# A User-Oriented Model of Automation for Pharmaceutical Sales Force for Better Productivity

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Routing, Scheduling, Sales territory, Call Planning

## Abstract
*It is very rightly quoted "Plan the work and work according to plan". This paper has identified dearth of planning as one of the causes of decrease in sales force effectiveness and proposed automation for call planning as a solution. It is proposed that the sales representative be relieved from the task of planning his work thus allowing him to concentrate on his performance in the doctor's cabin. Instead of relying on the sales executives plan his work technology should be used for bringing in efficiency into planning. Using automation enables efficient day to day planning and also ensures that the distance traveled by the sales representative is minimum. These has the dual advantage of decreasing the cost incurred by the pharmaceutical company over traveling allowances and also decrease the work load and frustration of sales representative.*

## Introduction:
It is a known fact that the pharmaceutical industry is highly regulated through out its value chain, in India it is governed by acts like the "The Patent Act-1970", "Drugs Price Control Order-1995", "Pharmacy Act-1948", "Drugs and Cosmetics Act-1940" etc. The promotion of pharmaceutical products is regulated by The Drugs and Magic Remedies (Objectionable Advertisement's) Act and Rules 1954. This act does not merely prohibit advertisements relating to drugs and medicines but covers all advertisements which are objectionable or unethical and are used to promote self-medication or self treatment.[1] This act has thus compelled the Pharma companies to rely less on direct advertising to consumers. When it comes to promotion Kotler defines four ways of promoting a product. Advertising, sales promotion, direct selling, public relations. For any consumer product advertising plays a major role in its promotion; however in case of Pharma, things are different, the companies are not allowed to advertise their products directly to patients but introduce products to doctors who then prescribe them to their patients. Hence the laws have forced the Pharma companies to rely major on their field force to drive sales thus increasing the importance of an efficient sales force by manifold.

In the pharmaceutical industry selling through a sales force is an approved, governed and widely accepted undisputed means of pharmaceutical marketing adopted by all the pharmaceutical companies and major national markets. Despite the growing use of new technologies like e-detailing being introduced in the pharmaceutical industry, personal selling remains a core activity. The reasons for this is the wide benefits offered by personal selling like optimal customer targeting, message adjustment, evaluation of perceptions and needs, marketing research, competitive intelligence gathering, etc.[2]

## Personal selling
Personal selling is developing a direct communication in person with the doctor and persuading him

to prescribe a pharmaceutical product.[2] It goes without saying that the sales force is a vital part of every pharmaceutical company it accounts for 11% of the company's total revenues.

1) **Importance:** Top 50 pharmaceutical companies spent about $28bn globally on sales and marketing in 2002, representing 14% of their combined revenues of around $200bn. Of this approximately 70–75% was allocated to physician detailing, representing 10–11% of total revenues. This emphasizes that promotion to physicians is still considered to be vitally important to the process of marketing pharmaceutical products. An estimated breakdown of sales and marketing spend is illustrated in the following figure. It is based on the ethical revenues of the top 50 global pharmaceutical companies.[3] Despite doctors hugely criticizing sales activities by Pharma companies even doctors feel the need for good sales representatives so as to keep them updated about new products in the market. They honestly accept that their prescription behavior is influenced to a great extent by the sales representatives and the relationship of the sales representative with the doctors. Hence it is important that the sales representative does his duties well. The critical task that the Sales executive performs is illustrated in the following section.

2) **Critical tasks of a sales executives: For ensuring that optimum sales are drawn through the efforts of detailing the following tasks is recognized as being critical.**
   I. Makes regular visits to his assigned physicians: E.g.: if he has to make 4 calls in 4 months to a particular doctor, he should ensure that those 4 calls are made to this physician.
   II. The frequency with which he visits physicians is maintained: E.g.: now he needs to make 4 calls in 4 months hence he should maintain an optimum gap of 1 month between each call and not make all 4 calls in just one last week of his planning period.
   III. Develops a good relationship with physicians: The relationship of Sales executives with physician is of prime importance. Money and gifts are no doubt also important but if the doctor does not like the representative he will not be highly influenced with just monetary gifts. It's important the sales representative builds a good rapport with his doctors. There are medical representative who doctors find friendly and treat them well while there are also others whom doctors do not entertain much and worst are also insulted, they are asked to leave samples with the receptionist causing a major loss to the company. This in turn causes frustration to the medical representative too.
   IV. Target his physicians well: They need to identify the optimum target audience for their marketed portfolio and tailoring detailing efforts to meet the precise needs of this physician population. This will need understanding the profile of physicians well, good documentation of each call and the inputs received from each call. It's only after understanding the specific needs of doctors; can the companies precisely cater to their needs.

