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CONCEPT OF POSTAL TRAFFIC QUALITY CONTROL USING THE P CARD

ABSTRACT

The concept of operation quality control using the P card has proven successful in some other companies, and it had not been previously used in the postal traffic. In this concrete study, the statistical data have been gathered on the number of sent and received post according to types and months for the period between January and December 1998 in domestic and international traffic for Središte pošta Zagreb (Zagreb Post Offices Centre) and in international traffic for Hrvatska pošta (Croatian Post), as well as the number of claim forms and the number of paid compensations for missing letters..

Based on these, the first step towards operative analysis has been made and the initial knowledge has been acquired. It shows that the control card can be combined with a number of other procedures that will provide a clear overview of the quality according to the given criterion (in the concrete case the quality indicator is the number of claim forms).

KEY WORDS

quality, post mail, postal traffic, claim forms

1. INTRODUCTION

Quality is one of the key issues for successful operation of a company. One of the methods of business quality analysis and control is by using the P card. This method has proven successful in some other companies, but it had not been applied until now in postal traffic. The need and the possibility of usage have been presented in literature (I. Bošnjak "Tehnologija poštanskog prometa II"), for the purpose of operative introduction of the quality control system based on the P card.

In this concrete study, the statistical data have been gathered by controlling the number of sent and received pieces of mail according to their type (registered, remittance letters, packets, EMS and ordinary mail) in the national and international traffic for Središte pošta Zagreb (Zagreb Post Offices Centre) and in international traffic for Hrvatska pošta (Croatian Post), as well as the number of submitted claim

forms and the number of compensations paid for the missing post.

This was used as the basis for using the P card that might improve control processes in postal traffic.

2. GATHERING AND PRESENTING DATA ON POST AND CLAIM FORMS

Gathering and analysing statistical data in postal traffic have had a long tradition and great significance. This involves many employees and requires spending a lot of working hours and resources. However, unfortunately, there is no systemically established and analysed evaluation of statistical results in traffic analysis and synthesis, i.e. in making technological, organisational and managers' decisions.

Data are the basis of any statistical research and analysis. Therefore, the key question is to find out when, where and how to obtain the necessary data, regarding the defined purposes and aims of research and analysis. By applying the statistical and technological knowledge, the statistical set (mass), statistical characteristics, sources of data have to be defined precisely already in the initial phase of applying statistical methods, and the software has to be selected.

Regarding source, data are generally divided into primary and secondary. Primary data are gathered in accordance with the set research aim. Within the statistical plan the aim and objective of research are devised, statistical set is defined, statistical characteristics are selected and their forms (modes) determined, the method, scope and means for the observation are planned, the software for storing, determining and analysing the gathered data is selected. If observation is meant as a statistical experiment, their objective is defined and the experiment design devised. Secondary data are those data that were gathered or are systematically gathered with another purpose, so that their scope and type do not result directly from the requirements of the given study.

Table 1 - Data on the number of post for the period between January and December 1998

Per month	Number of sent post							Number of received post						
	Domestic traffic				International traffic			Domestic traffic				International traffic		
	R	P	Remittance		R	V	P	R	P	Remittance		R	V	P
			letters	parcels						letters	parcels			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
I	911664	47867	84252	4671	36439	14	479	823517	25464	54259	2263	29266	83	1665
II	1061286	55355	88332	4915	35359	13	531	894369	23223	52650	2361	27683	72	1122
III	1387599	61634	100203	5590	40620	32	631	1212798	22326	57674	2649	31611	70	1307
IV	1066906	55419	99157	5885	36826	35	464	966838	24621	58539	2658	28978	72	1062
V	1013794	43322	90991	4212	33104	20	459	1153601	19991	56526	1782	25389	73	1113
VI	1096306	40145	95868	4396	32202	14	501	957262	13079	54957	3057	28008	78	1092
VII	1217649	41739	97072	4870	38225	22	444	1590173	16116	56647	2029	25409	58	984
VIII	1286260	31795	91005	3320	26098	45	333	869736	13500	52979	1032	22987	46	969
IX	1354428	52105	99472	4884	32632	17	495	1039427	19156	54559	1717	25481	83	918
X	1169848	49345	93285	3705	35772	23	494	1147812	21222	52459	1691	29503	103	1167
XI	1058547	43769	80806	3847	32666	15	531	943085	22666	46130	1697	30351	92	1397
XII	1048362	48141	107034	4385	35698	32	840	958892	27616	51648	2204	32383	144	2527
Total:	13672649	570636	1127477	54680	415641	282	6202	12557510	248980	649027	25140	337049	974	15323

