

Customer Retention Case Study Report

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Acknowledgement

It is my pleasure to present this report. Working on this project was an incredible experience that has given me good information and knowledge regarding the data analysis process.

All the required information and dataset are provided by **Flip Robo Technologies** (Bangalore) that helped me to complete the project.

I want to thank my SME **Swati Mahaseth** for giving the dataset to perform the complete case study process.



Introduction

Problem Statement:

Customer satisfaction has emerged as one of the most important factors that guarantee the success of online store; it has been posited as a key stimulant of purchase or repurchase intentions and customer loyalty.

A comprehensive review of the literature, theories and models have been carried out to propose the models for customer activation and customer retention.

Five major factors that contributed to the success of an e-commerce store have been identified as: service quality, system quality, information quality, trust and net benefit.

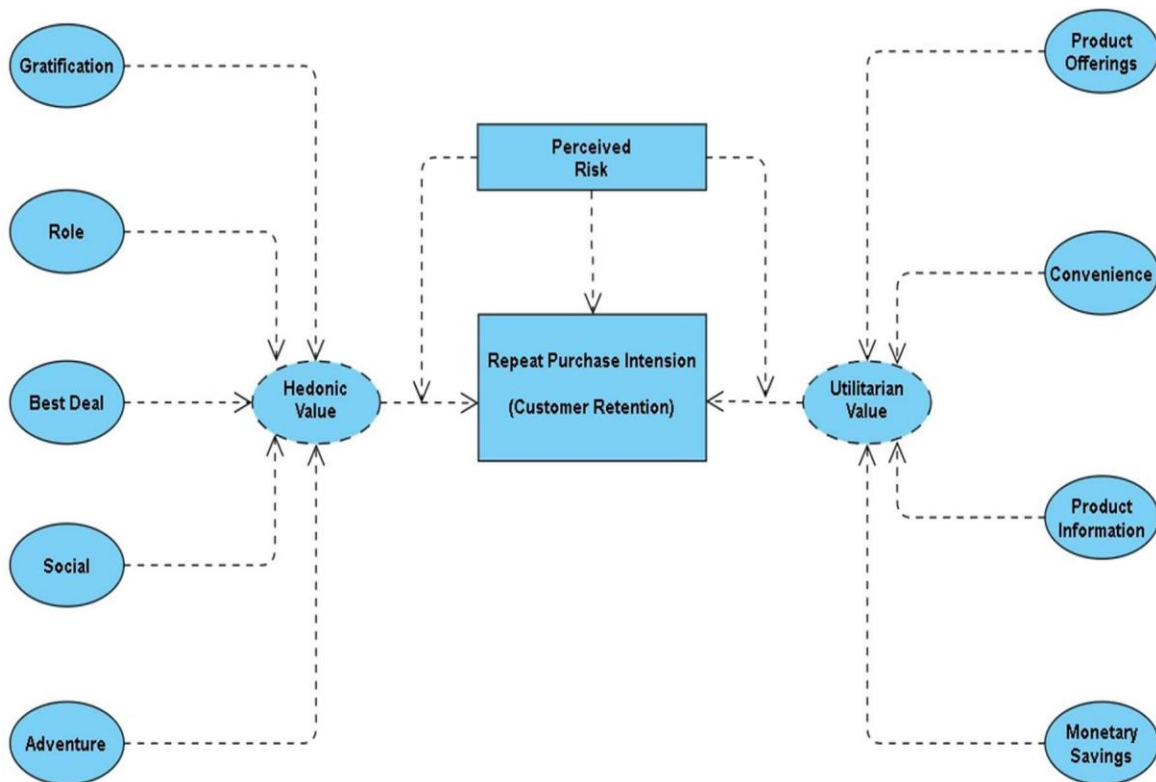
The research furthermore investigated the factors that influence the online customers repeat purchase intention.

The combination of both utilitarian value and hedonistic values are needed to affect the repeat purchase intention (loyalty) positively.

The data is collected from the Indian online shoppers.

Results indicate the e-retail success factors, which are very much critical for customer satisfaction.

Use Case Diagram:



In the above use case diagram, we can see that the Repeat Purchase Intention basically our Customer Retention strategy relies on Hedonic value and Utilitarian value. Also, we see that there are perceived risks affecting the purchase and re purchase intentions of our customers. The Hedonic value has 5 major parts such as gratification, role, best deal, social aspect and adventure feeling criterions. Where as in Utilitarian value we have product offerings, convenience, product information and monetary savings.

Motivation for the Problem Undertaken

Our main objective of doing this project is to analyze whether the users are shopping products from e-commerce websites. How did they give feedbacks to these websites on the basis of several positive and negative factors and also the details of the users on basis of factors like age, gender, city etc.

Benefits of Customer Retention:

1. Retention is cheaper than acquisition

- While the old adage about "it costs five times as much to acquire a new customer" may not be accurate in every case, the basic principle is spot on: it's more cost-effective to keep someone in the fold than to bring in new customers.
- Even still, if it's data you want, there has been plenty of research into acquisition vs retention, and every one of them has come back with the economics favoring retention as the more economically viable focus.
- One caveat though: retention is cheaper than acquisition, but it isn't necessarily easier.

2. Loyal customers are more profitable

- Not only is loyalty cheaper, it has better returns. According to research, engaged consumers buy 90% more frequently, spend 60% more per transaction and are five times more likely to indicate it is the only brand they would purchase in the future.
- On average, they're delivering 23% more revenue and profitability over the average customer.
- While loyal customers are more profitable, don't take their loyalty for granted.
- They'll be more open to price increases, but be cautious not to raise prices simply to see how long they'll stick around.
- Consider the flipside: "Actively disengaged" customers (people who oppose the brand and may be actively spreading that opinion) can cost a brand 13% of its revenue.