**Sales force effectiveness is decreasing:**

A sale is a supremely important part for driving profits for any company and hence Pharma companies invest heavily in the promotion of their products, and the major chunk of this promotion goes into personal selling. Physician detailing is estimated to account for 70–75% of the sales and marketing spend of an average pharmaceutical company. Therefore, maximizing the efficiency of detailing is vital to improve cost-effectiveness in the face of increasing pricing pressures, generic competition and spiralling R&D costs.[3]

Sales force expenditure typically consists of a number of elements:
1. Salaries;
2. Reps' additional expenses, e.g. travel, training;

3. Promotional expenses, e.g. product samples, educational programs and materials;
4. Operational fixed costs, e.g. production and administration costs

Pharma has been expanding its sales forces at a breathtaking rate in recent years, as companies try to gain and maintain share of voice. The number of Pharma sales reps in the United States topped 100,000 in the year of 2004 – nearly triple the number just 10 years ago. Experts say that translates to at least one rep for every seven practicing US physicians. And the story in Europe and other regions is much the same.[9]

Pharmaceutical companies spend an average of $31.9 million annually on sales for each blockbuster primary care drug they market and $25.3 million annually selling each specialty pharmaceutical product marketed, according to a research by Cutting Edge Information. That's about $150,000 per primary care rep annually and $330,000 per specialty drug rep spent on salary, travel and technology, promotional materials and samples aside.[4] The company spends a huge amount of its revenues on sales and expenditure but where is all the money going? Is it translating into profits?

According to InPharm, the top 40 Pharma companies have doubled the sizes of their sales forces over the past five years. But in the same period, prescribing has increased only 15%. Industry experts say that is a meagre and unsustainable return on the tremendous investment made industry-wide in the field force. And those costs continue to rise. The annual field force budget in Pharma is nearly $875 million, with top-spending organizations committing more than $1 billion annually to field sales. There is a discrepancy of sales force size and cost compared to marginal gains in prescribing.[9]

The ROI obtained from pharmaceutical detailing is fast decreasing. Although companies intend to expand their sales forces, to date, such growth has not been accompanied by improvements in field force productivity. Between 1995 and 2000, the amount of time spent with sales reps by the average US physician decreased from 12 minutes to seven minutes per day. Only 20% of physicians increased the number of reps seen daily over the same period, despite the significant growth in total sales force headcount, implying that each rep must be making fewer successful physician visits. At the same time, large US practice management companies are applying greater pressure on physicians to reduce the time devoted to those activities not directly related to patient care. As a result, sales force ROI is in decline as reps spend a greater portion of their time attempting to gain detailing appointments rather than making productive visits. Even when admitted to see a physician, reps are often granted only two minutes of the physician's time. Sean Burke, CIO of Galderma International, says that as sales forces have grown, competition for the available time with doctors has increased as well. "The sales representative is becoming the equivalent of 'spam' in the internet world and the physician receptionist is the filter" he says.

Companies that fail to improve their productivity will experience further ROI decline if sales forces continue to grow at existing rates. As the pressures of an increasingly competitive market impact on the revenues of pharmaceutical companies, the relative expense associated with a sales force is growing. As companies continue to grow sales force numbers to keep pace with their competitors, maximizing field force productivity is of paramount importance. By developing the most effective sales force structures and strategies, pharmaceutical companies can significantly enhance return on investment (ROI). Over the last decade or so, the pressure has mounted on pharmaceutical companies to increase efficiency and productivity within the sales force, it is estimated that, on average, physicians currently see reps for only seven minutes per day, in comparison to 12 minutes per day in 1995. With sales forces having more than doubled over the same time period, increased competition is negatively impacting ROI; increasing the efficiency of the sales function is vital to the future success of pharmaceutical companies.[3]

## Cause of low Effectiveness

One industry-based study identified five factors which contribute to a high performance sales force (El-Ansary et al., 1993). These influences are sales teamwork, sales training, supplier relations, hiring practices, and sales manager characteristics. Emin Babakus (1994) identified the lack of sales territory alignment by the management as a performance hurdle confronting the salesperson.[8] Other than these optimum sales force size and structure, good compensation performance and appraisal models have also been recognized as critical in improving sales effectiveness, these are no doubt very important activities, however at the end planning each day of a Sales executives and his performance inside the cabin of the doctor will drive sales.

The Pharma Company wants the rep to work to his maximum and make as many calls as possible put in his best for each call, while the rep tries wrap his work decrease his work load to a minimum. Taking this in view it is proposed that through proper planning, a balance between the workload of the rep and the company's demands can be achieved. To explain this further the all the activities that a representative performs can be split into two types critical and non- critical.

