Would the Glitter Persist: A Model Based Inquiry into the Rising Popularity of TV Game Show

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A.   Background

Of all programs shown on TV game shows are probably the most popular. And among game shows nothing has attracted the attention as the one titled 'Who Wants to Be a Millionaire. First broadcast in Britain, it has been aired in a number of other countries including India. After amazing success in the UK, America and other foreign shores, the TV game show: 'Who Wants To Be A Millionaire' hit Indian TV with a bang.

The show's producers, who opted for the title 'Kaun Banega Crorepati' (hindi translation of the original title), wanted to take no risks. And what would ensure that show catches people's attention? Well, how about a huge superstar presenter in the form of living legend Amitabh Bachchan! This ensures a double treat for common man of India, at one side there are huge prizes to be won, and on the other side, a life time chance to share the stage with none other than Amitabh Bachchan! So it hasn't come as a surprise that the initial episodes have attracted huge ratings and it looks like Star TV is onto a winner.

The concept and rules of the game show are quite simple and therein lies the secret to its success. The Big B asks the contestant a number of questions. The contestant is chosen amongst the 10 contestants who are there at the game show. In all there are 15 questions to be answered. With each question asked, the prize money goes on doubling. To help him out in his quest to become a Crorepati, he also has the option of using 3 lifelines by which he can get help in answering the answers correctly. The good thing is that there is neither time limit to answer the questions nor any buzzer round. He can take his own sweet time to answer.

This show, as far as the viewer is concerned, is all about Amitabh Bachchan. The baritone voice, the right modulation, impeccable language, perfect nuances, subtle humour, Amitabh Bachchan is in his elements and carries the show on his shoulder with aplomb. The maestro of theatrics conducts the show in his typical style. He is not a professional quizzer but plays the role to perfection. The talent and versatility of the nation's best acting talent is on show as he does his job with élan. Bachchan is a master showman who goes a long way in making the quiz a lot more fun than it would have been without him as the master. Everyone accepts that this is the most popular show today, and we can see every other channel frantically trying to come out with their own versions of it.

So what that KBC is an imitation too? Did anyone ever think that KBC would be so successful anyway in India? Why is it successful? I think, it is more of the human psyche to make money. And that too, free money! Annual per capita income in India is around Rs 10,207. Star TV computers have so far logged 5.5 million callers from across India wanting to participate in the most expensive game show in Indian TV history.

But what would happen after this initial euphoria dies down. Or more appropriately would this euphoria ever die down? Would this popularity chart, which is soaring at the moment stay like this forever, or would it ever come down.

Issues
- As the popularity and earnings of this show increase, some other competitors would also jump in to the cash on the popularity of game shows.
- In the initial phase of the show, the number of viewers has been increasing, but this state cannot continue for long.
- Would the content of the show able to hold the viewer's interest in a long term.
- Right in the beginning, the organisers have roped in the biggest name in the Bollywood in the form of Mr. Amitabh Bachchan, what would happen, if tomorrow, he decides to call it a day?

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- At Present, all the telephone lines, which lead to the mega bucks have been jammed. What would be the ideal time when a call from a common man has a very high probability of getting through so that he gets a chance to pocket some bucks?

Our paper would try to address some or all of these questions through a concept called ***Dynamic Brand Value Management*** (DBVM) (Warren et. al. 1998).

B.   A framework for valuing brands

In the last couple year, executives seeking to meet the challenge of managing brands head on have found a new approach towards brand management, termed as dynamic brand value management. DBVM sets out to identify, quantify, and manage the complex system that underpins a brand's value. As already stated, It adds to existing marketing techniques key concepts from two methodologies: the resource-based view of the firm and business dynamics (Sterman 2000).

