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## An Effective Email Marketing using Optimized Email Cleaning Process

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**Abstract**— The aim of this research work is to develop a best optimal procedure to send the emails and get the high open rate. This research work is focused on email address verification whether it is email sender address or receiver address. The success of an email campaign depends on two major factors, Email sender address, and Email subject line. The importance of subject line is less over email sender address as it is essential to send an email to user inbox folder to start the subject line role to play. And if we get fail in pushing the email into inbox folder then subject line would not have any significance even after it is made best. Study of email sender address could be an effective area to dig out the impact of email sender address over successful email campaign. We tried to analyze the effects of email addresses over email sending by sending live emails to the users. In the email sender verification, we analyze the impact of domain, SPF, DKIM, and came up with some useful results. In email receiver verification process we developed a code to filter the email addresses of the receiver where we checked the email address for MX, disposable, duplicate, role email, and domain. After this email cleaning process, we found an extra increment in the email open and deliver rate whereas email bounce rate got decreased.

**Keywords**— email marketing, email cleaning, spam, and bounce, SPF, DKIM, email template, email campaign.

### I. INTRODUCTION

Email marketing has been proved a great medium in order to get either a lead or profit. Out of 100 emails if we are possible to convert it into to one sale then also it would be a profitable business. In today time when email marketing is touching its peak users are still facing some huge problems like spam, bounce, SMTP suspension, and etc. So where the actual problem is either ESP services are not good or users do not to proper use of ESP for sending the email campaign. Nowadays most of the ESP are using a complex email filter which can't we assured for sending our email in the users inbox. User can also delete an email coming from someone which is not in his contact list [9]. So rather choosing the best ESP we should always focus to follow a procedure to get a best email campaign. Generally users who use the ESP for sending the emails to their customers are not tech familiar So when they start using any ESP it is very less chance that they configure their account properly and also validate their email specially domain with addition of SPF and DKIM record. It does not mean that it is a fault at their end instead it is un-awareness of the users with these all kinds of procedures and configuration before sending the email campaign. So to attain a successful email campaign the user should understand this procedure to verify the sender identity at

Their end and once they are authenticated then they should focus to their email list. Most of the users use third party or purchased list to promoting their product or services so it is very important to clean their email list before sending the email campaign. And this cleaning should be from a reputed email cleaning services or specific email cleaning service. After passing through this email quality checkups you should move your focus to the email template in the area of email subject line, email header, email footer, email content, email images, email attachment, email font letters, you aim should be to remove or avoid all such stuff from your email template which could make it a spam email. And those users who do not follow this basic and simple procedure are landed with unsatisfactory experiences with their ESP and then they start looking for new ESP again and again. Even your category of IP address impacts your email campaign. To overcome all these email marketing problem we build an email cleaning code with some optimization in the filtering technique in order to improvise the result and reduce the time of cleaning. We also researched on the other two important factor like email sender verification and email template verification and tried to break all the false believe which have been coming with the email marketing practice for a

Long time and showed impact of them over email delivery rate. Overall we tried to focus on improving the email sending practice with our optimised email cleaning process.

