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Research Article

A Comparative Study to Understand the Efficiency of two Behavioral Change Communication Models Against Plastic Use

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ABSTRACT

The word pollution when comes to the mind feels dirty but people never think about how the surroundings are being polluted. If people want to get a clear environment, the behavioral change should be the first stepping stone. It is known to all that plastic is a non-biodegradable material but when talks about easily accessible material, mass production of plastic has been continued. Though different steps have been taken to ban the use of this harmful material every time failure has been observed. In this situation, behavioral change communication may help to solve this problem. Keeping all in the mind this particular study was conducted by two researchers in a particular block called Egra which is situated in West Bengal, India to understand the efficiency of the two models. Two different models have been applied viz. M1 and M2 and both work through a total of 6 stages. A total of 50 samples were taken and it was divided into two groups 25 each through the lottery method and applied the respective models. Through the study it has been observed that at the beginning periods success of the M1 model was good when 88% of people of M1 reach the contemplation period, another side only 52 percent of people reach the contemplation period of the M2 model. But slowly with time M2 also started to gear up and at the last, it achieves the same achievement as M1. This data proves that the M2 model is slow but steady. In the last stage, it was found that for M1 number of people in the contemplation period has increased to 60 percent people in the action and maintenance also decreased to 28 and 4 percent. Where in the case of M2 the people who are in action are 20 percent, 60 percent in the maintenance stage, and 20 percent population is terminated from this habit. In this stage, it is clear that the M2 has quite well retention power than the M1. Above all, it can be said that even M2 is slow though it is a better model than M1. Because at the end of the day it brings more numbers of terminated people. Later in the future by amalgamating these two models small weaknesses can be resolved, but for that, another detailed study has to be done.

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Introduction

Plastic is a cheap but deadly material created by humans for mass utilization. According to a study of National geography (Parker, 2019) every year, about 8 million tons of plastic waste escapes into the oceans from coastal nations. That's the equivalent of setting five garbage bags full of trash on every foot of coastline around the world. The study also said that production increased exponentially, from 2.3 million tons in 1950 to 448 million tons by 2015. Production is expected to double by 2050. It may look cheap but the future generation of the human race has to pay a huge cost if it cannot be stopped now. Different countries of the world coming out of different laws and restrictions over it but at the end of the day, this habit of using plastic has entered into the bone marrows of common mass. Even with very strict laws also people find a gap and use it regularly. From the toothbrush to medical care plastic is everywhere. So through strict rules and regulations, it is not possible to check its use until the people understand what it cost. In this case, a behavioral change communication approach can become a better approach. Behavioral change communication (BCC) is a specific type of approach in the field of communication where the pain points of the audience are targeted to change the behavior toward a specific direction. The behavior change can happen willingly or unwillingly at any point in time of life of a person. It may be an external induction of inner urge. Many records proved that behavioral changes helped to stop many bugger problems in the world. Numerous historical infectious disease experiences confirm the existence of a so-called behavioral immune system (Schaller, 2011) in humans. For example, during 2003, severe acute respiratory syndrome (SARS) outbreak, people took precautionary actions such as wearing face masks, hand-washing, avoiding public transport, restaurants, shops, and other crowded places in Hong Kong (Lau et al., 2004; Durham & Casman, 2011) and Beijing (Beutels et al., 2009). Also, the 2009 A/H1N1 influenza pandemic has triggered a significant proportion of the population to adapt their behavior and take preventive measures such as social distancing (Rubin et al., 2009; Jones & Salathe, 2009; Verelst et al., 2016). The transformation of Prince Sidharth to Buddha was a behavioral change through his inner urge and self-realization. But all the human being is not that much privileged that they can get a self-change towards the positive direction. For them, behavioral change communication is an alternative that brings tremendous results in the recent world. There are different models of this approach, but one model cannot be universal or best as there are several types of audiences in the world. The approach towards every audience will be different and the approach toward different goals will be different. In this study, the two researchers have made two different models of behavioral change and tried to compare with their efficiency to change the behavior towards plastic use.

