Annals of "Dunarea de Jos" University of Galati
Fascicle I. Economics and Applied Informatics
Years XXV – n°3/2019
ISSN-L 1584-0409 ISSN-Online 2344-441X
www.eia.feaa.ugal.ro

DOI https://doi.org/10.35219/eai1584040972

The McDonald's Corporation, a „Star" in the „Galaxy of the Businesses"

Gabriela OPAIT*

A R T I C L E I N F O

Article history:
Accepted December 2019
Available online December 2019
JEL Classification
C1, C12, C2

Keywords:
Healthy life-style, Adaptation, Standardization

A B S T R A C T

McDonald's represents the biggest company in the realm of chain restaurants, as a result of the revenues. McDonald's Bar-B-Q was started in 1940, by Richard and Maurice McDonald's, in San Bernardino, California, the United States of America. After fifteen years, Ray Kroc achieves the establishment of the McDonald's Corporation, who traded at the brothers McDonald's them rights. Today, the McDonald's Corporation has the seat in Chicago, Illinois, the United States of America.

1. Introduction

McDonald's is a highly prized company since her profile appears as the greatest worldwide chain of restaurant in fast-food. The McDonald's Company has an enormous worldwide success as a result of the strategic management applied through two vectors: standardization and adaptation. On the one side, in each country the diners find similar products, on the other side, the customers discover products adaptated on the cultures and trends of all the countries. Also, for a healthy life-style, the McDonald's Company introduced healthy drinks (smoothies, milkshakes), vegetable salads and fruit salads. In this original processing, we have as target the „sketch" of the powerful ascension whom the McDonald's Company highlighted in the spell of time 2005-2018. The start-up unveils the procedure whereby we can make prediction concerning the number of McDonald's restaurants in 2019. In the second area of this article, we „explore in the visual field" the proceeding of the achievement regarding the route pursued by the values which display the McDonald's worldwide revenues, in the spell of time 2005-2018. The third area is focused on the estimation concerning the McDonald's American Customer Index, in the horizon of time 2019-2030. For to fulfil the objective of this statistical processing, we view as spent method the predictions through the „Least Squares Method". Johann Carl Friedrich Gauss materialized, in 1823, the „Least Squares Method" which „shines" as the „accelerator" through we can „touch" the values which unveil to the equations's parameters.

2. The statistical processing whereby it estimates the number of McDonald's worldwide restaurants in 2019

Table 1. The series which unveils the number of McDonald's worldwide restaurants and the McDonald's worlwide revenues, in the spell of time 2005-2018

YEARS	NUMBER OF MCDONALD'S WORLDWIDE RESTAURANTS (ξ_i)	MCDONALD'S CORPORATION WORLDWIDE REVENUE (billions $) ($\lambda_i$)
2005	30766	19,12
2006	31046	20,90
2007	31377	22,79
2008	31967	23,52
2009	32478	22,75
2010	32737	24,08
2011	33510	27,01
2012	34480	27,57
2013	35429	28,11
2014	36258	27,44
2015	36525	25,41
2016	36899	24,62

*Dunarea de Jos University of Galati, Romania. E-mail address: gabriela.opait@ugal.ro (G. Opait – Corresponding author)

YEARS	NUMBER OF MCDONALD'S WORLDWIDE RESTAURANTS (ξ_i)	MCDONALD'S CORPORATION WORLDWIDE REVENUE (billions $) (λ_i)
2017	**37241**	**22,82**
2018	**37855**	**21,03**

Source: „Statista Portal the United States of America"

Table 2.The string of numbers concerning the McDonald's American Customer Satisfaction Index, in the spell of time 2006-2018

YEARS	MCDONALD'S AMERICAN CUSTOMER SATISFACTION INDEX (%) (γ_i)
2006	**63**
2007	**64**
2008	**69**
2009	**70**
2010	**67**
2011	**72**
2012	**73**
2013	**73**
2014	**71**
2015	**67**
2016	**69**
2017	**69**
2018	**69**

Source: „Statista Portal the United States of America"