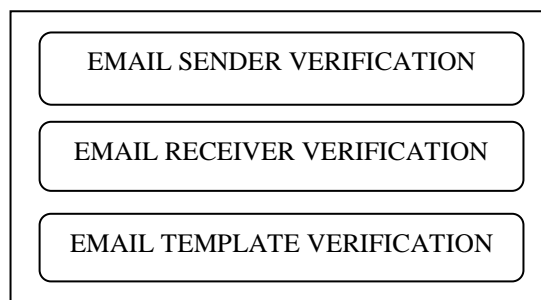
## II. RELATED WORK

Response Goodarz have discussed about E-mail marketing and its advantages, some authors describe that as a permitted Relationship between marketers and customers to provide wealth communication (Jackson and DeCormier 1999) or other researcher define as a “internet’s killer application” in that specific email can be modified, targeted and even track by the marketers (Wreden 1999) ..[1]. Ms. Rekha has explained that Spam filter software is used to identify and stop all un-ethical and unwanted emails targeted to the user inbox folder [4]. Manish Kumar stated that email spoofing has emerged as a biggest security challenge for all the web users or email marketers. One can never identify either legitimate or forged email until they check for the email authentication, verification, and traceability. The three main policy provided by the system to stop email spoofing are Sender Policy Framework (SPF) , Sender ID, Domain Keys (DKIM) [2]. As per Experian study ISPs are expected to take a better step to stop spamming prior to the spammers, thus they regularly review their policy and laws. Spam filters monitor the email not to contain unauthenticated contents or non-standard content. Email template can be checked with either available ways before final distribution [10]. As per the Deborah Fallows, email users are not entirely clear on just what is spam, an issue that is an absolute stopper for writing effective, enforceable legislation against spam. [12]. As per Yingjie Zhou for various email related studies archived email datasets are considered as an important data resource. These datasets could be used for the studies of spam detection, email classification, social network analysis (SNA) and text mining. But as we know that raw data of any forms is a mixture and not cleaned so before it used in any analysis study it should be cleaned well [13]. As per R.Miller email was first introduced in the year of 1971 and became a popular and effective medium of communication. Their number has been increased from countable to 2672 million as of 2016 and further increasing on day by day. This rapid growth of emails emerged with a new form of marketing called email marketing. The revenue has touched the figure of \$ 19,353 million. An email is only be considered a worth or success if it is opened or read by the customers or users. Email sender address and email subject line are the most responsible factors for opening and leaving the email by users [17].

## III. METHODOLOGY

Successful email campaign plays around the subject lines and email sender identity. This is to analyse the impact of sender identity over email campaign.

We also made the use one of the reputed ESP for analysing the verification at different phase as shown in Fig2 by sending the email though it. We divided whole process into three different verification strategies which are listed in Fig1.



**Fig 1: Methodology Process Flow**

### a). EMAIL-SENDER\_VERIFICATION

This is a very important verification at our end; if we are sender of this email then we should make sure to verify our email and domain in a proper way to avoid any kind of problems while sending the email campaign. To see the effect of email sender on email campaign we went with multiple test cases or experiments. First we try sending few email campaign with the help of public email address as with our Gmail address with a un-cleaned email list where we observed that the no. bounce emails were more with few open email. Our public emails are fine in terms of authentication but only problem with theses emails are the daily quota where you can not send more emails to your recipients. Second problem could be the problem of branding as it is never good to use public email for promoting our product or services. So after this experiment we came to a conclusion that we should use public email for our personal and official conversations though should not use for marketing strategy. In our second test case we create a disposable email address for sending our email campaign. This email address was not verified with SPF and DKIM configuration. Once we start sending email campaign we found some amazing results. We got negligible spam and bounce as we sent this campaign to the cleaned email list but we hardly could get one or two email open out of all.

This means most of the emails sent were landed in the spam folder of the recipients. SO here list cleaning play a very important role to reduce the spam and bounce and this also protect us from the SMTP suspension which could create a bigger problem to us.