Methodology

This research was done basically to compare the efficiency to two different models of BCC created by two researchers. If we go into depth this work can be divided into three major phases *i.e.* Evolution of the models, Implementation, and Efficiency analysis. In the first two phases, two researchers worked independently but the analysis part was done together.

Evolution of the models

In this stage the two researchers went through several documents and case studies to understand different models of the BCC, later they also rigorously study the human behavior towards plastic use. This behavioral study was done by the early publication reviewing, closely observing the people using plastic in different market and home conditions and lots of informal interviews. This gathered knowledge pool helped the researchers to shape their models to direct people towards a plastic-free world. Then both the researchers present their models in front of the expert panel and the gaps were rectified through rapid triangulation.

Implementation

Both of the models were implemented in a semi-urban area of West Bengal named Egra of Purba Medinipur district. The persons for the experiment was chosen randomly with one condition that the participant should be an adult. One announcement was done for volunteers to participate in the experiment. As a result of the announcement, a heterogeneous group of people came to take an active part. Later through the lottery method, they were divided into two small groups of 25 persons in each group. Later according to the models' people were treated through different activities and other means.

Analysis

For the analysis, one plastic use motivation assessment schedule was made. To understand the efficiency of the baseline data was collected before the BCC implementation (A1), then at the middle of the curriculum (just after the activity to the transformation from pre-contemplation stage to the contemplation stage) (A2), then quickly after finishing of the BCC implementation (A3) and three more after six months interval from the previous assessment (A3, A5, and A6). Later the information is interpreted to understand the efficiency by using different mathematical tools.

Theory and models used for efficiency check

Stages of Change

Historically the first, and empirically the most frequently utilized, stage model is the 'Transtheoretical' or 'Stages of Change' model of Prochaska and colleagues (The TTM integrates basic principles of behavior change from the major theories of intervention current at the time, based on clinical experience in the area of smoking cessation; hence the appellation 'trans-theoretical' (Sniehotta & Aunger, 2010)

Table 1 Transtheoretical Model: Stages of Change

STAGE	DEFINITION
Pre-contemplation	Not seriously thinking changing behavior
Contemplation	Seriously thinking about changing behavior in the next 6 months + but not within the next 30 days + no attempt in the past year
Preparation	Seriously thinking about changing behavior in the next 30 days
Action	First 6 months of abstinence
Maintenance	Abstinence beyond 6 months
(Termination)	The complete absence of temptation for previous behavior

Note -Definitions adapted from (Schaller, 2011)

Model 1 of the research (M1)

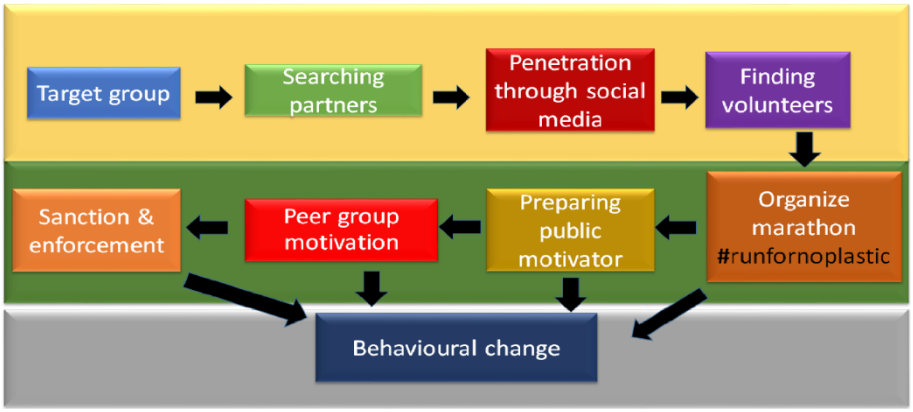

Figure 1. Model 1 BCC used in the research

Target group - In this model, the first focus is the target group the materials for motivation depends on the target group. So Identification and understanding of the target group are very important for this model of BCC.

