UNIVERSITY OF MASSACHUSETTS - DARTMOUTH

DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE


# A Case Study on Different ways of Sharing Information in Social Networks

CIS 600: MASTER'S PROJECT

FINAL PROJECT REPORT

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## ABSTRACT

Social Networks now become popular and powerful platforms for people to share information. Everyone may share their interested information with their connections, or send messages to their friends. Communicating or passing information through messages requires personal time, communication and computational resources.

With an increase in the amount of messages being sent there can be chances that the receiver may not notice specific messages, or there can be an indifference in message as well. This makes it important for the system to send an appropriate message to an appropriate user of interest. The goal of this project is to develop computational decision-making methods to share information with targeted users of interest in a cost effective manner.

A previous work provided an analysis of experiments where all the nodes in a network used the same strategy of forwarding messages. In the project, we experiment on nodes using different strategies in a single network and report the analysis. And we also study different methods of message sharing and the corresponding strategies, including posting and message sending.

# Introduction

Social networks are the new standards of community interactions of the world in present generation. Initially, social networks started with communication as their sole purpose but now there are various others things that people operate on to, in many levels. Many social networking sites such as Facebook, twitter, LinkedIn, Instagram have provided a platform for people to not just communicate through messages, also to share their interests, opinions or ideas with their connections and expanding these connections to explore their professional careers as well. To provide with all these functionalities; being able to communicate in a proper manner without errors is of utmost importance, achieving these would cost time and resources.

In open Multi Agent systems, where a centralized control is not provided and every individual has equal rights, to make sure that they get along well together and function accurately is a challenging task. Identifying the influential individuals would allow to ensure a standard or a pattern in behavior of these systems and in providing efficiency. Here, we ensure the capability of sending messages to its target user of interest in a cost effective manner. Communicating or passing information through messages requires personal time, communication and computational resources. Also, with an increase in the amount of messages being sent there can be chances that the receiver may not notice specific messages, or there can be an indifference in message as well. This makes it important for the system to send an appropriate message to an appropriate user of interest. To ensure the capability of sending message to its target users of interest, it is important to send the right message to the right person who is interested in that message. Decision-making regarding which message should be shared with whom and in a way that doesn't reduce the receiver's attention is of utmost importance. To achieve this, we analyze different ways of sharing Information. The existing system provided an analysis of experiments where all the nodes in a networks used single strategy forwarding messages. In the present system we experiment on nodes using different strategies in a single network and report the analysis.

In this approach, to help nodes in deciding the connection to which the message is sent we study the different message forwarding strategies. Here, each message is considered as part of a category where it can have a single category or multiple categories from a list of categories, with different relevant strength. Each node has its own profile describing the topics of its interest. This helps in deciding the nodes that are interested in each message based on the category of the message and the interest profile of each node. Once the category and interest is decided we conduct experiments on six different methodologies of message forwarding on different network structures to analyze and demonstrate the working of these strategies on the networks. This study assumes that information relevance of a message and Interest profile of a node are available.

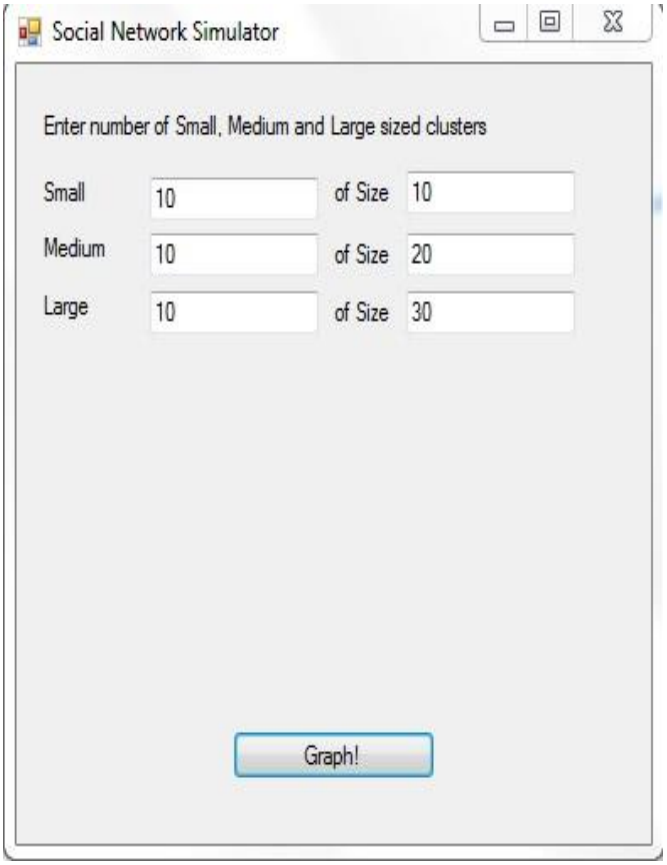
The main objects in this approach are messages and nodes. Each messages has its own category list and relevance score to which it belongs.
Example of a Message
{Sports, 0.9}.

Example of an Interest Profile of node
“0": {"reebok":{"interestFactor":"2", "score":"0.3"}, "nike":{"interestFactor":"2",”score”:”0.5”}, adidas":{"interestFactor":"5","score":"0.8"}, "home-decor":{"interestFactor":"4","score":"1"}, "tools":{"interestFactor":"5","score":"0.4"}}

## INTERFACE AND WORKING

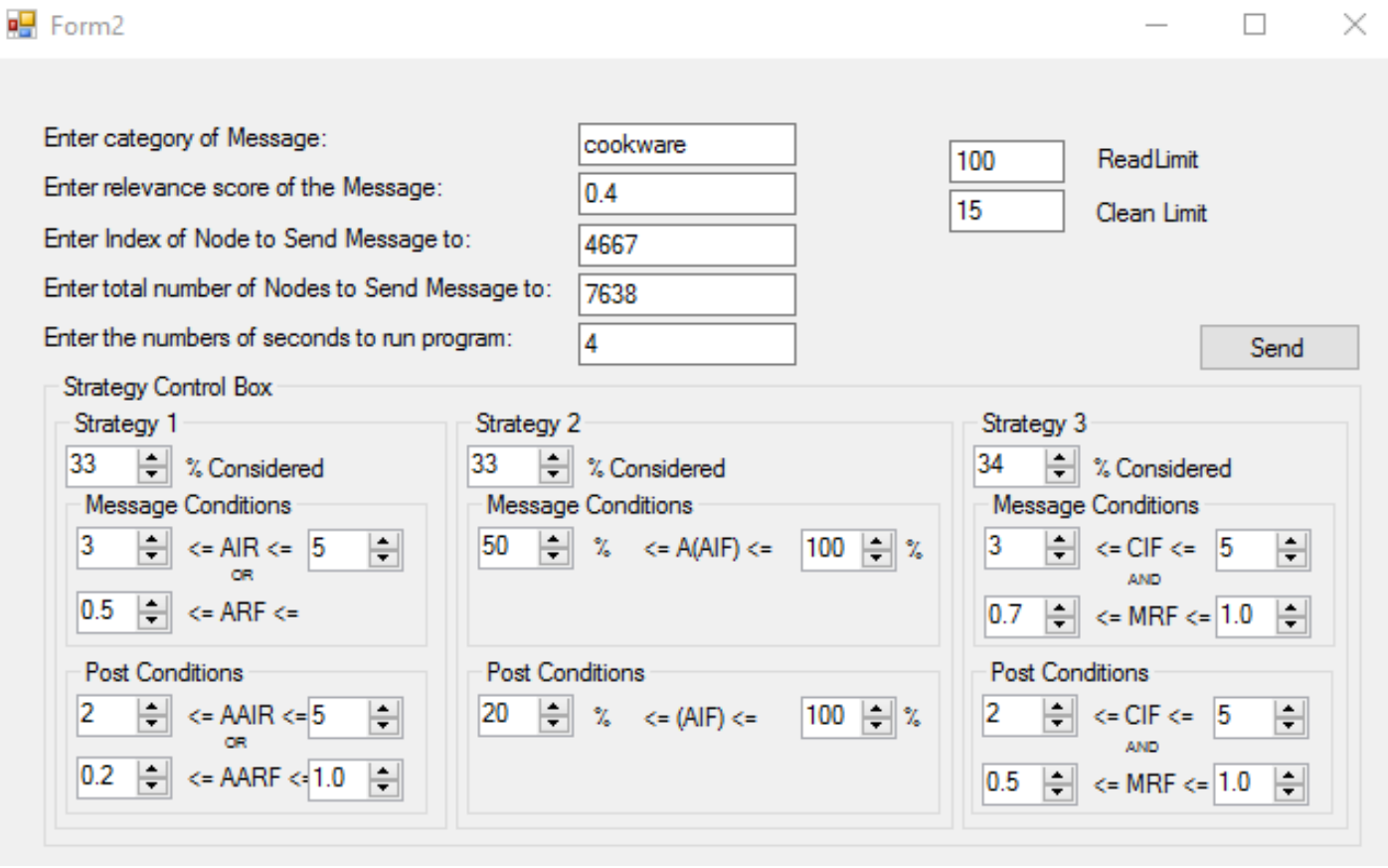
Form 1:

Builds a social network based on the user input of number of large, medium and small clusters and corresponding sizes. A network of nodes is created once a user enters the input and clicks on graph button. The nodes’ connections are randomly selected and a json file is created with these connection links.



## Form 2:

The form enables the user to input the message's categories and the corresponding relevance's. The user can also select the node from which the user wants to initiate the message and also the restrict the number of nodes to who can receive the message though more number of nodes are eligible to receive the message as per one of the 3 strategies.




WORKING

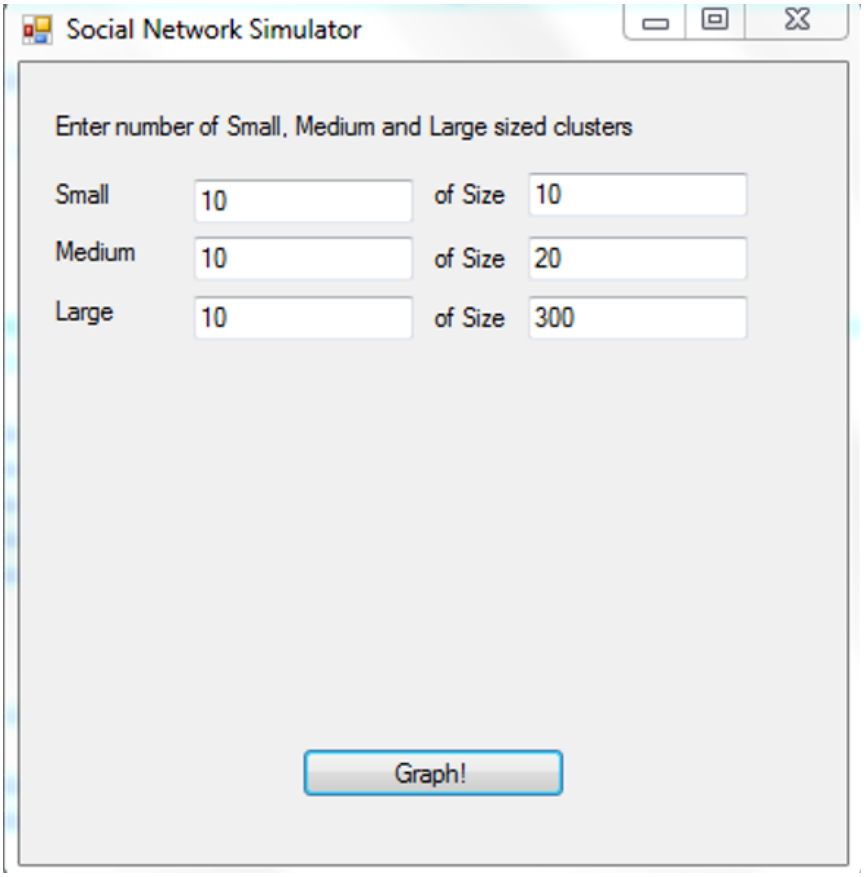
The following are the steps followed in this project
Step – 1 messages and nodes profiles are created
Step – 2 High, Med and Low interested Messages and Nodes are calculated
Step – 3 Decision of Message forwarding or Posting is made
Step – 4 Check if the message/post is already read and read it the message /post is already not read.