3. Your brand will stand out from the crowd

- Put your consumer hat on, and consider how many brands you interact with that actually seem to value your patronage.
- You can probably only think of one or two.
- Most brands focus on acquisition, which makes the retention-centric among us stand out even more.
- People see around 10,000 marketing exposures a day, but only engage with a few of them.
- The ones that earn continual engagement are those with whom they feel an emotional connection with on some level.
- Forget a unique selling proposition; the best brands have a unique retention proposition.

4. You'll earn more word-of-mouth referrals

- Your loyal customers will be your best source of new business.

- Despite all the efforts into online and mobile marketing and social media, people are still most strongly influenced by referrals from friends and family.
- Millennials in particular will spread the word of a brand's exploits: 90% share their brand preferences online.

5. Engaged Customers Provide More Feedback

- Feedback is critical to the success of any business.
- Customers who provide feedbacks are often willing to give brands the benefit of the doubt.
- They're telling you how to earn their business repeatedly. As research has shown, people who have complained and seen their issue resolved are 84% less likely to decrease their spend.
- Need help dealing with the customers who are providing nasty feedback?

6. Customers will explore your brand

- That's a nice way of saying you'll be able to sell them more stuff.
- Once a brand has proven itself with one product or service, customers are six times more likely to say they would try a new product or service from the brand as soon as it becomes available.
- That's not just valuable for sales, but these folks can be utilized to help with #5 above as beta testers - a critical element in product development.

7. Loyal Customers are more forgiving

- An Accenture study states over \$1.6 trillion is lost each year due to customers bailing after a poor service experience.
- We've gone so far as to claim that it's the top reason people will ditch a brand.
- But customers who consider themselves loyal will let some misdeeds slide - just don't let it happen too often.

8. Customers will welcome your marketing

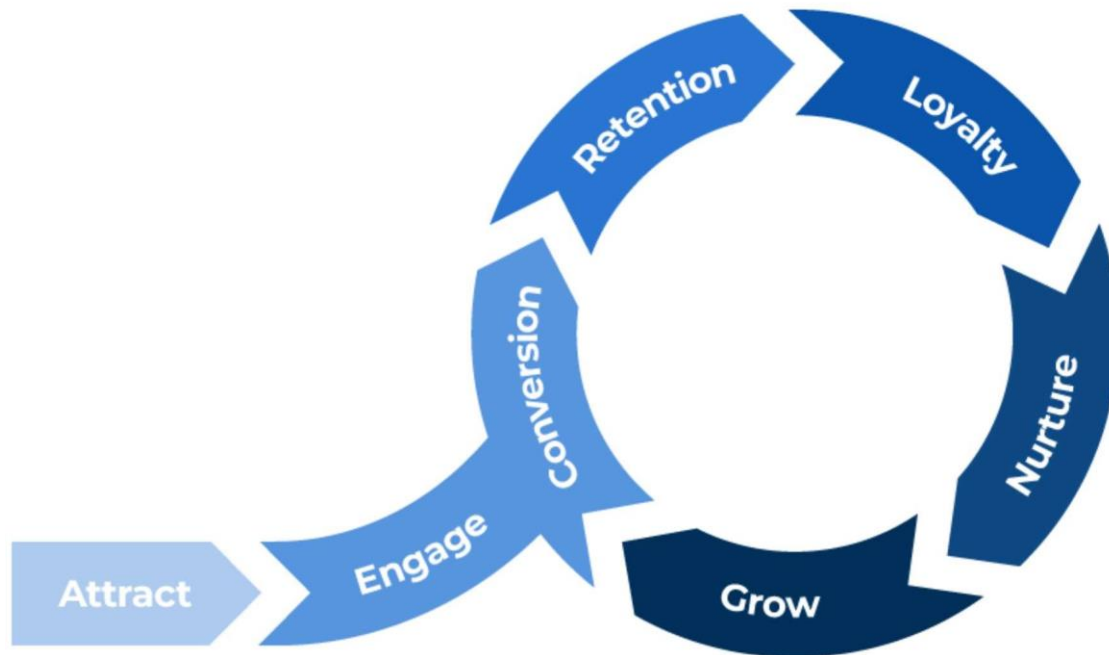
- No one likes being marketed to.
- Except for loyal customers!
- Those folks are four times more likely to say they "appreciate when this brand reaches out to me" and seven times more likely to "always respond to this brand's promotional offers."

9. You earn wiggle room to try new things

- Loyalty is fickle, so too many changes could chase people away.
- But once you've established a core base of proven customers, your brand can expand its boundaries.
- Maybe it's new messaging or a new product line, or even a new logo. The bottom line is as long as you maintain the basic premises that keep people in your corner; they'll stick with you through thin and thin.

- In fact, some of them will be excited to see what you can do.
- Existing customers are 50% more likely to try new products, according to a study.

Client Lifecycle Stages



Lifetime revenue is the end goal, not just today's revenue.

Need for Customer Retention:

Keeping current customers happy is generally more cost-effective than acquiring first-time customers. According to the Harvard Business Review, acquiring a new customer can be five to 25 times more expensive than holding on to an existing one.

Companies don't need to spend big on marketing, advertising, or sales outreach. It is easier to turn existing customers into repeating ones, since they already trust your brand from previous purchases. New customers, however, often require more convincing when it comes to that initial sale.

Customer loyalty won't just give companies repeat business. Loyal customers are more likely to give free recommendations to their colleagues, friends, and family. Creating that cycle of retained customers and buzz marketing is one way a company can cultivate customer loyalty for long-term success.