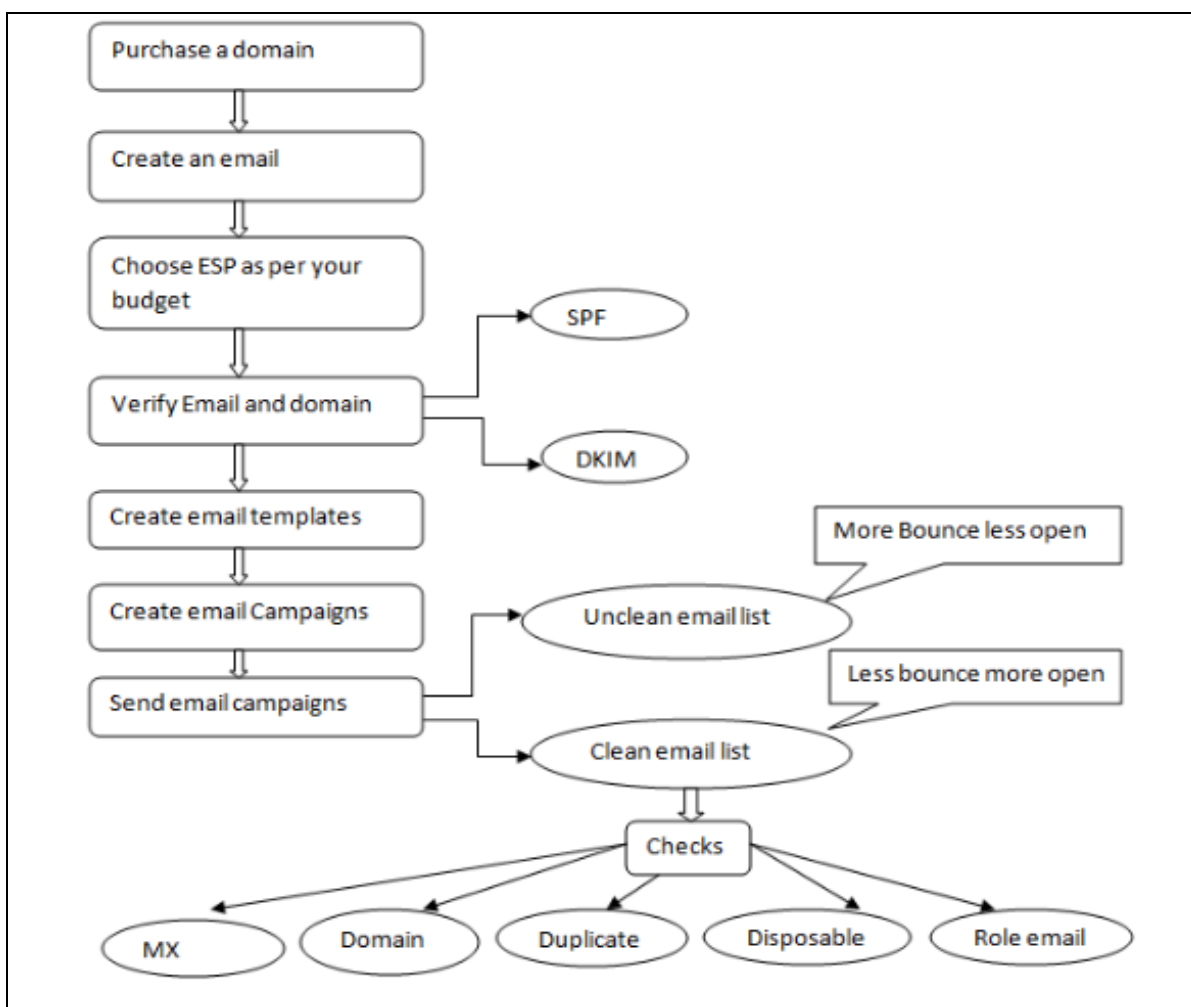
Once you clean your list and send the email campaign to the same list then you should also configure the HTTP end point for tracking the spam and bounce emails and stop them in the next time email sending. In case you are using third party SMTP you would need to set these end point separately whereas in all in one ESP it is automatically configured to catch and spam and bounce records though you can still check the setting for the same. In our third case we purchased a domain and configure it properly like we configure its MX record, SPF records, DKIM records, and DMARK records.

**MX:** It stands for mail exchange record, If any SMTP asks for this value to add into your domain hosting site then you can add it though it is already set in most of the case.

**SPF:** it stands for sender policy framework; SPF record provides a confirmation to the recipient server that the email sending server is authorize to send the email on your behalf.

**DKIM:** It stands for domain key identified mail, it is used to check the authenticity of your email message. Here a digital signature is added with the sending message along with a public key and then it is decrypted at the recipient server with the same public key to confirm whether same message came as deliver from the sending server.

Now the question arise is this that how we implement these SPF and DKIM records for our SMTP server and where do we get these records from and where do we need to put in? It is not a very complicated



**Fig 2: Process Flow Chart**

Process and does not require any technical stuff. When you decide to send the email with the help of any ESP then that ESP provides you the SPF and DKIM records for your domain and you just need to put these records in your domain hosting site where have you purchased your

domain from. You can generally find the area inside the DNS manager or DNS management.

You get a place to add the text records inside the DNS management in your C-Panel. But there could be one more case when your ESP and SMTP server are different then you will get the SPF and DKIM records from your SMTP server and will need to add at the same place as described above, but you should be very clear that the SPF and DKIM records are given from your SMTP server. Once we configure our domain properly with these setting then we sent few more email campaign and we find that the email start going into the users inbox folder as we start getting open, unsubscribe and abuse status from the user end , this assures us that the emails are reaching into the users inbox folder. In the similar fashion we tried this to the different-2 email list and found the positive outcome. But after all these experiment we were unable to find expected result from our email sent. So, now we stop to sent the email campaign to the full contact list instead we sent it to the most engaging contacts in our list, and found some amazing results with this experiment. We succeed to get the more open rate or an average open rate in case of email newsletter and we could also reduce the bounce and spam email below the benchmark. As per Douglas engage contacts are those contacts that have opened our emails before or still opening our emails, once you are success to make as such huge list of engaged contacts then you will surely get the best outcome from your email campaign as per your expectation Primary responsibility of “DKIM” is to add an identifier in your email that can be trusted by receiver end, specifically a domain name that can be unrelated to any other identifier in the message. That domain name is used for associating the reputation of the domain owner with the message [8].