Table 2 - Data on the number of claim forms for the period between January and December 1998

Per month	Number of submitted claim forms							Number of received claim forms						
	Domestic traffic				International traffic			Domestic traffic				International traffic		
	R	P	Remittance		R	V	P	R	P	Remittance		R	V	P
			letters	parcels						letters	parcels			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
I	344	57	15		55	1	1	868	74	28	11	155	35	18
II	365	34	49	1	51	1	2	685	53	26		199	65	24
III	331	64	20	1	43		1	698	49	18	1	185	42	7
IV	355	36	19	1	42			673	29	17	1	128	22	14
V	373	33	22		50			667	27	21		80	13	10
VI	342	19	9		42			673	28	15	1	98	18	7
VII	277	24	18		31	1	1	505	26	19	1	126	13	4
VIII	283	29	9		30	1		450	14	19	1	65	1	13
IX	387	19	12		44	1		663	24	23		55	2	11
X	346	33	21		38	2		519	21	18	1	78	3	5
XI	332	38	15	2	57			543	28	23		90	16	1
XII	230	380	9		34	3	1	549	64	12	7	98	28	1
Total:	3965	766	218	5	517	10	6	7493	437	239	24	1357	258	115

Table 3 - Data on the number of claim forms for the period between January and December 1998

Per month	Number of submitted negatively solved claim forms							Number of received negatively solved claim forms						
	Domestic traffic				International traffic			Domestic traffic				International traffic		
	R	P	Remittance		R	V	P	R	P	Remittance		R	V	P
			letters	parcels						letters	parcels			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
I	91	25	2		16			151	15	1		123	28	
II	107	15			23			198	15			144	49	8
III	83	32			21	1		142	15			119	35	1
IV	83	10			17			116	6			82	17	2
V	134	11			24			189	8	2		56	11	
VI	77	13			19			150	7	1		61	11	2
VII	79	8			6			127	5	1		92	9	
VIII	87	9			8	1		104	1			26	1	1
IX	80	5	1		11			139	6	1		28	1	1
X	80	15			62	6	3	102	3			20	2	
XI	63	12			42		1	117	7	1		29	11	
XII	68	22			10			102	13		1	58	21	
Total.	1032	167	3		259	8	4	1637	101	7	1	838	196	15

Table 4 - Data on the number of post in international traffic for the period between January and December 1998

Per month	Sent to international traffic					Received from international traffic				
	R	V	P	Ordinary	EMS	R	V	P	Ordinary	EMS
	1	2	3	4	5	6	7	8	9	10
I	24884	480	1041	1014594	153	88743	2339	5590	1650553	1159
II	92127	548	959	946201	138	93148	2330	4109	1343530	1204
III	99401	637	1127	1087319	159	93325	2268	4573	1461166	1428
IV	92258	587	1007	1128128	165	96714	2199	3901	1686337	1517
V	86807	227	924	1115758	156	78691	1886	3617	1351503	1234
VI	88541	338	920	1548005	182	94047	2055	3722	1417646	1448
VII	105446	508	948	3434429	180	81656	1968	3718	1590120	1423
VIII	85684	444	713	4496821	110	84237	1676	3425	1514574	1269
IX	89980	472	1063	1767011	123	81516	2057	3565	1606617	1349
X	92570	477	1073	1060922	168	98677	1792	4286	1363800	1572
XI	89260	430	1166	1079791	149	100201	1792	4951	1327317	1486
XII	95609	679	1879	4470599	152	111193	2947	9825	4970090	1831
Total:	1042567	5827	12820	23149578	1835	1102148	25309	55282	21283253	16920

Table 5 - Data on the number of claim forms in international traffic for the period between January and December 1998

Per month	Sent in international traffic					Received from international traffic				
	R	V	P	Ordinary	EMS	R	V	P	Ordinary	EMS
	1	2	3	4	5	6	7	8	9	10
I	205	4	16	2	2	457	156	41	41	34
II	202	2	17		8	626	301	39	54	41
III	225	2	14	1	1	455	184	42	33	19
IV	174	2	8		3	364	95	47	33	28
straight V	180	2	8	2	4	230	45	18	25	21
VI	193	2	7	1	4	421	43	23	38	24
VII	141	2	8		8	441	51	24	29	28
VIII	136	5	3	1	1	192	18	39	36	35
IX	151	2	9		1	230	15	29	16	30
X	170	4	13	1	2	181	15	16	32	30
XI	180	1	10	1	4	228	89	28	35	20
XII	191	3	4	2	7	362	179	26	29	50
Total:	2148	31	117	11	45	4187	1191	372	401	360