Finding Volunteer – The next step was finding volunteers among the target group who will be interested to give their valuable time to this cause.

Penetration through social media – Then the campaign will start through the volunteers with already prepared information education communication materials (IECs). The volunteers are supposed to penetrate the minds of target groups through social media by sharing different information sharing materials that will aware the target groups of the seriousness of the situation and the future costs they are going to pay for it. It will be one type of scaring or awaking the target group. Through this, the target group will be shifted from the pre-contemplation stage to the contemplation stage.

Organizing marathon – The next step is to organize a marathon, the route of the marathon will be through a busy market after it closed or a dumping ground where the people can see around a lot of single-use plastics are creating heap. It will open their eyes and they can see the seriousness of the situation. It will bring them into the preparation stage. From this stage, the behavior change may occur.

Preparing public motivator – The next step is to prepare motivators among the target group. The persons who are deeply affected by the marathon and want to change society can find out and with special guidance, they can become a public motivator. Which will later lead to the action stage of the public.

Peer group motivation – The persons who are still not ready to understand or cannot accept the facts can be treated with peer group motivation. The community-level motivators will do a much closed interpersonal communication regularly which will slowly shape their choice and the motive towards the no plastic use.

Sanction and enforcement – After a peer motivation also if people are not ready to listen in such case sanction and the enforcement can be adopted where the changed community will force them to change and leave the plastic use forever.

Behavioral change – This can happen from any stage after the marathon, it depends on people and their motives. Their behavior and their pain points are the two main sensitive parameters that play a huge role that when the behavioral change can happen.

Model 2 of the research (M2)

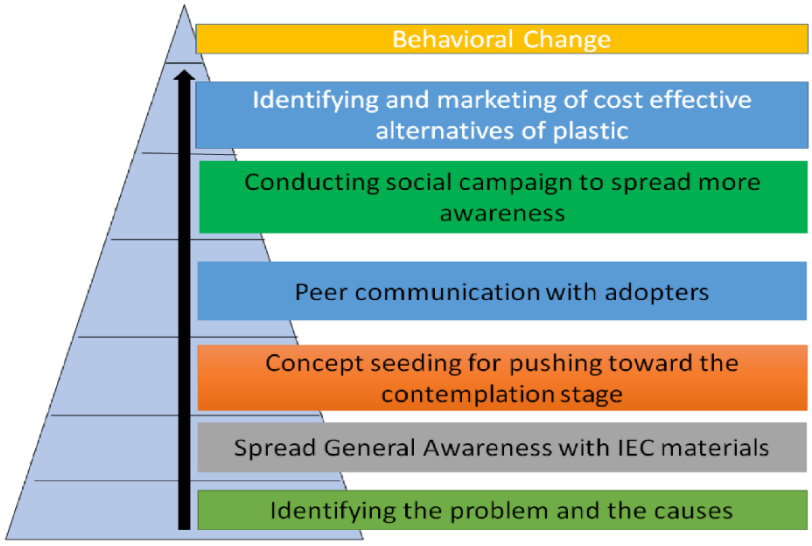

Figure 2. Model 2 BCC used for the research

Identifying the problem and the causes – In this model, the problem is mainly focused on as a major parameter. The problems and their causes can change the approach of BCC. Sometimes the same problem can be created by different causes, so the causes are important to find a solution in the BCC. According to this model without an alternative solution to a problem, BCC cannot sustain.

Spread General Awareness with IEC materials – This is for pushing the people from a pre-contemplation period to the contemplation stage. Different Information and education materials will change people's perception and they will start to understand the seriousness of the situation.

Concept seeding for pushing toward the contemplation stage – Once the terminologies and situations are known to people they can be seeded with the concept of no plastic world. How plastic is ruining the world and how it will be without plastic things can be clarified to the people so that a permanent transformation can be achieved.

Peer communication with adopters – Then the people who are not ready to understand the seriousness of the situation can be peer communicate by the early adopters of the concept which will bring a better result than any expert from outside.