Improving customer retention means improving the customer experience. In fact, 77 percent of customers surveyed in a 2021 Customer Experience Trend Report being more loyal to a company that offers a good customer experience if they have an issue. 72 percent are willing to spend more from a company that offers good customer experiences. And 50 percent say that customer experience is more important to them now compared to a year ago.



Since the cost of getting a new customer is an estimated five to ten times more than keeping an old one, nurturing loyal customers is a powerful strategy that helps businesses grow.

Code use-

```
Import pandas as pd
import numpy as np
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
!pip install klib
df=pd.read_excel('codedsheet.xlsx')
```

In [6]:

```
df
df.head()
df.tail()
```

```
import klib
```

In [13]:

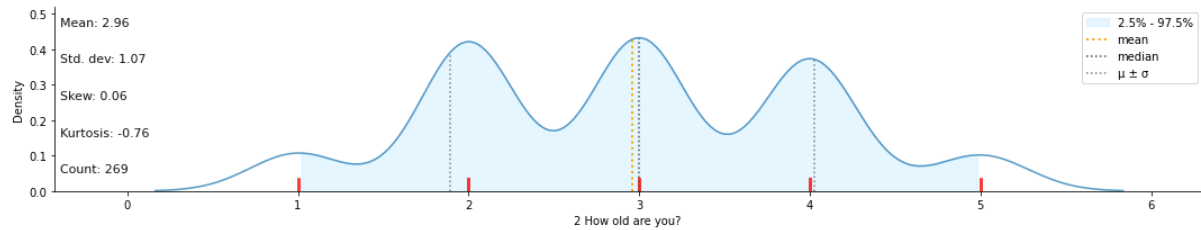
```
klib.corr_mat(df)
klib.corr_plot(df)
```

Out[14]:

```
klib.dist_plot(df)
klib.dist_plot(df)
```



```
_klib.dist_plot(df)
```



```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 269 entries, 0 to 268
```

```
Data columns (total 71 columns):
```

```
#    Column
```

```
Non-Null Count  Dtype
```

```
---  -
```

```
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```

```
0    1gender_of_respondent
269 non-null      int64
1    2_how_old_are_you
269 non-null      int64
2    3_which_city_do_you_shop_online_from
269 non-null      object
3    4_what_is_the_pin_code_of_where_you_shop_online_from
269 non-null      int64
4    5_since_how_long_you_are_shopping_online
269 non-null      int64
5    6_how_many_times_you_have_made_an_online_purchase_in_the_past_1_year
269 non-null      int64
6    7_how_do_you_access_the_internet_while_shopping_on_line
269 non-null      int64
7    8_which_device_do_you_use_to_access_the_online_shopping
269 non-null      int64
8    9_what_is_the_screen_size_of_your_mobile_device
269 non-null      int64
9    10_what_is_the_operating_system_os_of_your_device
269 non-null      int64
10   11_what_browser_do_you_run_on_your_device_to_access_the_website
269 non-null      int64
11
12   12_which_channel_did_you_follow_to_arrive_at_your_favorite_online_store_for
    _the_first_time                269 non-null      int64
12   13_after_first_visit,_how_do_you_reach_the_online_retail_store
269 non-null      int64
13
14   14_how_much_time_do_you_explore_the_e_retail_store_before_making_a_purchase
    _decision                269 non-null      int64
14   15_what_is_your_preferred_payment_option
269 non-null      int64
15
16   16_how_4_do_you_abandon_selecting_an_items_and_leaving_without_making_payme
    nt_your_shopping_cart      269 non-null      int64
16   17_why_did_you_abandon_the_"bag",_"shopping_cart"
269 non-null      int64
17   18_the_content_on_the_website_must_be_easy_to_read_and_understand
269 non-null      int64
18
19   19_information_on_similar_product_to_the_one_highlighted_is_important_for_p
    roduct_comparison          269 non-null      int64
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19
20_complete_information_on_listed_seller_and_product_being_offered_is_important_for_purchase_decision 269 non-null int64
20 21_all_relevant_information_on_listed_products_must_be_stated_clearly
269 non-null int64
21 22_ease_of_navigation_in_website
269 non-null int64
22 23_loading_and_processing_speed
269 non-null int64
23 24_user_friendly_interface_of_the_website
269 non-null int64
24 25_convenient_payment_methods
269 non-null int64
25
26_trust_that_the_online_retail_store_will_fulfill_its_part_of_the_transaction_at_the_stipulated_time 269 non-null int64
26 27_empathy_readiness_to_assist_with_queries_towards_the_customers
269 non-null int64
27 28_being_able_to_guarantee_the_privacy_of_the_customer
269 non-null int64
28
29_responsiveness,_availability_of_several_communication_channels_email,_online_rep,_twitter,_phone_etc 269 non-null int64
29 30_online_shopping_gives_monetary_benefit_and_discounts
269 non-null int64
30 31_enjoyment_is_derived_from_shopping_online
269 non-null int64
31 32_shopping_online_is_convenient_and_flexible
269 non-null int64
32
33_return_and_replacement_policy_of_the_e_tailer_is_important_for_purchase_decision 269 non-null int64
33 34_gaining_access_to_loyalty_programs_is_a_benefit_of_shopping_online
269 non-null int64
34
35_displaying_quality_information_on_the_website_improves_satisfaction_of_customers 269 non-null int64
35
36_user_derive_satisfaction_while_shopping_on_a_good_quality_website_or_application 269 non-null int64
36
37_net_benefit_derived_from_shopping_online_can_lead_to_users_satisfaction
269 non-null int64
37 38_user_satisfaction_cannot_exist_without_trust
269 non-null int64
38 39_offering_a_wide_variety_of_listed_product_in_several_category
269 non-null int64
39 40_provision_of_complete_and_relevant_product_information
269 non-null int64
40 41_monetary_savings
269 non-null int64
41 42_the_convenience_of_patronizing_the_online_retailer
269 non-null int64
42 43_shopping_on_the_website_gives_you_the_sense_of_adventure
269 non-null int64
43 44_shopping_on_your_preferred_e_tailer_enhances_your_social_status
269 non-null int64
44 45_you_feel_gratification_shopping_on_your_favorite_e_tailer
269 non-null int64
45 46_shopping_on_the_website_helps_you_fulfill_certain_roles
269 non-null int64

```

46 47_getting_value_for_money_spent
269 non-null      int64
47
from_the_following,_tick_any_or_all_of_the_online_retailers_you_have_shopped_from      269 non-null      object
48 easy_to_use_website_or_application
269 non-null      object
49 visual_appealing_web_page_layout
269 non-null      object
50 wild_variety_of_product_on_offer
269 non-null      object
51 complete,_relevant_description_information_of_products
269 non-null      object
52 fast_loading_website_speed_of_website_and_application
269 non-null      object
53 reliability_of_the_website_or_application
269 non-null      object
54 quickness_to_complete_purchase
269 non-null      object
55 availability_of_several_payment_options
269 non-null      object
56 speedy_order_delivery
269 non-null      object
57 privacy_of_customers'_information
269 non-null      object
58 security_of_customer_financial_information
269 non-null      object
59 perceived_trustworthiness
269 non-null      object
60 presence_of_online_assistance_through_multi_channel
269 non-null      object
61 longer_time_to_get_logged_in_promotion,_sales_period
269 non-null      object
62 longer_time_in_displaying_graphics_and_photos_promotion,_sales_period
269 non-null      object
63 late_declaration_of_price_promotion,_sales_period
269 non-null      object
64 longer_page_loading_time_promotion,_sales_period
269 non-null      object
65 limited_mode_of_payment_on_most_products_promotion,_sales_period
269 non-null      object
66 longer_delivery_period
269 non-null      object
67 change_in_website_application_design
269 non-null      object
68 frequent_disruption_when_moving_from_one_page_to_another
269 non-null      object
69 website_is_as_efficient_as_before
269 non-null      object
70 which_of_the_indian_online_retailer_would_you_recommend_to_a_friend
269 non-null      object
dtypes: int64(46), object(25)
memory usage: 149.3+ KB