#### **b).EMAIL-RECEIVER-VERIFICATION**

Email receiver verification is the verification process of the receiver email address whether it is single email or a list of email address. To verify the impact of list first we sent an email campaign to an un-cleaned email list and what we found is that we landed with more than 50% bounce rate which more than sufficient to get our SMTP account suspension from any ESP provider. We again sent an email campaign to the un-cleaned list and this time we are landed with 80% bounce email, form these results one thing is very clear that list cleaning is very necessary before sending our email campaign whether it is our own subscriber list or third-party and purchased list. Because this will really stop most of your bounce and spam email and will save your SMTP account from suspension. So the process of email cleaning reduces 50% of your headache of email being bounce or spam. And once you take this list with reference to the proposed methodology then you get a fine list or also called engaged list where your customer open your email and read your email regularly. So after building a best engaged contact list it is very less chance to get any kind of problems like spam or bounce

during your email campaigning sending however you can expect to get better and better result with the moving time.

In our next email campaign we clean our email list with our build code and now this time we got 7% bounce rate which is quite less and acceptable by most of the ESP as

they allow a bounce rate less than 8%. And furthermore with the experiment we were able to get a bounce less than 5% which is safe zone for any user sending email campaign and is acceptable to almost all the ESP. With these checks we were able to get a clean list which is sufficient to reduce the bounce rate, which could create a reason for our SMTP account Suspension at first encounter.

#### **c).EMAIL-TEMPLATE-VERIFICATION**

We can't be assured even after email sender and email receiver verification because these will not just sufficient to make our email open though they can land our email in the user mailbox but is not a guarantee that email will land in the inbox folder. So this email template design and configuration plays a very important role in landing our email in the inbox folder. So to check the impact of the template design we again made some experiment by sending the variation in the email template or email template body, email template subject line. When we sent the email campaign with more and more image inside it then it got landed in the spam folder of the receiver. As per study of “Enron Corpus”, Numeric Data in email includes such features as the message size, number of recipients and counts of particular characters. So far, every test has found that these features can contribute little towards email classification [6]. Frequently, marketers are sending out email marketing campaigns that priorities speed and convenience at the expense of relevance and targeted content. Product news and service information remains the biggest focus of email marketing content (56%) [11]. These Email template creation makes a worth to all the ESP as they allow us to create attractive and amazing email template with ease in very quick time and these beautiful templates helps in drawing the user attention towards our email . This facility of creating templates is not provided in our public email providers like Gmail and Yahoo. Templates are the great help when it comes to design the marketing email for our product or service [15].

When we use any special symbols either in our email subject line or in email content then also it increase the chance of email to be landed in the spam folder. When we use any un-ethical language in our email campaign then it reached to the spam folder of user. So if we really want to send our email directly to the user inbox folder then we should avoid all these activity while designing the email

template. But the most crucial phase of this procedure start here when our email is in the inbox folder and user don't open the email, because this would be the most unlucky moment with the email who has come by passing a long journey of verification. So here the most important role is of subject line along with the email sending timing which

Convenes user to open the email and it makes a worth to send the email cost and effort. When we sent the template with whole subject line in upper case then it just reach to spam folder. When we sent a very lengthy email template then it reached to the spam folder. When we introduce more and more link to our email template then it reached to the spam folder. Subject line should be very specific and attractive as well, if you choose a better subject line then it will make worth to your email. As there have been several rule proposed to make a best subject line but here in our experiment we used to choose very specific subject related to the content of our email. Though our research was not over a targeting audience so we sent a variety of subject along with email campaigns and we observed that the subject line related to SMTP, Money making , ESP, Email sending, Domain got the higher open rate in comparison to the other subject line. But my personal opinion is that the subject line will do best always if it used against a targeting audience however the best subject line can do better 1-2 times for audience but they will not work further with the same intensity.