Table 6 - Data on the number of claim forms in international traffic for the period between January and December 1998

Per month	Number of submitted negatively solved claim forms					Number of received negatively solved claim forms				
	R	V	P	Ordinary	EMS	R	V	P	Ordinary	EMS
	1	2	3	4	5	6	7	8	9	10
I	61	2	4		1	386	145	4	7	12
II	39	1	9			564	295	12	5	19
III	59		2			357	174	6		4
IV	45		2		1	294	92	15	8	4
V	49	1	1			169	37	2	9	2
VI	60		1	1	2	360	37	1	1	1
VII	45	1	3		1	394	44	4	5	2
VIII	51	1				113	7	8	6	6
IX	49					142	10	5	4	7
X	63	2	3			114	11	1	6	7
XI	63			1	3	145	83	3	13	5
XII	92		1	1	1	284	164	5	30	16
Total:	676	8	26	3	9	3322	1099	66	94	85

Gathering of data on postal traffic depends on the time of gathering, and can basically be:

1. constant
2. periodical
3. one-time

Constant gathering of data means continuous (automatic) recording of statistical units whenever they appear, i.e. whenever there is a change in the statistical set or mass. Such gathering of data is done at the post office for all the recorded post, i.e. other current records.

Periodical gathering of data is done on the basis of statistical plan (or special regulations) so that it is repeated at certain intervals. For instance, statistical data for ordinary letters are gathered between the 11th and 17th in the month. One-time gathering of data is done for various cases when certain facts have to be established.

Methods of gathering data regarding the scope can be as follows:

1. detailed or complete gathering
2. incomplete or representative

Detailed or complete gathering of data includes all the members of a statistical set without exceptions. For instance, the list of employees, record of the recorded post, recording of the load to which the counters are subjected, these are the examples of detailed study. It is usually very expensive and it tends to be realised at a certain interval (e.g. defining of standards, etc.).

Gathering of statistical data in HP is carried out on the basis of special Instructions on gathering and processing of statistical data which determine a unique method of gathering and processing statistical data on postal services in HP, and in compliance with the Regulations on the technological procedure regarding services in postal traffic.

Data presented in tables refer to the number of letters sent and received in domestic and international traffic according to types and months for the Središte pošta Zagreb, the number of sent and received letters according to types and months in the international traffic for Hrvatska pošta over the period from January to December 1998.

Based on the gathered statistical data, a diagram has been made showing quality control by using P card. The control limits (upper and lower) have been determined for the total number of claim forms, total in dispatch and receipt per months, as well as for the number of compensations paid for the missing post. Further, there is a diagram of the relation between the number of sent and received registered post per months in domestic traffic for Središte pošta Zagreb and the number of claimed post, as well as the relation between the number of registered letters per months, sent and received in international traffic for Hrvatska pošta and the number of claimed post.

In order to make the diagram, determine the mean line, and upper and lower control limits, the data on the number of sent and received claimed post and the number of compensations paid to the users for missing

post in dispatch and receipt per months have been summed up. Also, the data on the number of sent and received post in domestic traffic both for Središte pošta Zagreb and for Hrvatska pošta have been summed up.

3. POSTAL TRAFFIC QUALITY CONTROL USING THE P CARD

Control P card has proved as good in controlling and determining the dynamics of the technological working process. The obtained results inform about a systemic fault and thus indicate that certain measures need to be undertaken in order to improve the quality over a certain period in performing postal services.

The results of the study show the following:

- 1) Diagram 1 shows that the number of claimed post has come close to the upper control limit in January, as result of the great number of sent and received "R" post during peak traffic (Christmas and New Year holidays). During July and August the number of claimed post approached the lower control limit, as result of the better quality of performing the technological working process (better performance of the employees due to the just finished holidays).
- 2) Diagram 2 shows the number of paid compensations for the missing "R" post. It reaches the upper control limit in February, and in May it exceeds the upper control limit, indicating that measures should be undertake in that period in order to improve the quality.
- 3) Diagram 3 shows the number of claimed parcels ("P"), indicating that the number of submitted claim forms until May is close to the upper limit and there is a sudden fall in May, keeping the trend until the end of the year with an exception in August.
- 4) Diagram 4 shows the number of sent and received claim forms for the registered ("R") post in international traffic for Hrvatska pošta. It may be seen that the upper control limit is slightly exceeded in February, as result of heavier traffic (Christmas and New Year holidays). The trend of decline is shown in the diagram until May, and then it remains level till the end of the year, except for July and August.
- 5) Diagram 5 shows the number of paid compensations for the missing post ("R") in international traffic indicating that the curve behaves in a very similar way as in diagram 4. This leads to the conclusion that a great percentage of the claimed post is really lost.
- 6) Graphs 6 and 6a show the relation between the number of sent and received registered post in

domestic and international traffic and the number of claimed "R" post per months. It may be seen that the number of claimed post in both cases in relation to the number of sent and received post is very small.

