

CASE 7

USERS' PERCEPTION OF TELEPHONE SERVICE

You have just complete your M.Sc. in Operational Research and have joined the Transitanian Government Operational Research Group (TGORG). This is a small group of O.R. staff which has recently been formed to supply O.R. consultancy services to Government organisations.

Prior to your arrival at TGORG, the Group had been commissioned by the Telephone Corporation of Transitanian to carry out a survey of the telephone system in two regions of Transitanian, Nangi and Elsabet. The general purpose of the survey was to gain a better understanding of the link between the telephone system and economic development in order to make recommendations to TCT on desirable policies for expansion of telephone supply.

At the time of your arrival at TGORG, a major survey of telephone users has been carried out and a large quantity of data has been compiled into tables. The O.R. Group is now analysing this data as a preparatory stage to writing their report for TCT. The O.R. Manager has decided to test your abilities by asking you to carry out this analysis stage in one particular area. The area which he has selected for you is the relatively simple one of user perceptions of the telephone service. The available data in this area consists of five tables of results from the survey together with a brief description of the survey method which produced these results. The tables and the survey method description are contained in Appendix 1.

The O.R. Manager has asked you to study these tables carefully and to write a short draft report. If this report is satisfactory, the Manager plans to incorporate all or part of it in the main report to TCT. The Manager has asked you to concentrate on the main conclusions which can be drawn from the survey results. In some cases, it may not be possible to form a firm conclusion, but the Manager is willing for you to put forward some reasonable hypotheses to explain the results, provided that you state clearly that these are not definite conclusions.

Whilst carrying out your task, you have the opportunity to be involved in a meeting with the Deputy Managing Director of TCT and the Managers of all the telephone regions, including Nangi and Elsabet. This meeting concerns future policy for the development of the telephone service in the various regions of the country. A transcript of part of the meeting is given in Appendix 2.

To the student: Write a short report (max. 500 words) as required by the O.R. Manager. Your inferences on user perceptions of the telephone service should be related to some of the policy issues mentioned in the policy meeting.

APPENDIX 1 SURVEY METHODS AND RESULTS

The sampling frame for the survey was the total set of telephone users in the selected regions. The population was stratified by economic category and by the hierarchical level of the place where the respondent carried out his business: these being Principal Towns, Urban Centres, Rural Centres and Market Centres in descending order of size. The survey included about 200 personal interviews with the telephone subscribers, over 100 sets of diary forms on actual telephone calls made, approximately 300 postal questionnaires and some interviews with coin box users and applicants for the telephone service. The vast majority of the respondents to the survey were business users of the telephone since private, or residential, use is very low in the regions surveyed.

The regions of Nangi and Elsabet are in different areas of the country of Transitalia but are both predominantly rural regions, in the sense that the livelihood of the great majority of the people is gained directly from farming. Both regions contain one Principal Town and a number of smaller places which are classed as Urban Centres, Rural Centres or Market Centres. The regions do however differ in their state of development. The region of Nangi is a relatively prosperous, rapidly growing region with good infrastructure. The Principal Town in the Region has strong connections with the other places in the Region in terms of the amount of trade between them. In contrast, Elsabet has poor rural infrastructure but high urban growth in the Principal Town. This is explained by the fact that the Principal Town in the Region contains a number of industries which are geared to a market outside the Region. This market is primarily the capital city of Transitalia and export markets. The Principal Town in Elsabet does not have strong economic links with the smaller places in its Region.

With respect to the questions on the telephone service which were directed to survey respondents, a number of points should be noted. The automatic telephone service, in which callers are able to dial other people automatically, is only available in the larger places of the regions, namely both Principal Towns and a few of the Urban Centres. The telephone service in smaller places is termed 'Operator Service' and relies on the user dialling the operator and waiting for the operator to connect their call. In both cases of automatic and operator service, distinction is made between local and non-local service, namely calls being made to persons in the local area of the caller and to more distant places respectively. When questioned about any aspect of the telephone service, respondents were free to make 'no comment' if they wished.