### Critical and Non-critical activities

The activities that contribute directly to sales and performance are called critical activities while the other activities are all non critical. To speak with examples - Critical activities are: Details companies' products to his customers with the targeted frequency and in an enthusiastic manner, builds and maintains good relationships, documents his works well that is all the activities that are mentioned in the earlier section. Non critical activities are: Traveling, wandering in search of the doctor's clinic, waiting outside in reception area, long administrative/paper work.  For a call to be successful and drive sales of the product a Sales executives is expected to do a few tasks religiously

1) **Detailing efforts according to the potential of physicians:**
Companies need to be realistic about the economic attractiveness of each physician segment and their ability to influence prescribers, based on historical evidence. In the low-prescribing, low-potential segment all calls are wasted. In the low potential, high-market share segment, calls are typically wasted due to overcalling: some response occurs, but the returns are generally low. Where investment is traditionally concentrated, in the high-potential, low-prescribing segment, calls are also wasted by overcalling. In contrast, in the very responsive high-potential, high penetration segment call opportunities are wasted due to under-calling.[7] It is hence important that the doctors are segmented into various classes based on the potential of each doctor.

2) **Give the targeted number of calls to the assigned physicians with correct frequency:**
That is if the Sales executives needs to give 4 calls to a particular doctor in a period of 4 months, he should firstly make 4 calls to that doctor next all these 4 calls should be made with an interval of 1 month between each call, it should not happen that all the 4 calls are made in the first month only. Only when the right numbers of calls are made at the right time can the doctor remember the company's products.

3) **Have high motivation levels:**
Next even the way the Sales executive performs in the doctor's cabin is immensely importance. He needs to detail his products with the right salesmanship attitude, he cannot afford to look dull and tired. He needs to be well prepared for the call, and should have done his homework well. He should be able to give the required information to the doctors in a manner so as to catch his attention and be in a position to solve doubts that arise in his mind.

4) **Document his work:**
This is a very important activity that should be carried out after his call is over, such noted helps the Sales executives during his next call with the same doctor also this helps the company to generate useful reports and data.

### 5)  Capture customer insights:

Customer insights act as a vital part in forming new strategies, in understanding how the drug is positioned. It gives you a look into what your esteemed customer thinks about your product verses competitors products. Through this the company also gets to know about the customer's needs and works accordingly.

### 6)   Build good relations with customers:

The Sales executives is expected to build a good rapport with his customers; interpersonal relationships become important for any product, without which whatever the Sales executives says falls on almost on deaf ears.



If these were the only tasks the Sales executives had to do it was fine but the story does not end here, the Sales executives has to spend time in doing other tasks besides these. He spends a majority of his time in non- critical activities which leads to neglecting of the critical activities and hence low performance in the doctors cabin thus leading to low performance.

The problems faced by sales executives can be as under: Pre Mobility problems, In-mobility problems, Post Mobility problems.[6]
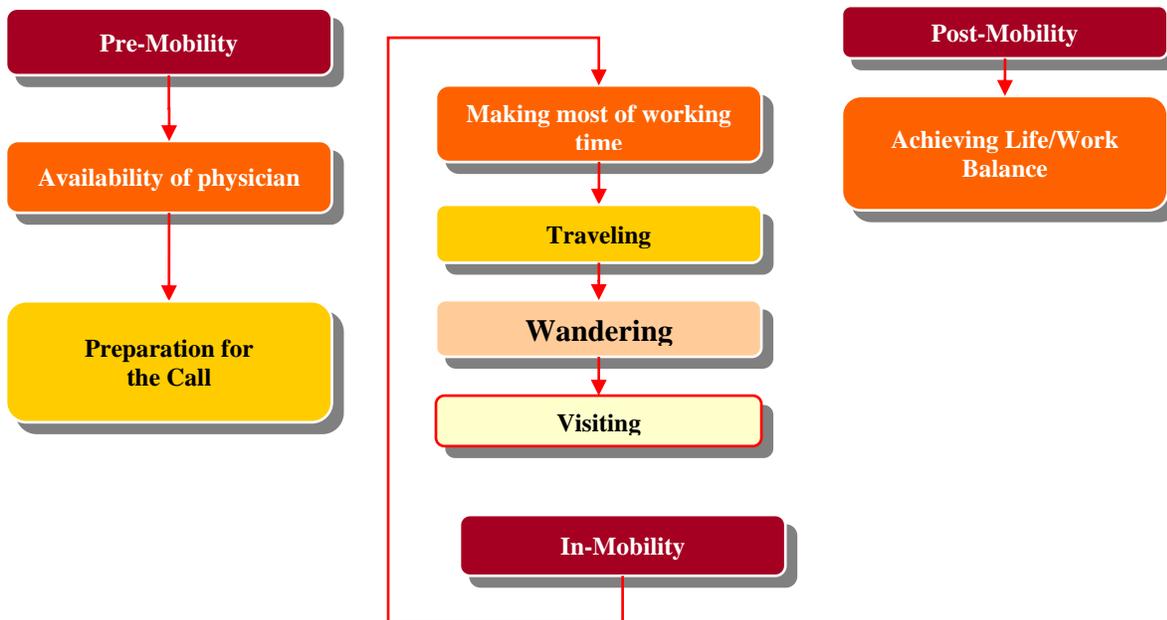
The Sales executives spends most of his time in non critical activities, gets exhausted with the travelling and wandering as a result he devotes very less time to the critical activities which actually contribute to sales, in all this cycle the main task of a Sales executives remains undone- this is 'Planning'. It is thus essential for a Sales executive to spend more time on his critical activities and spend less time on non critical activities. This he can do only by effective planning. It is a known fact that Planning is very important for any objective to be met, without which work happens in a very hap hazard manner.

