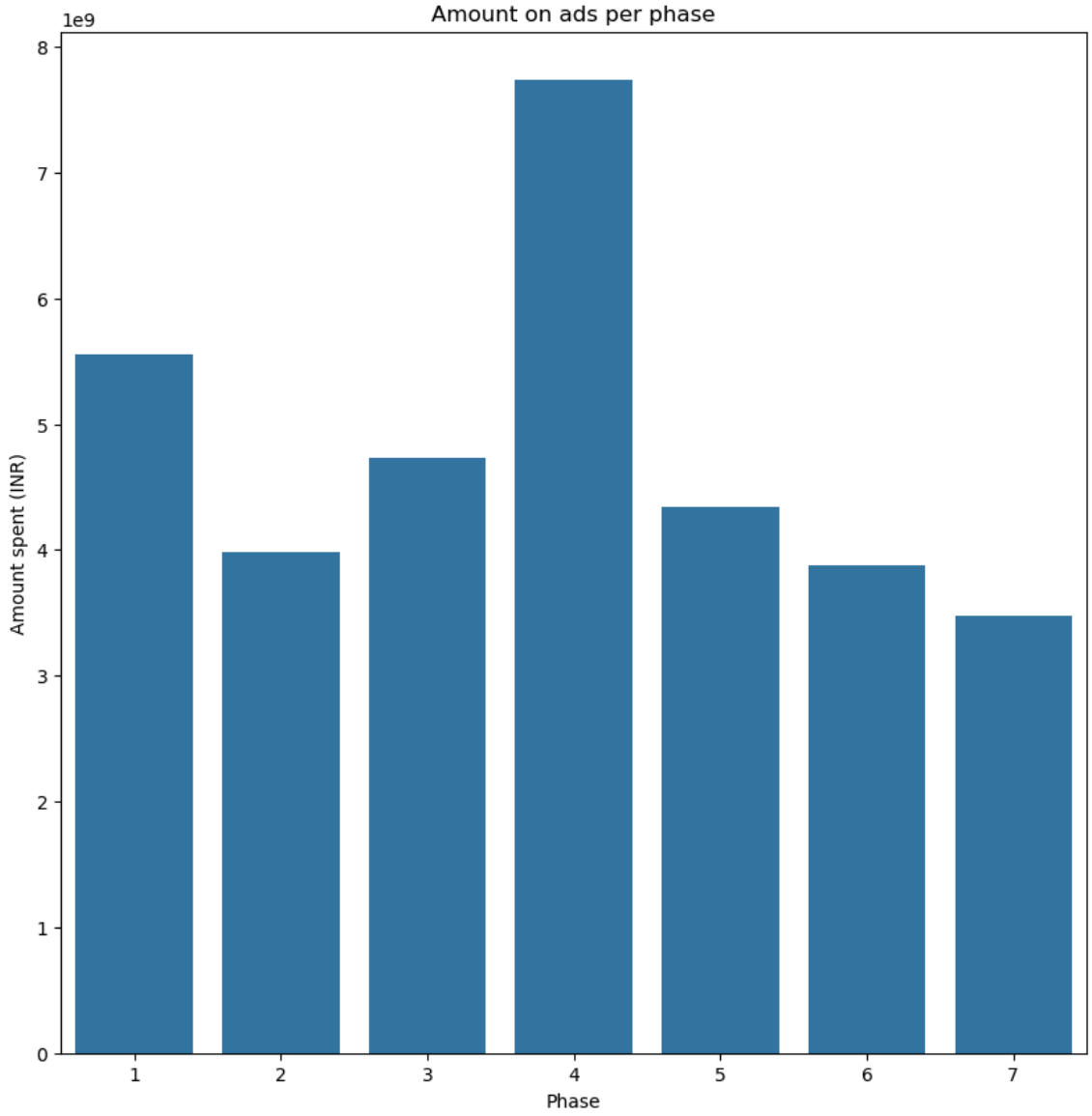
	_id	State	PC_Name	Total Electors	Polled (%)	Total Votes	Phase	Location name	Amount spent (INR)
0	1	andaman and nicobar islands	Andaman & Nicobar Islands	315148	64.10	202018	1	andaman and nicobar islands	377858.0
1	2	arunachal pradesh	Arunachal East	375310	83.31	312658	1	arunachal pradesh	1385654.0
2	3	arunachal pradesh	Arunachal West	517384	73.60	380783	1	arunachal pradesh	1385654.0
3	4	assam	Dibrugarh	1659588	76.75	1273744	1	assam	17478091.0
4	5	assam	Jorhat	1727121	79.89	1379749	1	assam	17478091.0

Analysis by phases

In [31]:
```
by_phase_pp = merged_data.groupby('Phase')['Polled (%)'].mean()
by_phase_pp = pd.DataFrame(by_phase_pp)
```

In [32]:
```
by_phase = merged_data.groupby('Phase')['Amount spent (INR)'].sum()
by_phase = pd.DataFrame(by_phase)
```

In [86]:
```
fig, ax1 = plt.subplots(figsize=(10, 10))
sns.barplot(data=by_phase,x='Phase',y='Amount spent (INR)',ax=ax1)
plt.title('Amount on ads per phase' )
plt.show()
```



In [ ]:

In [ ]: