APPLICATION OF A MODEL OF PLANNING FOR THE CONTINUOUS IMPROVEMENT OF THE DEVELOPMENT OF THE TELECOMMUNICATIONS

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ABSTRACT

The communications systems are used to send information from a place to another one through different means like the space, the optical fiber and metallic wiring. The most common systems among others, are the television, radio, infrared, satellite, the telephone ones, voice on IP that consist of sending the voice on an IP. The objective is continuously to improve the form to make get at the addressee the information generated by the source, of fast, safe way truthful and low cost.
This model consists of five stages: first is the Projection of Reference in which one detects problematic of the system using the techniques of Kawakita Jiro (TKJ), analytical hierarchal structuring and the principle of Pareto; in the normative planning the mission of the system considers that includes its goals and objectives; the strategic planning raises how to give solution to the detected problems; the organizational planning proposes the resources with which the problematic one will be solved; the fifth stage is the evaluation that allows to know what is feasible to do.

STRUCTURE OF THE MODEL OF PLANNING OF HAZAN OZBECKHAN[1]

Problematic

The problematic one constitutes an aid to be able to see clearly which is the focal object, defined this one like the system in which it has been interested, that is to say, the part on which control can be exerted on the part of which they carry out the planning.

Within first stage one will be used the Kawakita-Jiro technique (TKJ), classifying the problematic one by groups, the model of decisions of Analytical Hierarchal structuring, the principle of Pareto and the applied technique of Ishikawa during this phase of the model.

Projection of Tendencies and Logical Future.

This part, jointly with the definition of the interest system and its problematic one, is what Projection of Reference is denominated. The phase of projection implies the prognosis through a series of historical statistical data, or of tendencies detected in qualitative form with base on a consultation of experts. Through this one, it is tried to know which would be the state or dimension of a problem in a specific future; this state is what it has been denominated future logical; he is the future more probable or natural.

A Model of Planning for Continuous Improvement

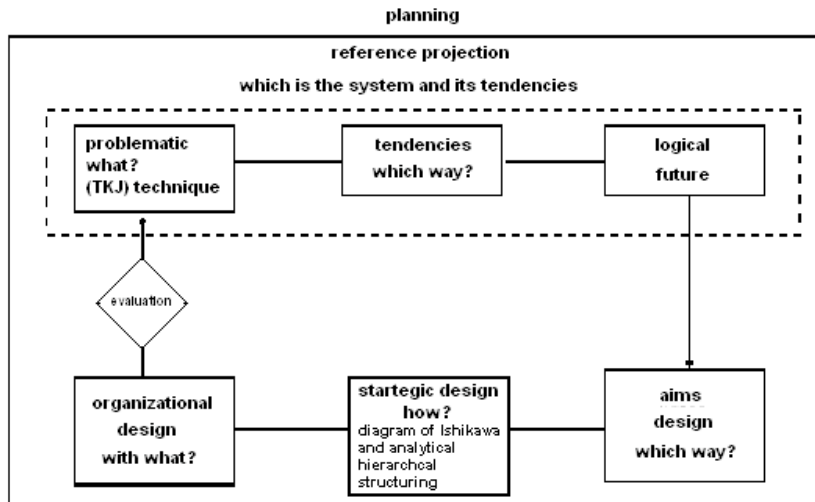
Figure 1.Model of de Planning of Hazan Ozbeckhan.
Source: Market, R. E. Pag. 16, 1991. op. cit.

1 Hazan Ozbeckhan, Thoughts on the Emerging Methodology of Planning, in systems and Management Science, Wiley, USA, 1974

Normative Planning

The essential task on this phase of the planning process consists of the precise definition of the aims that persecute the system.

Strategic planning

Once the pertinent problematic has been determined, with the degree of necessary detail and the aims have been designed that are tried to reach in participative form, has one more a clearer idea of the effort that will be necessary to make to transform the system of the present state towards which it is desired. It is possible to begin now with an estimation of costs, hour-man, specific investments, reconstructions, etc. the form in which these resources will be used will have to be effective, efficient and coherent.