Conducting a social campaign to spread more awareness – People will indeed understand and leave the plastic, but for few days to retain this habit a regular campaign is very much important. Once the monitoring is finished people will again go back to their old habits. So after the BCC also regular awareness-building programs should be organized in regular intervals.

Identifying and marketing cost-effective alternatives of plastic – This is a very important part of this model. Plastic is indeed harmful, but it is now everywhere. How people can avoid it. Until there is a cost-effective alternative all the efforts will go in vain people will again come back to the plastic. It may not be self-change but the situations may lead them to do so.

Behavioral Change – When all these steps can be followed the behavioral change will come. This model believes the facilitators only can create opportunities and favorable conditions for the behavioral change but the change has to come from inside of the person, none can change anyone if he doesn't want to be.

Results and Discussion

To test the efficiency of these two models fifty adult volunteers were randomly chosen, among them, 23 were a student of different college from a different educational background and others are job holders or self-employed persons. Later they were divided into two groups of 25 each through the lottery method and both models were tested on them.

Baseline information

To test the efficiency of these two models fifty adult volunteers were randomly chosen, among them, 23 were a student of different college from a different educational background and others are job holders or self-employed persons. Later they were divided into two groups of 25 each through the lottery method and both models were tested on them.

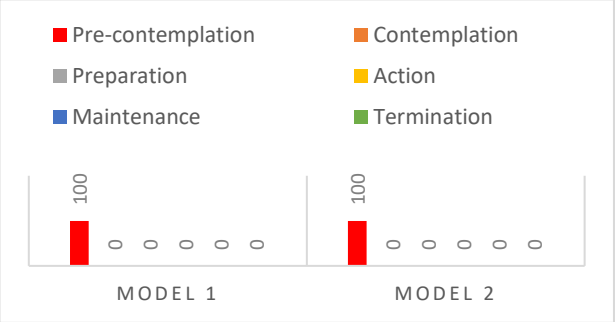

Chart 1. Baseline Information

Middle of the curriculum analysis

This data was collected after the marathon of model one (M1) and concept seeding of model two (M2). According to this data in that period M1 has motivated more people and can transform 88 percent, people, from the pre-contemplation stage to the contemplation stage, but on the other hand, the transformation rate of M2 is quite less only 52 percent.

According to this observation, a marathon through a highly polluted area by plastic can change more number of people than showing some videos or posters for the concept of seeding.

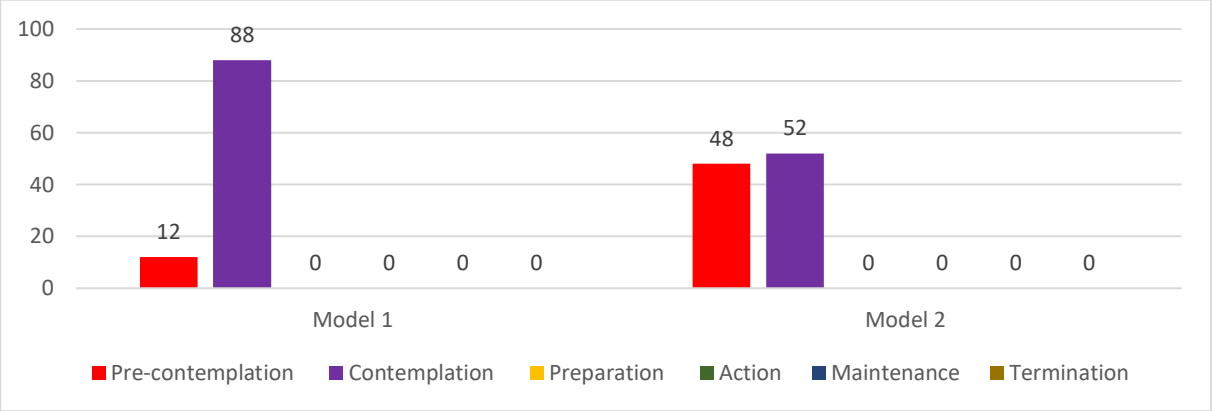

Chart 2. Middle of the curriculum analysis

Quick after the BCC curriculum analysis

This data was collected just after finishing the formal BCC curriculum, at that situation it was found that M1 has transformed all volunteers to the contemplation stage but for M2 it has sill 28 percent volunteers in the pre-contemplation stage. Where for M1 28 percent of people in the contemplation stage there in the case of M2 24 percent of people are in the contemplation stage. In the case of M1, 72 percent of people already enter the preparation stage and for M2 only 48 percent of people came to the preparation stage. In this stage also it was seen that the M1 is working faster than the M2.