```

In [20]:

```

klib.data_cleaning(df)
Long column names detected (>25 characters). Consider renaming the
following columns ['3_which_city_do_you_shop_online_from',
'4_what_is_the_pin_code_of_where_you_shop_online_from',
'5_since_how_long_you_are_shopping_online',
'6_how_many_times_you_have_made_an_online_purchase_in_the_past_1_year',
'7_how_do_you_access_the_internet_while_shopping_on_line',

```

'8_which_device_do_you_use_to_access_the_online_shopping',
 '9_what_is_the_screen_size_of_your_mobile_device',
 '10_what_is_the_operating_system_os_of_your_device',
 '11_what_browser_do_you_run_on_your_device_to_access_the_website',
 '12_which_channel_did_you_follow_to_arrive_at_your_favorite_online_store_for_the_first_time',
 '13_after_first_visit_how_do_you_reach_the_online_retail_store',
 '14_how_much_time_do_you_explore_the_e_retail_store_before_making_a_purchase_decision', '15_what_is_your_preferred_payment_option',
 '16_how_4_do_you_abandon_selecting_an_items_and_leaving_without_making_payment_your_shopping_cart',
 '17_why_did_you_abandon_the_"bag",_"shopping_cart"',
 '18_the_content_on_the_website_must_be_easy_to_read_and_understand',
 '19_information_on_similar_product_to_the_one_highlighted_is_important_for_product_comparison',
 '20_complete_information_on_listed_seller_and_product_being_offered_is_important_for_purchase_decision',
 '21_all_relevant_information_on_listed_products_must_be_stated_clearly',
 '22_ease_of_navigation_in_website', '23_loading_and_processing_speed',
 '24_user_friendly_interface_of_the_website',
 '25_convenient_payment_methods',
 '26_trust_that_the_online_retail_store_will_fulfill_its_part_of_the_transaction_at_the_stipulated_time',
 '27_empathy_readiness_to_assist_with_queries_towards_the_customers',
 '28_being_able_to_guarantee_the_privacy_of_the_customer',
 '29_responsiveness_availability_of_several_communication_channels_email_online_rep_twitter_phone_etc',
 '30_online_shopping_gives_monetary_benefit_and_discounts',
 '31_enjoyment_is_derived_from_shopping_online',
 '32_shopping_online_is_convenient_and_flexible',
 '33_return_and_replacement_policy_of_the_e_tailer_is_important_for_purchase_decision',
 '34_gaining_access_to_loyalty_programs_is_a_benefit_of_shopping_online',
 '35_displaying_quality_information_on_the_website_improves_satisfaction_of_customers',
 '36_user_derive_satisfaction_while_shopping_on_a_good_quality_website_or_application',
 '37_net_benefit_derived_from_shopping_online_can_lead_to_users_satisfaction', '38_user_satisfaction_cannot_exist_without_trust',
 '39_offering_a_wide_variety_of_listed_product_in_several_category',
 '40_provision_of_complete_and_relevant_product_information',
 '42_the_convenience_of_patronizing_the_online_retailer',
 '43_shopping_on_the_website_gives_you_the_sense_of_adventure',
 '44_shopping_on_your_preferred_e_tailer_enhances_your_social_status',
 '45_you_feel_gratification_shopping_on_your_favorite_e_tailer',
 '46_shopping_on_the_website_helps_you_fulfill_certain_roles',
 '47_getting_value_for_money_spent',
 'from_the_following_tick_any_or_all_of_the_online_retailers_you_have_shopped_from', 'easy_to_use_website_or_application',
 'visual_appealing_web_page_layout', 'wild_variety_of_product_on_offer',
 'complete_relevant_description_information_of_products',
 'fast_loading_website_speed_of_website_and_application',
 'reliability_of_the_website_or_application',
 'quickness_to_complete_purchase',
 'availability_of_several_payment_options',
 'privacy_of_customers_information',
 'security_of_customer_financial_information',
 'presence_of_online_assistance_through_multi_channel',
 'longer_time_to_get_goods_in_promotion_sales_period',
 'longer_time_in_displaying_graphics_and_photos_promotion_sales_period',
 'late_declaration_of_price_promotion_sales_period',

```
'longer_page_loading_time_promotion,_sales_period',
'limited_mode_of_payment_on_most_products_promotion,_sales_period',
'change_in_website_application_design',
'frequent_disruption_when_moving_from_one_page_to_another',
'website_is_as_efficient_as_before',
'which_of_the_indian_online_retailer_would_you_recommend_to_a_friend'].
Shape of cleaned data: (139, 71) - Remaining NAs: 0
```