Organizational Planning

Once defined what to do and how to do, the planning model takes to the question on what resources must count so that the system becomes to the way wished with the design of strategies. This part closes the cycle of the global method of planning, the execution of combat operations will begin to transform the system of the predicted way if everything well were designed.

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Evaluation

The evaluation stage is related to the fact of establish the qualified system of information to the process, which can detect in the most frequent way the values of the variables more relevant with the object to receive on time deviations to the wished values and make the qualified corrections.

APPLICATION OF THE MODEL OF PLANNING OF HAZAN OZBECKHAN

In the case of telecommunications is pretended to apply this model that will allow the correct performance for the improvement of them, as well as the quality that allows the full satisfaction to their national and international users.

According with the model of planning of Hazan Ozbeckahn we are going to consider every stage of it.

KAWARITA-JIRO TECHNIQUE APPLICATION

Identifying the problematic

To realize this technique a questionnaire was elaborated and it was sent to the experts to detect the communications problematic, once obtained their answers with a total of 50 questionnaires 31 problems were obtained because there were similar answers. First was argued if they were well elaborated, this is, that they weren't solutions, causes, etc. later the sentences where existed confusion or they weren't well posed, were modified, to do that, the authors were asked to do the make the necessary explanations.

Once reclassified the problems there were the next results:

1. Politics of the telecommunications
2. Politics of the national telecommunications
3. Politics of the regional communications
4. Politics of the world communications
5. Telecommunications rules
6. National normatively
7. Regional normatively
8. World normatively
9. Information security
10. Virus attacks
11. Hackers participation
12. Efficient in the communications systems
13. A few development in the telecommunications industry
14. Difficult of adapting the enterprises about updating their technologies.
15. Services integrations.
16. Service lack
17. Products quality
18. higher prices
19. Low quality in some services
20. Incompatibility of services
21. Training

22. Low personal self-respect
23. Deficiency training people
24. Deficiency in the knowledge of the people to engineering levels and in others areas
25. Enterprises without research department
26. Deficient infrastructure principally in rural zones and small cities
27. Areas
28. Equipment
29. Work tools
30. Coordination between internet producers in Mexico in order to offer a save net to the users.
31. Low impact in wide band and cable television services in the country

Later the similar problems were gathered together, getting 6 groups to the total problematic of the system identified by the Z letter, those 6 final problems because of the Yi, and in the thirty-one, problems because of the Xij letter.

Z. system total problematic
Y_1Politics of telecommunications
X_{11} National communications politics
X_{12} regional communications politics
X_{13} world communications politic
Y_2 regulation of telecommunications
X_{21} National normative ness
X_{22} regional normative ness
X_{23} world normative ness
Y_3 security in the information
X_{31} viruses' attacks
X_{32} hackers' participation
X_{33} efficiency in the communications systems
Y_4 low growing in the telecommunications industry
X_{41} difficulty of the enterprises adaptation in order to get renovated on the technologies
X_{42} integration of services
X_{43} scarcity of services
X_{44} qualities on the products
X_{45} elevated costs
X_{46} low quality in some services
X_{47} incompatibilities of services
X_{48} coordination between the internet producers in Mexico to offer a safe producers in net to the user
X_{49} low impact of broadband and cable television services in the country
Y_5 Training
$X5_{51}$ Self-esteem in the workers
X_{52} deficiencies in workers training
X_{53} deficiency in the workers knowledge about engineering and other areas
X_{54} enterprises without investigation

departments
**Y$_6$ inadequate infrastructure in rural
zones and small cities**
X$_{61}$ areas
X$_{62}$ equipment
X$_{63}$ work material

Hierarchy of problems

Problems were evaluated by a computer program called "take in decisions and analytic hierarchy, where each one essential importance was taken in a comparison accordingly to the table of contents number I.