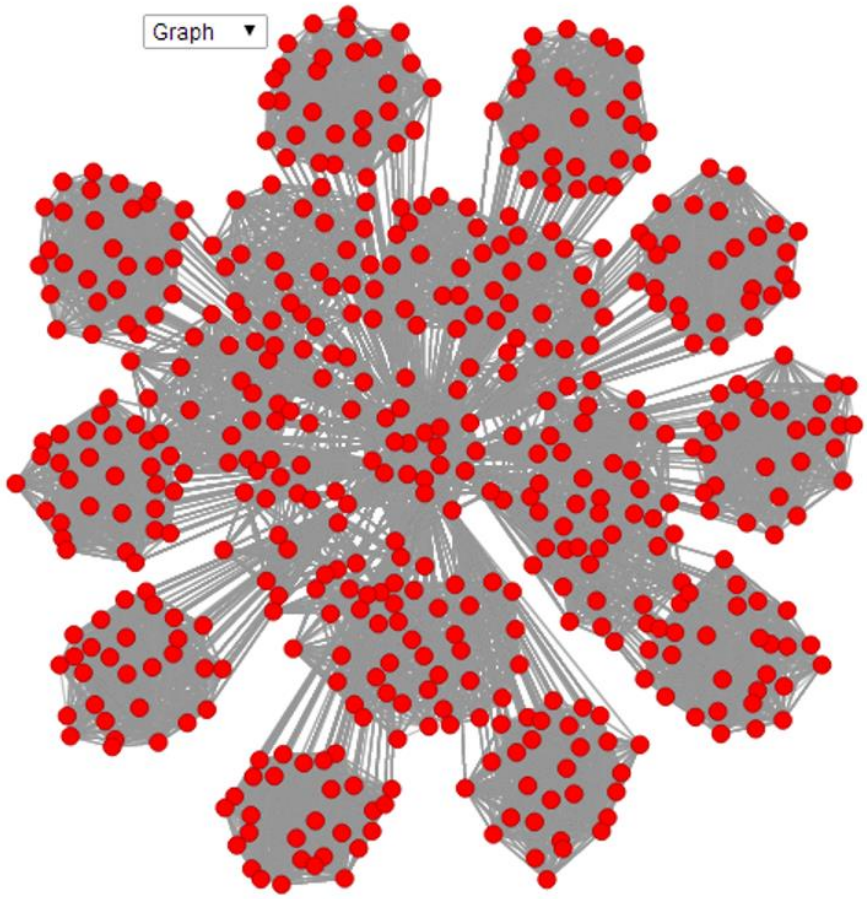
Step – 1 messages and nodes profiles are created

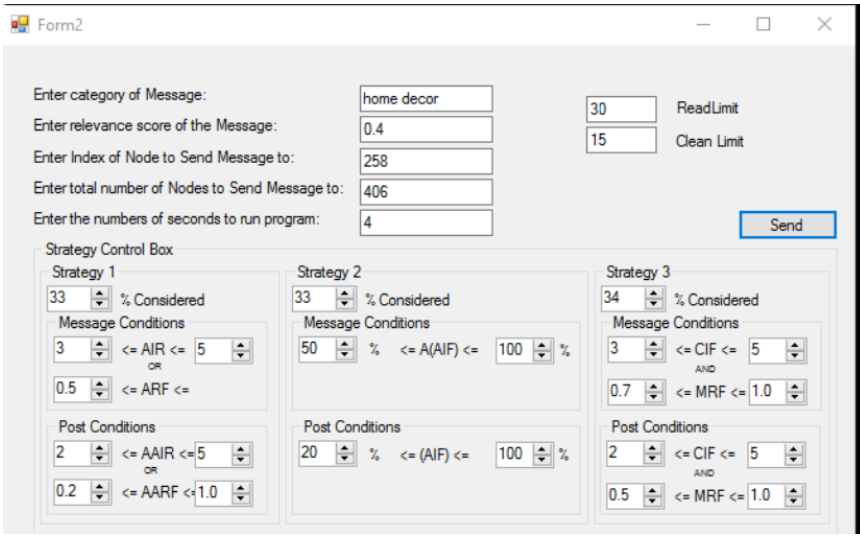
The social network framework creates the JSON file based on the sizes of the cluster for building a social network. This JSON file contains the details of the sources and links of the network, the program shows the visualization of the network using D3.js library and generates a JSON file.

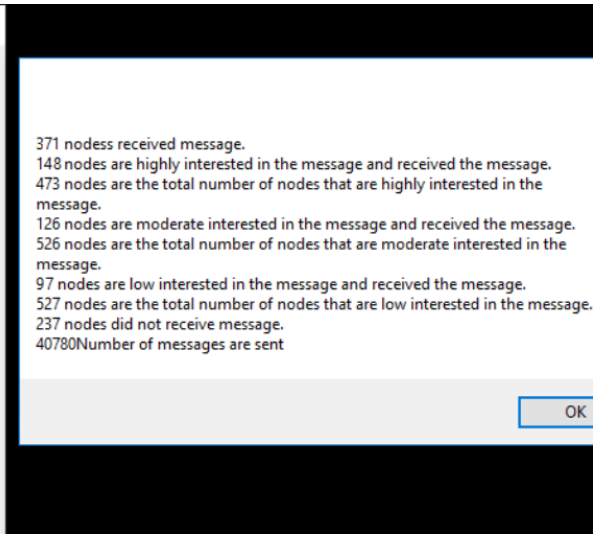
There is a data file containing all the test data that is required for building this social network with each node's interest list along with the node's interest factor and relevance tolerance of different message categories. Initially when they are just created all the nodes of the graph are displayed with red color. But once the user sends the message, the recipient nodes turns blue in color.

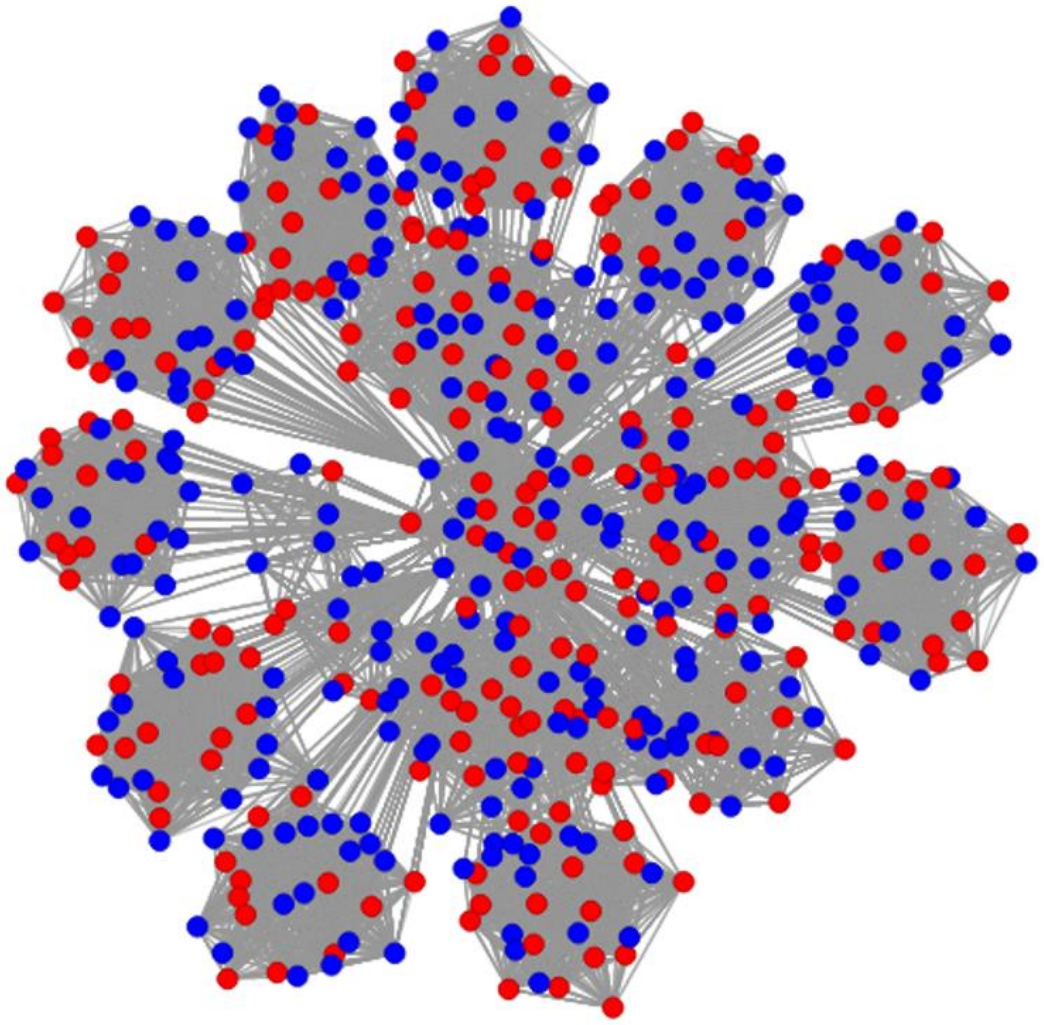
Example




Graph


Form2
Enter category of Message:
home decor
Enter relevance score of the Message:
0.4
Enter Index of Node to Send Message to:
258
Enter total number of Nodes to Send Message to:
406
Enter the numbers of seconds to run program:
4
30
ReadLimit
15
Clean Limit
Send
Strategy Control Box
Strategy 1
33
% Considered
Message Conditions
3
<= AIR <=
5
OR
0.5
<= ARF <=
Post Conditions
2
<= AAIR <=
5
OR
0.2
<= AARF <=
1.0
Strategy 2
33
% Considered
Message Conditions
50
% <= A(AIF) <=
100
%
Post Conditions
20
% <= (AIF) <=
100
%
Strategy 3
34
% Considered
Message Conditions
3
<= CIF <=
5
AND
0.7
<= MRF <=
1.0
Post Conditions
2
<= CIF <=
5
AND
0.5
<= MRF <=
1.0


371 nodess received message.
148 nodes are highly interested in the message and received the message.
473 nodes are the total number of nodes that are highly interested in the message.
126 nodes are moderate interested in the message and received the message.
526 nodes are the total number of nodes that are moderate interested in the message.
97 nodes are low interested in the message and received the message.
527 nodes are the total number of nodes that are low interested in the message.
237 nodes did not receive message.
40780Number of messages are sent
OK



Thus, from the above example a network is created and based on the cluster sizes and number of nodes are created. Each of these nodes are assigned with an interest profile. We further evaluate the nodes with the strategies based on these profiles.

## Step – 2 High, Med and Low interested Messages and Nodes are calculated

For every message we check for each and every node if it falls under high, medium or low interested in that message. In this way we count the total number of nodes that are interested in a message and vice versa.

For example:

Message:

{sports, 0.5}

For this message,

Node which is highly interested is:

"0":{"sports":{"interestFactor":"5", "score":"0.3"}, "reebok":{"interestFactor":"0", "score":"0.3"}, "nike":{"interestFactor":"0", "score":"0.2"}, "adidas":{"interestFactor":"5", "score":"0.8"}, "home decor":{"interestFactor":"4","score":"1"}, "tools":{"interestFactor":"5", "score":"0.4"}, "toys":{"interestFactor":"4", "score":"0.2"}, "clothes":{"interestFactor":"4", "score":"0.6"}, "cookware":{"interestFactor":"1", "score":"0.6"}, "appliances":{"interestFactor":"5", "score":"1"}}

Node which is moderate interested is:

"0":{"sports":{"interestFactor":"4", "score":"0.3"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4","score":"0.2"},"clothes":{"interestFactor":"4","score":"0.6"},"cookware":{"interestFactor":"1","score":"0.6"},"appliances":{"interestFactor":"5", "score":"1"}}

Node which is low interested is:

"0":{"sports":{"interestFactor":"1", "score":"0.3"},"reebok":{"interestFactor":"0", "score":"0.3"},"cookware":{"interestFactor":"1","score":"0.6"},"appliances":{"interestFactor":"5", "score":"1"}}

### Step – 3 Decision of Message forwarding or Posting is made

A detailed explanation of this decision with an example and the strategies involved in this decision are listed in the below section titled as Strategies.

### Step – 4 Check if the message/post is already read and read it the message /post is already not read.

Once the total number of high, medium and low interested counters are counted for each message and node; we check if the message is going to be forwarded directly to one's inbox or as a post on to their post boards. This decision is made based on the strategies and it threshold values. Here, for every network we have a user specified consideration of how much percentage of the total number of nodes to be decided as message or post opt a particular strategy. Thus for each strategy only this percentage of number of nodes are sent for decision under every strategy.

After being decided by the strategies, if the message has to be forwarded or posted it is send to its respective block and here in both post and message blocks, we check if the message is already in the hash table or not and if it is not in the hash table the highly or medium or low received counters incremented to count the values of total number of messages and posts that are interested in the message and received them. Thus, by incrementing the counter the particular message is marked as read and is added to the unique hast set so that it is not re read. In this way the messages and post are read. And these values are saved on to excel sheets. Based on these values we compute the evaluation ratios.

# Strategies

To ensure the capability of sending message to its target users of interest, it is important to send the right message to the right person who is interested in that message. We came up with three Strategies.

- Strategy - 1 - Average Interest and Relevance
- Strategy - 2 - Combined Interest and Relevance
- Strategy - 3 - Moderate Interest and Relevance

## STRATEGY – 1
## Average Interest and Relevance

*MESSAGE -*

Node is determined to be interested and will send the message when the average Interest Factor is greater than 3 or the average Relevance factor is greater than 0.5

$$I_a >= 3 \;||\; R_a >= 0.5$$

*POST -*

Node is determined to be interested and will send the message when the average of average Interest Factor is greater than 2 or the average of average Relevance factor is greater than 0.2

$$Avg\ I_a >= 2 \;\&\&\; Avg\ R_a >= 0.2$$

- $I_a$ is average interest factor of all the categories of a node's interest list.
- $R_a$ is average relevance score for all the categories of a node's interest list which also belongs to message category list.

Examples for a message to satisfy strategy – 1 as a post or direct message forwarding.

*Example for Posting the message:*

Categories list $CL_i$ = {("sports", 0.1), ("nike",0.2), ("reebok",0.3)}

Neighbor node's profiles-

"0":{"sports":{"interestFactor":"2", "score":"0.3"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2"}

"0":{"sports":{"interestFactor":“1", "score":"0.5"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2”}

"0":{"sports":{"interestFactor":"2", "score":"0.5"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2”}

The application will post the message instead of sending the message to the node since the average of average Interest Factor is greater than 2 or the average of average Relevance factor is greater than 0.2.

*Example for forwarding the message:*

Categories list $CL_i$ = {(“sports”, 0.8),(“nike”,0.1),(“reebok”,0.3)}

The application sends the message to sample node as the average relevance of $CL_i$ is greater than 0.3 and the average score of sports, reebok, nike is greater than 3.

