



MANAGERIAL EFFECTIVENESS AS RELATED TO ORGANIZATIONAL CLIMATE AND LEADERSHIP EFFECTIVENESS AMONG BANK EMPLOYEES IN INDIA

 $\mathbf{B}\mathbf{y}$

R. D. Pathak
A. N. Dhamani
&
D. M. Pestonjee



1993 (1094)

W P No. 1094 April 1993

The main objective of the working paper series of the IBM is to help faculty members to test out their research findings at the pre-publication stage.

INDIAN INSTITUTE OF MANAGEMENT A:MEDAHAD-380 015 INDIA

W.p. 1094

PURCHASED APPROVAL

GRATIS/EXCHANGE

PRICE

ACC NO. WARACE FORMAL STATEMENT

MANAGERIAL EFFECTIVENESS AS RELATED TO ORGANIZATIONAL CLIMATE AND LEADERSHIP EFFECTIVENESS AMONG BANK EMPLOYEES IN INDIA

Dr. R.D. Pathak Visiting Fellow Manchester Business School Syndicate Bank Manchester U.K.

Dr. A.N. Dhamani Branch Manager Railway Road Nangal, Punjab India.

Prof. DM. Pestonjee L&T Chair Professor of OB Indian institute of Management Vastrapur Ahmedabad - 380015.

MANAGERIAL EFFECTIVENESS AS RELATED TO ORGANIZATIONAL CLIMATE AND LEADERSHIP EFFECTIVENESS AMONG BANK EMPLOYEES IN INDIA

ABSTRACT

A sample of 196 branch managers from public sector banks in India was selected to study the relationship of managerial motivational climate and effectiveness with leadership effectiveness. Self-ratings by managers and subordinates ratings of their managers effectiveness did not differ significantly. Out of 24 characteristics of managerial effectiveness, managers gave first three ranks to: competence and responsible, good work ethics, and work quality. 'Adaptability factor' was given the 21st rank by all managers which has an important implication in terms of managerial development. Motivational climate of the organization was seen as characterised by `extension'. 'achievement' and 'expert influence.' The correlational analysis of managerial effectiveness with organizational climate dimensions suggest that branch managers are not considering themselves in the role of 'change agents' rather there is tendency to stick to rules and procedures. The findings also suggest that an effective manager is likely to be an effective leader but an effective leader may not be an effective manager. The relationship between leadership style effectiveness and managerial effectiveness needs further investigation utilising a leadership effectiveness instrument with known psychometric qualities.

INTRODUCTION

Managerial effectiveness had been reported to be a function of personal and situational factors. Dwivedi (1970) in a study 22 public and 30 private sector managers in India concluded that two factors contribute most to the performance of the manager i.e. the environment in which he is placed and his own Nanjanath et al (1980) in a study of 24 personality traits. Indian industries found that of all the factors contributing to the individual qualities o f managerial effectiveness, managers top the list. Such individual qualities include: job intelligence, ability to get along with people and knowledge, decision-making ability. Bannet and Langford (1980) have listed a number of personality traits in their description of effective managers in U.K. and U.S.A. Jaswal (1981) in his study on managerial effectiveness in a large fertiliser factory in India found that individual qualities of the managers ranked second among the factors contributing to managerial effectiveness. Dharmani (1981) found that among all the factors contributing to managerial effectivenss of bank managers from three lead banks of a northern state in India, individual qualities of the managers were ranked first by these managers. Venkataraman et al (1983) also reported personal qualities of managers as the primary determinant of managerial effectiveness. Baker and Perkins (1988) considered a special set of five factors in the individual manager for successful performance in a given situation. are: personal attributes of the managers, knowledge base, skills needed in discharging managerial responsibilities, positive attitudes supportive of managing, and an appropriate set of values.

Research findings also suggest that the way employees view organizational climate can influence both their satisfaction and performance (Akhilesh and Pandey, 1986). Paul (1983), studied managerial effectiveness of 150 managers in the city of Madras in India and found that the managers who perceive the climate as more autonomous are more effective than managers who perceive the climate as less autonomous. Padaki examined the nature of organizational climate, its correlates and relationship with effectiveness. The results showed that οf organizational climate contribute certain aspects individual well organizational substantially to a s the question whether leadership effectiveness. Further, effectiveness is associated with managerial effectiveness continues to be of considerable interest but not well researched. Klepinger (1980) showed that the executives rated high on leadership behaviour dimensions are also rated high on managerial Pathak (1980), Pathak and Singh (1981), Kalia effectiveness. (1981), and Singh and Dass (1977) reported findings on leadership styles and leadership effectiveness of Indian managers but did

not investigate the relationship between managerial effectiveness and leadership effectiveness.