Five detailed tables of survey results are attached.

Table 1 Perception of Automatic Service

Set of Respondents: All

Number of respondents making the given comment about the local and non-local components of the automatic phone service
(Number of respondents making the comment as a percentage of respondents making at least one comment)

Comment made	Local Service			Non-Local Service		
	Nangi Region	Elsabet Region	Total	Nangi Region	Elsabet Region	Total
No problems	45 (53.6)	45 (64.3)	90 (58.4)	36 (39.1)	6 (8.2)	42 (25.5)
Delays acceptable	21 (25)	17 (24.3)	38 (24.7)	13 (14.1)	4 (5.5)	17 (10.3)
Some delays	7 (8.3)	2 (2.9)	2 (5.8)	9 (9.8)	5 (6.8)	14 (8.5)
Delays bad	6 (7.1)	4 (5.7)	10 (6.5)	14 (15.2)	14 (19.2)	28 (17)
Delays very bad	5 (6)	1 (1.4)	6 (3.9)	17 (18.5)	45 (61.6)	62 (37.6)
Crossed lines	2 (2.4)	1 (1.4)	3 (1.9)	9 (9.8)	2 (2.7)	11 (6.7)
Bad during day	1 (1.2)		1 (0.6)	7 (7.6)	14 (19.2)	21 (12.7)
Wrong numbers				7 (7.6)	1 (1.4)	8 (4.8)
Too difficult to use				6 (6.5)	1 (1.4)	7 (4.2)
Total of respondents making at least one comment	84	70	154	92	73	165
No comment	265	155	420	257	152	409
% of respondents making at least one comment	24.1%	31.1%	26.8%	26.4%	32.4%	28.7%

Table 2 Perception of Operator Service

Set of Respondents: All

Number of respondents making the given comment about the local and non-local components of the operator controlled phone service
(Number of respondents making the comment as a percentage of respondents making at least one comment)

Comment made	Local Service			Non-Local Service		
	Nangi Region	Elsabet Region	Total	Nangi Region	Elsabet Region	Total
No problems	88 (38.6)	34 (17.3)	122 (28.8)	27 (11.9)	12 (6.0)	39 (9.2)
Delays acceptable	34 (14.9)	33 (16.8)	67 (15.8)	19 (8.4)	10 (5.0)	29 (6.8)
Some delays	32 (14.0)	41 (20.9)	73 (17.2)	25 (11.1)	18 (9.0)	43 (10.1)
Delays bad	48 (21.1)	60 (30.6)	108 (25.5)	79 (35)	52 (26.0)	131 (30.8)
Delays very bad	23 (10.1)	18 (9.2)	41 (9.7)	84 (37.2)	128 (64.0)	212 (49.8)
Wrong numbers	1 (0.4)	2 (1.0)	3 (0.7)	3 (1.3)	2 (1.0)	5 (1.2)
Crossed lines	1 (0.4)	1 (0.5)	2 (0.5)	2 (0.9)	5 (2.5)	7 (1.6)
Operators inefficient	22 (9.6)	39 (19.9)	61 (14.4)	18 (8.0)	41 (20.5)	59 (13.8)
Operators rude	22 (9.6)	25 (12.8)	47 (11.1)	19 (8.4)	26 (13.0)	45 (10.6)
Operators need reminding	3 (1.3)	4 (2.0)	7 (1.7)	3 (1.3)	7 (3.5)	10 (2.3)
Faint or noisy lines	5 (2.2)	8 (4.1)	13 (3.1)	11 (4.9)	14 (7.0)	25 (5.9)
Too difficult to use	4 (1.8)	1 (0.5)	5 (1.2)	6 (2.7)	3 (1.5)	9 (2.1)
Easier to visit than to phone	2 (0.9)		2 (0.5)			
Cut off during calls	1 (0.4)	7 (3.6)	8 (1.9)	2 (0.9)	10 (5.0)	12 (2.8)
Bad during day				6 (2.7)	15 (7.5)	21 (4.9)