DBVM provides a framework for making fact-based decisions about brand value management. It rests on three core ideas:

- ❖ A brand's value equals the net present value of its future cash flows, which are determined by future sales volumes and prices and by the value of the option to create brand extensions (new variants on the basic brand that tap new market segments). All key branding decisions can be assessed in terms of their impact on future cash flows, which means there is a common language for boardroom discussions.
- ❖ This value depends on the health of the brand's key resources. The concept of resources is key to the DBVM framework: resources are the factors that influence brand value. They may be hard, tangible items such as product features or the number of loyal customers, sales outlets, and staff, or soft, intangible factors such as retail display quality, product quality, and staff morale. Some resources, such as retail display quality or customer loyalty, are outside management's direct control; it can only influence them.
- ❖ These resources evolve and interact to create a complex system containing time delays and feedback loops. A virtuous reinforcing loop is created when a product sells well, is taken up by more retailers, and then sells even better; however, the strength of this reinforcing loop diminishes as retail availability approaches saturation. Similarly, word of mouth that a brand is "trendy" may boost awareness and purchase, but in time, as the brand loses its trendiness, rejection may set in.

The application of these ideas makes it possible to quantify the value of alternative strategies. Companies using DBVM have found that the process of describing and modeling a brand's resource system brings to the surface many assumptions that would otherwise have remained hidden. After discovering DBVM, even experienced managers have learned a lot about their business and found it easier to make tough decisions about their brands.

Surprising insights: Executives quite naturally make different brand management decisions when they can see the impact of these decisions on earnings. DBVM enables them to do just that by quantifying the drivers of brand value and structuring them within a decision framework. Some of the insights it yields, however, are far from intuitive: DBVM succeeds in establishing credible mathematical links between soft variables and hard figures. It identifies which soft variables are the best lead indicators of financial performance, identifies the direction they are moving in, and quantifies the rate at which they are changing with sufficient accuracy for the results to be useful in strategy formulation and review.

A brand has value, but not just one value: Putting a value on a brand perplexes many managers. The earnings stream of a brand is influenced by the way it is managed, as well as by the strength of competing brands. A brand would also be worth different amounts to different owners, depending on the state of their resource systems and on how well the brand fits with the owner's resources. DBVM can be used to produce sound, detailed estimates of future earnings streams to yield valuations of brands under different strategic and ownership scenarios.

Short-term measures can destroy long-term value. Many brand-owning organizations have a short-term culture. This month's sales figures are what matters, marketing directors favor initiatives that get results fast, and the average brand manager has less than two years to make a mark. Yet this month's sales figures incorporate the ripple effects of initiatives going back years. What seems like a good idea at the time often turns out to destroy value in the end. Disentangling the historical chain of cause and effect may not be worth the effort, but a DBVM approach at least

allows brand managers to look forward, simulating initiatives and isolating their impact many years from now. This allows them to make and defend informed decisions that maximize long-term value, not just this quarter's sales.

C.   Objective of the study
The study reported in this paper was undertaken to understand the dynamics of the popularity growth of 'Kaun Banega Crorepati' based on the concept of DBVM.

The DBVM approach as applied to KBC would consist of four steps:
- ❖ **Identify and quantify the resources influencing brand value of KBC**. These can be tangible, such as the number of advertisements and the number of viewers or intangible, such as the level of skill of the producers of the show and the number of people trying to call. Their importance would change as they are affected by other resources and by management actions
- ❖ **Understand and map how the resources interact with each other.** The number of stores that decide to stock a brand, for instance, is driven by the size and skills of the sales force as well as by the number of consumers of the product, which in turn is affected by the number of stores stocking the brand. By making a distinction between stocks (or resources) and flows, this approach imposes a degree of rigor that is helpful in understanding the dynamic behaviour of a system. It also distinguishes between what builds up and what depletes a resource, and thus indicates which lead indicators to track or management levers to pull.
- ❖ **Build a business dynamics computer model** that lays out the critical resources and the key relationships between them, and uses market data and interview results to quantify these linkages.
- ❖ **Use the model to carry out simulations** in order to understand and quantify the impact of management levers and assess how various brand strategies might affect short- and long-term earnings streams.

From this study, we would be able to come up with:
- ❖ The factors which are detrimental to the popularity of Kaun Banega Crorepati
- ❖ A model that shows all the resources of KBC brand, and the interrelationships between them.
- ❖ A policy analysis tool, which may help in taking decisions such as the time when a person should call up when his chances of selection are very high.

