

ABOUT APPLICATION OF DIVISION INTO PERIODS IN PORTFOLIO ANALYSIS

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In the article the possibilities of using the methods of division into periods the complex numbers of dynamics during construction of one of the important models of portfolio analysis - the matrix of the life cycle of goods are examined. All the calculations are performed with real data of one of the Novosibirsk publishing houses. The conclusions are made.

Tasks completed with the help of the methods of division into periods¹ are not limited to obtaining the homogeneous intervals of the development of time series. The sphere of application can vary greatly.

Let's examine the possibilities of applying the method for the construction of one of the important matrices of portfolio analysis - goods life cycle model².

This task looks preferable due to finished posing of problems and first outline types, first of all (it was previously taken for granted that theoretically life cycle of goods can include the following periods of single qualitative dynamics - introduction, increase, maturity and decrease); then, normative strategies of development of the actually got types are developed; finally, there is an approximate system of the recommended parameters, whose values allow on the one hand to search for the critical transition points of quantitative changes into the qualitative jumps in the development of the process, on the other hand it is possible to build a complex number of dynamics on the basis of these parameters.

Let's examine the features and the problems of the construction of the life cycle model at present - for the strategic units of one of Novosibirsk publishing houses. In particular, the following series of books, produced by the publishing house in 2001-2008, were examined: in the segment of the detective and adventure literature - a series "Russian crime", in the segment of sentimental prose - the series "The Stranger" and "The formula of love", in the segment of leisure, household, way of life - the series "Good mood" and "Culinary recipes".

The stages of life cycle are shown as a rule through the values of the following parameters:

1. Rate of increase in sales;
2. Dynamics of the demand;
3. Presence and the renewability of the product line;
4. Level of concentration of the market segment;
5. Value of the input barriers;
6. Market share distribution among the chief players of the market and the stability of the market shares.

Far from all these parameters are considered both at the level of enterprise and at the level of branch. Some of them has to be evaluated through the indices connected with them. Thus, for example, the dynamics of the demand was estimated by means of chain rates of the dispatch of the firm "Top-book". The considerations are the following: in the first place, more than 5% of books of Russian production are realized through the retail network of this enterprise, in the second place, "Top-book" does not usually undertake direct marketing effects (until recently there was no division of distribution in the usual sense), accordingly the dynamics of the dispatch can play the role of the indicator of the demand. The level of the concentration of segment is determined through the four parts coefficient of concentration. The constancy of market share was estimated with the help of market share distribution of four chief producers in the corresponding market segment.

Let us calculate according to the initial data the matrix of distances on the Euclidean certificate and the correlation matrix. As the objects

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Table 1

Indexes for evaluating the stages of the life cycle of a series "Russian crime"

Indices	2001	2002	2003	2004	2005	2006	2007
Chain rate of increase in the dispatch (coefficient)	4,86	2,54	1,51	1,49	0,804	0,5	0,99
Chain rate of increase in the demand (coefficient)	1	1,54	1,47	1,18	0,75	0,57	1,18
the four parts - coefficient of concentration, %	80,5	84,6	91,1	92,6	92,2	93,3	94,0
Product line - number of publications in the year	11	29	49	64	79	53	23
Market share distribution among the 4 chief players of the market	22	23,4	25,5	27,9	29,9	30	31,4

we will examine are years, the results will be presented in tables 2 and 3, respectively.

Let's build an optimum dendrite, with the smallest sum of bond lengths, according to the data in table 3.

Table 2

The matrix of distances on a series "Russian crime"

	2001	2002	2003	2004	2005	2006	2007
2001	0,00	0,64	0,91	1,00	1,24	1,12	0,88
2002	0,64	0,00	0,35	0,57	0,92	0,85	0,48
2003	0,91	0,35	0,00	0,28	0,64	0,64	0,44
2004	1,00	0,57	0,28	0,00	0,37	0,47	0,54
2005	1,24	0,92	0,64	0,37	0,00	0,36	0,76
2006	1,12	0,85	0,64	0,47	0,36	0,00	0,56
2007	0,88	0,48	0,44	0,54	0,76	0,56	0,00

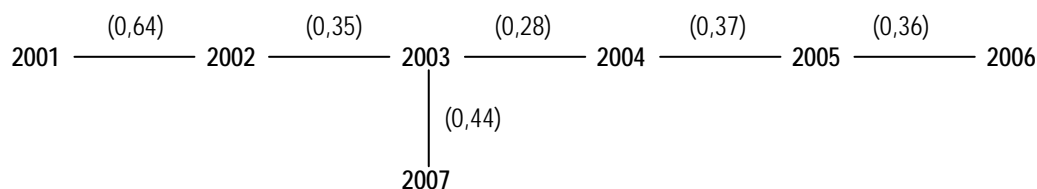
Table 3

The matrix of the correlations on a series "Russian crime"