Dropped rows: 130

of which 130 duplicates. (Rows (first 150 shown): [72, 94, 95, 97, 99, 100, 101, 108, 109, 110, 111, 113, 114, 115, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 152, 153, 155, 162, 163, 169, 170, 171, 174, 175, 177, 180, 181, 182, 183, 192, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268])

Dropped columns: 0

of which 0 single valued. Columns: []

Dropped missing values: 0

Reduced memory by at least: 0.12 MB (-80.0%)

klib.clean_column_names(df)

klib.convert_datatypes(df)

Out[22]:

1 g e n d e r o f r e s p o n d e n t	2 _h o _d _r e s p o n d e n t	3 _wh ich _is _d _u _sh _o _n li ne _fr o m	4_w hat _is _the _pin _co de _of _u _sh _o _n li ne _fr o m	5_s inc e_ ho lon g_ yo u_ are _s ho ppi ng _o nli ne	6_ho w_w any_t imes_ you_ have_ made_ _an onlin e_pur chase_ _in_t he_p ast_1 _year	7_h ow_ do_ you_ _acc _ess_ the_ inte _rnet _wh ile_s hop ping_ on_ _lin e	8_w hich _de vice _do _yo u_ se_t o_a cces s_th e_o nlin e_sh oppi ng	9_ wh at_i s_t he_ scr een _siz e_o f_y our_ _m obil e_d evi ce	10_ wh at_i s_t he_ ope rati ng_ syst em_ _os _of _yo ur_ dev ice	lon ger_ _ti me_ to_ get_ logg ed_i n_p rom otio n_s ales _pe riod	longe r_tim e_in_ displ _gra phics _and _pho tos_p romo tion_ _sale _s_per iod	late_ _de cla rati on_ of_ pri ce_ pro mo tio n_ sale _s_p eri od	lon ger_ _pa ge_ loa din _me _pr om otio n_ sale _s_p eri od	limit ed_ mod _e_of_ _pay ment _on_ _most _pro ducts_ _pro moti on_s_ ales_ _perio d	1 o n g e r _d _r _d _el _i _v _e _y _p _e _ri o d	ch an ge_ _i _n_ we _a _pp lic ati on_ _d esi gn	freq uent_ _dis rupt ion_ _whe n_m ovin g_fr om_ one_ page_ _to_ _an oth er	w eb sit e_ _is _as _ef fic ie nt _a _s_ _be fo re	whic h_of _the _india n_on _line_ _retail er_w ould _you_ _reco mme nd_ _t_o_a _friend	
0	0	3	De lhi	110 009	5	4	4	3	5	1	Am azo n.in	Amaz on.in	Flip kart .co m	Flip kart .co m	Ama zon.i n	Pa ya tm .co m	Fl ip ka rt .co m	Ama zon.i n	A m az on .in	Flipk art.co m
1	1	2	De lhi	110 030	5	5	2	1	2	3	Am azo n.in, Flip kart .co m	Mynt ra.co m	sna pde al.c om	Sna pde al.c om	Snap deal. com	S n a p d e a l .c o m	A ma zo n.i n	Myn tra.c om	A m az on .in , Fl ip ka rt. co m	Ama zon.i n, Mynt ra.co m