D.   Cause and Effect relationships
The most interesting aspect of this problem is how management has to handle two brand values simultaneously. The first of these is the flow of interest that needs to be build in order that the program gets sufficient viewers and ensures flow of advertisement revenues. The other flow that the company has to manage is that of people who take part in the program. The following diagram explains the cause-effect relationship we propose for the situation.

Interest building starts with 'promotion'. As the promotional expenditure increases, the 'awareness' of the game
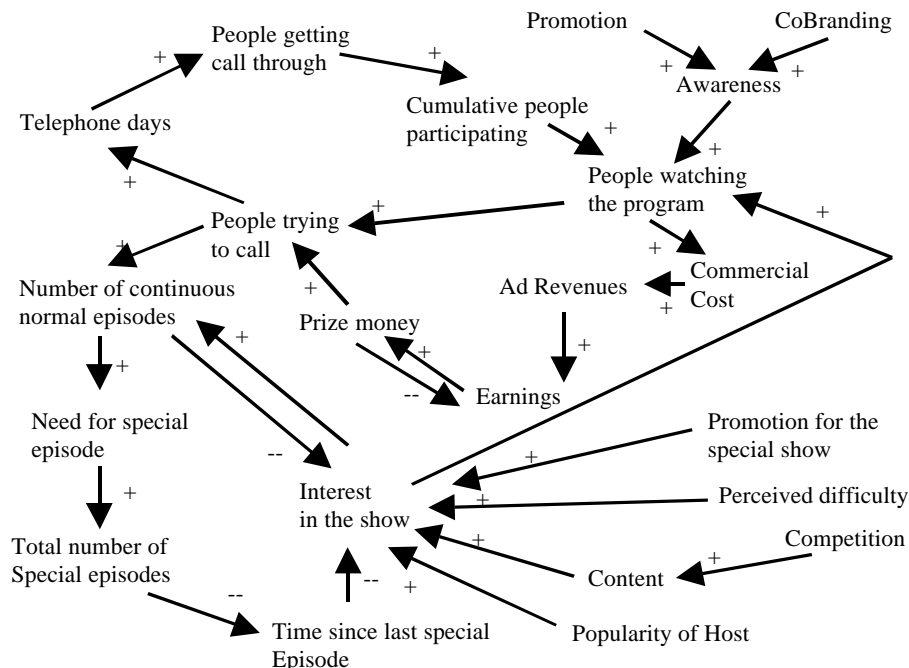
show among the TV viewing population increases leading to an increase in interest. As the awareness of the game show among the TV watching population increases the number of people watching the program would increase. The increase in people watching the program would lead to an increase in advertisement rates charged for this game show. So the 'commercial cost' would increase. This increase in commercial cost would lead to an increase in the advertisement revenues or 'ad revenues' as it is called in our diagram. This in turn would lead to an increase in the 'earnings' for the organizers of the show. This increase in the earnings would gradually lead to increase in the average 'prize money' won by a contestant. But an interesting point to note here is that this increase in prize money would lead to a decrease in the earnings so in effect there is a negative feedback loop working here between Prize money and earnings. On the other hand as the average 'prize money' increases, the number of people trying to call would increase because of the lure of making some 'easy bucks'. As the number of callers increase, this would result in more stress on already jammed lines. If this trend continues, then after some time the authorities would increase the number of 'telephone days', which would result in the increase in number of 'people getting their calls through', which in turn would increase the number of people watching the game show. And in this way this loop would go on and on. This is a positive feedback loop, which can also be called as 'Reinforcing loop'.

There is one more feedback loop acting in the system. As the 'people trying to call' increase, it would lead to increase in the 'number of continuous normal episodes' i.e. the number of episodes between two special episodes. With this increase, the 'interest' in the show would start decreasing, because of monotony attached with this. But if the 'interest' increases, then it would lead to a further increase in 'number of continuous normal episodes'. So there is a negative feedback loop at work between these two variables. As the 'number of continuous normal episodes' increase, the 'need for a special episode' increase. When this need is met this would lead to an increase in the 'total number of special episodes' which would set the 'Time since least special episode' to zero. As this time increases, the 'interest in the show' would decrease. But as this interest increases, it would lead to an increase in the number of 'people watching the program'.