A Sales executive spends 75% of his time in non sales related activities that include waiting, wandering, administrative work.[7] This non critical activity makes the Sales executives loose his focus towards critical activities. In this juggle the most important activity that is planning remains undone. "Plan your work and work out your plans", "If you fail to plan you will plan to fail"

There are many more thoughts about the importance of planning, hence like any other field sales and marketing also requires an effective plan, without which success is difficult to achieve. Planning is not the only thing that is hindering efficiency but there are also other causes like wrong territory alignment, inefficient choosing of target doctors etc but this article assumes that all these aspects are taken care already. Given that the Sales executives is assigned with optimum territory and also with the right targets what next is important for his productivity is efficient performance in the doctor's cabin. For this the Sales executives needs to plan his work well.

## Importance of sales automation for planning

During 1980 when laptops came into the market space they got with them the possibility of sales force automation, according to Moriarity and Swartz 1989 the sales force automation systems reported to increase the sales by 10-30% and more while gave a 100 % return on investment. According to Taylor 1993 automation systems were used to increase the sales to a very large extent. Robert Enegel 2000 in his research found that sales force automation systems were found to be very useful and the $22.2million sales increases were attributable to sales force automation usage.[10]

Being customer centric is very essential for an organization in any industry and the importance of the same is all the more in the Pharma industry. The investment made by a company usually in terms of the cost of field operations, as well as the samples given. The return on this investment is measured by way of retail audits; the prescription trends of customers can be analyzed. All this information is collected based on the call reports sent from the field. Prior to the implementation of web based sales force automation tools, all the features and functionalities existing now were run using manual tools by the field sales staff. The manual work not only put burden on the field force in terms of efforts but took up their productive time that they should have been otherwise spending for critical activities like in-clinic discussions. This short fall is overcome by providing the mobile interface. Moreover, like any other manual system, this style of working is always prone to errors. Analysis of the data captured manually becomes highly difficult and hence any corrective actions towards improvements are not timely actions. With online data capture and reporting tools, the analysis is at a click of a mouse and corrective actions can be initiated immediately.[11]

As with automation using routing and scheduling is very vital to sales management, a good routing and scheduling plan ensures that the work is done systematically and in time. Routing and scheduling brings in planning to work which makes it sure that the Sales executives are on target.[12] Lauren Hertel in his work on routing and scheduling has developed a mathematical programming model for scheduling, he clearly stated the importance of routing and scheduling in his research paper stating that routing and scheduling attempts to attain a balance in both workload of medical reps and sales. [13]

### *The Indian scenario:*

The Indian pharmacist makes some 10 calls per day he starts his day at around 10 in the morning and ends up at around 2pm. During this time he goes from one doctor to the other in a particular area waits for about half hour outside each clinic details his products in the meagre time that the doctor allows him and rushes to the next doctor.

As far as the planning is concerned the situation is somewhat like this:

In big Indian Pharma companies each Sales executives is provided with a palm top, this palmtop is used to document his every day's work, it also provides him with the information that the Sales executives requires. The Sales executives prepares is given a list of doctors and he is asked to give his plan for the entire month, this is not a mandatory exercise but it is appreciated if the Sales executives does it.

In small Indian Pharma companies the situation is screwed up, the Sales executives is given a list of doctors he needs to cover, he is given a target to achieve and is left on his own. Here the Sales executives still does the documentation with papers.

It is evident that the second system is even more worst that the first, but the first system too has lot of loopholes.

1- The Sales executives do not really understand the gravity of planning and avoids doing such an exercise.

2- Even if the representative is forced it is likely that the he prepares the plan haphazardly just for the sake of doing it, but never follows such a plan.

3- Even if he does make a plan with little bit of seriousness it is very much likely that the plan may not be efficient because while planning he needs to keep in mind just too many things as under

*A: Appointments of doctors*
*B: Right number of calls to each doctor*
*C: Make calls with the right frequency*
*D: Also the distance that he travels should be minimum*

The Sales executives should be able to change his plan according to the practical situations that arise daily like doctors being not available or postponement or preponement of appointments. In case a doctor asks for some information during his next visit the Sales executives should be able to remember that and cater to the specific needs of the doctor. Clearly this is too much of work specially when added to the amount of travelling waiting and other numerous jobs that the Sales executives needs to do. However it is supremely important that this planning is done.