OBJECTIVES

- i) To measure the managerial effectiveness of branch managers of public sector banks and to study the perception of branch managers regarding personality traits and qualities of managers contributing to managerial effectiveness.
- ii) To study the relationship between managers' perception of their organizational climate and managerial effectiveness.
- iii) To study the relationship between leadership style effectiveness and managerial effectiveness.

HYPOTHESIS

- a) Perception of variables contributing to managerial effectiveness will differ between the two groups of highly effective and lesser effective managers (the two groups formed on the basis of their total score on managerial effectiveness measurement).
- b) Organizational climate will be perceived differently by the two groups of highly effective and lesser effective managers.
- c) Leadership style effectiveness will be positively related with managerial effectiveness.

Sample:

The universe of the study was bank managers (representing junior, middle and senior management) working in 2407 branches of public sector banks (banks set up as statutory corporations of Acts of the Parliament and accounting for more than ninety percent of the total business of commercial banks in the country) in three northern states of India (16 districts) and an adjoining union territory. A random sample of 243 branches was selected from these 2407 branches and branch managers of these 243 branches constituted our sample for this study. In addition, we selected another sample of 243 persons who were working as immediate subordinates to these managers at next hierarchical level. The final sample comprised of 196 branch managers and their 196 immediate subordinates.

Research Tools

- 1. Managerial Effectiveness was measured through a questionnaire which measures 30 characteristics (Gupta, 1986) using Likert type
- scale. Reliability coefficient and test-retest reliability coefficient after a period of six weeks was 0.82 and 0.79 respectively. The content and statistical validity indices are 0.90 and 0.71 respectively.
- 2. Organizational Climate questionnaire was a 72-item modified version of Litwin and Stringer questionnaire and is developed by Pareek (1979). The test-retest reliability coefficients range from 0.17 to 0.40. The intercorrelational matrices indicated internal consistency of the various dimensions and relevance of the items to these dimensions
- 3. Leadership Effectiveness was measured through a questionnaire developed by Hersey and Blanchard (1977) which is known as LEAD-SELF. This instrument measures self-perception of the manager regarding one's behaviour in various situations as a leader. Although it is a popularly advocated measurement device for studying leader behaviour and has been reportedly administered to more than 14000 managers from different countries. (Hersey and Blanchard, 1982).

Data Collection:

The respondents were personally contacted to solicit their support in filling up the questionnaire by explaning to them the purpose of the study and giving guarantee of confidentiality of individual responses. Further follow up was done through post. Out of the sample of 243 branch managers, responses from 196 managers were taken into account. The next person working under these managers also filled up the questionnaires and we got 196 of these with subordinate rating of their superior's managerial effectiveness.

Results and Discussion:

The managerial effectiveness score from the self-rating of branch managers on a 30 item Likert type scale of managerial effectiveness ranged between 71 to 142 (maximum and minimum possible scores are 150 and 30). The graphic distribution of this range when divided into 15 classes with class interval equal to 5 is shown in Figure 1.

The managerial effectiveness score on the basis of subordinate rating of their superiors (branch managers) on same 30 item managerial effectiveness scale using Likert scale ranged from 63 to 149. The value of 't' calculated for self-rating and

subordinate rating of managerial effectiveness was insignificant (t = 1.74) at 1% and 5% levels of significance. This signifies that self and subordinate perceptions of managers' effectiveness rating are same. One explanation of the finding may be because the officer next to branch manager in the branch officiates a number of times as the branch manager and hence may perceive managerial job requirements in the same way as his superior perceives. Also there are overlapping duties of Branch manager's and his immediate subordinate resulting in similar perceptions of job holders duties and effectiveness criteria.

Branch managers were categorised further into groups representing degrees of managerial effectiveness according to their self-rating score on the managerial effectiveness scale and based on values of quartile \mathbb{Q}_1 and \mathbb{Q}_3 given below:

- i) Highly Effective (HE) group of managers with scores, 124 and above (30.60%).
- ii) Moderately Effective (ME) group of managers with scores less than 124 and greater than and equal to 117 (43.87%).
- iii) Lesser Effective (LE) managers with effectiveness scores below 117 (25.53%).