"0":{"sports":{"interestFactor":"4", "score":"0.3"},"reebok":{"interestFactor":"4", "score":"0.3"},"nike":{"interestFactor":"2", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2"},"clothes":{"interestFactor":"4", "score":"0.6"},"cookware":{"interestFactor":"1",score":"0.6"},"appliances":{"interestFactor":"5","", "score":"1"}}

## STRATEGY – 2
## Combined Interest and Relevance

*MESSAGE*

For any common category x in both the message’s category list and also in the node’s interest list, the combined relative average of the interest factor and the relevance of category x is Greater than or equal to 50%

$$(fn_x\% + ri_x\%)/2 >= 50\%$$

*POST*

For any common category x in both the message’s category list and also in the node’s interest list, the combined relative average of the interest factor and the relevance of category x is Greater than or equal to 20%

$$\text{avg } (fn_x\% + ri_x\%)/2 >= 20\%$$

Examples for a message to satisfy strategy – 2 as a post or direct message forwarding.

*Example for posting the message :*

Categories list $CL_i$ = {(“sports”, 0.5)}

"0":{"sports":{"interestFactor":"2", "score":"0.3"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2”}

"0":{"sports":{"interestFactor":“1", "score":"0.5"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2”}

"0":{"sports":{"interestFactor":"2", "score":"0.5"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2”}

The application will post the message instead of sending the message to the node below as the requirement is met

fnx% = 2/5 => 40%  fnx% = 1/5 => 20%

rix% = 0.5/1 => 50%  rix% = 0.5/1 => 50%

(fnx% + rix%)/2 = (40+50)/2 = 45%  (fnx% + rix%)/2 = (20+50)/2 = 35%

Avg (fnx% + rix%)/2 = (35+45)/2 = 40% which is less than the required 50%

*Example for forwarding the message :*

Categories list $CL_i$ = {(“sports”, 0.6)}

"0":{"sports":{"interestFactor":“3", "score":"0.5"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2"},"clothes":{"interestFactor":"4", "score":"0.6"},"cookware":{"interestFactor":"1","score":"0.6"},"appliances":{"interestFactor":"5", "score":"1"}}

"0":{"sports":{"interestFactor":“4", "score":"0.7"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2”}

"0":{"sports":{"interestFactor":“3", "score":"0.5"},"reebok":{"interestFactor":"0", "score":"0.3"},"nike":{"interestFactor":"0", "score":"0.2"},"adidas":{"interestFactor":"5", "score":"0.8"},"home decor":{"interestFactor":"4", "score":"1"},"tools":{"interestFactor":"5", "score":"0.4"},"toys":{"interestFactor":"4", "score":"0.2”}

The application will post the message instead of sending the message to the node below as the requirement is met

fnx% = 3/5 =>60%  fnx% = 4/5 => 80%

rix% = 0.6/1 => 60%  rix% = 0.7/1 => 70%

(fnx% + rix%)/2 = (60+60)/2 = 60%  (fnx% + rix%)/2 = (70+80)/2 = 75%

Avg (fnx% + rix%)/2 = (75+65)/2 = 68% which is more than the required 50%

## STRATEGY-3

## Moderate Interest and Relevance

*MESSAGE*

Send the message to the node if for any common category x in both the message’s category list and also in the node’s interest list, the node’s interest factor for x is greater than or equal to 3 or the message relevance for x is greater than or equal to 0.7

$ci_x \in FL_i$ && $fn_x >= 3$ || $ri_x >= 0.7$

*POST*

Send the message to the node if for any common category x in both the message’s category list and also in the node’s interest list, the node’s interest factor for x is greater than or equal to 2 or the message relevance for x is greater than or equal to 0.5

$ci_x \in FL_i$ && $fn_x >= 2$ || $ri_x >= 0.5$

Examples for a message to satisfy strategy – 3 as a post or direct message forwarding.

*Example for posting the message*

Categories list $CL_i$ = {(“sports”, 0.6)}

The application does not send the message to the node below as the relevance is greater than or equal to 0.5

"0":{"sports":{"interestFactor":"4", "score":"0.3"},"reebok":{"interestFactor":"0",”score":"0.3"}, "nike":{"interestFactor":"0", "score":"0.2"}, "adidas":{"interestFactor":"5", "score":"0.8"}, "home decor":{"interestFactor":"4", "score":"1"}, "tools":{"interestFactor":"5", "score":"0.4"}, "toys":{"interestFactor":"4", "score":"0.2"},"clothes":{"interestFactor":"4", "score":"0.6"}, "cookware":{"interestFactor":"1",“score":"0.6"},"appliances":{"interestFactor":"5",”score":"1"}}

*Example for sending the message*

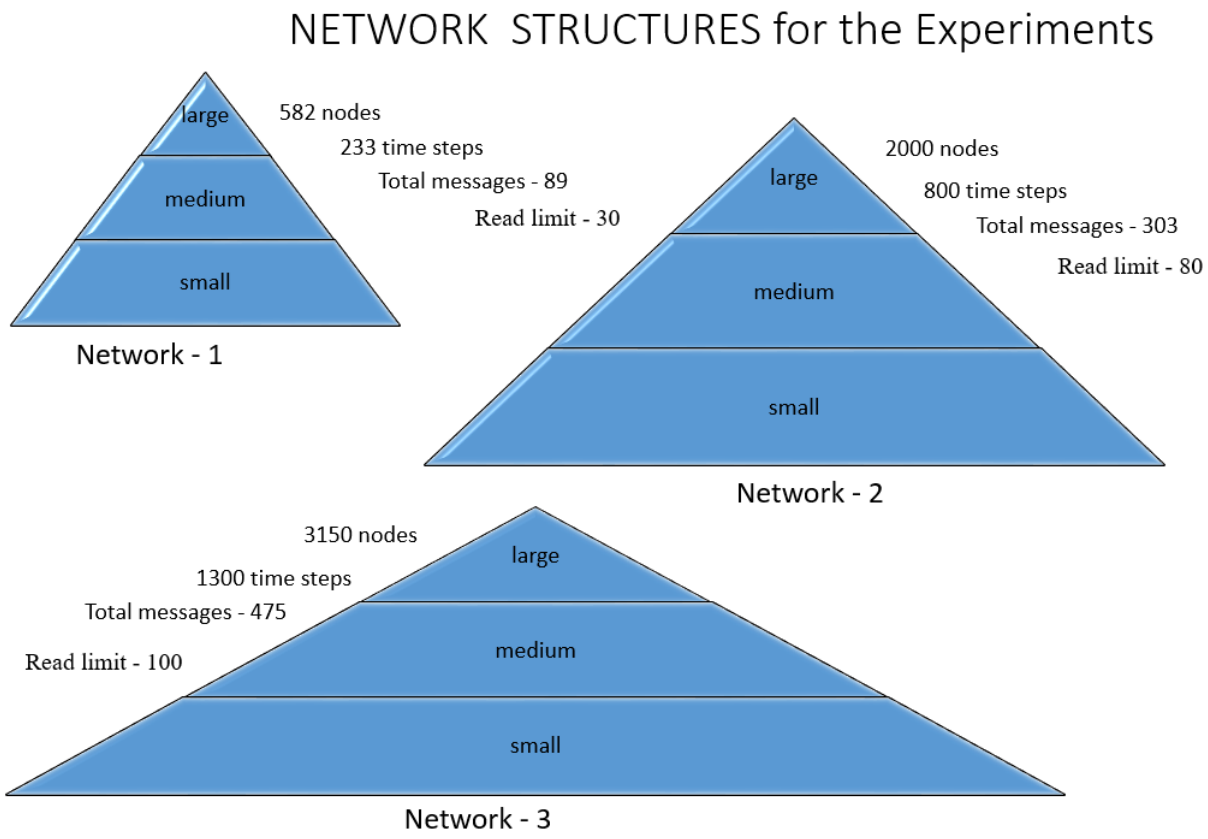
Categories list $CL_i$ = {("sports", 0.8)}

The application does send the message to the node below as the $fn_x = 4$ which is greater the required 3 and the relevance $ri_x = 0.8$ which is greater than 0.7

"0":{"sports":{"interestFactor":"4", "score":"0.3"},"reebok":{"interestFactor":"0", "score":"0.3"}, "nike":{"interestFactor":"0", "score":"0.2"}, "adidas":{"interestFactor":"5", "score":"0.8"}, "home decor":{"interestFactor":"4", "score":"1"}, "tools":{"interestFactor":"5", "score":"0.4"}, "toys":{"interestFactor":"4", "score":"0.2"}, "clothes":{"interestFactor":"4", "score":"0.6"}, "cookware":{"interestFactor":"1", "score":"0.6"}, appliances":{"interestFactor":"5","score":"1"}}

## EXPERIMENTS

To analyze how these strategies, work on different network structures and we evaluate based on 3 different ratios for each network. We have different messages in each network and the total number of messages are 15% of total number of nodes in a network. Time is measured in number of time steps and the total number of time steps for each network is 40% of total number of nodes. Message relevance profile is generated randomly with a list of categories and their relevance. The dataset contains different nodes with their profile, while creating a network an ID is generated for each node and the nodes profile corresponding to that ID is taken from the dataset.



# Evaluation Criteria

To evaluate these results we have four different Ratios for each network.

- Interest Ratio
- Reachability Ratio
- Appreciation Ratio
- Message Node / Post Node Ratio

Interest Ratio:

[sum of all nodes] Interested & Received messages or posts / Total messages or posts received.

[Interested & Received messages + Interested & Read Post] / [Total messages received+ total Post Read]

Reachability Ratio:

[sum of all messages or posts] Interested and received nodes/ interested nodes

[sum of all messages or posts] Interested and [received or read post] nodes/ interested nodes]

These two ratios are calculated differently for high, moderate and low interested nodes.

- If the interest factor equals to 5 then it is a Highly Interested node.
- If the interest factor is between 3 and 4 then it is a Moderate interested node.
- If the interest factor is less than 3 then it is a low interested node.

Appreciation Ratio:

[sum of all nodes] Messages or Posts appreciated/ Messages or posts forwarded

[Messages appreciated + post read & appreciated] / [Messages forwarded + Post being read]

- In this, for each network nodes are classified based on appreciation Ratio in 3 ways.
- Message is appreciated when the interest factor is greater than or equal to 3 and message relevance is greater than or equal to nodes relevance.
- Post is appreciated when the interest factor of a message is greater than or equal to 3 and message relevance is greater than or equal to nodes relevance and message in the post board is read.

Message Node Ratio / Post Node Ratio:

It is the ratio of number of post or messages forwarded with the total number of nodes in the network.

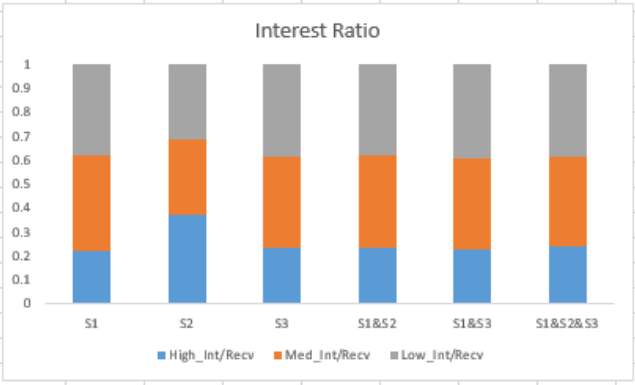
# RESULTS

## NETWORK – 1

***MESSAGE***

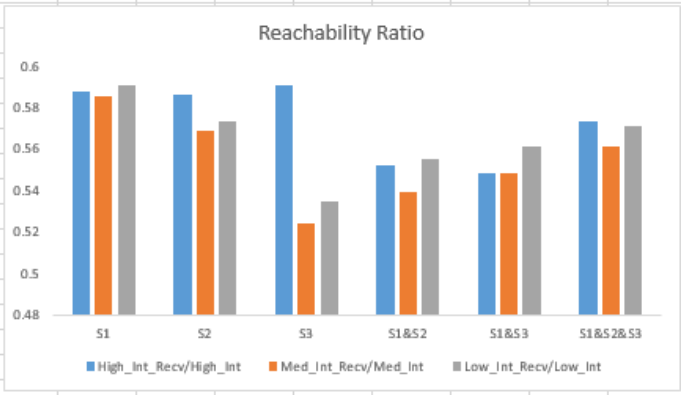
***INTEREST RATIO***

| | High_Int/Recv | Med_Int/Recv | Low_Int/Recv |
|---|---|---|---|
| S1 | 0.223442619 | 0.394108735 | 0.382448646 |
| S2 | 0.370251706 | 0.313355958 | 0.316392335 |
| S3 | 0.231093585 | 0.384197689 | 0.384708726 |
| S1&S2 | 0.23517508 | 0.386046832 | 0.378778088 |
| S1&S3 | 0.224897375 | 0.381450887 | 0.393651738 |
| S1&S2&S3 | 0.243317218 | 0.372727748 | 0.383955034 |




***REACHABILITY RATIO***

| | High_Int_Recv/High_Int | Med_Int_Recv/Med_Int | Low_Int_Recv/Low_Int |
|---|---|---|---|
| S1 | 0.588150073 | 0.585495702 | 0.590749987 |
| S2 | 0.586111987 | 0.569076834 | 0.573179021 |
| S3 | 0.590799623 | 0.524093557 | 0.53471954 |
| S1&S2 | 0.552343102 | 0.539488089 | 0.555485984 |
| S1&S3 | 0.548513805 | 0.547990077 | 0.560922336 |
| S1&S2&S3 | 0.573577659 | 0.561385377 | 0.571322447 |