For the quality control of remittance letters it is necessary to find a different solving concept, since the designated values for the given post are different and this results in different amounts of paid compensations.

The carried out studies have led to the conclusion that the number of claimed post and the number of paid compensations for the lost post in relation to the total number of sent and received post according to types amount to e.g.:

- out of 0.3% claimed "R" post in international traffic for the whole HP the number of paid compensations for the lost post amounts to 0.02%.
- Out of 0.7% claimed "P" in international traffic for the whole HP the number of paid compensations for the loss of parcels amounts to 0.2%.

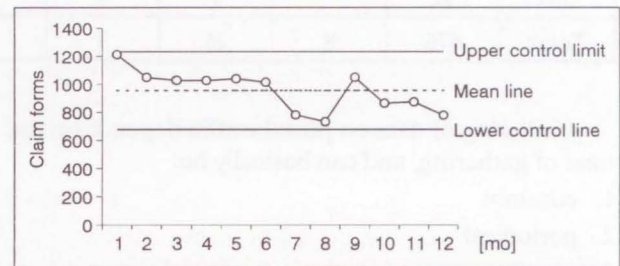


Figure 1 - Diagram of controlling submitted claim forms at SP Zagreb for "R" post in domestic traffic

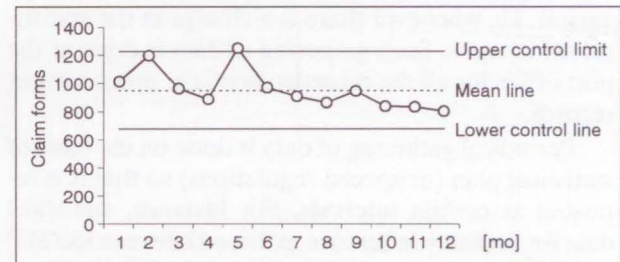


Figure 2 - Diagram of controlling paid compensation at SP Zagreb for miscarried "R" post in domestic traffic

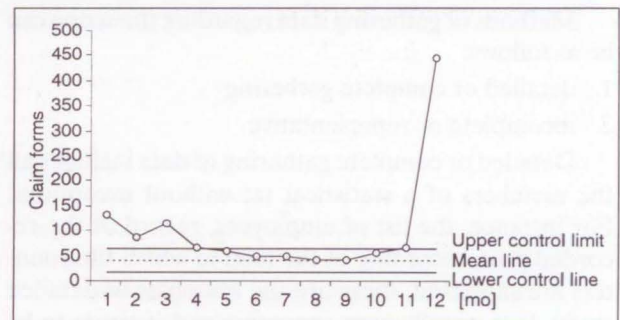


Figure 3 - Diagram of controlling submitted claim forms at SP Zagreb for "P" post in domestic traffic

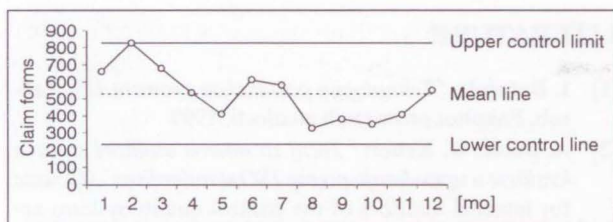


Figure 4 - Diagram of controlling the submitted claim forms at HP for "R" post in international traffic

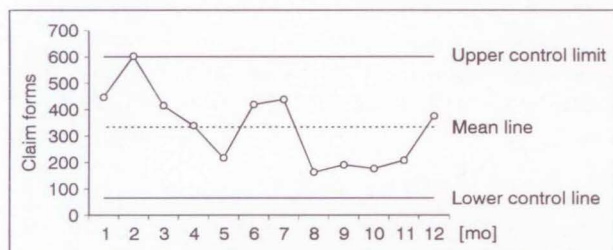


Figure 5 - Diagram of controlling paid compensation at HP for miscarried "R" post in international traffic