So how we ensure that the Sales executive plans his work? Well the answer is technology, and sales force automation. The proposed solution to this problem is that, do not leave the task of planning to the Sales executives instead provide them with a plan that they would have to follow. The sales executive will open his palmtop every morning and he will get a list of doctors he has to visit on that particular day. He will also get the order in which he should be visiting these doctors so that the distance travelled by Sales executives will be least. Also he can refer to a map which will show him exactly the route that he should take to each doctor.

This will possibly reduce the distance that the Sales executives travels daily, and hence the high cost incurred in travelling by the pharmaceutical company in the form of allowances to the sales executives. Also the list that will be prepared will be a solution to the planning problem. The list that will be given to the Sales executives each day will take into consideration the following constraints:

1- Appointments of doctors
2- Targeted number of calls that are supposed to be made to each doctor
3- Frequency of these calls

Hence if an algorithm is developed in such a way that, each day when the Sales executives opens his laptop, logs on to this software, chooses a date...

And flash he gets the list of the doctors he needs to visit that day, he does not have to do any thinking, and he just blindly needs to visit the doctors according to this list. After doing so he can be rest assured

that he has done the required number of calls to each doctor and also that the distance that he travels daily is the minimum possible. He can now concentrate on more strategic activities like planning for the call, and not waste his energy in simply thinking each morning about which doctor he should visit. This solution sounds pretty easy, but involves number of practical difficulties. This is similar to the Sales executives getting a preplanned list at the beginning of every month then where is the need for a palmtop or an algorithm? Well there are many disadvantages to having a hard inflexible list. The first problem is that the no matter how efficiently a list is prepared, incase if there are changes like change of appointments, or doctor unavailability etc then the goals will not be attained. More the planning is away from reality there will be less compliance with the plan by the sales executives. Hence here is where the role of technology comes. If an algorithm is prepared in such a way that every day when the Sales executives runs it, the program will follow fixed steps and give the Sales executives a fresh list of doctors.

**Nature of the algorithm:**
Develop a methodology which will give the sales representative a list of doctors each day. This list is prepared keeping in mind the following constraints:
Hard Constraints:
- Appointment of doctors is taken into consideration
- Targeted number of calls is made to each doctor
- Frequency of calling is maintained
- Soft Constraints:
- Distance travelled by the Sales executives is between a minimum and a maximum range

Now armed with this technology the Sales executives need not waste his energy into thinking each morning about making his day productive, he simply needs to open his palmtop and get the list of doctors he needs to visit on that day, if he does that he will ensure that his targeted number of calls are made and also he travels a minimum distance each day. Provision can be made to document each day's work of the medical representative. The algorithm can also provide space for writing notes against each doctor, these notes flash up whenever the same doctors name appears again in the list. In case some doctor is not available the list can provide the representative with names of two extra doctors so that his time is not wasted.

The screen of the palm top can look somewhat like this:

| Time | Doctor name (18th April) | Address | Status of call | Comment | |
|---|---|---|---|---|---|
| 10am (appointment) | Dr A. Mehta | | | | Click for Calender |
| 11am | Dr R. Sharma | | | | |
| 11.30am | Dr A. Thukral | | | | |
| 12pm | Dr R Sethi | | | | |
| 12.30 pm | Dr A Harde | | | | Click to see today's |
| 1 pm | Dr V. Murli | | | | |
| 1.30 pm | Dr R. Chowdhari | | | | |
| 2 pm | Dr. Iqubal Ansari | | | | |
| 2.30 pm | Dr Thomas | | | | |
| 3 pm | Dr R. Jain | | | | Enter |
| | Dr P. Parikh. | | | | |
| | Dr H Soni | | | | |
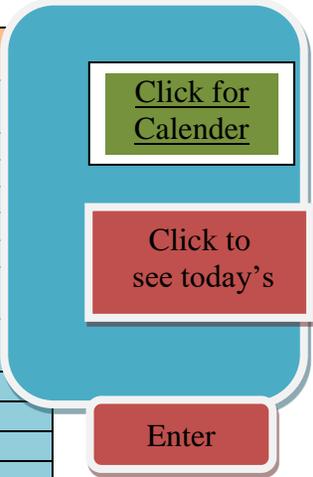
An attempt has been made to used simple excel to prepare a dashboard, the model is presented below-

**Model for excel based dashboard for call planning**
Methodology followed:
The program will have the following inputs:
1)   Appointment Sheet
   All the doctors in the list of the Sales executives will be numbered or given a code in this table there will also be a column for filling in the appointments of each doctor.