Apart from these loops, some other factors/variables have a direct bearing on the interest in the program they are 'Promotion for the special show', 'Perceived difficulty', 'Competition', 'Content', and 'Host popularity'.

E.   Simulation Model

The cause-effect structure was converted into the flow diagram given in annexure I. The flow diagram used symbols of the Powersim© simulation software. Documentation on the variables used are provided in Annexure II. Paprameters value s were based data available in public media and website of the game show. Simulation of the model resulted in outputs given in Figure 2.
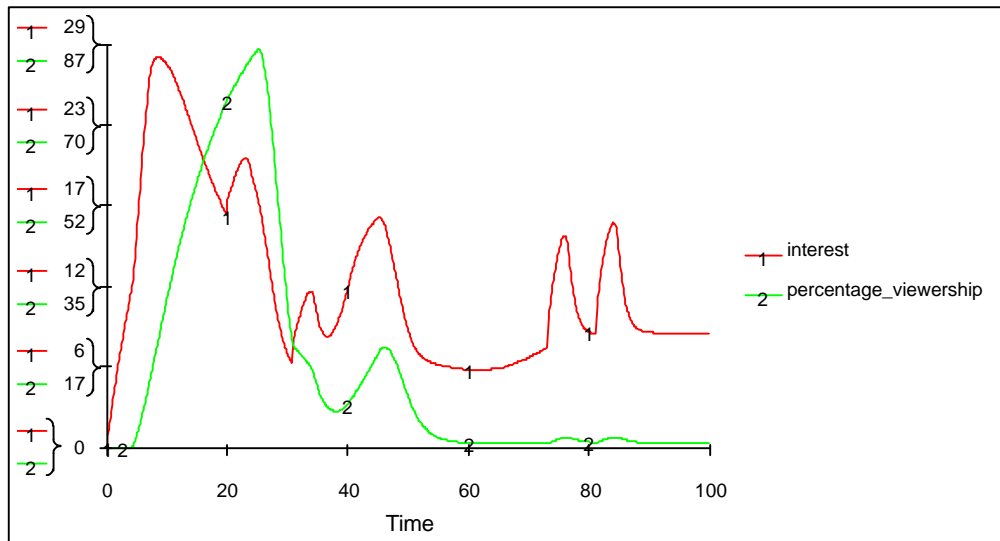
Figure 2: Behaviour of Interest and Percentage Viewership

An explanation of this behaviour can be provided in the following manner. In the initial period company spends massive amount in promoting the game show. The money spent goes to increase the interest among the population to call in and participate in the show. Simultaneously promotion also affects the number of potential viewers (people willing to sit in front of the TV watching the program) as awareness about the program increases. Following the launch of the program a large chunk of these potential viewers become actual viewers and the viewership increases. With time however, as people sit through a number of episodes, the level of interest starts falling. However the viewership drops after some time due to inertia of changing TV viewing habits. At this point comes special episode, another instrument for promoting the brand. But the interest doesn't touch the previous peak. As time progresses, the effectiveness of promotional instruments like advertising and special episodes decrease.

F.   Management Levers

One of the objectives of this study was to identify the 'management levers' – or those parameters on which management has some control and which have a profound effect on the system as a whole even if they are changed slightly. They can also be called as 'leverage points'.

Based on several simulation runs, we could identify the following management levers in our model.

Content:
Quality of the Content is very important in face of plethora of choices available for a viewer in terms of number of channels he can watch. As seen in our questionnaire viewers are not loyal to any one particular channel, especially in prime time. So to hook them to STAR TV at 9:00-10:00 PM slot, the content has to be very good. In this model, we have seen that a small modification in the value of the content can have a large effect onto the total viewership of the show. Also because of this even the earnings get a boost as the advertising rates charged depend upon the viewership levels.