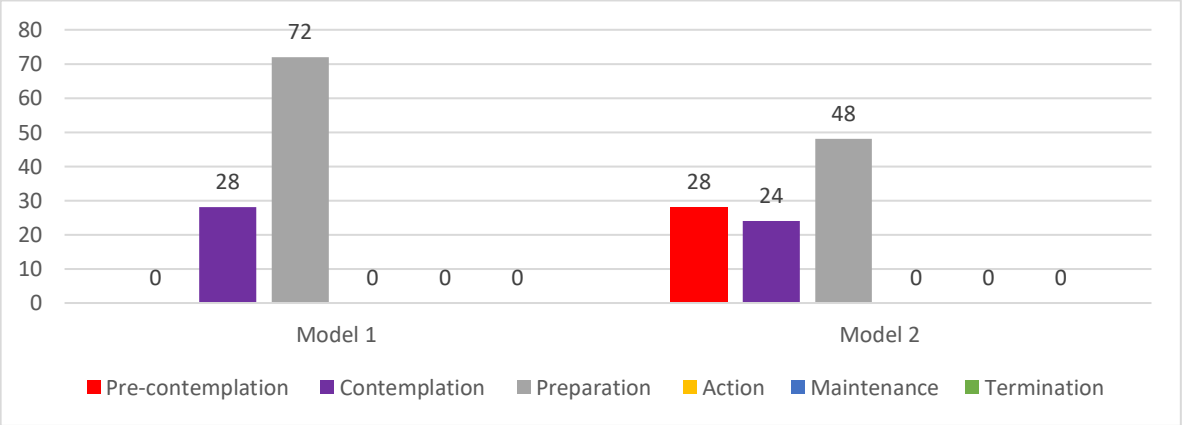

Chart 3. Quick after the BCC curriculum analysis

First six-month interval analysis

This information was collected after six months of the BCC curriculum, from that information it was found that in the case of M1 number of volunteers were in the contemplation period are 20 percent where for the M2 it is 28 percent. Only 8 percent of the volunteers were in the preparation stage in the case of M1 wherein in the case of M2 it is 24 percent. Now if we discuss the action stage there are 60 percent people in the case of M1 and 40 percent people in the case M2. In this stage, a few people already maintaining this for more than six months they were in the maintenance stage. In the case of M1, this number is 12 percent and for M2 this number is 8 percent at this stage. Now if we do an overview compared to the previous analysis this time M2 had performed better than the past but still M1 is giving a better and faster result than the M2.