**Email sending time:** It is not considered an important factor while sending the email campaign but this could also add an extra value in your email open rate. As you would have also probably observed this phenomenon that when we check our email inbox then we pay an extra attention to the first 5-10 emails and then we randomly see for the important emails which either we are engaged with or we are familiar with. So the landing of your email in first 10 places can add an extra advantage to your email and this would probably increase the chance of its opening. But this time vary from country to country even could also be different areas in the same country.

**Email sending Frequency:** Sending too frequent email to the same customer or list may cause spam or unsubscribe marking for your email, so we should avoid sending email frequently.

Below are few important points which we came up with after researching our proposed methodology on an experimental ground of email sending.

1. Purchase a suitable domain related to your service or product with dedicated IP address.

2. Setup an email account using this domain which will help to verify the email address for your domain.
3. Now choose a best ESP as per your budget.
4. Verify your Email and Domain address.
5. You can verify your email just by click the verification link in your email inbox.
6. You can verify your domain by just placing SPF and DKIM records from your SMTP providers to your domain hosting site where have you purchased domain from.
7. In case you are using third party SMTP to send your email then make sure you configure your https end point to receive the details of spam and bounce emails.
8. Clean your email list with the help of one of reputed email cleaning service in case your ESP does not provide the facility to clean the email list.
9. Upload your contacts to your account.
10. Now create an email template for sending the email. Choose the best precise subject line for your email template.
11. Your email should not be too lengthy.
12. Make sure your email does not contain more no. of images.
13. Image size in your template should not be too large.
14. Do not have more links to your email template.
15. Avoid the use of uppercase letters in your email template.
16. Use standard font size in your email template.
17. Make sure color of email template background and email template should not be same.
18. Avoid use of un-social, un-ethical words in your email template.
19. Try to send your email campaign to the targeted audience.
20. Try to avoid the use of third party or purchased email list and use your own subscriber list to send your email campaign.
21. Try to send the email at the best timing as per the country timing. Either scheduled it for early morning or late evening. Though you can also draw your own pattern to get the best timing to

- send the emails by analyzing your email campaigns.
22. Avoid attachment to your email campaign if possible as it could convert it into a spam email easily.
  23. Always prefer sending emails to your own subscribers who has opted or authorize to send the emails.
  24. If you will collect your subscribers with double opt-in process then this would give you best result for your email campaigning.
  25. You should always have a website with your domain which you are using to send your email campaign.
  26. Never send too frequent emails as sometime users get irritated with this frequent reception of emails.
  27. In case of shared IP address just check the blacklist for your sender email.