In face of quality competition, the quality of the content is the management's best bet. As it can reduce the rate of lose of customers and also rate of the lose of interest.

Promotional Expenditure
The second management lever is the level of promotional expenditure. Management can certainly attract and even retain viewers if they promote this show effectively by means of Good Set, Trendy advertisements, more airtime, and some schemes for viewers etc.

Prize money
Prize money is another very effective management lever. If a person senses that the average prize money is increasing, he/she would certainly be drawn towards making a call, or at least trying once. It can be seen from our model that as the prize money on offer increases, the viewers as well as the callers increase in number.

G.   References

Warren Kim, Glucksman Maurice, Desmet Driek, Marshall Norman, Reyner Michael, and Finskud Lars(1998), *End of Vodoo Brand Management* in McKinsey Quarterly 1998 (2): 107 – 117.

Flow Diagram for the Situation
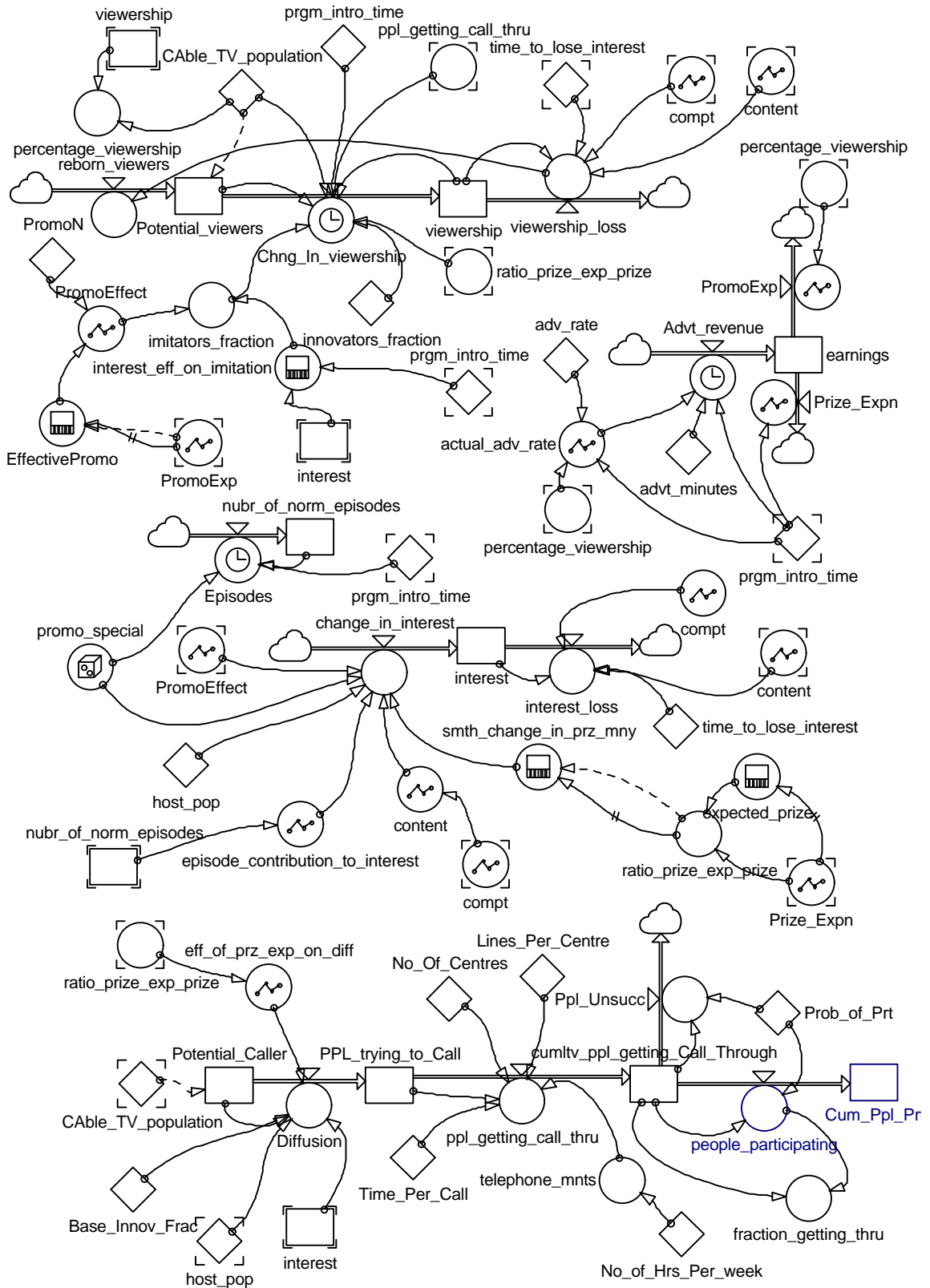
Documentation on variables used

