

# APPLIED STUDY OF THE COMPETITIVE FUNCTION IN THE AUTOMOTIVE INDUSTRY

**Naghiu Mihai-Octavian**

*Technical University of Cluj-Napoca, Romania*

**Abstract.** The following paper features a scenario that presupposes the development of primary market research that focuses at first on qualitative research methods and follows afterwards with the utilization of quantitative research methods that are representative (this in order to be able to extrapolate the obtained results with a certain probability and error limit) on the studied market.

**Keywords:** competitiveness, decision making, market launch.

## INTRODUCTION

Given the fact that the data collected in the product development stage just isn't enough to predict what will happen when the new product hits the market, therefore marketing testing tries to mimic at a representative scale the product's behavior on a real market. One of the main threats when releasing a new product comes from the competitors that might monitor the test and its results, and replicate for example by lowering the prices of their own products in order to undermine the launch of the new product. Also, the situation can turn highly dangerous especially when there is no real possibility of protecting the product against copying, and as a result of this the competitors are easily able to copy the product in a relatively short term. In order to minimize these risks it is most necessary that the marketing testing takes place as quickly as possible and of course, based on it one must make the last corrections before launching the product on the market, that is if they estimate that the new product is going to be a success.

## COMPETITIVENESS FUNCTION

$$NCj_{(t)} = \prod_{i \in s1} \left( \frac{K_{ijc(t)}}{k_{ilc(t)}} \right)^{\gamma_{ic}} \cdot \prod_{i \in s2} \left( \frac{K_{ijm(t)}}{k_{ilm(t)}} \right)^{\gamma_{im}}$$

Where the significance of the involved measures are:

j – industrial product for long term use, for which the level of competitiveness is calculated NCj (with the hypothesis that a P group exists of industrial products “interchangeable” or that can be substituted, or products long term use form the same P class, etc., and j ∈ P);

K<sub>ijc(t)</sub> – the average grade given by potential customers for the specific characteristic “i”, of the new product “j”, corporal type of characteristic “c”, at the moment “t”, in the second scenario, when a representative survey type of marketing research is done;

l – the market leader product analyzed in group “P”, at the time t;

$K_{ijm}(t)$ – the average grade given by potential customers for the specific characteristic “i”, of the new product “j”, marketing type of characteristic “m”, at the moment “t”, in the second scenario, when a representative survey type of marketing research is done;

$S1'$  – subset of technical characteristics (efficiency, productivity, reliability,etc.);

$S2'$  – subset of marketing characteristics, non-corporal or intangible (for example the guaranty, the service, the facilities of purchase, the arrangements for payment, the image of the producer, the price, the brand, etc.);

$\gamma_{ic}'$ – elasticity or power to influence the global characteristic “i”, corporal type of characteristic “c”, on the level of the competitiveness of the new product, where  $\square_{ic}$  can be determine on the bases of the importance of the average given by the potential clients for the given characteristic, in the second scenario, when a representative survey type of marketing research is done;

$\gamma_{im}'$ – elasticity or power to influence the global characteristic “i”, marketing characteristic “m”, on the level of the competitiveness of the new product,  $\square_{im}$  where can be determine on the bases of the importance of the average given by the potential clients for the given characteristic, in the second scenario, when a representative survey type of marketing research is done;

t – time.

### APPLIED RESEARCH FOR A DURABLE GOOD - THE AUTOMOBILE

In the application of the proposed function we have used the feedback of the potential customers, regarding the importance of the criteria or attributes, considered as elasticity’s and average grades given to the characteristics, in the place of their value, in subset  $S_1$ , because it is god that the grades are as high as possible. So subset  $S_2$  doesn’t exist. In addition, the image is integrated as a non-corporal characteristic.

The survey was done on a swatch of 150 subjects, all adults, from Cluj-Napoca, selected by a nonrandom method, unequal rates, after gender, age and car owned.

At the question regarding the intention of buying, in the next 2 years, a Dacia Duster automobile, the answers of the investigated subjects whereas follows in the table 1.

Table 1

Probability of buying a Dacia Duster automobile in the next 2 years at the level of the investigated swatch

1 Certainly not	2 Probably not	3 I don't know	4 Probably yes	5 Certainly yes
64	48	36	2	0
42,67%	32%	24%	1,33%	0

At the question “ In your opinion which are the most important criteria in deciding to buy a SUV car? “ points from 0 to 10 where given, where 0 is the less important criteria, and so on, and 10 in considered the one that is most important. The answers are as follows:

Table 2

Importance of different marketing and technical criteria, in the decision to buy a SUV