Table 2 (continued)

Comment made	Local Service			Non-Local Service		
	Nangi Region	Elsabet Region	Total	Nangi Region	Elsabet Region	Total
Total of respondents making at least one comment	228	196	424	226	200	426
No comment	121	29	150	123	25	148
% of respondents making at least one comment	65.3%	87.1%	73.9%	64.8%	88.9%	74.2%

Table 3 General Perception of Service

Set of Respondents: All

Number of respondents in different regions making given comment
 (Number of respondents making the comment as a percentage of
 respondents making at least one comment)

Comment made	Nangi	Elsabet	Total
Bill greater than use	10 (8.5)	19 (19.4)	29 (13.5)
No bill explanation	4 (3.4)	1 (1.0)	5 (2.3)
No call delay explanation	2 (1.7)	2 (2.0)	4 (1.9)
Delay causes loss/inconvenience	34 (29.1)	26 (26.5)	60 (27.9)
Maintenance delay causes loss/inconvenience	19 (16.2)	10 (10.2)	29 (13.5)
Prices too high	4 (3.4)	2 (2.0)	6 (2.8)
Want 24 hours service	5 (4.3)	5 (5.1)	10 (4.7)
Want automatic or STD service	32 (27.4)	40 (40.8)	72 (33.5)
Equipment provision slow	7 (6.0)	3 (3.1)	10 (4.7)
No complaints/good	15 (12.8)	1 (1.0)	16 (7.4)
Number of respondents making at least one comment	117	98	215
Number of respondents making at least one comment as a percentage of all respondents	33.5%	43.6%	37.5%

Table 4 Complaints made by Economic Actors Compared to

Average Rate of Complaint

Set of Respondents: All

Ratio of the number of comments classed as complaints made by respondents in economic categories to the average number of comments classed as complaints made by all respondents

Economic Category	
Construction	1.27
'Hard' Industry	1.17
Public Administration and Security	1.13
Other Services	1.12
Banking & Finance	1.12
Other Communications	1.05
Utilities	1.02
Wholesale Trade	1.0
Transport & Storage	0.96
'Soft' Industry	0.94
Retail Trade	0.93
Other Agriculture	0.88
Plantation Agriculture	0.81
Residential	0.45

Table 5 Complaints at Level in Hierarchy

Compared to Average Rate of Complaints

Set of Respondents: All

Level	Ratio*
Principal Town	1.21
Urban Centre	1.02
Rural Centre	0.55
Market Centre	1.11

* As defined for Table 4

APPENDIX 2 PARTIAL TRANSCRIPT OF A POLICY MEETING

DMD Deputy Managing Director

MNR Manager - Nangi Region

MER Manager - Elsabet Region

MNR But we are going to need a rapid development of the telephone service to the smaller places in the Nangi region over the next few years. The region is expanding rapidly, as you know, and we must make sure that the telephone service keeps pace with that development.

DMD We'll try to help you as far as possible but the Government imposes a strict constraint on our foreign exchange borrowing and there is a very large unmet demand for the telephone service in all our major cities. You know that we make a much better return on capital by expansion of the service in major urban areas compared to expansion elsewhere.

MNR Well, I know that's true, but we must find funds to help development in the rural regions. The President's speech last week emphasised the need to provide resources in the rural areas to make it attractive for people to develop those areas. This applies to the telephone service as well as other infrastructure. Nangi region is being successful and we must keep it that way.

MER I realise, DMD, that funds are going to be limited for telephone service expansion in the regions and I hope we in Elsabet are going to get our fair share. Nangi is already a much more prosperous region than my own and it would be wrong to spend all the capital there. We need to catch up with them and priority should be given to our problems.

DMD We'll try to make a fair allocation of funds between the regions but it's very difficult. We have to show some return on capital from our investments and improving service in small rural places doesn't pay in financial terms. That's particularly true in the smaller places in regions like Elsabet where demand for the service is low.