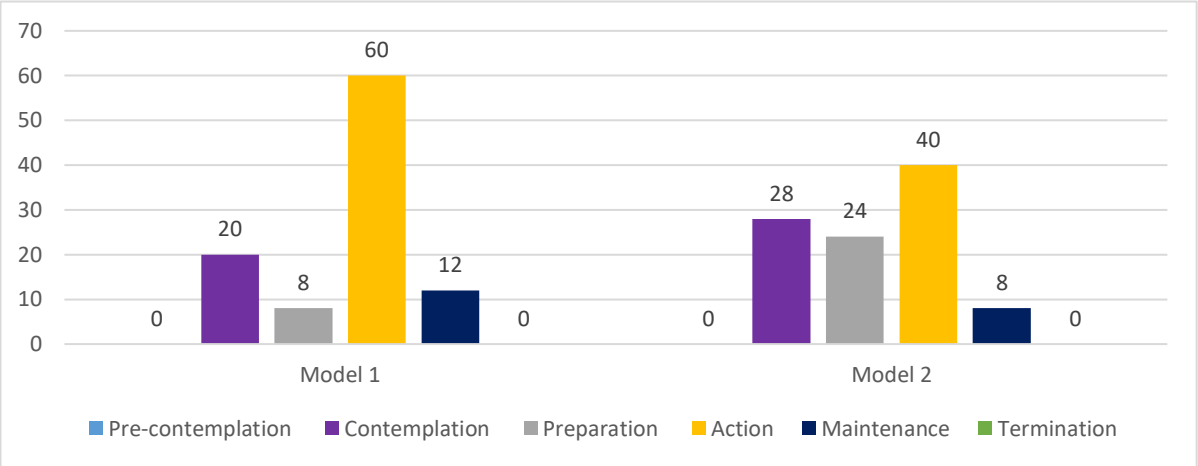

Chart 4. First six month interval analysis

Second six-month interval analysis

This information was collected after twelve months of the BCC curriculum. From the information, it was found that in the case of M1 people in the contemplation increases from 20 percent to 36 percent wherein in the case of M2 it decreases from 28 percent to 20 percent than the previous data. Now people in the action period of M1 is only 40 percent where the M2 performed very well and achieve 48 percent. There are still 16 percent people are in the maintenance stage for M1 but M2 is also growing and currently they achieve 8 percent of the population. Both the model achieve 8 percent termination from plastic use at this stage of time. From this information, it is clear that M1 may be a fast model but have a very low capacity of maintenance and retention where M2 is slow but its growth is quite steady.

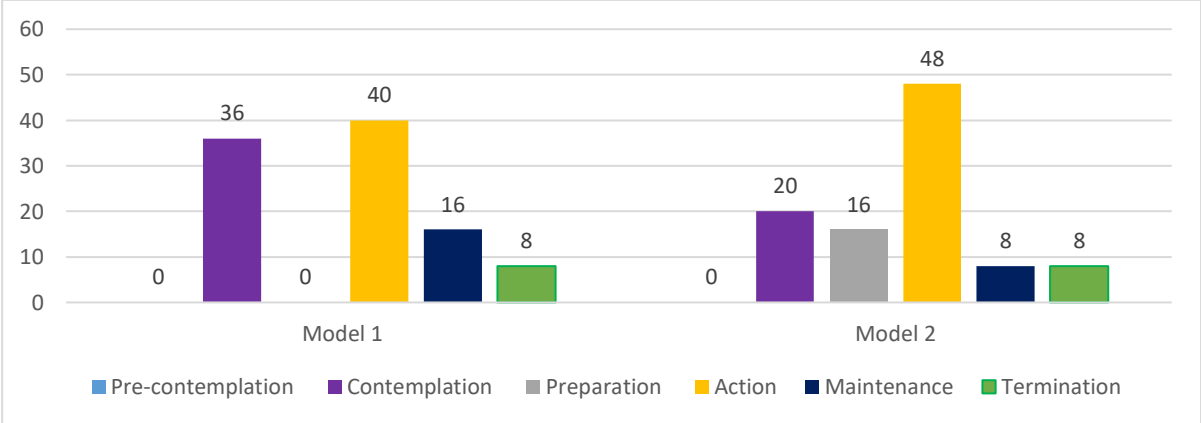

Chart 5. Second six month interval analysis

Third six-month interval analysis

This information was collected after eighteen months of the BCC curriculum. From this information, it was found that for M1 number of people in the contemplation period has increased to 60 percent people in the action and maintenance also decreased to 28 and 4 percent. Where in the case of M2 the people who are in action are 20 percent, 60 percent in the maintenance stage, and 20 percent population is terminated from this habit. In this stage, it is clear that the M2 has quite well retention power than the M1.