Table number: 1

| Number | Name | Address | Rank | Appointment Date | Appointment Time |
|---|---|---|---|---|---|
| 1 | | | A | 30/1/2008 | 10am |
| 2 | | | C | 4/3/2008 | 4pm |
| 3 | | | A | 5/1/2008 | 6pm |
| 4 | | | B | 6/4/2008 | 12pm |

2) Distance Matrix
   A distance matrix is prepared as follows giving the distance between each doctor.

Table number: 2

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 23 | 25 | 20 | 10 | 20 | 8 | 4 | 5 |
| 2 | | 0 | 23 | 4 | 3 | 5 | 22 | 32 | 23 |
| 3 | | | 0 | 24 | 13 | 15 | 25 | 2 | 13 |
| 4 | | | | 0 | 16 | 21 | 24 | 12 | 24 |
| 5 | | | | | 0 | 22 | 13 | 14 | 16 |
| 6 | | | | | | 0 | 11 | 19 | 18 |
| 7 | | | | | | | 0 | 21 | 22 |
| 8 | | | | | | | | 0 | 23 |
| 9 | | | | | | | | | 0 |

It is assumed that the matrix is symmetrical i.e. the distance between going from doctor number 2 to 1 is the same as going from doctor number 1to 2.  Though this may always not be correct.
   Also the time factor is considered while forming the distance matrix, example though the distance between doctor 1 to 4 is 20 minutes which is less than the time required to go from doctor 1 to 3, does not mean that the time required to go from doctor 1 to 4 is less than the time required to go from doctor 1 to 3, factors like traffic too play a role in increasing time.
   Calls Data
   Ratings of each doctor is provided, it is assumed that this rating is based on some rational. This rating helps us in classifying doctors according to their potential for sales. For our example lets take rating as A, B and C

Table number: 3

| Number | Rank | Date of Last Visit | Date of Next Visit |
|---|---|---|---|
| 1 | A | | ψ |
| | C | | ψ |
| 3 | A | | ψ |

| 4 | B | | ψ |
|---|---|---|---|

Apart from the ratings of doctors the calls data sheet also contains two more columns:

Date of last visit and the Date of next visit, in the former column the date of the last visit gets entered automatically and the next column that is Date of Next visit is calculated by the program according to the rank of the doctors. If it is a Class A doctor then 30 days are added to his date of Last Visit, if B class then 60 days are added, if C class doctor is on the list then 120 days are added. This is done using formulae of MS Excel. The blocks which has the symbol ψ in table number 3 will be coded with the formula

=IF (C2="A", D2+30, IF (C2="B", D2+60, D2+120))
Where C2 – is the address of the column of "Last Visit" while D2 is the column of "Next Visit"

Thus to summarize, we have three sheets that would go as input into the program:

1) Appointment sheet
2) Calls Data
3) Distance Matrix

To proceed further, when a Sales executive chooses a date from the calendar the program is initiated and the algorithm follows the following steps:

 The assumption of this program is that the day of Sales executives is divided into the following periods 10am, 12pm, 2pm, 4pm, 6pm, and 8pm. This means that the Sales executives visits 6 doctors in a day and at the above times; it is assumed that the Sales executives visits each doctor within a time 2 hour time gap.

Let's suppose that the user has chosen the date 12th Jan 2008, now the program will first go to the Appointments Sheet and choose all those doctors which have given an appointment on 12th Jan 2008. It will also place them in the time slots.
Example: If on a particular day the Sales executives has 2 calls by appointments at 12pm and the other at 4pm, and then program pastes the code of the doctors against their appointments.
   Table number: 4

| 10 am | 12 |
|---|---|
| 12pm | 67 |
| 2 pm | 89 |
| 4 pm | 76 |
| 6 pm | 23 |
| 8 pm | 37 |

Now the job is to fill the remaining appointments.

For filling the remaining four appointments the program goes to the Call Data Sheet.
In the calls Data sheet, the program goes to the "Next Visit column" and picks the codes of all those doctors who have appointments after 12 Jan 2008. It pastes these doctors in a separate table, now the program sorts these doctors on the basis of their ranks. All the doctors with Rank A are placed first then the Rank B followed by Rank C. This is the first sorting that the program does, after this the program

sorts this list of doctors for the second time, now the criteria being the "Last Visit" column. The doctors that the Sales executives have visited just recently are placed last.