By means of this program the relative importance of the six problems were gotten, which we represent with the letter Y; the program calculates them in relation to the importance and intensity that each participant assigns to the different pairs of combinations   (Y$_1$Y$_2$,   Y$_1$Y$_3$,   Y$_1$Y$_4$,   Y$_1$Y$_5$,   Y$_1$Y$_6$, Y$_2$Y$_3$,Y$_2$Y$_4$,Y$_2$Y$_5$,Y$_2$Y$_6$,Y$_3$Y$_4$,Y$_3$Y$_5$,Y$_3$Y$_6$,Y$_4$Y$_5$,Y$_4$Y$_6$,Y$_5$Y$_6$) and the one that decides must ponder the relative importance of the preferred element into the comparison in base to the scale of qualifications shown in table I. the thirty one problems of the inferior stratum are represented by an X and their percentages of relative importance are calculated by the program in the same way that the ones calculated by the Y. the addition of percentages of relative importance of each one of the Y problems gives the 100% of absolute importance of the Z problematic, in the same way, the addition of percentages X gives the 100% of relative importance of each Y. percentages gotten by the program are:

Table I.- Relative and Absolute Importance of the Problematic

Problematic	Relative Importance %	Absolute Importance %
Y$_1$Politics of telecommunications	**23**	
X$_{11}$ National communications politic	60	0.60*0.23*100=13.080
X$_{12}$ regional communications politic	25	0.25*0.23*100=05.750
X$_{13}$world communications politic	15	0.15*0.23*100=03.450
Y$_2$ regulation of telecommunications	**19**	
X$_{21}$ National normative ness	50	0.50*0.19*100=09.500
X$_{22}$ regional normative ness	35	0.35*0.19*100=06.650
X$_{23}$ world normative ness	25	0.25*0.19*100=04.750
Y$_3$ security in the information	**18**	
X$_{31}$ viruses attacks	55	0.55*0.18*100=09.900
X$_{32}$ hackers participation	30	0.30*0.18*100=05.400
X$_{33}$ efficiency in the communications systems	15	0.15*0.18*100=02.700
Y$_4$ low growing in the telecommunications industry	**17**	
X$_{41}$ difficulty of the enterprises adaptation in order to get renovated	15	0.15*0.17*100=02.550

on the technologies

X_{42} integration of services	14	0.14*0.17*100=02.380
X_{43} scarcity of services	12	0.14*0.17*100=02.040
X_{44} quality on the products	11	0.11*0.17*100=01.870
X_{45} elevated costs	11	0.11*0.17*100=01.870
X_{46} low quality in some services	10	0.10*0.17*100=01.700
X_{47} incompatibility of services	10	0.10*0.17*100=01.700
X_{48} coordination between the internet producers in Mexico to offer a safe net to the user	9	0.09*0.17*100=01.530
X_{49} low impact of broadband and cable television services in the country	8	0.08*0.17*100=01.360
Y_5 Training	**14**	
X_{51} Self-esteem in the workers	40	0.40*0.14*100=05.600
X_{52} deficiency in workers training	30	0.30*0.14*100=04.200
X_{53} deficiency in the workers knowledge about engineering and other areas	20	0.20*0.14*100=02.800
X_{54} enterprises without investigation departments	10	.010*0.14*100=01.400
Y_6 inadequate infrastructure in rural zones and small cities	**9**	
X_{61} areas	55	0.55*0.09*100=04.950
X_{62} equipment	25	0.25*0.09*100=02.250
X_{63} work material	20	0.20*0.09*100=01.800

The figure number 2 shows the hierarchical arboreal structure that is divided in three levels:
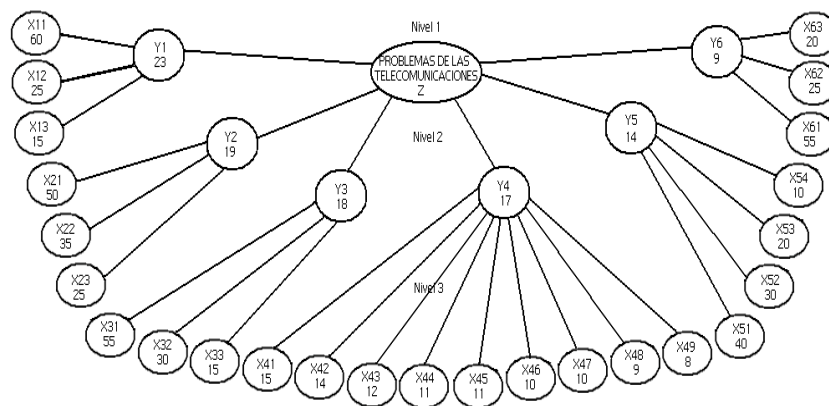

Figure 2.- Arboreal Hierarchical Structure
of the Problematic

the first level consist in the total problematic of telecommunications (Z), the second level is conformed by the six problems, assorted by the (Yi), within we find the thirty one problems represented by (Xij), the graphic ends in the third level due to each one of the elements cannot be divided already into other problems to consider.