The Chi Square analysis however, showed that managerial effectiveness was not related significantly to personal and positional characteristics of managers (sample characteristics in table 1).

Table 2 shows the ranking of personality traits or qualities associated with managerial effectiveness by three categories of managers. The results lend partial support to our hypothesis that characteristics associated with managerial effectiveness will be ranked differently by managers of highly effective and lesser effective categories.

It is interesting to note that 'good work ethics' has been given second ranking and the 'unethical practice of developing oneself using resources of the organization' has been given the lowest ranking by all the three categories of managers. It is surprising that 'adaptability' has been given considerably lower ranking (21st) by all managers whereas in a study by Pathak (1990), adaptability significantly contributed to job involvement of bank managers. This finding suggests that bank managers do not consider themselves to be in a fast changing environment where adaptability is an important factor in managerial effectiveness. Management development programmes for these bank managers should emphasise their roles in a changing environment, particularly as 'change agents.'

The three factors which were ranked at the top by all managers were: (i) competence and responsility, (ii) good work ethics, and (iii) work quality. Kumar (1970) in a study of successful executives drawn from a private sector company in India found that they express feelings of self-worth and see themselves as generally competent people. In a study by Venkataraman et al (1983) on 274 managers, it was found that Indian managers give top priority to work aspects, good interpersonal relationship with subordinates, technical competency, openness to learning and good relations with colleagues as factors related with managerial effectiveness.

The ranking of 'good work ethics' and 'work quality' amongst the first three characteristics associated with managerial effectiveness along with least importance given to 'developing oneself using company resources' by all categories is indicative of ethical and professional approach to their roles. Why then are some highly effective and others lesser effective? This may have to do with the way they perceive the motivational climate of their organization and their ability to be effective leaders.

Table 3 shows how these branch managers perceive the motivational climate of their organization:

Table 3

From the table above, it is clear that all the three categories of managers have given first rank to 'extension' dimension of the climate followed by 'achievement' and 'expert influence' dimensions. Our hypothesis that highly effective and lesser effective manager will differ in their perception of organizational climate is not supported by the results because there is not much difference in the way organization climate is perceived by these groups of managers. In another study by Jahangiri (1983) among educational administrators, association of managerial effectiveness with organizational climate has been partially supported.

The 'extension' dimension of the climate which has been given the first rank by managers is indicative of high concern to develop people and groups. Supervisors are perceived as helping their subordinates to grow and develop and are encouraged to handle problems and resolve conflicts supportively. 'Expert influence' dimension which has been given the second rank refers to a climate where people with skill and expertise are encouraged. They are perceived as influential in decision making, resolving conflicts and problems and command high regard in the organization. 'Achievement dimension which has been ranked third, indicates concern for work excellence and competition with other organizations.

The correlational matrices in tables 4,5, 6 and 7 however, give partial support to our hypothesis that organizational climate will be perceived differently by highly effective and less effective managers. In case of highly effective managers, there was a low but significant negative correlation with 'achievement' and 'affiliation' dimension whereas in case of lesser effective managers, managerial effectiveness was found have a negative and significant correlation with 'control', `affiliation' and 'dependency' dimensions of organizational In other words, while highly effective managers climate. the organizational climate as not meeting their perceive and 'affiliation' motives, the lesser effective `achievement' managers perceive dominance of 'control', 'affiliation' 'Control' dominance means 'dependency' in their organization. that managers are seen as controlling their subordinates communication is used as a mechanism of control. Sarupria (1983) had concluded that managerial performance is positively and significantly related with the perception of 'control' dominance dimension of organizational 'Affiliation' dominance is characterised by people's striving for friendliness, warmth and affectionate relationships, whereas 'dependency' dominance is characterised by observing rules and regulations, strictly following orders, and excessive dependency on authority. This explains why these managers gave a much lower 'adaptability' characteristics of ranking to managerial effectiveness.