Now that this list is ready, the program picks the first 10 doctors and places them in the Table 5:

Table number: 5

|  | 67 | 76 | 23 |
|---|---|---|---|
| 12 | 2 | 4 | 9 |
| 23 | 12 | 3 | 32 |
| 34 | 14 | 5 | 12 |
| 45 | 5 | 7 | 24 |
| 56 | 10 | 24 | 31 |
| 37 | 23 | 34 | 6 |
| 78 | 8 | 12 | 10 |
| 89 | 4 | 9 | 8 |
| 13 | 10 | 14 | 19 |
| 43 | 9 | 21 | 20 |
| Closest doctor | 12 | 23 | 37 |

Next the program goes to the Table 4, and chooses a cell which is filled with a doctor's code and which has either the cell on top or below empty. Now it copies the doctor's code from this cell and pastes it in table number 5. Now the program goes back to distance matrix and pastes the distances from doctor number 67 to doctor number 12, 23,34, 45…. (All 10 doctors in Table 5)
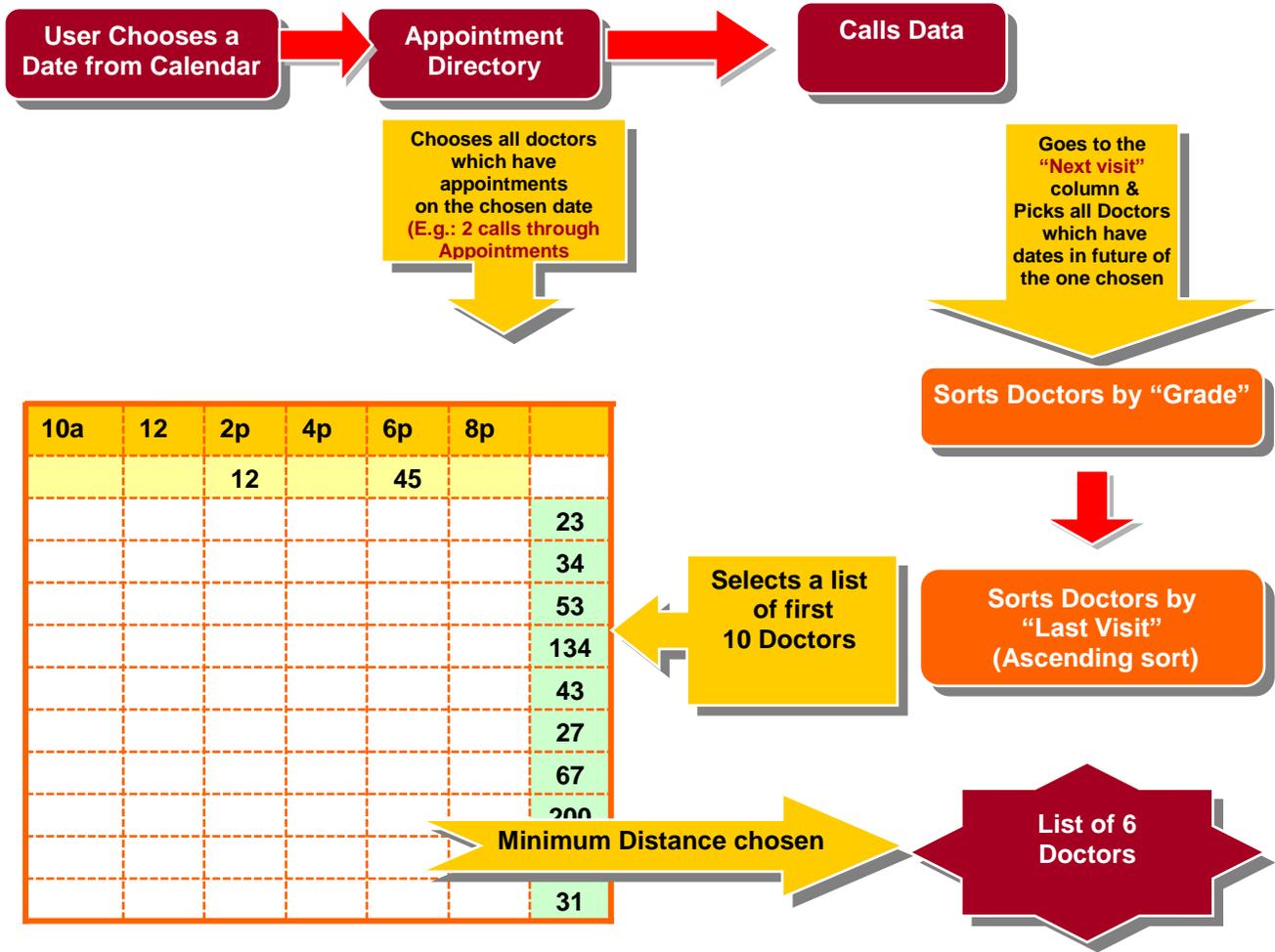
Next it chooses that doctor which has the shortest distance from doctor number 67 (in this example 12) and places the doctor's code (doctor number 12) in table number 4 in the cell just above 67.

Next the program again starts to search in Table number 4 like before a cell which is filled and has the cells on top and bottom empty. This time it again encounters cell filled with 67 which has the cell below it empty.

Thus the program will search again in table number 5 the doctor with shortest distance from doctor number 67. Now the program encounters doctor number 12 as the nearest but also sees that doctor number 12 is already once on the list thus the program searches for the next minimum distance doctor from 67, this time it encounters 89, thus it pastes the code 89 in Table 4 just below 67.