## INTEREST RATIO AND REACHABILITY RATIO FOR MESSAGES

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

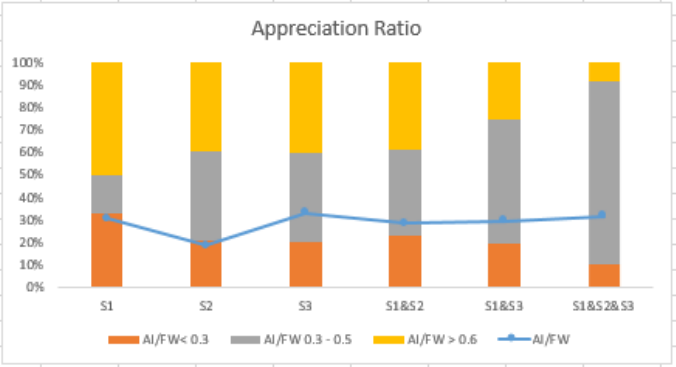
S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

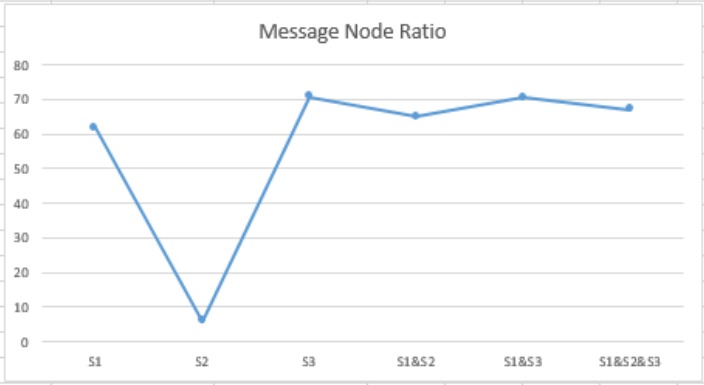
***APPRECIATIO RATIO***

| | AI/FW | AI/FW< 0.3 | AI/FW 0.3 - 0.5 | AI/FW > 0.6 |
|---|---|---|---|---|
| S1 | 0.30393 | 0.330000697 | 0.169996896 | 0.500002407 |
| S2 | 0.18312 | 0.21033798 | 0.395323576 | 0.394338445 |
| S3 | 0.33052 | 0.197466174 | 0.400810527 | 0.401723299 |
| S1&S2 | 0.28174 | 0.228006622 | 0.3860809 | 0.385912478 |
| S1&S3 | 0.29401 | 0.19579825 | 0.551436946 | 0.252764803 |
| S1&S2&S3 | 0.31393 | 0.10211947 | 0.815969663 | 0.081910866 |




***MESSAGE NODE RATIO***

| | |
|---|---|
| S1 | 61.8729 |
| S2 | 5.98797 |
| S3 | 70.8883 |
| S1&S2 | 65.0515 |
| S1&S3 | 70.5292 |
| S1&S2&S3 | 67.0724 |




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR MESSAGES

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

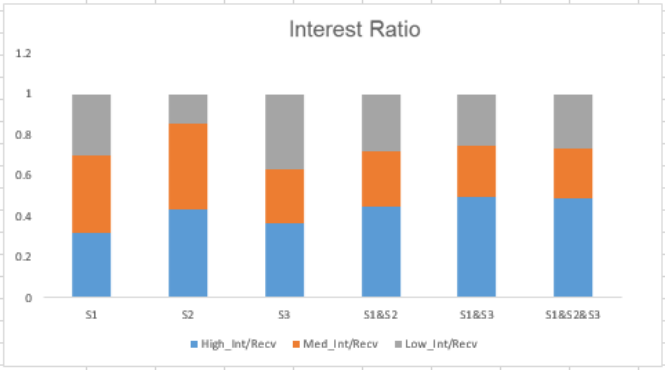
S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

***POST***

***INTEREST RATIO***

| | High_Int/R | Med_Int/Recv | Low_Int/Recv |
|---|---|---|---|
| S1 | 0.31563 | 0.380329568 | 0.304039709 |
| S2 | 0.43335 | 0.42201543 | 0.144636413 |
| S3 | 0.36773 | 0.265902768 | 0.366370434 |
| S1&S2 | 0.44465 | 0.272298608 | 0.283047941 |
| S1&S3 | 0.49133 | 0.2559043 | 0.252764803 |
| S1&S2&S3 | 0.48619 | 0.245957551 | 0.267852228 |




***REACHABILITY RATIO***

| | High_Int_R | Med_Int_Recv/Med_Int | Low_Int_Recv/Low_Int |
|---|---|---|---|
| S1 | 0.40397 | 0.305640598 | 0.306343588 |
| S2 | 0.32106 | 0.340224654 | 0.338715856 |
| S3 | 0.29451 | 0.208702426 | 0.216561081 |
| S1&S2 | 0.33569 | 0.244917583 | 0.256385698 |
| S1&S3 | 0.30477 | 0.212327433 | 0.213835573 |
| S1&S2&S3 | 0.3095 | 0.246761663 | 0.248416419 |


## INTEREST RATIO AND REACHABILITY RATIO FOR POSTS

S1 Strategy – 1 100%

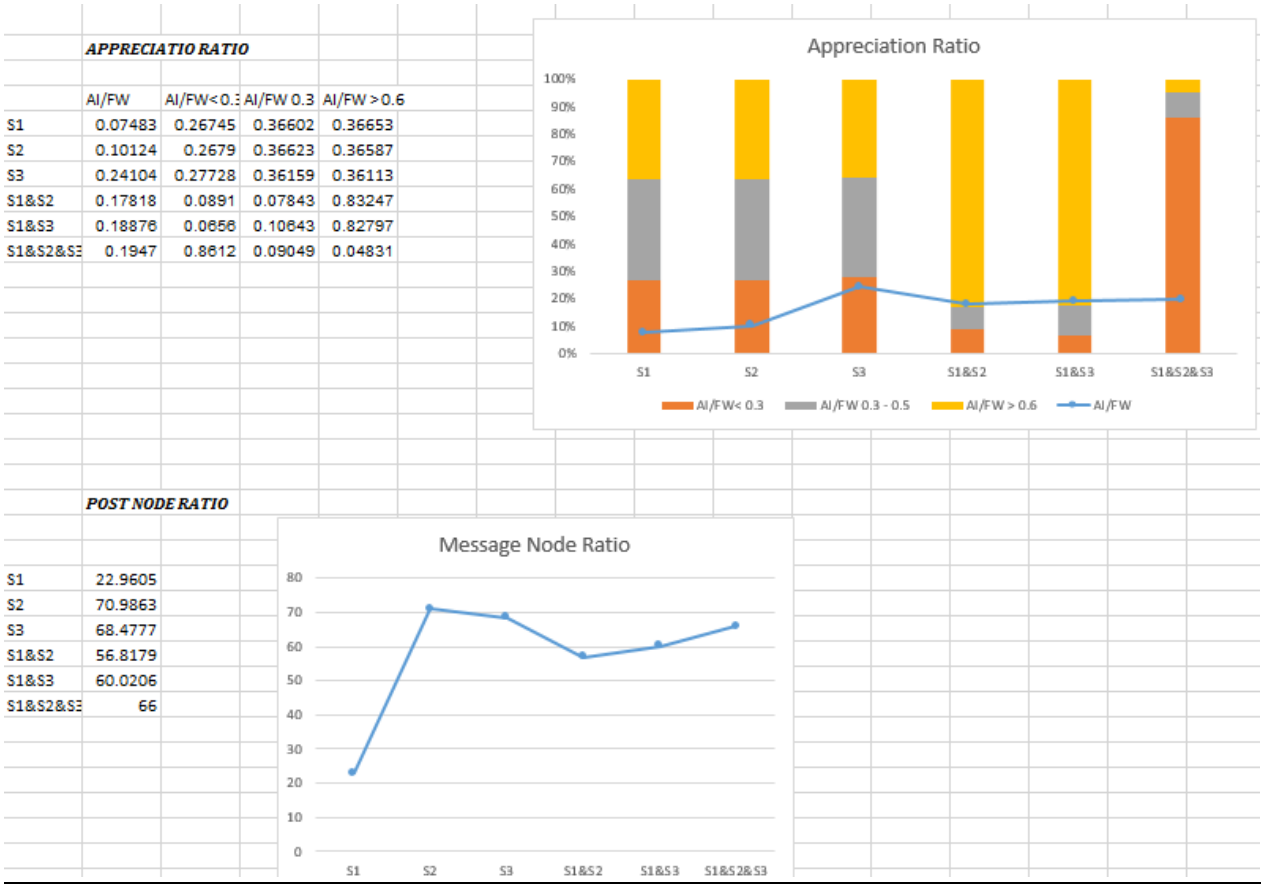
S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR POST

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

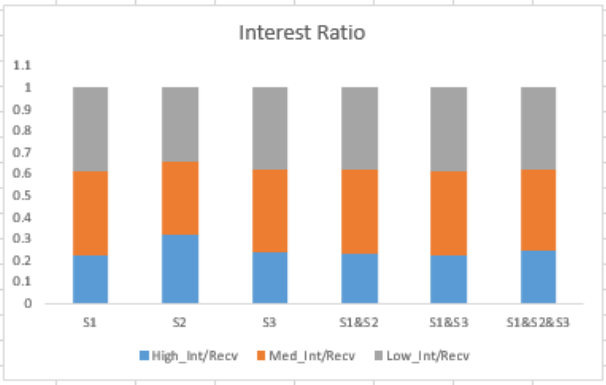
S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

# COMBINED RESULTS FOR MESSAGE AND POST NETWORK -1

**COMBINED - POST & MESSAGE**

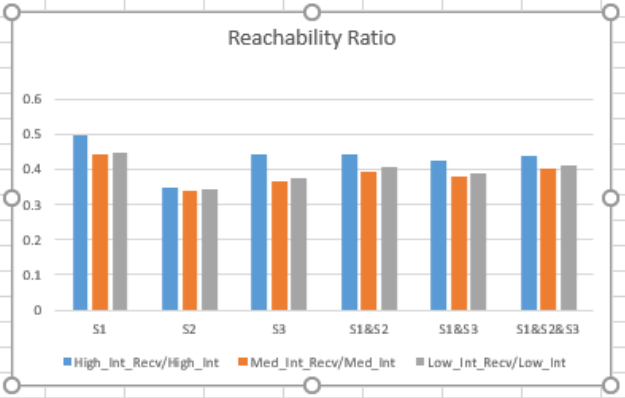
***INTEREST RATIO***

| | High_Int/Recv | Med_Int/Recv | Low_Int/Recv |
|---|---|---|---|
| S1 | 0.223998002 | 0.389768029 | 0.386233969 |
| S2 | 0.317111698 | 0.337571714 | 0.345316588 |
| S3 | 0.238815989 | 0.380822968 | 0.380361044 |
| S1&S2 | 0.232837128 | 0.384337966 | 0.382824906 |
| S1&S3 | 0.223273163 | 0.385248493 | 0.391478344 |
| S1&S2&S3 | 0.241765036 | 0.377580279 | 0.380654685 |




***REACHABILITY RATIO***

| | High_Int_Recv/High_Int | Med_Int_Recv/Med_In | Low_Int_Recv/Low_Int |
|---|---|---|---|
| S1 | 0.496060763 | 0.44556815 | 0.448546788 |
| S2 | 0.350275763 | 0.337743686 | 0.342090424 |
| S3 | 0.442654301 | 0.366397991 | 0.37564031 |
| S1&S2 | 0.444017381 | 0.392202836 | 0.405935841 |
| S1&S3 | 0.42664355 | 0.380158755 | 0.387378955 |
| S1&S2&S3 | 0.439463283 | 0.403816983 | 0.41101298 |




# INTEREST RATIO AND REACHABILITY RATIO FOR MESSAGE AND POST COMBINED

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

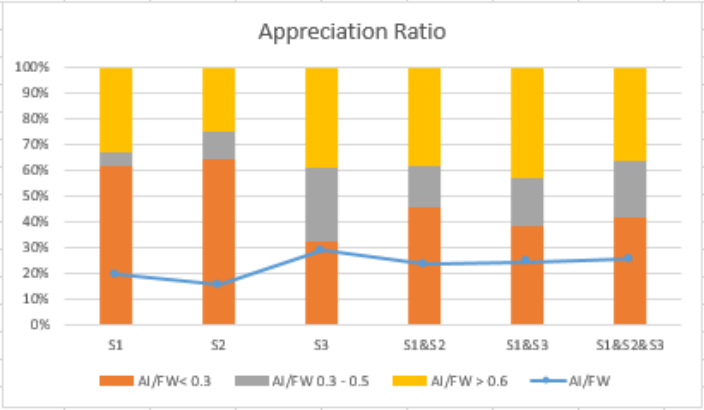
S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

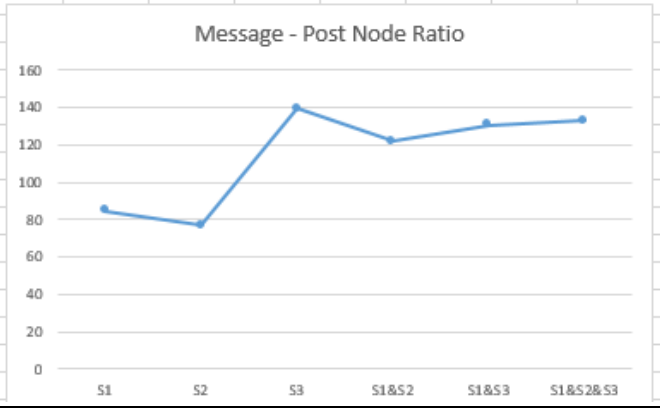
***APPRECIATIO RATIO***

| | AI/FW | AI/FW<0.3 | AI/FW 0.3 | AI/FW >0.6 |
|---|---|---|---|---|
| S1 | 0.19196 | 0.12438 | 0.01136 | 0.06652 |
| S2 | 0.15296 | 0.10444 | 0.01728 | 0.03988 |
| S3 | 0.286 | 0.10342 | 0.09103 | 0.1254 |
| S1&S2 | 0.23179 | 0.11756 | 0.04031 | 0.09818 |
| S1&S3 | 0.24334 | 0.10339 | 0.05208 | 0.11613 |
| S1&S2&S3 | 0.25495 | 0.1181 | 0.06162 | 0.10224 |