	2001	2002	2003	2004	2005	2006	2007
2001	1,000	0,441	-0,103	-0,377	-0,549	-0,222	0,236
2002	0,441	1,000	0,799	0,427	-0,002	0,228	0,800
2003	-0,103	0,799	1,000	0,870	0,562	0,649	0,870
2004	-0,377	0,427	0,870	1,000	0,897	0,906	0,772
2005	-0,549	-0,002	0,562	0,897	1,000	0,933	0,512
2006	-0,222	0,228	0,649	0,906	0,933	1,000	0,738
2007	0,236	0,800	0,870	0,772	0,512	0,738	1,000

Let's carry out "natural" partition of the dendrite:

Thus $K = 4$, so if we move away 3 longest connections from the dendrite we will obtain



K	Bond length on the decrease	Relation of adjacent bond lengths	Note
1	0,64	-	
2	0,44	1,455	
3	0,37	1,189	
4	0,36	1,027	Minimum relation
5	0,35	1,029	
6	0,28	1,25	

Table 4

Basic components

Year	Component 1	Component 2
2001	-0,662	0,586
2002		0,966
2003	0,599	0,737
2004	0,906	0,416
2005	0,984	
2006	0,874	
2007	0,474	0,859
Own value	3,574	2,836
Part dispersion	0,511	0,405

Table 5

Basic factors

Year	Factor 1	Factor 2	Factor 3
2001			0,462
2002	-0,579	0,773	
2003	-0,918		
2004	-0,977		
2005	-0,814	-0,554	
2006	-0,896		
2007		0,413	

Table 6

The contribution of the dispersion of major factors in the general variation

	Own value	Dispersion, %	Accumulated own value	Accumulated dispersion, %
1	4,426	63,222	4,426	63,222
2	1,984	28,349	6,410	91,571
3	0,556	7,937	6,966	99,508
4	0,034	0,492	7,000	100,000

algorithms. Let's present the results of the analysis in Table 7.

As we see, on the one hand, different algorithms of a study give somewhat distinguished results, on the other hand the agreements are significant, at least "the nucleus of periods" catches all the methods. Analogous calculations were also carried out on other publishing series.

The following problem, which must be solved during the construction of the life cycle model is the determination of competitiveness.

In this specific case, this task does not look like a complex one for a very simple reason - the size of the enterprise, its market share and other parameters a priori do not allow to occupy two leading positions: the prevailing and the strong one.

For 2006 these positions for the series in question were determined by expert evaluation. We as a result have the following model of the life cycle of the strategic units of the publishing house in 2006, presented in Table 8.

Table 7

The estimation of the convergence of different algorithms in the separate stages of the life cycle of the "Russian crime" series

Period	Method of the dendrites	Method of the main components	Method of the major factors	Note, the reaction of method to "the exposure of the nucleus" of the period
Introduction	2001	2001	2001	+
Increase	2002, 2003, 2004	2002, 2003	2002	+(2002)
Maturity	2005, 2006	2004, 2005, 2006	2003, 2004, 2005, 2006	+(2005, 2006)
Decrease	2007	2007	2007	+

Table 8

The life cycles of the strategic units of publishing house in 2006

Stage of the life cycle	Name of the series				
Introduction	Culinary recipes				
Increase		Russian crime, the Stranger	Good mood		
Maturity		Formula of love			
Decrease					
	Weak	Noticeable	Durable	Strong	Prevailing
	Stage of the life cycle				

Conclusions:

1. In the grouped form the developments of separate series recommended as strategic units look as follows: "Culinary recipes", "Russian crime", "The Stranger" are in danger of being withdrawn from the market or of the failure of the market or the liquidation of business; "The formula of love" has a careful gradual development; "Good mood" has all the range of possible actions.

2. It goes without saying, investigating any question in the level of concrete enterprise, as for instance, the construction of the model of the life cycle of goods, the results you get by time are catastrophic in some sense. For example, the recommendation of a strategy "withdrawal from the market or the liquidation of business" affects concrete personnel of enterprise, and in the case with the publishing house it also concerns the authors (some authors can

lose the possibility of publishing their works), etc. However, these problems controlled, there are possibilities of changing the activity of the enterprise and its workers.

This example in its time "puzzled" us in another way. Studying the life cycle of goods based on the example of series of books of a separate publishing house, we focused the attention on the fact that sufficiently many "signals" appeared, signs of the stagnation of the all book branch of Russia (extremely high level of the concentration of all examined segments, decrease in the demand, high input and output barriers, etc).

¹ *Glinsky V.V., Ionin V.G.* Statistical analysis. M., 2002. - 241 p.

² *Gradov A.P.* Strategy of firm. Spb., 1995; *Thompson A.A., Strickland A.Dj.* Strategic management. Skill of development and realization of strategy. M., 1998.