The way the highly effective and less effective branch managers in our sample have perceived the characteristics associated with managerial effectiveness and their organizational climate dimensions suggest that managerial effectiveness and leadership style could have some relationship as hypothesised. The mean leadership effectiveness score on LEAD-SELF for the whole group (N = 196) is + 4.51 which is in conformity with the findings of Hersey and Blanchard (1982) reporting that leadership effectiveness score of managers (14000 managers in different countires) is between + 6 and - 6. The degree of managerial effectiveness and leadership effectiveness is shown in the table below:

Table 8

Table 8 lends partial support to our hypothesis that leadership effectiveness will be positively associated managerial effectiveness because the highly effective group of managers have significantly higher leadership effectiveness score than the moderately effective groups of managers (t = 2.67, p < .01). However, what is interesting is the finding that lesser effective group of managers have a higher leadership effectiveness score than the moderately effective group of This leads to the observation that even a lesser managers. effective manager may be as effective a leader as a highly effective manager, or, in other words, an effective leader may not be an effective manager but an effective manager is likely to be an effective leader. From the intercorrelation matrices (Tables 4 to 7), it is found that the correlation between leadership effectiveness and managerial effectiveness is positive but insignificant except in case of moderately effective group of managers where there is a positive significant correlation between leadership effectiveness and managerial effectiveness.

VIRRAM SARABHAI LIBRART IMDIAN INSTITULE OF MANAGEMEN. VASTRAPUR, AHMEDABAD-380030

REFERENCES

- 1. Akhilesh, K.B. and S. Pandey (1986): `A Comparative study of Organizational Climate in Two Banks.' <u>Indian Journal of Industrial Relations</u>, 21 (4).
- 2. Baker, W. and A. Perkins (1988): 'The New Nationalism and Limits to Excelence in Public Sector Managing' Management in Government, 19 (2-4).
- 3. Bannett, R. and V. Langford (1980): 'How to Measure Managers? Growth, 8 (3-4).
- 4. Blank, W., V.N. Weitzel and S.G. Green (1990): 'A Test of the situational Leadership Theory'. <u>Personnel Psychology</u>, 43, pp. 579-597.
- 5. Dharmani, A.N> (1981): Managerial Effectiveness in Lead Banks in Himachal Pradesh. Unpublished Dissertation. Department of Business Management, H.P. University, Shimla, India.
- 6. Dwivedi, R.S. (1970): 'The Relative Importance of Personality Traits Among Indian Managers.' <u>Indian</u> Management, 9 (4).
- 7. Graeff, C.L. (1983): 'The Situational Leadership Theory: A critical view'. Academy of Management Review, 8 (2), pp. 285-291.
- 8. Goodson, J.R., G.W. McGee and J.F. Cashman (1989): 'Situational Leadership Theory: A Test of Leadership Prescriptions.' Group and Organization Studies, 14 (4), pp. 446-461.
- 9. Gupta, S.L. (1986): A Study of Commercial Bank Branch Managers' Effectiveness in Relation to Personality, Job Satisfaction and Adjustment. Unpublished Ph.D. Thesis. Punjab University, Chandigarh, India.
- 10. Hersey, P. and K.H. Blanchard (1977): Management of Organizational Behaviour: Utilizing Human Resources (3rd edition). Prentice Hall, Englewood Cliffs, N.J.
- 11. Hersey, P. and K.H. Blanchard (1982): <u>Management of organizational Behaviour: Utilizing Human Resources</u> (4th edition). Prentice Hall, Englewood Cliffs, N.J.
- 12. Jahangiri, H. (1983): <u>Managerial Effectiveness in relation</u>
 to Personality, Occupational Goal Values, Leadership Style
 and Organizational Climate.