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PARETO´S PRINCIPLE

The Pareto´s principle (principle 20-80) establishes that if we consider the 20% of the most important problems, and we add the absolute importance of each one of them, we get approximately the 80% of the absolute importance from the total problematic. This means, that we could solve the 20% of the principal problems for not to waste our efforts and resources in the others, due to the low impact in the total problematic.

Table II.-Absolute importance and amount of Pareto from high to low importance

Problems in significance order	Element	absolute importance (AI)100%	Paretó amount 100%
politic of national communications	X11	0.1308	0.1308
viruses attacks	X31	0.0990	0.2298
national normative ness	X21	0.0950	0.3248
reional normative ness	X22	0.0665	0.3918
politic of regional communications	X12	0.0575	0.4488
low self-esteem in the workers	X51	0.0560	0.5048
hackers participation	X32	0.0540	0.05588
areas	X61	0.0495	0.6083
world normative ness	X23	0.0475	0.6558
deficiency in the training of workers	X52	0.0420	0.6978
politic of the world communications	X13	0.0345	0.7258
deficiency in the workers knowledge about engineering and other areas	X53	0.0280	0.7538
efficiency in the communications systems	X33	0.0270	0.7808
difficulty of adaptation to renovate the technologies	X41	0.0255	0.8063
services integration	X42	0.0238	0.8301
equipment	X62	0.0225	0.8526
scarcity of services	X43	0.0204	0.873
quality in the products	X44	0.0187	0.8917
elevated costs	X45	0.0187	0.9104
material of work	X63	0.0180	0.9284
low quality in some services	X46	0.0170	0.9454
incompatibility of services	X47	0.0170	0.9624
coordination between the internet producers in Mexico to offer a safe net to the user	X48	0.0153	0.9777
enterprises without investigation departments	X54	0.0140	0.9917
low impact of broadband and cable television services in the country	X49	0.0081	0.9998

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ISHIKAWA TECHNIQUE

   This technique also known as fish skeleton was used to detect the reasons of the problems, for that, the questionnaires of the experts were reviewed and with the help of the TKJ technique were detected the causes of the considered problems.
Then, an abstract was made, getting seven general causes and their specific causes per problem.

Relation of Problems with their Specific Causes

Politic of nationals communications

-Information given to population about the development of telecommunications
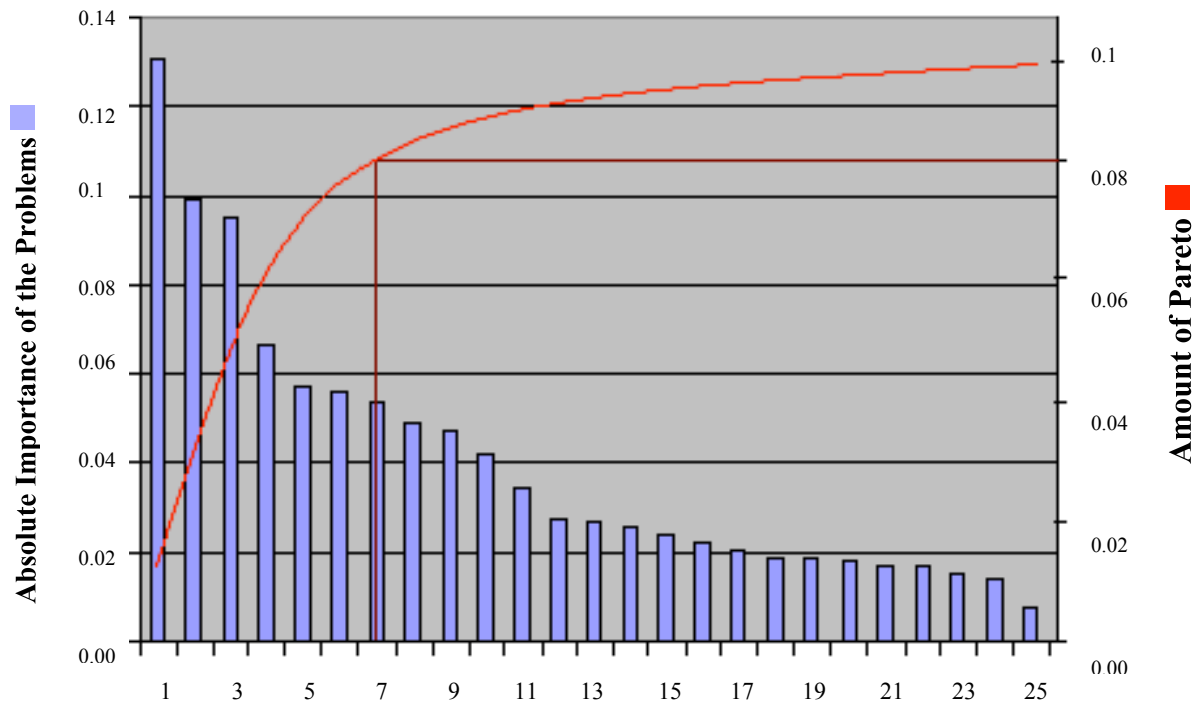-Population training for the use of the telecommunications