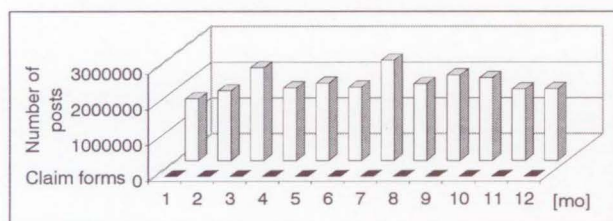


Figure 6 - Graph showing relations between total number of sent and received "R" post for SP Zagreb and total number of claim forms in domestic traffic

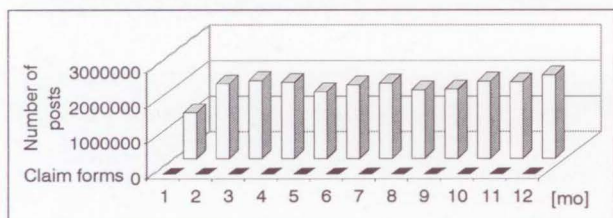


Figure 6a - Graph showing relations between the total number of sent and received "R" post for HP and total number of claim forms in international traffic

- Out of 0.04% claimed "R" post in domestic traffic at SPZ the number of paid compensations for the lost post amounts to 0.01%.
- Out of 0.1% claimed "P" in domestic traffic at SPZ the number of paid compensations for the lost parcels amounts to 0.03%.

4. THE NEED TO INTRODUCE THE QUALITY MANAGEMENT SYSTEM

The quality management system must subject all its management function activities to determining the quality policy. By applying the quality means, the sys-

tem must determine the objectives and responsibilities such as quality planning, quality control, quality assurance and quality improvement.

Achieving of satisfactory quality includes all the levels of the quality ring as a whole. Quality management is the responsibility of all the management levels headed by the highest management authority. Quality management means also considering the economic aspects.

Quality reliability (quality certificate) makes up all the planned and systemic actions that are applied within the quality system. They have been proven necessary because of reaching sufficient reliability that the product or service will meet the given quality requirements.

For the implementation of a good management of the quality system, a good organisational structure, responsibility, procedures, processes and resources are necessary.

1. Quality system has to be comprehensive inasmuch as necessary to meet the quality objectives.
2. Quality system is intended first of all to meet the internal requirements of company management. It is wider than the requirements of a single user who judges only that part of the quality system.

Complete quality management is a managerial approach to organisation focused on quality, based on participation of all the members and directed to long-term success based on the user's satisfaction and the benefit of all the members of the organisation and the society.

5. CONCLUSION

Concurrent control of certain types of claim forms according to groups could determine the time pattern of reaching the upper and lower control limits. In January and February it increases, whereas in August it decreases, the subject of separate study.

The concept of postal traffic quality control by using the P card had not been used in postal traffic whereas it has been used successfully in some other companies. Considering the basic characteristics of this concept, the paper tried to make the first step towards the operative analysis in order to check the applicability of the concept. Initial knowledge shows that there a number of other procedures can be combined with the use of the control card which provides a clear overview of the quality per given criterion (in the concrete case the quality indicator is the number of claim forms). P card can be combined with other quality criteria so that it fits into the total quality control system in the postal system process.

Since quality control requirements can change from time to time, which means periodical re-analysis

of quality requirements, the postal traffic quality can be improved by implementing the quality management system.

SAŽETAK

KONCEPT PRAĆENJA KVALITETE POŠTANSKOG PROMETA PRIMJENOM P KARTE

U ovom konkretnom istraživanju primijenjena je metoda analize i praćenja kvalitete putem P karte. U tu svrhu su prikupljeni statistički podaci o broju otpremljenih i prispjelih poštanskih pošiljaka po vrstama i mjesecima te podaci o broju sačinjenih potražnica i broju isplaćenih naknada za gubitak pismovnih pošiljaka za razdoblje od 01.-12. mjeseca 1998. godine. Navedeni podaci su prikupljeni za unutrašnji i međunarodni promet iz Središta pošta Zagreb, a podaci na nivou Hrvatske pošte se odnose samo na međunarodni promet.

Temeljem navedenog, učinjen je prvi korak prema operativnoj razradi. Došlo se do početne spoznaje koja govori da je moguće kontrolnu kartu povezati s nizom drugih postupaka koji će pružiti pregledni prikaz kvalitete po navedenom kriteriju (u konkretnom slučaju pokazatelj kvalitete je broj potražnica).

LITERATURE

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