Thus now the program has got 4 doctors, next the program again repeats, it goes to Table 4 and searches for a cell which has its adjacent top or bottom cells empty. This time it encounters cell filled with 76. Now the program checks with the distance matrix and pastes the distances from doctor number 76 and doctor number 12, 23, 34, 45…. In Table number 5. Again like before the program will search for the doctor with minimum distance from doctor 89 and paste it in table 4 just below cell containing code 89. The process is again repeated for getting the last doctor, now the shortest distance from doctor 23 is checked, this time it is doctor 37. This way we get the list of 6 doctors that the Sales executives should visit on 12th Jan 2008.

Following is the diagrammatic representation of the above description. This model can be changed to suit the appointments and needs of sales executives of a particular company.

**User Chooses a Date from Calendar** → **Appointment Directory** → **Calls Data**

Chooses all doctors which have appointments on the chosen date (E.g.: 2 calls through Appointments

Goes to the "Next visit" column & Picks all Doctors which have dates in future of the one chosen

**Sorts Doctors by "Grade"**

| 10a | 12 | 2p | 4p | 6p | 8p | |
|-----|-----|-----|-----|-----|-----|-----|
| | | 12 | | 45 | | |
| | | | | | | 23 |
| | | | | | | 34 |
| | | | | | | 53 |
| | | | | | | 134 |
| | | | | | | 43 |
| | | | | | | 27 |
| | | | | | | 67 |
| | | | | | | 200 |
| | | | | | | |
| | | | | | | 31 |

**Selects a list of first 10 Doctors**

**Sorts Doctors by "Last Visit" (Ascending sort)**

**Minimum Distance chosen**

**List of 6 Doctors**

Advantages of using Call Planning verses Traditional detailing:

| | With Call Planning | Without Call Planning |
|-----|-----|-----|
| Appointment of Doctors | Does not have to bother, just enters the appointments once and can relax | Has to remember or document appointments manually, and refer to them often, fearing not to miss any |
| Travel distance & Time Management | Sales executives travels minimum distance, more probability to make complete use of his time | Daily ends up huge amount of time travelling waiting and wandering, thus the Sales executives is totally frustrated |
| Capture of feedback of doctors | As soon as the call is over enters the feedback or some notes and can forget about them, when the same doctor appears on his list the notes flash against the name of the doctor | Has to remember each doctors reactions manually, has to put efforts into remembering and recollecting before any visit. A task which is actually difficult |
| Cost of travelling incurred by company | Company knows exact distance travelled by the sales executive and hence reimburses appropriately | Company incurs huge amount of unnecessary costs |

| Satisfaction level of the Sales executives | Workload of the Sales Exe. is reduced with call planning, he works in a more systematic manner, has to travel less hence feels less frustrated and more motivated | It is a known fact that Sales executives are not satisfied due to reasons like, huge travelling, waiting and administrative work. |
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## References

N.K.Jain *"A Textbook of Forensic Pharmacy"* Vallabh Prakashan 2003 Pg no. 252

Dimitris Dogramatzis *"Pharmaceutical marketing A practical guide"* A CRC Press book Pg 273 & 275

Reuters Business Insight healthcare *"The Pharmaceutical Sales Force Outlook: Structures and strategies to maximize ROI and boost product uptake"* 2003

A Report by Eye for Pharma *" Sales force effectiveness: getting it right"* 2004

A Report by Eye For Pharma *"Sales Force effectiveness: Selling Smarter"* March 2005

Chihab Ben Moussa, "Supporting Sales representatives on the move: A study of the information needs  of Pharmaceutical sales representatives" (2005)

A report by Scrips in partnership with Eyeforpharma *"Sales force effectiveness"* PJB publications (2005)

Emin Babakus, David W. Cravens *"Removing Sales force Performance Hurdles"* Journal of Business & Industrial Marketing, Vol. 9 No. 3, 1994, pp. 19-29, MCB University Press, 0885-8624**A9**

Eyeforpharma report  *"Building a better pharma rep with mobile technologies"* (2004)

Robert Enagel and Micheal Barnes *"Sales force automation usage, effectiveness, and cost benefit in Germany, England and United States"* Journal of business and industrial marketing vol 15 no 4 2000 pp 216-242 MCB university press

Aashruti Kak *"e-solutions for pharma sales"*  Express Pharma 16-31st Oct 2007

Joseph P. Vaccaro  *"Managing Sales Professionals: The Reality of Profitability"* The Haworth Press Inc Pg 17 and 34 http://books.google.co.in/books?id=EHvEh6gYGJUC&printsec=titlepage&dq=sales+routing+and+scheduling+importance&source=gbs_toc_s&cad=1#PPA29,M1

Lauren Hertel *"A Mathematical Programming Model for Scheduling Pharmaceutical Sales Representatives"* (2004)