1) People Getting call through: No of people who tried to call to participate in the show ands were successful.
2) Telephone days: The number of days for which telephone lines stay open consecutively.
3) People trying to call Number of people who try to call at KBC office to participate.
4) Prize money: The amount of money that a participant wins on an average.
5) Earnings: The earnings through the advertising revenues minus the promotional expenses and the prize money.
6) Ad Revenues: Revenues from the advertisements from the sponsors of the show.
7) Commercial cost: The advertising cost per minute.
8) People watching the program: The number of people watching the show at a given time.
9) Cumulative people participating: All the participants in the show right from the beginning of the game show on TV.
10) Awareness: The number of people who are aware of this game show.
11) Promotion: The expenditure incurred in promoting the game show through advertisements etc.
12) CoBranding:
13) Promotion for the special episode: The expenditure incurred in promoting the special episodes of the game show.
14) Competition: Other programs which are its direct competitors.
15) Content: The content of the game show including the kind of questions, game format etc.
16) Host popularity: The popularity of the show anchor.
17) The number of continuous normal episodes: The number of normal episodes between any two special episodes.
18) Need for a special episode: As there are more and more of normal episodes, the interest in the show starts decreasing for a viewer, so there is a need for a special episode.
19) Total number of special episodes: As the need for a special episode increases to certain extent, a special episode would be telecast. This would increase the Total number of special episodes telecast.
20) Time since last episode: The time in some predefined units since the last special episode was telecast
21) Interest: Interest is defined as the likelihood of an average viewer of this game show to watch this show again the next day.
22) Perceived difficulty: The difficulty level of the questions asked from the participants as perceived by an average viewer.
23) Potential viewers: Potential viewers of this game show are assumed to be all those households that have access to Star TV channel. Initially the level is taken to be equal to 96 million people.
24) Viewership: All those potential viewers who have started watching this game show. This value is set equal to zero at the beginning. This value stays at this level for the first four weeks, as there is no telecast in this initial period. But there have been promotional expenditures directed at making people aware about this show and also lead them to try to make a call at the KBC centers.
25) Earnings: Total earnings of the game show through Advertising revenues minus the expenditure for promotion of KBC and the prize money won by the participants. This promotion expenditure also includes all the other expenditures incurred on the salaries of staff and set etc. This value is set equal to zero at the beginning. This value also stays at this level for the first four weeks.
26) Number of normal episodes: This shows the number of continuous normal episodes between any two special episodes. As soon as a special episode is being telecast, this level is reset to zero. Initially this value is zero for the first four weeks as there is number telecast for the first four weeks.
27) Interest: Interest is defined as the likelihood of an average person to watch the game show again the next day.
28) Potential callers: Potential callers are assumed to be all those people who are potential viewers. This value is also set equal to the potential viewers.
29) Percentage viewership: This is the ratio of cable_tv_population and viewership. We expect it to follow a 's-shaped' curve with time.
30) Prgm intro time: We have taken the starting time of the simulation as one month before the show actually came on air. This is to take into account all those promotional expenses incurred to make people aware of this show, prior to its inauguration.
31) Time_to_lose_interest: Total time in which present value of viewership would come to zero, if there is no inflow into the viewership. This is taken to be equal to 10 weeks.