- 13. Jaswal, d.S. (1981): Managerial Effectiveness in NFL Nangal. Unpublished Dissertation. Department of Business Management, H.P. University, Shimla, India.
- 14. Kalia, M. (1981): A Study of Leadership Styles Among Bank Managers in Nationalised Banks. Unpublished Dissertation, H.P. University, Shimla, India.
- 15. Klepinger, B.W. (1980): 'The Leadership Behaviour of executives of Social Science Organizations as Related to Managerial Effectiveness and Employee Satisfaction.' Dissertation Abstracts International, 41 (5-a).
- 16. Kumar, U. (1970): 'The successful Executive: A Study of the Indian Manager in an Industrial Organization.' Interpersonal Development, 1.
- 17. Litwin, G.W. and R.A. Stringer (1968): Motivation and Organizational comiate, Harvard University, Boston.
- 18. Nanjanath, A.R., R. Raghupati and V. Jagannathan (1980):
 'An Action Plan for Managerial Effectiveness.' Indian
 Management, 19 (9), pp. 5-19.
- 19. Padaki, R. (1986): 'Job Design and Motivation to Work: Moderating Role of Organizational Climate.' Abhigyan (Autumn).
- 20. Pareek, U. (1979): MAD Scales. Indian Institute of Management, Ahmedabad.
- 21. Pathak, R.D. (1980): 'A Study of Leadership Styles, Effectiveness and Job Involvement among Bank Officers.' Prajnan, 9 (4), pp. 345-360.
- 22. Pathak, R.D. and G.B. Singh (1981): 'A Comparative Study of Leadership Styles and Effectiveness of Middle Level Managers? Indian Labour Journal, 22 (10), pp. 1449-1461.
- 23. Pathak, R.D. (1990): <u>Job Involvement Among Bank Managers</u>, National Institute of Bank Management, Pune, India.
- 24. Paul, M.T. (1983): <u>Managerial Effectiveness and Motivation</u>. <u>Leadership</u>. <u>Personality and Organizational Climate</u>. Unpublished Ph.D. Thesis, University of Madras, 1983.
- 25. Sarupria, D.S. (1983): 'A Study of Psychological Factors in Entrepreneurship and Managerial Effectiveness.' Unpublished Ph.D. Thesis, Gujarat University, Ahmedabad.

- 26. Singh, P. and G.S. Das (1977): 'Managerial Style of Indian Managers: A Profile.' <u>ASCI Journal of Management</u>, 7 (1).
- 27. Vecchio, R.P. (1987): 'Situational Leadership Theory: An Examination of a Prescriptive Theory.' <u>Journal of Applied Psychology</u>, 77 (3), pp. 444-45.
- 28. Venkataraman, S., G.K. Valecha and F. Soares (1983): 'What Makes a Good Manager Professional View Point, <u>Indian Management</u>,

Table 1
Sample Characteristics

Age:		Education:	
Upto 35 years	28.06%	Undergraduate	1.02%
36 - 40 years	42.85%	Graduates	55.60%
Above 40 years	29.08%	Postgraduate	42.35%
Mean age	35.97%	Ostgraddate	42.33%
Male	93.87%	Married	92.35%
Female	6.13%	Unmarried	7.65%
remaie	6.13%	Onmarried	7.03%
Management Level:		Span of Control	
Senior Management	2.55%	Upto 10	40.31%
Middle Management	42.35%	11 - 20	22.96%
Junior Management	55.10%	21 - 30	14.29%
<u> </u>		Above 30	22.44%
			,
Parental Domicile:		Parental Economic	
		Status:	
City	33.67%	Affluent	4.08%
Town	29.08%	Middle class	87.75%
Village	37.25%	Poor	8.17%
Promotions received:		Length of Service	
Tromocrons received.		in this orgn.:	
Nil	15.31%	In chis drgh.	
1	49.49%	Upto 5	8.87%
2	21.43%	6 - 10	22.45%
3	6.63%	11 - 15	22.45% 37.24%
-			
4 more	7.14%	16 - 20	22.94%
		Above 20	8.70%
Organizations Changed:		Job Positions	
<u> </u>		Changed:	
Nil	57.14%	1 1	35,20%
1	23.47%	2	16.33%
2	10.71%	3	14.80%
3	5.10%	4	13.27%
4 or more	3.58%	5 or more	20.40%
	0.00%		20.40%

Table 2
Ranking of Personality Traits/Qualities

Characteristics	Highly Effective	Moderately Effective	Lesser Effective	Whole Group (N = 196)
Competence and responsiblity	1	1	3	1
Good work ethics	2	2	2	2
Work quality	3	3	1	3
Job content clarity	4	5	8	5
Sood interpersonal relations with subordinates	5	7	13	9
Hard work	6	9	7	7
Good judgement	7	4	4	4
Creativity and innovativeness	8	8	9	8 ·
Loyality to organization	7	ii	12	11
Good interpersonal relations with superior	10	10	17	12
Good interpersonal relationship with colleagues	11	7	13	10
Technically sound	12	6	6	6
Eagerness to learn	13	19	16	17
Conscientiousness and dedication	14	15	15	16
Serve as a model	15	17	10	15
Patience	16	18	. 18	18
Good communication with others	17	20	19	20
Understanding and humane	18	14	11	14
Positive attitude	19	12	5	i 3
Consultative	20	16	20	19
Adaptable	21	21	21	21
Unusually higher career objectives	22	23	22	23
Introspective	23	22	23	22
Developing oneself using company resources	24	24	24	24