Figure 3.- Problems Ordered from Greater to Shorter whose Absolutes Importance Amount Gives the Pareto´s Amount.

-There exists a lack of communication in some communities in the country
-Protectionism of the national companies
Viruses attacks
-Carelessness from the programmers
-Lack of vaccinations
-Lack of care from the users
National normative ness
-Frauds

-Inadequate publicity
-Affectation to audio & video enterprises
-Tightfisted development of telecommunications
Regional normative ness
-Incompatibility in the services
-Inadequate publicity
-Affectation to audio & video enterprises
-Tightfisted development of telecommunications
Politics of regional communications
-Information to population about the development of telecommunications
-Population training for the use of telecommunications
-Exists lack of communication in Latin America countries
-Protectionism of the national companies
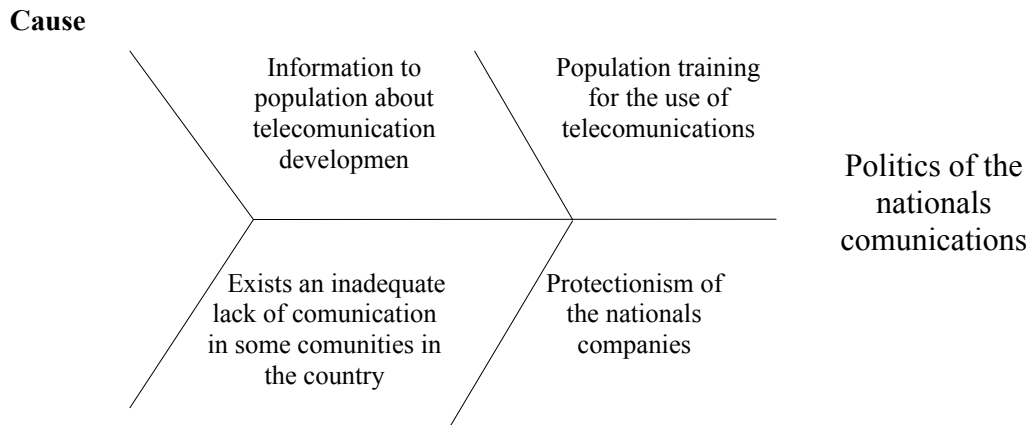**Low self-esteem in the workers**
-Lack of incentives in the work
-Low personal interactivity in the work
-Information of the objectives and goals of the enterprise
Hackers' participation
-Make use of the programming mistakes
-Piracy of programs
-Inadequate programming

And so, in the same way we can find the general and specific causes of each considered problem.

Next, we present an example of the Ishikawa schemes with their general causes.

Cause

Information to population about telecomunication developmen

Population training for the use of telecomunications

Politics of the nationals comunications

Exists an inadequate lack of comunication in some comunities in the country

Protectionism of the nationals companies

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