***MESSAGE NODE RATIO***

| | |
|---|---|
| S1 | 84.8333 |
| S2 | 76.9742 |
| S3 | 139.366 |
| S1&S2 | 121.869 |
| S1&S3 | 130.55 |
| S1&S2&S3 | 133.072 |




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR MESSAGE AND POST COMBINED

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

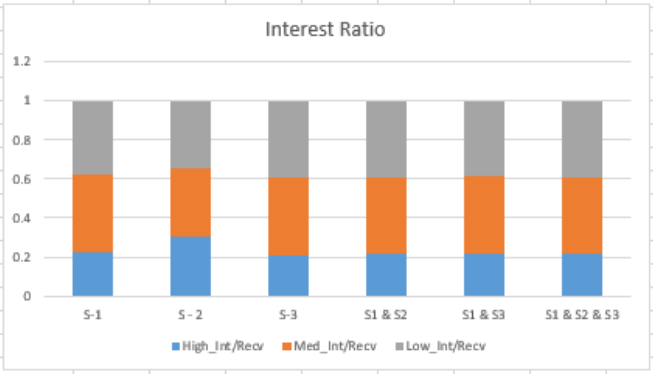
# RESULTS

## NETWORK – 2

***MESSAGE***

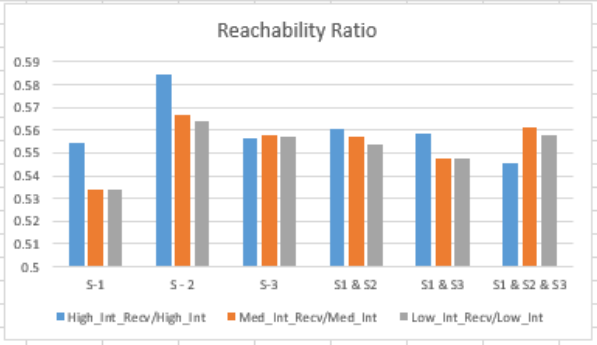
***INTEREST RATIO***

| | *High_Int/Recv* | *Med_Int/Recv* | *Low_Int/Recv* |
|---|---|---|---|
| *S-1* | 0.228092764 | 0.39318191 | 0.378725326 |
| *S - 2* | 0.305003121 | 0.34736784 | 0.347629039 |
| *S-3* | 0.211058198 | 0.395902053 | 0.393039749 |
| *S1 & S2* | 0.2185602 | 0.390718792 | 0.390721008 |
| *S1 & S3* | 0.21435283 | 0.398180067 | 0.387467103 |
| *S1 & S2 & S3* | *0.215298269* | *0.394537622* | *0.39016411* |




***REACHABILITY RATIO***

| | *High_Int_Recv/High_Int* | *Med_Int_Recv/Med_Int* | *Low_Int_Recv/Low_Int* |
|---|---|---|---|
| *S-1* | 0.554470394 | 0.533822515 | 0.534233602 |
| *S - 2* | 0.584699681 | 0.566489288 | 0.563819694 |
| *S-3* | 0.55630012 | 0.557938972 | 0.557456502 |
| *S1 & S2* | *0.560229585* | *0.557101631* | *0.55379254* |
| *S1 & S3* | *0.558294794* | *0.547709069* | *0.54762279* |
| *S1 & S2 & S3* | *0.54556186* | *0.561202601* | *0.55792226* |




## INTEREST RATIO AND REACHABILITY RATIO FOR MESSAGES

S1 Strategy – 1 100%

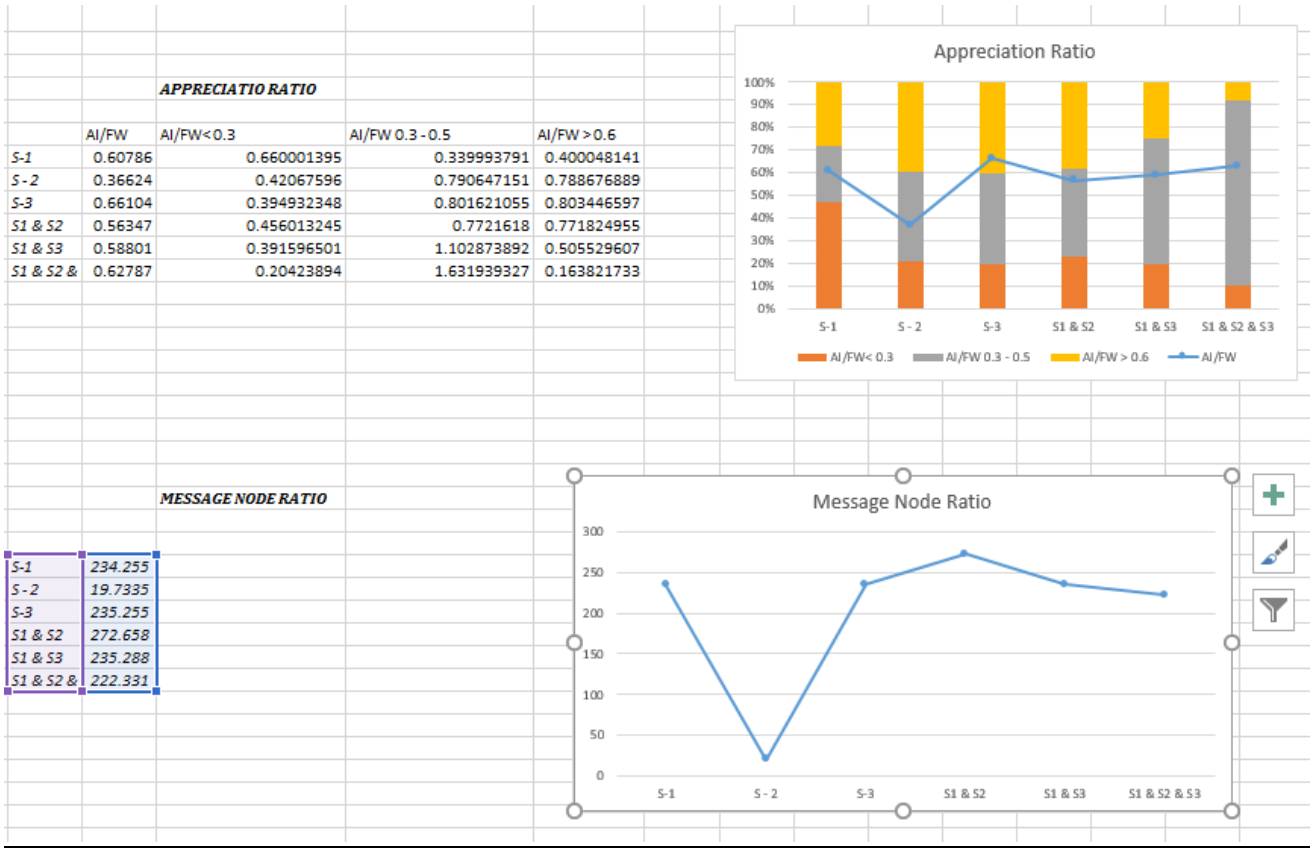
S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%



***APPRECIATIO RATIO***

| | AI/FW | AI/FW<0.3 | AI/FW 0.3 - 0.5 | AI/FW >0.6 |
|---|---|---|---|---|
| *S-1* | 0.60786 | 0.660001395 | 0.339993791 | 0.400048141 |
| *S - 2* | 0.36624 | 0.42067596 | 0.790647151 | 0.788676889 |
| *S-3* | 0.66104 | 0.394932348 | 0.801621055 | 0.803446597 |
| *S1 & S2* | 0.56347 | 0.456013245 | 0.7721618 | 0.771824955 |
| *S1 & S3* | 0.58801 | 0.391596501 | 1.102873892 | 0.505529607 |
| *S1 & S2 &* | 0.62787 | 0.20423894 | 1.631939327 | 0.163821733 |



***MESSAGE NODE RATIO***

| | |
|---|---|
| *S-1* | *234.255* |
| *S - 2* | *19.7335* |
| *S-3* | *235.255* |
| *S1 & S2* | *272.658* |
| *S1 & S3* | *235.288* |
| *S1 & S2 &* | *222.331* |



## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR MESSAGES

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

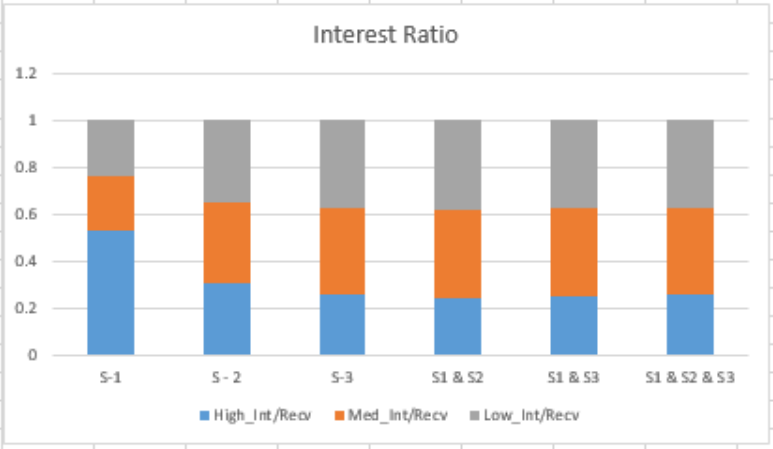
S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

**POST**

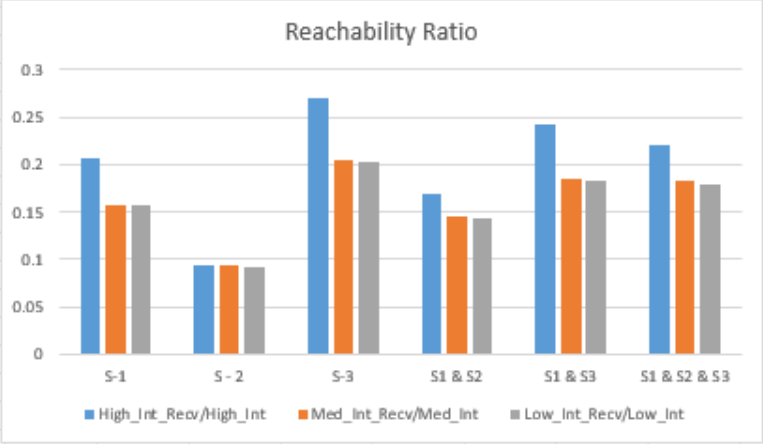
***INTEREST RATIO***

| | High_Int/I | Med_Int/R | Low_Int/Recv |
|---|---|---|---|
| S-1 | 0.52982 | 0.2344 | 0.23578 |
| S - 2 | 0.31058 | 0.34474 | 0.34469 |
| S-3 | 0.25636 | 0.37182 | 0.37182 |
| S1 & S2 | 0.2421 | 0.37886 | 0.37904 |
| S1 & S3 | 0.25407 | 0.37292 | 0.37302 |
| S1 & S2 & | 0.25755 | 0.37127 | 0.37118 |




***REACHABILITY RATIO***

| | High_Int_ | Med_Int_R | Low_Int_Recv/Low_Int |
|---|---|---|---|
| S-1 | 0.20747 | 0.15718 | 0.15652 |
| S - 2 | 0.09273 | 0.09293 | 0.09158 |
| S-3 | 0.27107 | 0.20484 | 0.20363 |
| S1 & S2 | 0.16984 | 0.14562 | 0.14392 |
| S1 & S3 | 0.2414 | 0.18401 | 0.18314 |
| S1 & S2 & | 0.22114 | 0.18219 | 0.17875 |




## INTEREST RATIO AND REACHABILITY RATIO FOR POSTS

S1 Strategy – 1 100%

S2 Strategy – 2 100%

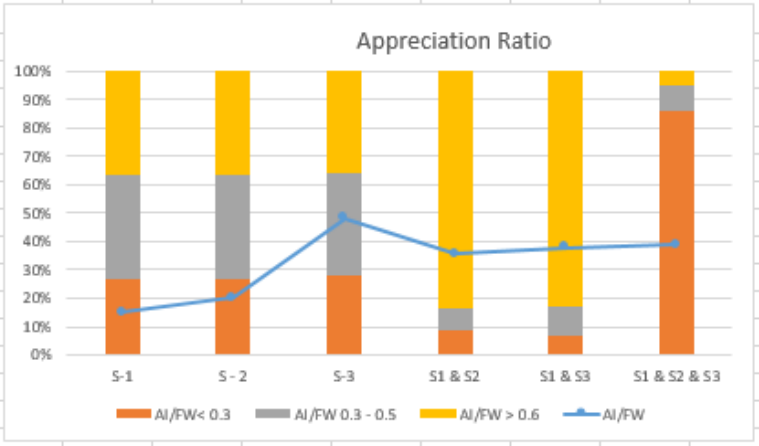
S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