32) PromoN: The normal promotion in Rs. The normal promotion is taken as 20 minutes of air time every week. So if advertising coast per minute is 500000 per minute. Then this value is taken as the product of 20 minutes and Rs. 500,000.

33) Effective Promo: It is the average of Promoexp delayed by 2 weeks. In other words it is equal to moving average of last two weeks of promotional expenditure.

34) Promo Effect: This value is dependent on the ratio of effectivepromo and PromoN. The ratio can take the value from 0 to 2.0. Depending on this ratio, the value of Promoeffect varies from 0 to 1.5.

35) Innovators_fraction: Fraction of potential viewers who would like to innovate and take on the new routes least travelled by. They are the first one to decide to watch this game show out of curiosity. This fraction is taken to be constant as 0.0005 or .05%.

36) Interest_eff_on_imitation: This value depends upon the rate of change of interest in unit time. Moving average talks about a level of the value around which the forecast is expected to move, but here we are talking about a trend, which depicts the slope of the Interest with time at x-axis. That slope is smoothed over 2 weeks. For the first four weeks the value remain zero, as there is no telecast.

37) Imitators_fraction: Fraction of potential viewers, who start watching this game show only after word of mouth and promotions.

38) Adv_rate: The advertising rate per minute charged from the sponsors of the game show. Due to very high viewership ratings of this show, the advertising rates are more than 1.5 times then the industry average. From the information available on the web sites this value is taken as 1500000 per minute or 250000 per 10 seconds slot.

39) Advt_minutes: Out of an airtime of 60 minutes about ten minutes are allocated for advertisements from the sponsors of the show. So the value is 40 minutes per week.

40) Actual_adv_rate: The advertising rate actually charged by the show organisers depending upon the popularity of the show. We measure this value in terms of the number of viewers of the show. If the percentage viewership is less than 30%, the rate would be same as the initial rates, but if goes to between 30 and 50% then they might charge upto 1.25 times the original, and beyond 50% they would charge 1.5 times the original rate.

41) Host_pop: This is a constant as of now, because there is only one host, and they are not planing to change the host very soon, looking at the popularity of Amitabh. We have taken this to be 1, but it can be changed later on.

42) Content: This parameter depends upon the extent of competition for the show. The real incentive to change the content comes from the quality of the competition. As there is no competition threat as of now. We can assume it to be constant.

43) Expected_prize: This is the 4 periods moving average of the actual prize money earned by participants in one episode.

44) Ratio_prize_exp_prize: This is the ratio of prize_exp and the expected_prize.

45) Smth_change_in_prz_mny: The is the moving average of ratio_prize_exp_prize of last 4 periods

46) Promo_special: This is the promotional activity for the special episode. As there is no fixed time interval after which there is a special episode, so we have taken it as a pulse, of value 1, which is generated randomly in between 4 weeks and 20 weeks.

47) Innov_frac: This is the fraction of potential callers who would be first among the callers. Basically these people love to innovate and enjoy taking on new things in life. We have taken this fraction to be 0.001.

48) Eff_of_prz_exp_on_diff: This value is based on the ratio_prize_exp_prize. Depending on the ratio, it can take up the value between 0 ad 1.

49) No_of_centres: Number of centres where a person can call. Right now there are 4 centres namely Mumbai, Delhi, Chennai and Calcutta.

50) Lines_per_centre: Number of lines available at each centre that can be used for calling. As of now there are 150 lines per centre.

51) Time_per_call: Average time taken by a person after his call gets placed. We have taken it to be 1.5 minutes on an average.

52) No_of_hrs_per_day: Initially one could call only for 4 hours a day. Now they have increased it to 24 hours a day.

53) Telephone_mnts: This is the total telephone minutes available in a day. It is product of 60 and no_of_hrs_per_day.

54) Prob_of_prt: The probability that people getting call through would be able to participate in the show. We have taken this to be .01 or 1%.

55) Fraction_getting_thru: Due to the constraints on number of participants in each show, the actual fraction of participation becomes really low. This is measured as ratio of people_participating and cumltv_ppl_getting_call_through.