#### IV. RESULT AND DISCUSSION

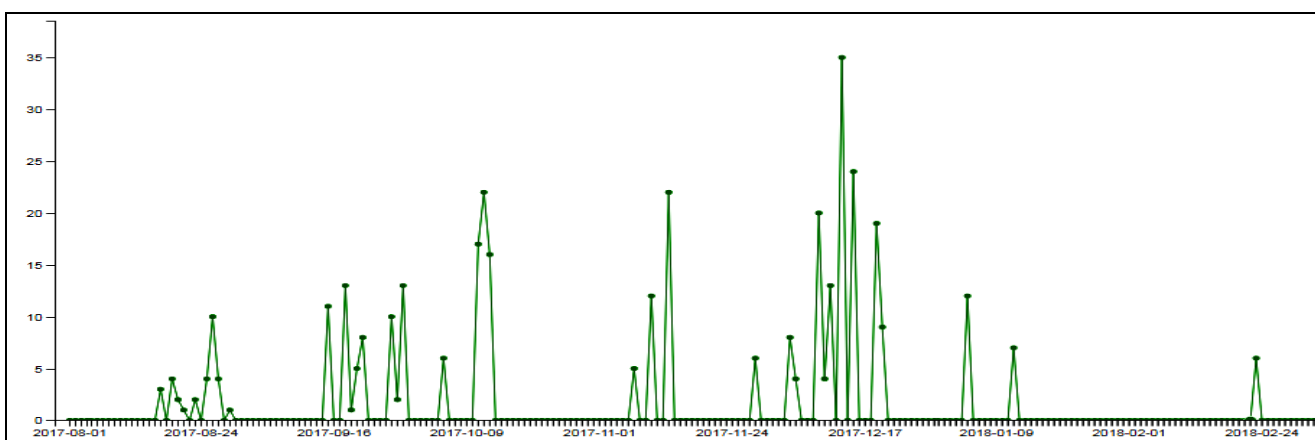


Fig 3: No. Of Email Open

In Fig3 you can see the graph of email open which is quite less in the starting but once after cleaning the list and verifying the SPF and DKIM records of the sending emails we start getting good results as shown the graph. For analysing the impact of our methodology we perform a live experiment over 110000 emails of approx 1400 users by sending them with different-2 test parameters. We got the positive result and tried to understand the strategy with sending the different-2 email campaigns. So this is a great success in order to have a slight Increasing graph of engaged contacts with time though this was not our targeting Audience still we were able to make an engaged user list with the help of our sending strategy. you can clearly see the reduced bounce email in Fig4 where in the beginning the bounce emails were more but with the cleaning process they start reducing with a large amount in number. Having knowledge of your reader behaviour along with their bonding and position is of great use As you would be able to Write appropriate tone in your email and that will be the worth for email for which it was designed [7].

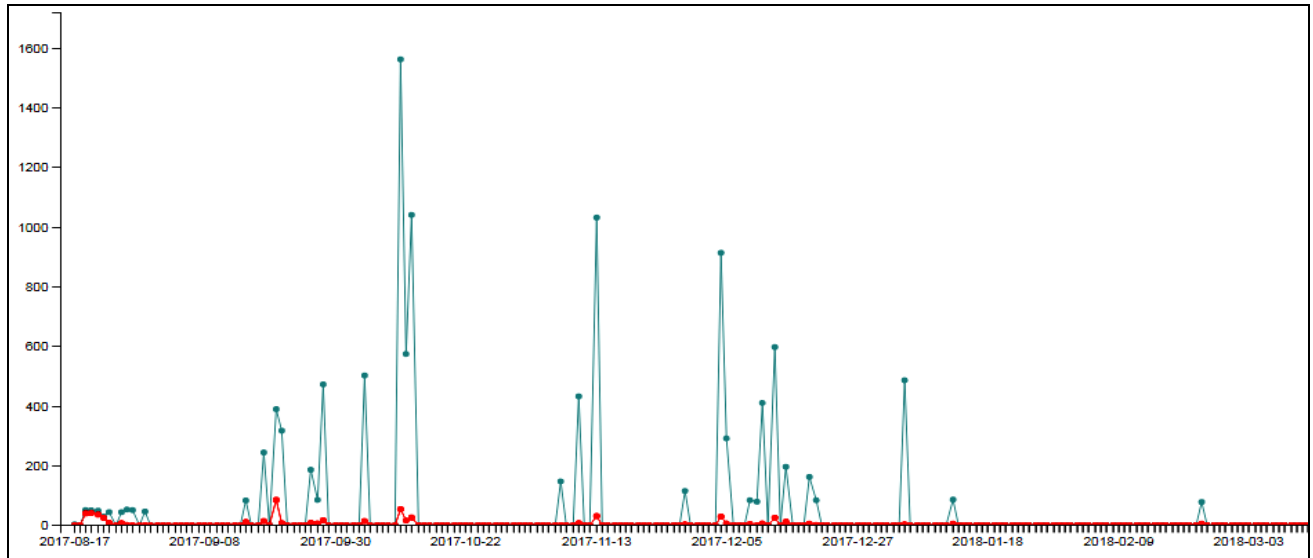
We sent all these campaigns with the help of one of the reputed ESP (Elastic Email) however we did not pay even a single penny for this as we used their free sending limit successfully.

So with this research work we also came up with a procedure to use the ESP free sending limit without suspending our account or any other problem. Even at some point of time our sending reputation reached near to 100% which is very good to get high deliver rate and open rate for our email campaigns, it also reduce the chance of our SMTP suspension to minimum level. On average we were able to get an average open of 14% which is a good open rate for a Newsletters though we sent random newsletters to the random audience. An email often has an attachment with malicious Codes that can be installed automatically upon opening without the victims realizing it [5] Though we could not analyse impact of attachment in the email campaign due to our account limitation but as per data Mining in this area we came to a conclusion that we should always avoid to have attachment in our promotional or marketing emails. Server blacklisting can cause prevention to most of the legitimate sender even they

did not send anything wrong. If any single user sends bulk spam and cause his mail server blacklisted then all other users using that mail server will find their emails to be blocked. [14]. As a result we did not include this check in our list cleaning procedure. We calculate our open rate with the below given formula.