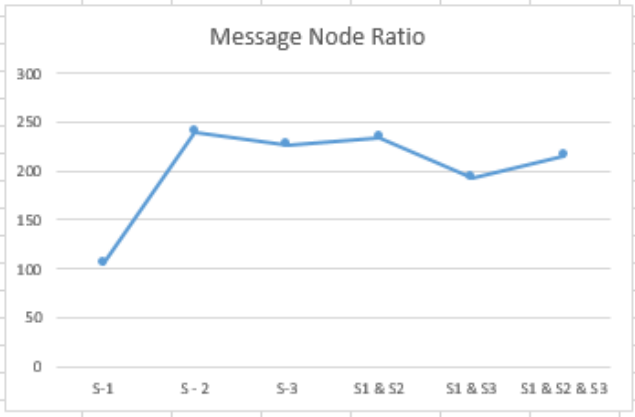
S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

| | APPRECIATIO RATIO | | | |
|---|---|---|---|---|
| | AI/FW | AI/FW< 0.3 | AI/FW 0.3 | AI/FW > 0.6 |
| S-1 | 0.14966 | 0.53491 | 0.73204 | 0.73305 |
| S - 2 | 0.20249 | 0.53581 | 0.73245 | 0.73174 |
| S-3 | 0.48209 | 0.55456 | 0.72318 | 0.72226 |
| S1 & S2 | 0.35637 | 0.1782 | 0.15686 | 1.66494 |
| S1 & S3 | 0.37751 | 0.1312 | 0.21286 | 1.65594 |
| S1 & S2 & | 0.3894 | 1.7224 | 0.18097 | 0.09663 |




| | MESSAGE NODE RATIO |
|---|---|
| S-1 | 105.391 |
| S - 2 | 239.59 |
| S-3 | 226.572 |
| S1 & S2 | 234.414 |
| S1 & S3 | 192.941 |
| S1 & S2 & | 215.915 |




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR POST

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

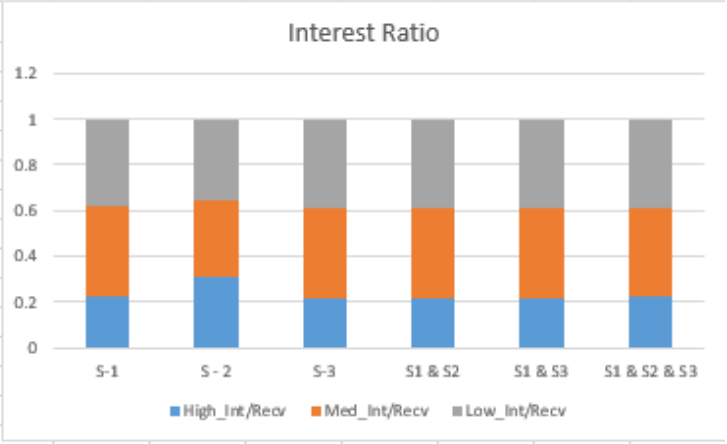
S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

# COMBINED RESULTS FOR MESSAGE AND POST NETWORK -2

***COMBINED - POST & MESSAGE***

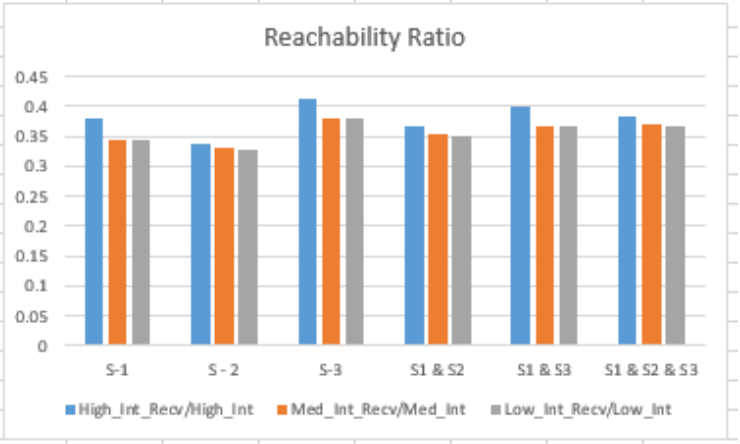
***INTEREST RATIO***

| | High_Int/R | Med_Int/R | Low_Int/Recv |
|---|---|---|---|
| *S-1* | 0.22181 | 0.39367 | 0.38451 |
| *S - 2* | 0.30993 | 0.33894 | 0.35114 |
| *S-3* | 0.21721 | 0.39348 | 0.38932 |
| *S1 & S2* | 0.2184 | 0.38979 | 0.39181 |
| *S1 & S3* | 0.21854 | 0.39393 | 0.38753 |
| *S1 & S2 &* | 0.22177 | 0.39181 | 0.38642 |




***REACHABILITY RATIO***

| | High_Int_R | Med_Int_R | Low_Int_Recv/Low_Int |
|---|---|---|---|
| *S-1* | 0.38097 | 0.3455 | 0.34538 |
| *S - 2* | 0.33871 | 0.32971 | 0.3277 |
| *S-3* | 0.41369 | 0.38139 | 0.38054 |
| *S1 & S2* | 0.36714 | 0.35323 | 0.35084 |
| *S1 & S3* | 0.39985 | 0.36586 | 0.36538 |
| *S1 & S2 &* | 0.38335 | 0.3717 | 0.36834 |




# INTEREST RATIO AND REACHABILITY RATIO FOR MESSAGE AND POST COMBINED

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

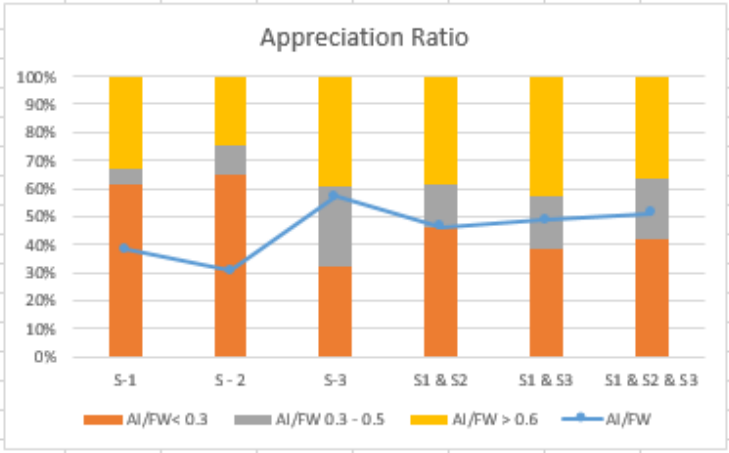
S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

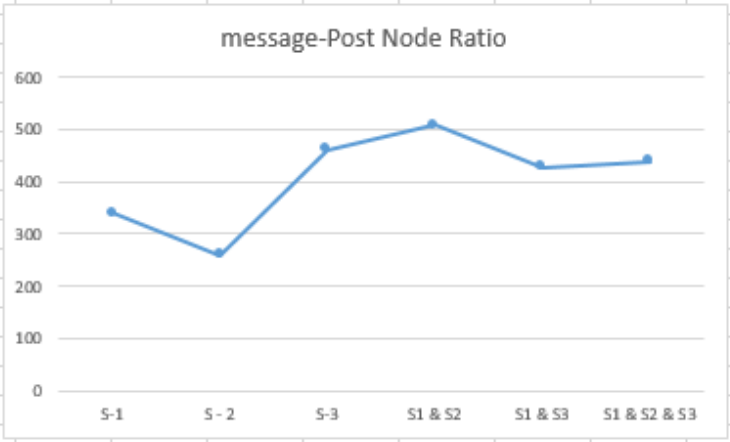
***APPRECIATIO RATIO***

| | AI/FW | AI/FW< 0.3 | AI/FW 0.3 | AI/FW > 0.6 |
|---|---|---|---|---|
| *S-1* | 0.38391 | 0.24876 | 0.02272 | 0.13305 |
| *S - 2* | 0.30591 | 0.20887 | 0.03457 | 0.07976 |
| *S-3* | 0.572 | 0.20684 | 0.18205 | 0.2508 |
| *S1 & S2* | 0.46358 | 0.23511 | 0.08061 | 0.19635 |
| *S1 & S3* | 0.48669 | 0.20679 | 0.10416 | 0.23225 |
| *S1 & S2 &* | 0.5099 | 0.23619 | 0.12324 | 0.20447 |




***MESSAGE NODE RATIO***

| | |
|---|---|
| *S-1* | 339.646 |
| *S - 2* | 259.324 |
| *S-3* | 461.827 |
| *S1 & S2* | 507.072 |
| *S1 & S3* | 428.229 |
| *S1 & S2 &* | 438.246 |




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR MESSAGE AND POST COMBINED

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

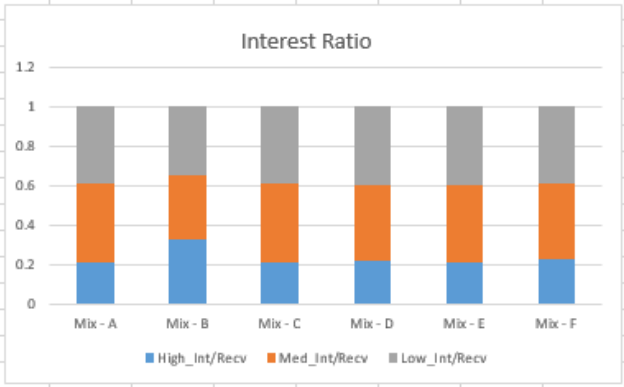
# RESULTS

## NETWORK – 3

**MESSAGE**

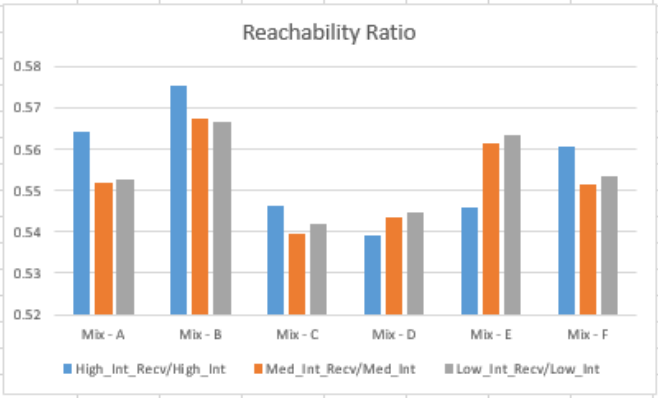
**INTEREST RATIO**

| | High_Int/Recv | Med_Int/Recv | Low_Int/Recv |
|---|---|---|---|
| Mix - A | 0.213218367 | 0.393194062 | 0.393587571 |
| Mix - B | 0.328422442 | 0.327136238 | 0.34444132 |
| Mix - C | 0.210087474 | 0.400717573 | 0.389194954 |
| Mix - D | 0.213944051 | 0.391426828 | 0.394629121 |
| Mix - E | 0.20743062 | 0.395573629 | 0.396995751 |
| Mix - F | 0.223058637 | 0.386570173 | 0.39037119 |




**REACHABILITY RATIO**

| | High_Int_Recv/High_Int | Med_Int_Recv/Med_Int | Low_Int_Recv/Low_Int |
|---|---|---|---|
| Mix - A | 0.564087043 | 0.552078811 | 0.552814519 |
| Mix - B | 0.575470219 | 0.567526424 | 0.566770342 |
| Mix - C | 0.54638887 | 0.539546748 | 0.541797075 |
| Mix - D | 0.539267898 | 0.543359536 | 0.544633107 |
| Mix - E | 0.54589052 | 0.561605535 | 0.563442479 |
| Mix - F | 0.560635735 | 0.551699283 | 0.553511687 |




## INTEREST RATIO AND REACHABILITY RATIO FOR MESSAGES

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

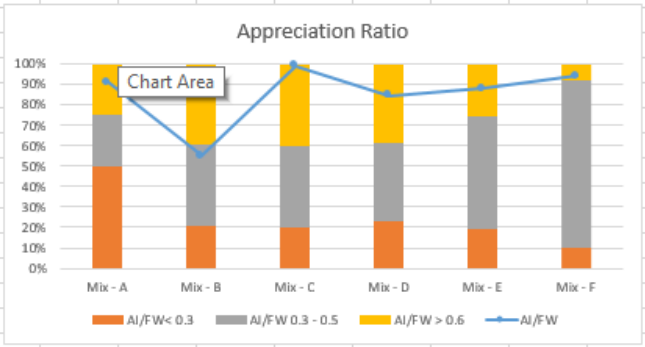
S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

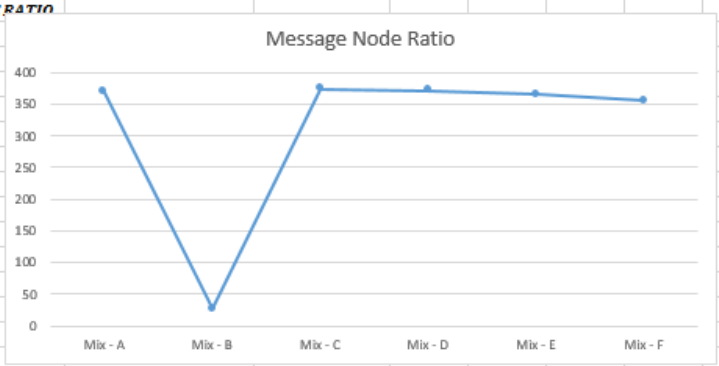
**APPRECIATIO RATIO**

| | AI/FW | AI/FW< 0.3 | AI/FW 0.3 - 0.5 | AI/FW > 0.6 |
|---|---|---|---|---|
| Mix - A | 0.91179 | 0.990002092 | 0.509990687 | 0.500007221 |
| Mix - B | 0.54936 | 0.63101394 | 1.185970727 | 1.183015334 |
| Mix - C | 0.99157 | 0.592398522 | 1.202431582 | 1.205169896 |
| Mix - D | 0.84521 | 0.684019867 | 1.1582427 | 1.157737433 |
| Mix - E | 0.88202 | 0.587394751 | 1.654310838 | 0.75829441 |
| Mix - F | 0.9418 | 0.30635841 | 2.44790899 | 0.245732599 |