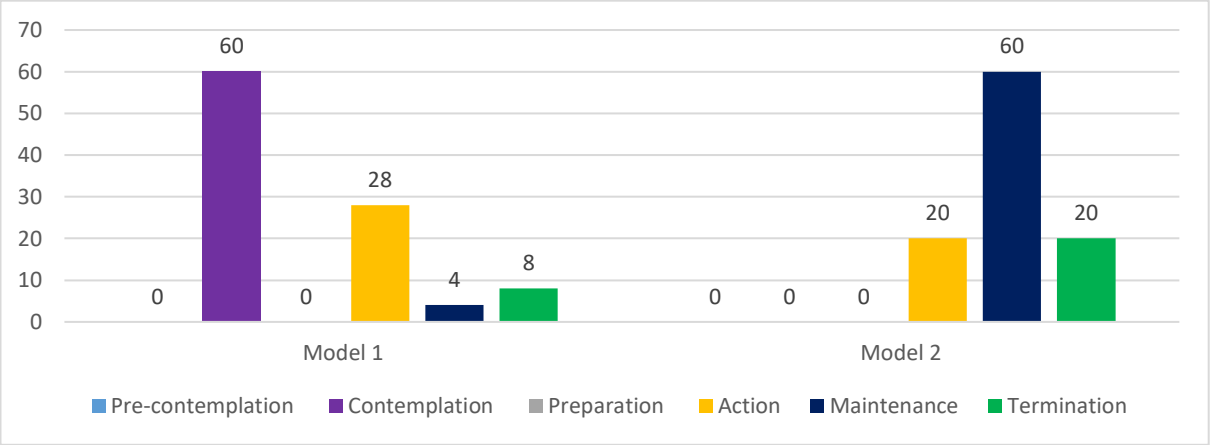

Chart 6. Third six month interval analysis

If we observe chart no 7 which is showing the change in the number of people in the contemplation stage it will clarify that M1 is a very fast model. At the time of A2, it gets a very good response from the people where it has to increase the number of people in the contemplation period, later with time it is also transforming people to the next stages very fast and later during A5 and A6 the number is supposed to be very less but suddenly it again increased it means this model is fast but have a very less retention capacity. On the other hand, M2 is quite slow than M1 in every time lags but if we see the results at A5 and A6 it is quite good than M1. It means this model is a slow but steady model.

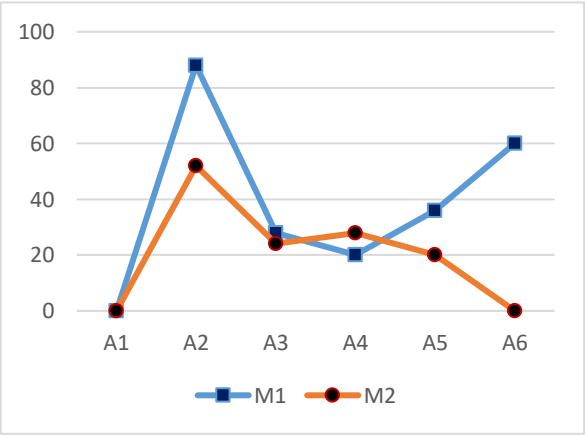

Chart 7. Change in Contemplation stage over time

Conclusions

Human behavior is one of the unpredictable things in the world. But if it can be shaped in a well-defined manner it can solve a lot of problems in the world. It is not a very easy task. Understanding the pain points of the public mind and using them for the benefit of society as well as individuals is a very sensitive skill. It may take few minutes to several years to change human behavior, depending on people. But a regular maintaining of the habit is very important to achieve the level of termination. In this study, M1 was a very fast model, but it won't have a well-defined monitoring system, on the other hand, M2 never leave their samples until that terminated. And the thought of cost-effective alternative finding in the M2 was a turning point of this model. Where after understanding the seriousness of the situation also due to lack of alternatives a lot of people go back to their old habits. The retention power of the M2 is very high for these two reasons. But the weakness it is a little slow. Above all, it can be said that even M2 is slow though it is a better model than M1. Because at the end of the day it brings more numbers of terminated people. Later in the future by amalgamating these two models small weaknesses can be resolved, but for that, another detailed study has to be done.

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