**Open Email Percentage = (Total no. of open email / Total no. of deliver email)\*100**

As per Smart Insight report of 2018 the standard no. of email open rate for unknown or random emails is 14.48% , and as per Constant contact the average email open rate for the category of marketing ,management, advertisement consultant and training are 13.10 and 10.77 respectively[3][16].



**Fig 4: Email Submitted vs. Email Bounce**

**Table 1: Email Sending Results**

Submit Email	Deliver Email	Open Email	Open Email (%)	Bounce Email	Bounce Email (%)	Unsubscribe Email
77	73	6	8.22	4	5.19	1
86	79	8	10.12	7	8.14	1
84	83	5	6.02	1	1.19	1
84	83	9	10.84	1	1.19	0
85	80	17	21.25	5	5.88	1
86	85	22	25.58	0	0	2
87	83	22	26.50	4	4.60	2
84	80	20	25	4	4.76	0

Total Email Open (%) = 16.69%

Total Bounce (%) = 3.87%

In this research paper we were able to achieve an average of 16.69% for the email campaign submitted to our filtered engaged contact list. We also got a bounce of 3.87% which is quite less and is acceptable by all the ESP or SMTP running today as at the best SMTP you are allowed to have a bounce percentage of 5 or less as shown in table2. With this outcome

we can assume that the procedure we develop works well in enhancing the email marketing strategy. However we performed this experiment in a limited boundary with maximum risk include like suspension of our SMTP account while sending the un-social emails for testing purpose.

If this procedure is followed with the real promotional or marketing email then this could generate even better results for email open rate.

**Table 2: Comparative Analysis**

Business Type	Open-Rate (Total %)	Bounce Rate (%)	Unsubscribe Rate (%)
Marketing, Advertising, Public relation[16]	13.10	10.30	0.01
Unknown Sender[22]	14.48	8.17	0.02
Proposed Algorithm Result	16.69	3.87	1.22



With the help of above extensive experiment we came up with an optimal procedure or algorithm which would help you to increase your email open rate to a different height.

In Table1 you can see the experimental stats for email campaign sent and in table2 we analyse the comparative study over results and match with the industry standard. Fig5 shows a graph representing the result analysis.

We have came up with few point which if been followed before sending the email campaign can definitely increase email open rate. You can find those points in below page.

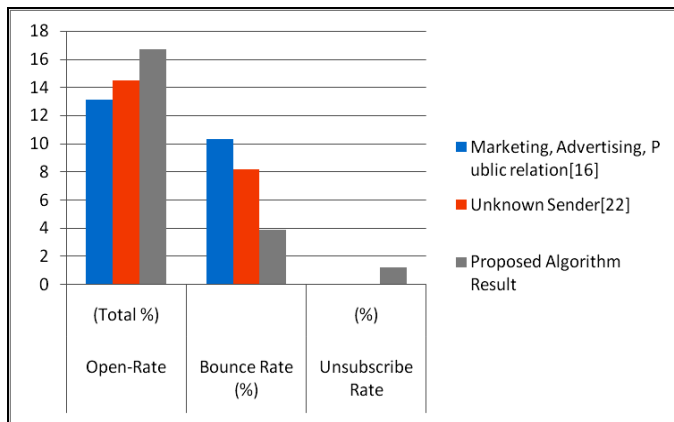


Fig 5: Email Sending Result Analysis

## V. CONCLUSION AND FUTURE SCOPE

In this research paper we have researched on all possible problems coming to the customers or email marketing users. And with our experiment analysis we proposed a lined procedure which if been followed step by step before sending the email campaign can provide better results up to your expectation. We analyze the impact of subject line and saw the effect of it over email campaign. We also researched the spam filter impact over emails. With all these researches we developed a new email cleaning code and got 16.67% email open which is better than standard industry open rate in the same category that we sent. In our research work there is a huge scope for future work. One can work with the existing code for targeted audience or own subscribers with specific email. They can also try the same procedures with dedicated IP address and can see the impact of it over email campaigns.

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### Authors Profile

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*Mr. Anurag Tiwari* has persued bechelor of engineering in 2011 by RGPV university in IT trade. He is persuing M-tech from RGPV university with trade CS. He has four year working experience in software MNC in the field of development, designing and database. Currently he is working on software startups.

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