**MESSAGE NODE RATIO**

| | |
|---|---|
| Mix - A | 368.989 |
| Mix - B | 27.2606 |
| Mix - C | 373.673 |
| Mix - D | 371.569 |
| Mix - E | 365.846 |
| Mix - F | 355.744 |




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR MESSAGES

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

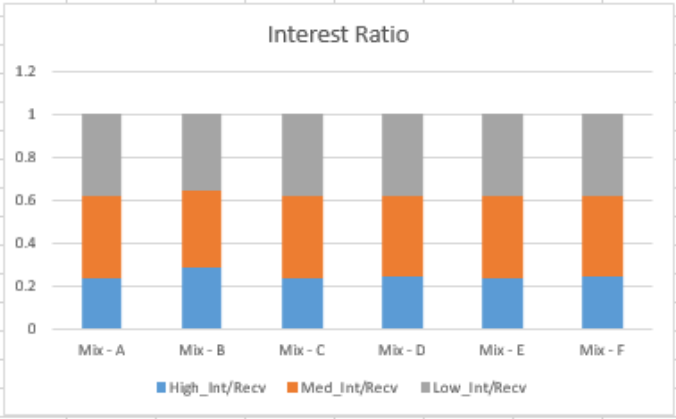
S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

**POST**

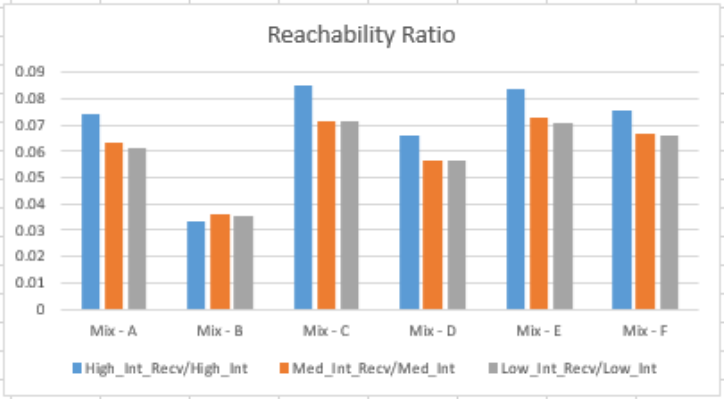
***INTEREST RATIO***

| | High_Int/I | Med_Int/R | Low_Int/Recv |
|---|---|---|---|
| Mix - A | 0.23457 | 0.38261 | 0.38282 |
| Mix - B | 0.28473 | 0.35765 | 0.35762 |
| Mix - C | 0.23106 | 0.38431 | 0.38463 |
| Mix - D | 0.24005 | 0.37993 | 0.38002 |
| Mix - E | 0.23473 | 0.38259 | 0.38268 |
| Mix - F | 0.24302 | 0.37862 | 0.37836 |




***REACHABILITY RATIO***

| | High_Int_I | Med_Int_F | Low_Int_Recv/Low_Int |
|---|---|---|---|
| Mix - A | 0.07411 | 0.06333 | 0.06127 |
| Mix - B | 0.03328 | 0.03599 | 0.03554 |
| Mix - C | 0.0849 | 0.07128 | 0.07116 |
| Mix - D | 0.06631 | 0.05642 | 0.0562 |
| Mix - E | 0.08392 | 0.07264 | 0.07049 |
| Mix - F | 0.07557 | 0.0664 | 0.06574 |




## INTEREST RATIO AND REACHABILITY RATIO FOR POSTS

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

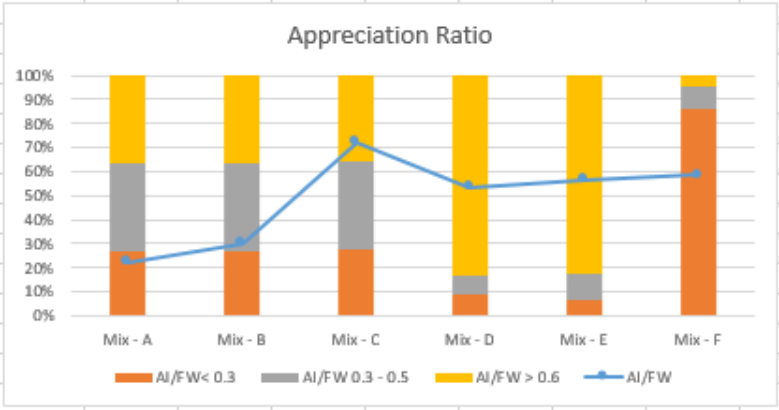
S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

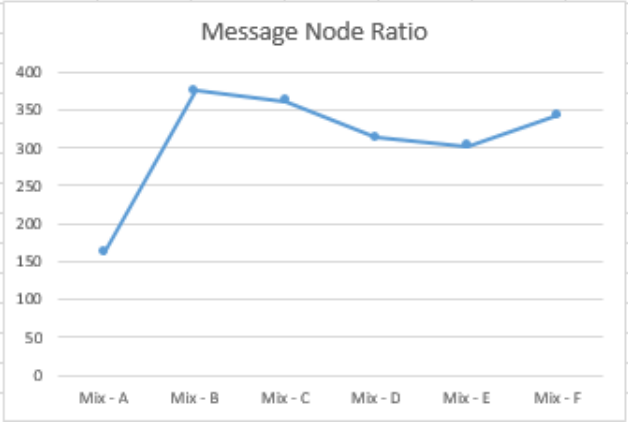
**APPRECIATIO RATIO**

| | AI/FW | AI/FW< 0.3 | AI/FW 0.3 | AI/FW > 0.6 |
|---|---|---|---|---|
| Mix - A | 0.2245 | 0.80236 | 1.09806 | 1.09958 |
| Mix - B | 0.30373 | 0.80371 | 1.09868 | 1.09761 |
| Mix - C | 0.72313 | 0.83184 | 1.08476 | 1.08339 |
| Mix - D | 0.53455 | 0.26729 | 0.23529 | 2.49742 |
| Mix - E | 0.56627 | 0.1968 | 0.31929 | 2.48392 |
| Mix - F | 0.58409 | 2.5836 | 0.27146 | 0.14494 |




**MESSAGE NODE RATIO**

| | |
|---|---|
| Mix - A | 161.359 |
| Mix - B | 374.932 |
| Mix - C | 362.124 |
| Mix - D | 313.121 |
| Mix - E | 303 |
| Mix - F | 342.814 |




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR POST

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

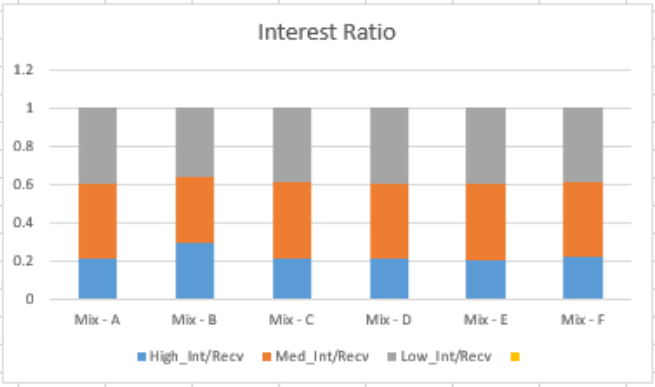
S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

# COMBINED RESULTS FOR MESSAGE AND POST NETWORK -3

## *COMBINED - POST & MESSAGE*

***INTEREST RATIO***

| | High_Int/R | Med_Int/R | Low_Int/Recv |
|---|---|---|---|
| Mix - A | 0.2132 | 0.39404 | 0.39276 |
| Mix - B | 0.29861 | 0.34226 | 0.35913 |
| Mix - C | 0.21096 | 0.39839 | 0.39064 |
| Mix - D | 0.21434 | 0.39087 | 0.39479 |
| Mix - E | 0.20716 | 0.39446 | 0.39838 |
| Mix - F | 0.22359 | 0.38637 | 0.39004 |




***REACHABILITY RATIO***

| | High_Int_R | Med_Int_R | Low_Int_Recv/Low_Int |
|---|---|---|---|
| Mix - A | 0.3191 | 0.30771 | 0.30704 |
| Mix - B | 0.30438 | 0.30176 | 0.30115 |
| Mix - C | 0.31564 | 0.30541 | 0.30648 |
| Mix - D | 0.30279 | 0.29989 | 0.30042 |
| Mix - E | 0.3149 | 0.31712 | 0.31697 |
| Mix - F | 0.3181 | 0.30905 | 0.30963 |


# INTEREST RATIO AND REACHABILITY RATIO FOR MESSAGE AND POST COMBINED

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

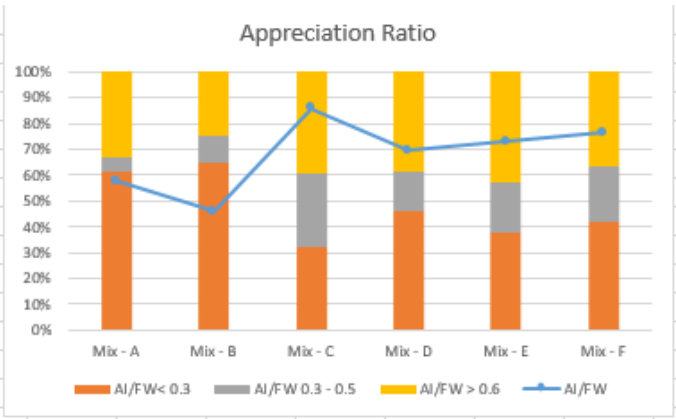
S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

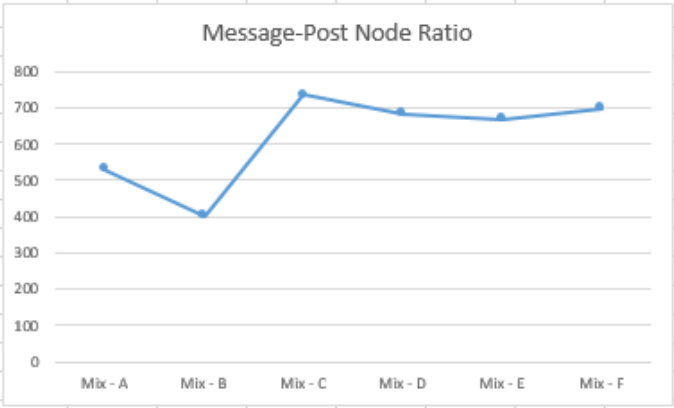
***APPRECIATIO RATIO***

| | AI/FW | AI/FW< 0.3 | AI/FW 0.3 | AI/FW > 0.6 |
|---|---|---|---|---|
| Mix - A | 0.57587 | 0.37313 | 0.03408 | 0.19957 |
| Mix - B | 0.45887 | 0.31331 | 0.05185 | 0.11963 |
| Mix - C | 0.85799 | 0.31025 | 0.27308 | 0.3762 |
| Mix - D | 0.69537 | 0.35267 | 0.12092 | 0.29453 |
| Mix - E | 0.73003 | 0.31018 | 0.15623 | 0.34838 |
| Mix - F | 0.76486 | 0.35429 | 0.18486 | 0.30671 |




***MESSAGE NODE RATIO***

| | |
|---|---|
| Mix - A | 530.348 |
| Mix - B | 402.193 |
| Mix - C | 735.797 |
| Mix - D | 684.69 |
| Mix - E | 668.846 |
| Mix - F | 698.557 |




## APPRECIATION RATIO AND MESSAGE NODE RATIO FOR MESSAGE AND POST COMBINED

S1 Strategy – 1 100%

S2 Strategy – 2 100%

S3 Strategy – 3 100%

S1 & S2 Strategy – 1 50% & Strategy – 2 50%

S1 & S3 Strategy – 1 50% & Strategy – 3 50%

S1 & S2 &S3 Strategy – 1 33% & Strategy – 2 33% & Strategy – 3 34%

# STRATEGIES OF EXISTING SYSTEM

Six strategies of the existing system

- Even Little Interested – One common category and relevance <0.1
- Average interest in Message - avg. Interest Factor and Relevance Factors
- If very Interested in Message - Interest factor > 3 && avg. Relevance factor > avg. Relevance Threshold.
- Unless not Interested – one common category in message category list & node category list
- Percentage based Interest Calculation – avg. Interest Factor and avg. Relevance > 50
- Moderate Interest in Message - One common category & node Interest factor >3 & relevance > 0.5

It considered only a single strategy while the current results focus on a Mix of strategies

- MIX –A – 50 % S2 & S3
- MIX – B – 20% S1; 25% S4&S6 ; 30% S5
- MIX – C – 20% S1 ; 40% S3 & S6
- MIX – D – 10% S1; 15% S2; 25 % S4,S5& S6
- MIX – E – 10% S1, S2, S3, S4, S6 & 50 % S5