- if the technique of the processing for the ξ variable, where ξ = **the number of McDonald's worldwide restaurants,** „stylizes" a linear route $\xi_{t_i} = a + b \cdot t_i$, *a* and *b* will be [2]:

$$a = \frac{\begin{vmatrix} \sum_{i=1}^{n}\xi_i & \sum_{i=1}^{n}t_i \\ \sum_{i=1}^{n}\xi_i t_i & \sum_{i=1}^{n}t_i^{\,2} \end{vmatrix}}{\begin{vmatrix} n & \sum_{i=1}^{n}t_i \\ \sum_{i=1}^{n}t_i & \sum_{i=1}^{n}t_i^{2} \end{vmatrix}} = \frac{\sum_{i=1}^{n}\xi_i \sum_{i=1}^{n}t_i^{2} - \sum_{i=1}^{n}\xi_i t_i \sum_{i=1}^{n}t_i}{n\sum_{i=1}^{n}t_i^{2} - \left(\sum_{i=1}^{n}t_i\right)^2} \qquad b = \frac{\begin{vmatrix} n & \sum_{i=1}^{n}x_i \\ \sum_{i=1}^{n}t_i & \sum_{i=1}^{n}\xi_i t_i \end{vmatrix}}{\begin{vmatrix} n & \sum_{i=1}^{n}t_i \\ \sum_{i=1}^{n}t_i & \sum_{i=1}^{n}t_i^{\,2} \end{vmatrix}} = \frac{n\sum_{i=1}^{n}\xi_i t_i - \sum_{i=1}^{n}t_i \sum_{i=1}^{n}\xi_i}{n\sum_{i=1}^{n}t_i^{2} - \left(\sum_{i=1}^{n}t_i\right)^2}$$

Table 3. The „galaxy" of the McDonald's worldwide restaurants if these indicate a linear route

YEARS	NUMBER OF MCDONALD'S WORLDWIDE RESTAURANTS (ξ_i)	LINEAR TENDENCY				
		t_i	t_i^2	$t_i\xi_i$	$\xi_{t_i} = a + bt_i$	$\lvert\xi_i - \xi_{t_i}\rvert$
2005	**30766**	-7	49	-215362	30425,20357	3341
2006	**31046**	-6	36	-186276	30962,09286	84
2007	**31377**	-5	25	-156885	31498,98214	122
2008	**31967**	-4	16	-127868	32035,87143	69
2009	**32478**	-3	9	-97434	32572,76071	95
2010	**32737**	-2	4	-65474	33109,65000	373
2011	**33510**	-1	1	-33510	33646,53928	137
2012	**34480**	+1	1	+34480	34720,31786	240
2013	**35429**	+2	4	+70858	35257,20714	172
2014	**36258**	+3	9	+108774	35794,09643	464
2015	**36525**	+4	16	+146100	36330,98571	194
2016	**36899**	+5	25	+184495	36867,87500	31
2017	**37241**	+6	36	+223446	37404,76428	164
2018	**37855**	+7	49	+264985	37941,65357	87
TOTAL	**478568**		280	150329	478568	5573

$$a = \frac{478568 \cdot 280 - 150329 \cdot 0}{14 \cdot 280 - 0^2} = 34183{,}42857$$

$$b = \frac{14 \cdot 150329 - 0 \cdot 478568}{14 \cdot 280 - 0^2} = 536{,}8892857$$

$$v_I = \left[\frac{\sum_{i=1}^{m} \left| \xi_i - \xi_{t_i}^I \right|}{n} : \frac{\sum_{i=1}^{m} \xi_i}{n} \right] \cdot 100 = \frac{\sum_{i=1}^{m} \left| \xi_i - \xi_{t_i}^I \right|}{\sum_{i=1}^{m} \xi_i} \cdot 100 = \frac{5573}{478568} \cdot 100 = 1{,}16\%$$