	0	1	2	3	4	5	6	7	8	9	10	Total	Share or importance of the criteria
Guaranty	17	3	3	10	9	11	5	10	20	26	16	130	0,057
Service	15	1	5	8	6	10	3	16	25	4	37	130	0,0614
Facilities given at porches (price reduction, possibility on renewing the car models)	19	2	0	1	5	5	9	33	25	27	4	130	0,0594
Way of payment (zero advance, no interest or low interest etc.,)	21	3	0	1	2	17	1	35	27	12	11	130	0,057
Producers image	12	2	7	1	5	12	14	13	26	19	19	130	0,0612
Price	9	9	3	0	2	2	0	12	21	27	45	130	0,071
Auto brand	6	6	3	0	0	6	11	31	30	15	22	130	0,0669
Safety	3	0	3	3	0	6	6	13	15	12	69	130	0,0792
Motoring (diesel/petrol)	6	3	3	9	1	7	2	15	21	21	42	130	0,0704
Traction system	12	1	2	0	5	7	5	18	23	22	35	130	0,0688
Consumption	8	5	2	5	0	15	12	9	3	27	44	130	0,0683
Satisfaction (pleasure) of driving	9	0	0	3	1	9	10	13	18	25	42	130	0,0725
Design	15	6	0	0	1	15	3	9	36	17	28	130	0,0644
Engine power	9	0	1	0	3	7	16	10	36	25	23	130	0,0696
Comfort	11	0	0	0	3	3	0	23	24	36	30	130	0,0729
	Total												1

For each criteria that were appreciated as being important in the decision of buy a SUV, subjects were asked to grade each criteria, in the case of the mentioned car marks. The scale is from 1 to 10, 1 being the lowest and 10 the highest. The subjects were asked to grade the mentioned car marks only if they know the situation of the car mark in question.

Table 3

The appreciation in the case of Dacia Duster, for the criteria reevaluated by the subjects, in the decision to buy a SUV

Dacia Duster	1	2	3	4	5	6	7	8	9	10	Total	Score
Guaranty	8	16	5	8	8	24	8	8	8	0	93	4,978495
Service	0	2	5	2	6	5	16	54	3	0	93	7,075269
Facilities given at porches (price reduction, possibility on renewing the car models)	9	2	1	7	2	8	18	19	9	18	93	6,892473
Way of payment (zero advance, no interest or low interest etc.,)	18	2	3	5	0	35	8	1	9	12	93	5,655914
Producers image	0	9	27	10	2	25	9	1	10	0	93	4,946237
Price	9	0	10	2	3	5	6	1	9	48	93	7,55914
Auto brand	18	0	18	2	1	25	21	2	2	4	93	4,903226
Safety	9	21	2	1	5	25	29	0	0	1	93	4,827957
Motoring (diesel/petrol)	18	1	5	1	10	10	17	11	13	7	93	5,83871
Traction system	11	1	5	5	2	15	16	9	9	20	93	6,591398
Consumption	18	1	2	1	0	25	29	1	10	6	93	5,817204
Satisfaction (pleasure) of driving	1	1	11	12	2	5	31	2	13	15	93	6,709677
Design	9	9	11	0	1	12	26	16	9	0	93	5,677419
Engine power	17	2	1	5	5	31	19	10	2	1	93	5,333333
Comfort	20	0	2	0	8	19	19	21	1	3	93	5,591398
Total												5,892543

By applying the new proposed function the level of competitiveness obtained was:

$NC=0,95$

Because it is closed to 1, which is the value of the leader, there are favorable premises, only at the studied level, from the local market, for the product Dacia Duster to be a success.

Table 4

Appreciation, in the case of the market leader Hyundai ix35, for the criteria reevaluated by the subjects, in the decision to buy a SUV

Hyundai ix35	1	2	3	4	5	6	7	8	9	10	Total	Average Score
Guaranty	0	1	9	7	2	29	29	9	6	1	93	6,236559
Service	0	1	10	1	1	9	53	7	8	3	93	6,709677
Facilities given at porches (price reduction, possibility on renewing the car models)	9	1	2	1	8	10	36	9	9	8	93	6,516129
Way of payment (zero advance, no interest or low interest etc.,)	25	1	2	9	10	12	25	1	8	0	93	4,795699
Producers image	0	1	10	8	13	10	44	6	1	0	93	5,956989
Price	11	2	18	1	1	12	18	27	0	3	93	5,612903
Auto brand	10	1	5	4	10	9	29	18	2	5	93	6,043011
Safety	21	1	3	0	2	3	18	18	9	18	93	6,354839
Motoring (diesel/petrol)	21	3	1	0	5	0	37	19	6	1	93	5,698925
Traction system	18	2	1	9	0	10	9	27	1	16	93	6,11828
Consumption	18	1	0	3	9	11	25	26	0	0	93	5,655914
Satisfaction (pleasure) of driving	0	1	10	19	1	0	54	1	0	7	93	6,11828
Design	11	1	0	2	0	15	33	10	19	2	93	6,591398
Engine power	16	5	0	0	10	0	19	29	9	5	93	6,150538
Comfort	0	0	0	1	19	20	10	18	8	17	93	7,258065
Total												6,132228

## CONCLUSIONS

Depending on the score registered for the competitiveness level of the new product, the company is able to take the corresponding decision whether this is: releasing the new product on the market, delaying the release, improving those product characteristics that are problematic or even dropping the idea of releasing the product (temporally or permanently). Of course, the proposed function needs to be experimented with, so that it can be scientifically validated.