# RESULTS FOR EXISTING SYSTEM EXXPERIMENT

## NETWORK – 1

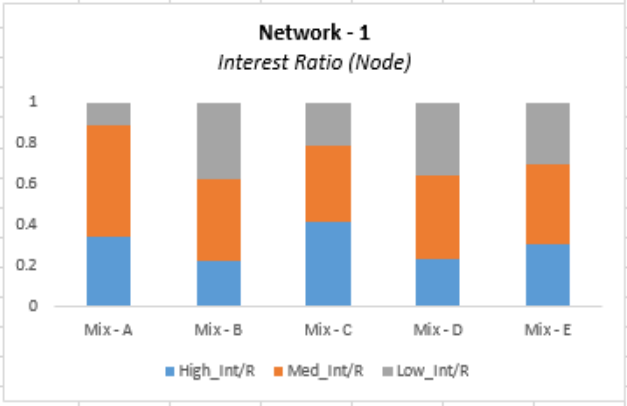
***Network - 1***

***Ratio***

| | High_Int/ | Med_Int/ | Low_Int/R |
|---|---|---|---|
| Mix - A | 0.26739 | 0.42777 | 0.09007 |
| Mix - B | 0.22339 | 0.40331 | 0.3733 |
| Mix - C | 0.41201 | 0.373 | 0.21499 |
| Mix - D | 0.23166 | 0.41033 | 0.35801 |
| Mix - E | 0.3046 | 0.39059 | 0.30481 |

***Reachability Ratio***

| | R/High_I | R/Med_Ir | R/Low_Int |
|---|---|---|---|
| Mix - A | 0.50821 | 0.55446 | 0.10709 |
| Mix - B | 0.96401 | 0.9596 | 0.90061 |
| Mix - C | 0.97669 | 0.60352 | 0.35209 |
| Mix - D | 0.86025 | 0.87248 | 0.78727 |
| Mix - E | 0.9309 | 0.76815 | 0.606 |



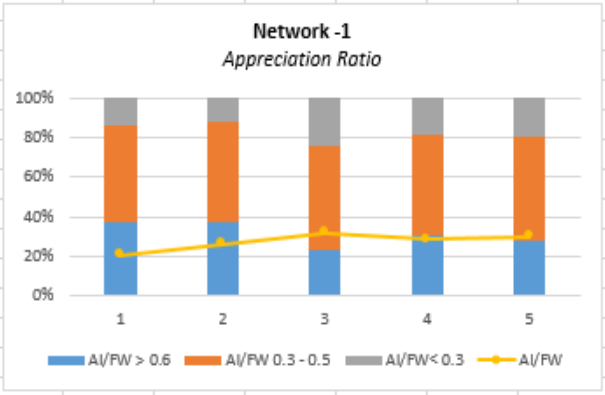


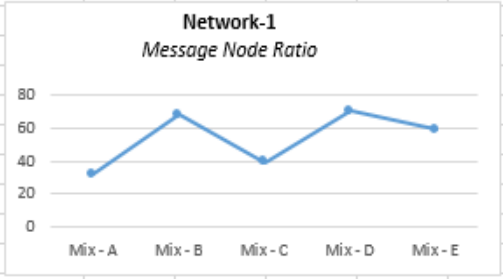
***Appreciation Ratio***

| | AI/FW > 0 | AI/FW 0.3 | AI/FW< 0 | AI/FW |
|---|---|---|---|---|
| Mix - A | 0.07773 | 0.10089 | 0.02821 | 0.20682 |
| Mix - B | 0.09726 | 0.13105 | 0.03201 | 0.26032 |
| Mix - C | 0.07218 | 0.16867 | 0.07527 | 0.31613 |
| Mix - D | 0.0862 | 0.14665 | 0.05249 | 0.28534 |
| Mix - E | 0.0841 | 0.15887 | 0.05765 | 0.30061 |

***Message Node ratio***

| | |
|---|---|
| Mix - A | 31.9261 |
| Mix - B | 68.1907 |
| Mix - C | 39.3729 |
| Mix - D | 70.6856 |
| Mix - E | 58.9656 |

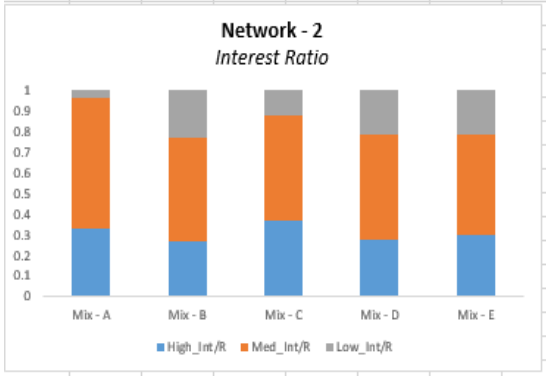


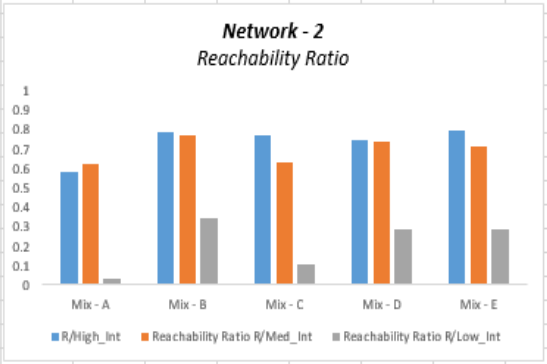



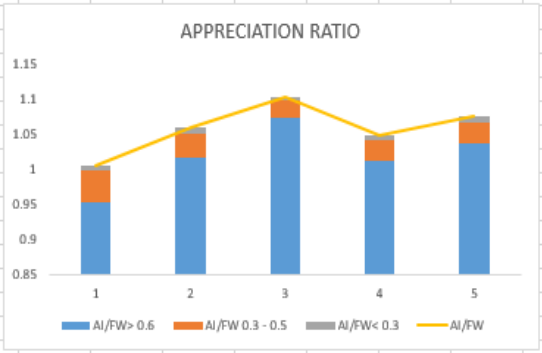
# NETWORK -2

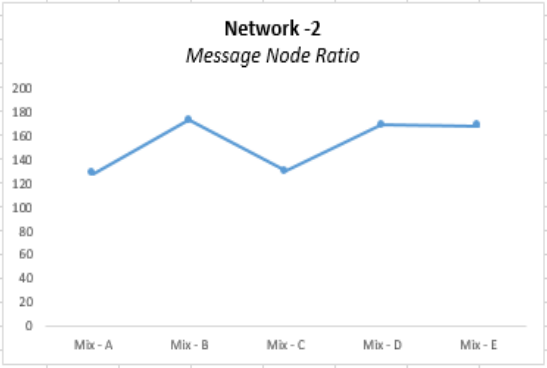
**Network - 2**

| | Interest Ratio | | | | Reachability Ratio | | | | Appreciation Ratio | | | | Message Node ratio | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High_Int/R | Med_Int/R | Low_Int/R | | R/High_Int | R/Med_Int | R/Low_Int | | AI/FW> 0.6 | AI/FW 0.3 | AI/FW< 0.3 | AI/FW | | |
| Mix - A | 0.30267 | 0.57482 | 0.03451 | Mix - A | 0.58053 | 0.61975 | 0.03383 | Mix - A | 0.95237 | 0.04558 | 0.00666 | 1.0046 | Mix - A | 128.405 |
| Mix - B | 0.26736 | 0.50487 | 0.22776 | Mix - B | 0.78681 | 0.77381 | 0.34057 | Mix - B | 1.01644 | 0.03328 | 0.00987 | 1.0596 | Mix - B | 173.623 |
| Mix - C | 0.36493 | 0.51438 | 0.12019 | Mix - C | 0.76948 | 0.63408 | 0.10983 | Mix - C | 1.07135 | 0.02494 | 0.0064 | 1.10269 | Mix - C | 130.504 |
| Mix - D | 0.27239 | 0.51297 | 0.21464 | Mix - D | 0.74704 | 0.73846 | 0.2861 | Mix - D | 1.01032 | 0.0301 | 0.00681 | 1.04723 | Mix - D | 169.212 |
| Mix - E | 0.29607 | 0.49258 | 0.21135 | Mix - E | 0.79372 | 0.70933 | 0.28724 | Mix - E | 1.03646 | 0.02959 | 0.0083 | 1.07435 | Mix - E | 168.453 |



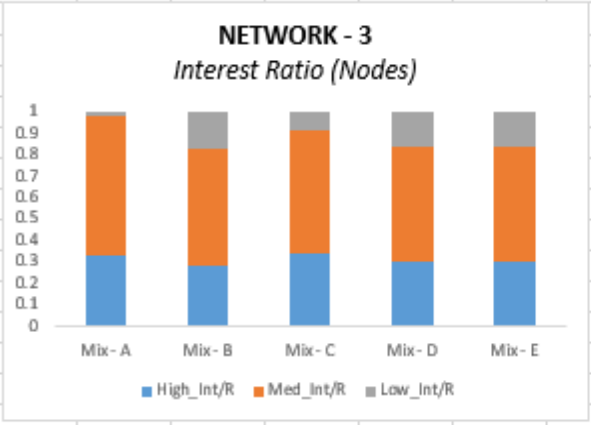



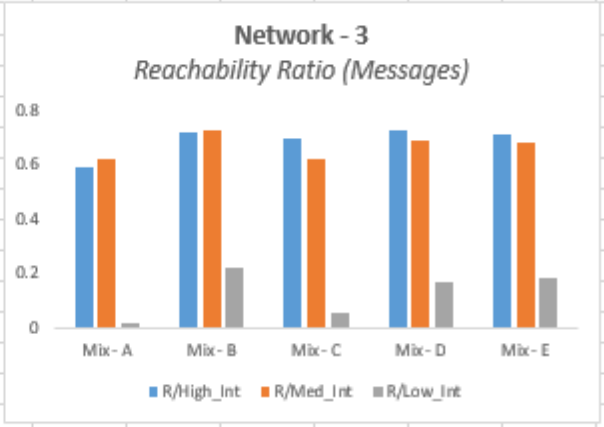
# NETWORK – 3

**Network - 3**

| | *Interest Ratio (Nodes)* | | |
|---|---|---|---|
| | High_Int/ | Med_Int/ | Low_Int/R |
| Mix - A | 0.30047 | 0.58497 | 0.01901 |
| Mix - B | 0.28172 | 0.54279 | 0.17549 |
| Mix - C | 0.34264 | 0.56572 | 0.09101 |
| Mix - D | 0.30173 | 0.53442 | 0.16384 |
| Mix - E | 0.29922 | 0.53745 | 0.16333 |

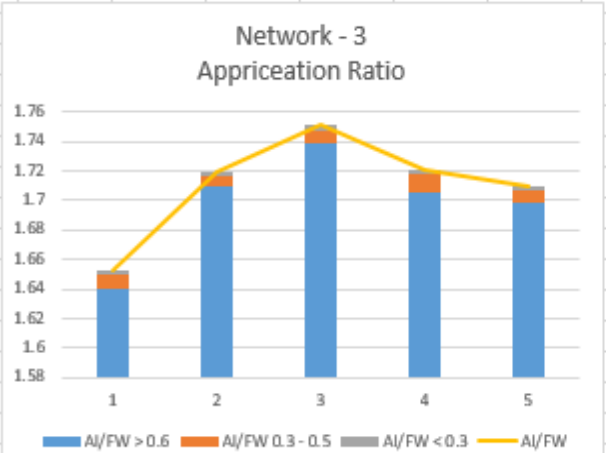
| | *Reachability Ratio (Messages)* | | |
|---|---|---|---|
| | R/High_In | R/Med_In | R/Low_Int |
| Mix - A | 0.5907 | 0.62321 | 0.01973 |
| Mix - B | 0.72251 | 0.72615 | 0.22502 |
| Mix - C | 0.69573 | 0.62509 | 0.05823 |
| Mix - D | 0.73104 | 0.69313 | 0.16719 |
| Mix - E | 0.71403 | 0.6801 | 0.18176 |

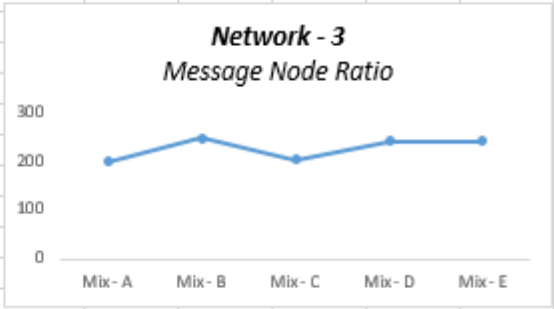



| | *Appreciation Ratio* | | | |
|---|---|---|---|---|
| | AI/FW > 0 | AI/FW 0.3 | AI/FW < 0 | AI/FW |
| Mix - A | 1.63984 | 0.00992 | 0.00356 | 1.65333 |
| Mix - B | 1.70908 | 0.0071 | 0.00324 | 1.71942 |
| Mix - C | 1.73952 | 0.00823 | 0.00312 | 1.75086 |
| Mix - D | 1.70581 | 0.01215 | 0.00339 | 1.72134 |
| Mix - E | 1.69814 | 0.00819 | 0.00355 | 1.70988 |

| | *Message Node ratio* |
|---|---|
| Mix - A | 199.391 |
| Mix - B | 248.018 |
| Mix - C | 203.81 |
| Mix - D | 241.578 |
| Mix - E | 242.448 |



# CONCLUSION

- Strategy – 2 prefers sending a highly Interested message rather than medium or low.
- Strategy – 3 always had high reach Reachability for a message that was highly Interested.
- When average Interested messages are to be considered choosing Strategy - 1 or Strategy - 3 is advisable; since 80% of the average Interested messages where sent using these two strategies.
- Strategy 1 had the highest average of appreciated messages.
- Message - Post Node Ratio increased significantly as there was an increase in the network size.
- Most of the results were consistent even with an increase in network sizes.