1 g e n d e r - o f - r e s p o n d e n t	2 - h o w o o d u	3_ wh ich _ci ty _d yo u sh _o nli -fr om	4_w hat _is the_ pin _co de_ of_ whe re_ you _sh op_ onli ne_ from	5_s inc e_ ho w_ lon g_ yo u_ are _s ho ppi ng_ _o nli ne	6_ho w_m any_ times_ you_ have_ made_ _an_ onlin e_ pur chase_ _in_ the_ past_ _year	7_h ow_ do_ you_ _acc ess_ the_ inte rnet_ _wh ile_ s hop ping_ _on _lin e	8_w hich _de vice_ do_ you_ _use_ _the_ _o_a cces s_ _th e_ _o nlin e_ _sh oppi ng	9_ wh at_ i s_ the_ scr een_ _siz e_ _o f_ _yo ur_ _mob ile_ _dev ice	10_ wh at_ i s_ the_ ope rati ng_ _syst em_ _os_ _of_ _yo ur_ _dev ice	longer _ti me_ to_ get_ logg ed_ _i n_ _p rom otio n_ _s ales_ _pe riod	longer _tim e_ _in_ _dis play ing_ _gra phics_ _and_ _pho tos_ _p romo tion_ _sale _s_ _per iod	late _de cla rati on_ _of_ _pri ce_ _pro mo tio n_ _n_ _sale _s_ _per iod	longer _pa ge_ _loa din g_ _ti me_ _pr om otio n_ _n_ _sale _s_ _per io d	limited _mod e_ _of_ _pay ment_ _on_ _most_ _pro ducts_ _pro moti on_ _s ales_ _perio d	1 o n g e r _d el i v e r _y _p e r i od	ch an ge_ _i n_ we bsi te_ _a pp lic ati on_ _d esi gn	frequ ent _dis rupt ion_ _whe n_ m ovin g_ _fr om_ one_ _page_ _to_ _ano ther	w eb sit e_ _is_ _a _se ef fic ie nt_ _a _s _be fo re	whic h_ _of _the_ _india n_ _on _line_ _retail er_ _w ould _you _reco mme nd_ _t _o_ _a_ _f riend					
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	3	0	2	Ka rna l	132 001	4		1		3	1	4	3		Sna pde al.co m	Mynt ra.co m, Snap deal.co m	My ntra .co m	Pay tm. .co m	Payt m.co m	P a y t m .co m	A ma zo n.i n, Fli pk art .co m	Ama zon.i n, Flip kart. com	A m az on .in, Fl ip ka rt. co m, Pa yt m. co m	Ama zon.i n, Flipk art.co m
	4	1	2	Ba ng alo re	530 068	3		2		2	1	2	3		Flip kart .co m, Payt m.co m	Payt m.co m	Pay tm. .co m	Pay tm. .co m	Snap deal. com	P a y t m .co m	A ma zo n.i n	Snap deal. com	Pa yt m. co m	Ama zon.i n, Mynt ra.co m
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2 6 4	1	2	So lan	173 212	2		1		3	1	4	2			Am azo n.in	Amaz on.in	Am azo n.in	Am azo n.in	Ama zon.i n	A m a z o n .i n	A ma zo n.i n	Ama zon.i n	A m az on .in	Ama zon.i n
2 6 5	1	3	Gh azi ab ad	201 008	2		4		3	1	5	2			Flip kart .co m	Flipk art.co m	Flip kart .co m	Flip kart .co m	Flipk art.co m	F li p k a rt .co m	Fli pk art .co m	Flip kart. com	Fl ip ka rt. co m	Flipk art.co m

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[illegible]269 rows \times 71 columns

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klib.drop_missing(df)
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r		_d	pin	w_	you_	acc	_do	he_	he_	me_	displ	on_	loa	e_of	r	_i	rupt	e_	india
o		o_	_co	lon	have_	the_	_yo	scr	ope	to_	aying	of_	din	pay	d	n_	ion_	_a	_on
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r		d_u	of_	u_	_an_	rnet	o_a	e_o	ng_	logg	_and	ce_	me	most	i	te	n_m	ef	retail
e		_a	re_	are	onlin	_wh	cce	f_y	em	ed_i	_pho	pro	om	_pro	v	a	ovin	fic	er_w
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e		o_o	ne_f	_o	ast_1	_lin	oppi	evi	dev	_pe	_sale	eri	erio	perio	e	esi	anot	fo	o_a
n		u_m	rom	nli	_year	e	ng	ce	ice	riod	_iod	od	d	d	ri	gn	her	re	friend