Table 3

Organizational Climate Perception

Clinate	3 . g	# # # 1 # # r = # #		
	H.E. (N = 60) Rank	R.E. (N = 66)	L.E. (N + 30)	(N = 194) Rank
Achieveent	2	2	3	3
Export in #1 # * * * * * * * * * * * * * * * * *	3	3	2	2
Extension	1	1	1	1 '
Control	•	3	4	3
A 7 7 1 1 1 4 1 6 B	4	4	3	•
-	5	4	4	4

H.C. - Highly Effective, H.E. - Redorately Effective, L.E. Lessor Effective, H.E. - Whole Group.

Table 4

Intercorrelation matrix for highly effective managers (N = 60)

	MEF **	LSE ***	Achievement	Expert influence	Extension	Control	Affili- ation	Depend-
MEF	í	0.05	-0.16*	-0.04	-0.12	0.03	-0.17*	0.05
LSE		1	~).04	-0.21 +	-0.14*	-0.06	-0.14*	-0.30*
Achievement			i	0.64*	0.65*	-0.03	0.26 *	0.27*
Expert influence				1	0.52*	0.01	0.43*	0.24*
Extension					1	-0.02	0.26*	0.34*
Control						i	0.37#	0.38*
Affiliation							1_	0.47#
Dependency								1

- * Significant at 1% level
- ** MEF stands for managerial effectiveness
- *** LEF stands for leadership style effectiveness.

 $\label{eq:Table 5} \textbf{Intercorrelation matrix for moderately effective managers } (N \approx 86)$

	ME F	LSE	Achievement	Expert influence	Extension	Control	Affili- ation	Depend-
MEF	1	0.17*	-0.08	0.09	0.06	0.05	-0.11	0.04
LSE		1	0.16*	0.02	0.08	0.06	-0.07	0.18+
Achievement			1_	0.50+	0.57*	0.03	0.24*	0.48*
Expert influence				<u>i</u>	0.57*	0.10	0.46*	0.49*
Extension					1	-0.20*	0.29*	0.36*
Control						1	0.13	0.40+
Affiliation							1	0.19*
Dependency								1

Significant at 1% level.

Table 6

Intercorrelation matrix for lesser effective managers (N = 50)

	MEF	LSE	Achievement	Expert influence	Extension	Control	Affili- ation	Depend- ency
MEF	1	0.09	0.05	-0.07	-0.08	-0.41*	-0.27*	-0.36*
LSE		1	0.01	-0.15 *	-0.09	-0.02	-0.02	-0.06
Achievemen t			1	0.48*	0.72*	0.12	0.32*	0.40*
Excert influence				1	0.60*	0.24*	0.40*	0.52*
Extension					1	0.15*	0.44*	0.43*
Control						1	0.27*	0.43*
Affiliation_							1_	0.52*
Decendency								1

• Significant at 1% level.

Table 7 $\label{eq:Table 7} Intercorrelation matrix for the whole group (N = 196)$

	MEF	LSE	Achievement	Expert influence	Extension	Cantrol	Affili- ation	Depend- ency
MEF	1	0.09	-0.09	-0.09	-0.09	-0.19*	-0.19*	-0.13
LSE		1	-0.08	0.12	-0.06	0.01	-0.09	-0.04
Achievement			1	0.60*	0.54*	0.03	0.28*	0.38*
Expert influence				1_	0.56*	0.12	0.44*	0.42*
Extension					1	-0.05	0.33*	0.37*
Control						11	0.24*	0.40*
Affiliation							1	0.37#
Dependency								1

Table 8

Comparision of mean scores on leadership style effectiveness
for three categories of managers

Broups	•	Hean Leadership fffectveness 8core	2.0		Reserva
Highly offective		5.73	5.40	2.447	Bigalficant
Noderately effective	• •	3.44	4.09	2.117	at 12 10v01
Highly offective	40	5.73	3.40	0.0244	Inaignificant
Lesser # # # # # # # # # # # # # # # # # # #	5 0	4.84	5.44		
Hoderately effective	• •	3.44	4.87	-1.5424	Inaignificant
L	5 0	4.06	5.44		

PURCHASED
APPROVAL
GRATIS/EXCHANGE

PRICE

ACC NO.
VIKRAM SARABHAI LIBRAKY
13. I. M. AHMEDARAD