1 gender_o_f_r_e_s_p_o_n_d_e_n_t	2 _h_o_w_o_f_t_e_n_p_o_n_d_e_n_t	3_ which_ci_ty_d_o_u_sh_o_nl_i_n_e_f_r_o_m	4_w hat_is_the_pin_code_of_whe_re_you_sh_o_p_onl_i_n_e_f_r_o_m	5_s inc_e_ho_w_l_o_n_g_yo_u_a_r_e_s_ho_p_p_i_n_g_o_nl_i_n_e	6_ho w_m_a_n_y_t_i_m_e_s_yo_u_h_a_v_e_m_a_d_e_an_onl_i_n_e_p_u_r_c_h_a_s_e_i_n_t_h_e_p_a_s_t_1_y_e_a_r	7_h ow_d_o_yo_u_a_c_c_e_s_s_the_int_e_r_n_e_t_w_h_i_l_e_s_ho_p_p_i_n_g_on_l_i_n_e	8_w hich_de_vic_e_do_yo_u_u_s_e_o_nl_i_n_e_s_h_o_p_p_i_n_g	9_ wh_at_i_s_t_h_e_s_c_r_e_e_n_s_i_z_e_o_f_y_o_u_r_m_o_b_i_l_e_d_e_v_i_c_e	10_ wh_at_i_s_t_h_e_o_p_e_r_a_t_i_n_g_s_y_s_t_e_m_o_f_yo_u_r_d_e_v_i_c_e	. <th>Am azo n.in</th> <th>Amaz on.in</th> <th>Flip kart .co m</th> <th>Flip kart .co m</th> <th>Ama zon.i n</th> <th>P a y t m . co m</th> <th>Fli pk art .co m</th> <th>Ama zon.i n</th> <th>A m az on .in</th> <th>Flipk art.co m</th>	Am azo n.in	Amaz on.in	Flip kart .co m	Flip kart .co m	Ama zon.i n	P a y t m . co m	Fli pk art .co m	Ama zon.i n	A m az on .in	Flipk art.co m	
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1	1	2	De lhi	110 030	5	5	2	1	2	3	.	Am azo n.in, Flip kart .co m	Mynt ra.co m	sna pde al.c om	Sna pde al.c om	Snap deal. com	S n a p d e a l .co m	A ma zo n.i n	Myn tra.c om	A m az on .in , Fl ip ka rt. co m	Ama zon.i n, Mynt ra.co m
2	1	2	Gr eat er No ida	201 308	4	5	3	1	4	2	.	My ntra .co m	Mynt ra.co m	My ntra .co m	My ntra .co m	Ama zon.i n	P a y t m . co m	Pa yt m. co m	Payt m.co m	A m az on .in	Ama zon.i n, Payt m.co m, Mynt ra.co m
3	0	2	Ka rna l	132 001	4	1	3	1	4	3	.	Sna pde al.c om	Mynt ra.co m, Snap deal.c om	My ntra .co m	Pay tm. co m	Payt m.co m	P a y t m . co m	A ma zo n.i n, Fli pk art .co m	Ama zon.i n, Fl ip ka rt. co m	A m az on .in , Fl ip ka rt. co m, Pa yt m. co m	Ama zon.i n, Flipk art.co m
4	1	2	Ba ng alo re	530 068	3	2	2	1	2	3	.	Flip kart .co m, Payt m.c om	Payt m.co m	Pay tm. co m	Pay tm. co m	Snap deal. com	P a y t m . co m	A ma zo n.i n	Snap deal. com	Pa yt m. co m	Ama zon.i n, Mynt ra.co m
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1 g e n d e r o f r e s p o n d e n t	2 _h o w o o d u m	3_ wh ich _ci ty _d yo u sh _o nli _fr o m	4_w hat _is the _pin _co _of _whe re _sh op _nli _fr o m	5_s inc e_ ho w_ lon g_ yo u_ are _s ho ppi ng _o nli ne	6_ho w_m any_t imes_ you_ have_ _an_ onlin e_pur chase _in_t he_p ast_1 _year	7_h ow_ do_ you_ _acc _ess_ the_ inte rnet_ _wh ile_s hop ping _on_ _lin e	8_w hich _de vice_ _do _yo u_ se_t _o_a cces _s_th e_o nlin e_sh oppin g	9_ wh at_i s_t he_ scr _siz _e_o f_y our_ _m obil e_d evi ce	10_ wh at_i s_t he_ ope rati ng_ syst em_ _os _of _yo ur_ dev ice	lon ger_ _ti me_ to_ get_ logg ed_i n_p rom otio n_s ales _pe riod	longe r_tim e_in_ displ aying_ _gra phics_ _and_ _pho tos_p romo tion, _sale s_per iod	late_ _de cla rati on_ of_ pri ce_ pro mo tio n_ sale s_p eri od	lon ger_ _pa ge_ loa din g_ ti me_ _pr om otio n_ sale s_p eri od	limit ed_ mod e_of_ pay ment_ _on_ most_ _pro ducts_ _pro moti on_s ales_ perio d	1 o n g e r _d el i v e r y _p e ri od	ch an ge_ _i n_ we bsi te_ _a pp lic ati on_ _d esi gn	frequ ent_ _dis rupt ion_ _whe n_m ovin g_fr om_ one_ page_ _to_ anot her	w eb sit e_ _is _a s_ ef fic ie nt_ _a s_ be fo re	whic h_of _the_ _india n_on line_ _retail er_w ould _you _reco mme nd_t o_a_f riend		
2 6 4	1	2	So lan	173 212	2	1	3	1	4	2	.	Am azo n.in	Amaz on.in	Am azo n.in	Am azo n.in	Ama zon.i n	A ma zo n.i n	Ama zon.i n	A m az on .in	Ama zon.i n	
2 6 5	1	3	Gh azi ab ad	201 008	2	4	3	1	5	2	.	Flip kart .co m	Flipk art.co m	Flip kart .co m	Flip kart .co m	Flipk art.co m	Fli pk art .co m	Fli pk art .co m	Flip kart .com	Fl ip ka rt. co m	Flipk art.co m
2 6 6	1	4	Ba ng alo re	560 010	3	1	3	2	5	1	.	Am azo n.in	Snap deal.c om	Am azo n.in	Sna pde al.c om	Snap deal. com	S n a p d e al .c o m	Sn ap de al. co m	Snap deal. com	A m az on .in	Ama zon.i n
2 6 7	1	1	So lan	173 229	3	1	2	1	4	2	.	Am azo n.in	Amaz on.in, Mynt ra.co m, Snap deal.c om	Am azo n.in	Am azo n.in, Sna pde al.c om	Ama zon.i n	A m a z o n .i n	A ma zo n.i n	Myn tra.c om, Snap deal. com	M yn tra .c o m, Sn ap de al. co m	Ama zon.i n
2 6 8	1	4	Gh azi ab ad	201 009	3	4	3	1	4	2	.	Am azo n.in	Amaz on.in	Am azo n.in	Am azo n.in	Ama zon.i n	A m a z o n .i n	A ma zo n.i n	Ama zon.i n	A m az on .in	Ama zon.i n

klib.mv_col_handling(df)

[illegible]

Out[25]:

0 0

1 **1**

2 2

3 3

4 4

264 103

265 106

266 178

267 8

268 105

269 rows \times 1 columns

In [28]:

df

Out[28]:

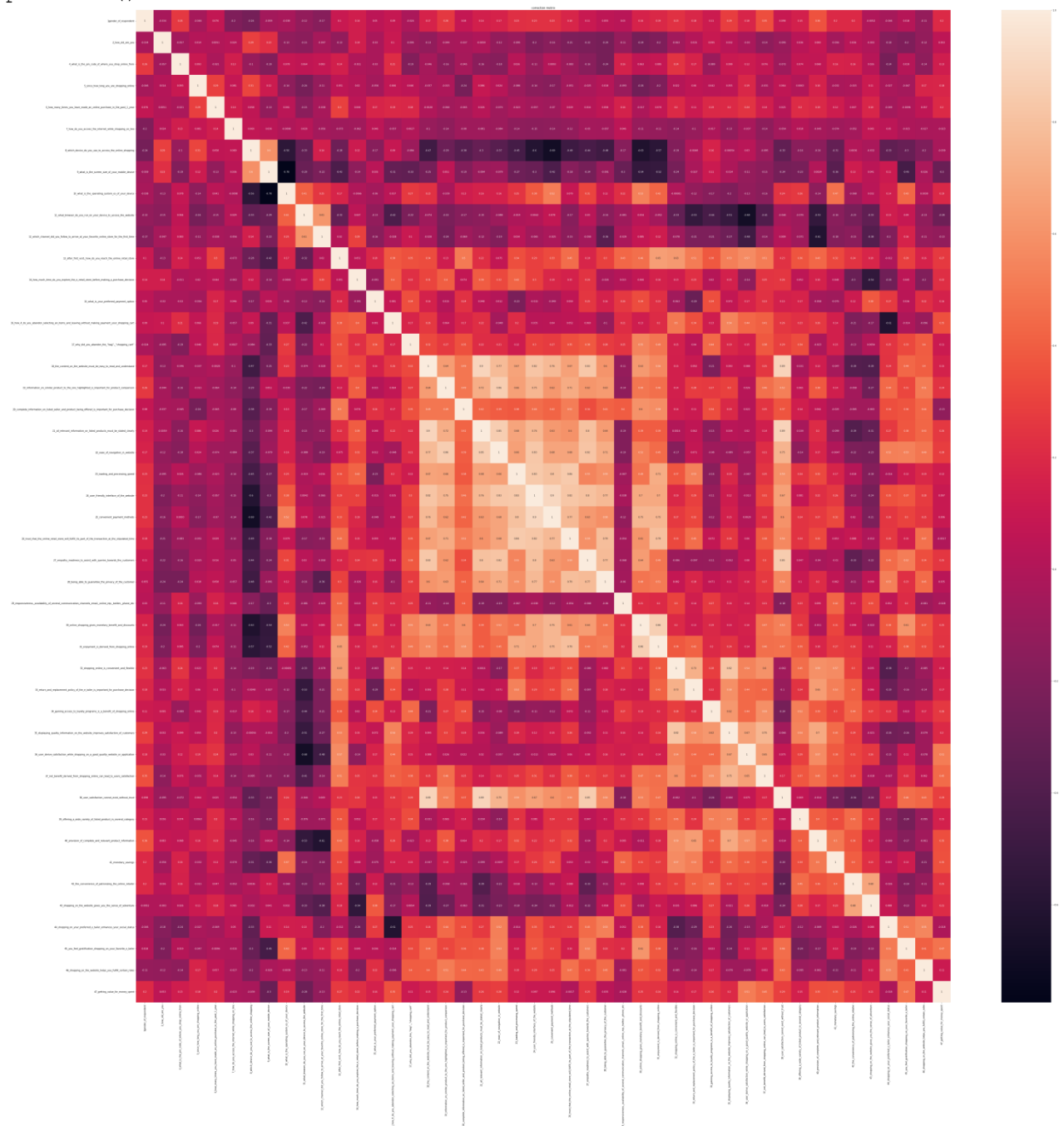
g	2	3_	4_w	5_s	6_ho	7_h	8_w	9_	10_	lon	longe	late	lon	limit	l	ch	freq	w	whic
n	-	wh	hat	inc	w_m	ow_	hich	wh	wh	ger	r_tim	_de	ger	ed_	o	an	uent	eb	h_of
d	h	ich	_is_	e_	any_t	do_	_de	at_i	at_i	_ti	e_in_	cla	_pa	mod	g	ge	_dis	sit	_the
e	o	_ci	the_	ho	imes_	you	vice	s_t	s_t	me_to_	displ	on_	ge_	e_of_	r	_i	rupt	e_	india
r	w	ty	pin	w_	you_	_acc	_do	he_	he_	get_	_gra	of_	loa	pay	-	n_	ion_	is	_on
-	-	_d	_co	lon	have_	ess_	_yo	scr	ope	logg	_phics	pri	g_ti	_on_	el	bsi	wh	s_	line_
f	o	o_	de_	yo	made	the_	u_u	een	rati	ed_i	_and	ce_	pr	most	i	te	n_m	_a	retail
d	l	o_	of_	u_	_an	inte	se_t	_siz	ng_	n_p	_pho	pro	mo	_pro	v	_a	g_fr	ould	_er_w
-	-	sh	re_	are	onlin	_wh	cces	f_y	em	rom	tos_p	otio	mo	otio	e	pp	lic	ie	_you
s	a	op	you	ho	e_pur	ile_s	s_th	our	_os	otio	romo	n_	n_	on_s	y	ati	one_	_a	_reco
p	e	nli	_sh	ppi	chase	hop	e_o	_m	_of	n_s	tion,	n_	sale	on_s	moti	on	page	_a	_mme
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e	u	m	rom	nli	_year	_lin	oppi	ng	ce	riod	iod	od		d	ri	gn	her	re	friend
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t															d				

[illegible]

```
import matplotlib.pyplot as plt
sns.heatmap(df.isnull())
plt.title('null value')
plt.show
```




```
corr_mat=df.corr()
plt.figure(figsize=[80,80])
sns.heatmap(corr_mat,annot=True)
plt.title('correction metrix')
plt.savefig('correction_metrix.jpg')
plt.show()
```



```
df.plot(kind='density',subplots=True,layout=(6,11),sharex=False,
legend=False,fontsize=1,figsize=(18,12))
plt.show()
```