- if the technique of the processing for ξ variable, where ξ = **the number of McDonald's worldwide restaurants,** „stylizes" a parabolic route $\xi_{t_i} = a + b \cdot t_i + ct_i^2$, *a* and *b* will be [2]:

$$a = \frac{\sum_{i=1}^{n} t_i^4 \sum_{i=1}^{n} \xi_i - \sum_{i=1}^{n} t_i^2 \sum_{i=1}^{n} t_i^2 \cdot \xi_i}{n \sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2 \right)^2} \quad ; \quad b = \frac{\sum_{i=1}^{n} \xi_i t_i}{\sum_{i=1}^{n} t_i^2} \quad ; \quad c = \frac{n \cdot \sum_{i=1}^{n} t_i^2 \cdot \xi_i - \sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} \xi_i}{n \sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2 \right)^2}$$

Table 4. The „galaxy" of the McDonald's worldwide restaurants if these indicate a quadratic route

YEARS	NUMBER OF MCDONALD'S WORLDWIDE RESTAURANTS (ξ_i)	PARABOLIC TENDENCY						
		t_i	t_i^2	t_i^3	t_i^4	$t_i^2 \xi_i$	$\xi_{t_i} = a + b\xi_i + c\xi_i^2$	$\left\| \xi_i - \xi_{t_i} \right\|$
2005	**30766**	-7	49	-343	2401	1507534	30513,71077	252
2006	**31046**	-6	36	-216	1296	1117656	31010,92442	35
2007	**31377**	-5	25	-125	625	784425	31514,24201	137
2008	**31967**	-4	16	-64	256	511472	32023,66354	57
2009	**32478**	-3	9	-27	81	292302	32539,18902	61
2010	**32737**	-2	4	-8	16	130948	33060,81505	324
2011	**33510**	-1	1	-1	1	33510	33588,55122	79
2012	**34480**	+1	1	+1	1	34480	34662,33039	182
2013	**35429**	+2	4	+8	16	141716	35208,37559	221
2014	**36258**	+3	9	+27	81	326322	35760,52474	497
2015	**36525**	+4	16	+64	256	584400	36318,77783	206
2016	**36899**	+5	25	+125	625	922475	36883,13487	16
2017	**37241**	+6	36	+216	1296	1340676	37453,59585	213
2018	**37855**	+7	49	+343	2401	1854895	38030,16077	175
TOTAL	**478568**		280		9352	9582811	478568	2455

$$a = \frac{\sum_{i=1}^{n} t_i^4 \sum_{i=1}^{n} \xi_i - \sum_{i=1}^{n} t_i^2 \sum_{i=1}^{n} t_i^2 \cdot \xi_i}{n \sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2 \right)^2} = \frac{9352 \cdot 478568 - 280 \cdot 9582811}{14 \cdot 9352 - 280^2} = 34122{,}38913$$

$$b = \frac{\sum_{i=1}^{n} \xi_i t_i}{\sum_{i=1}^{n} t_i^2} = \frac{150329}{280} = 536{,}8892857$$

$$c = \frac{n \cdot \sum_{i=1}^{n} t_i^2 \cdot \xi_i - \sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} \xi_i}{n \sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2 \right)^2} = \frac{14 \cdot 9582811 - 280 \cdot 478568}{14 \cdot 9352 - 280^2} = 3{,}051972281$$

$$v_{II} = \left[\frac{\sum_{i=1}^{m} \left| \xi_i - \xi_{t_i}^{II} \right|}{n} : \frac{\sum_{i=1}^{m} \xi_i}{n} \right] \cdot 100 = \frac{\sum_{i=1}^{m} \left| \xi_i - \xi_{t_i}^{II} \right|}{\sum_{i=1}^{m} \xi_i} \cdot 100 = \frac{2455}{478568} \cdot 100 = 0{,}512988\%$$

- if the technique of the processing for ξ variable, where ξ = **the number of McDonald's worldwide restaurants,** „stylizes" a parabolic route of three degree $\xi_{t_i} = a + b \cdot t_i + ct_i^2 + dt_i^3$, *a, b, c* and *d* will be [2]:

Table 5. The „galaxy" of the McDonald's worldwide restaurants if these indicate a quadratic route of three degree

YEARS	NUMBER OF MCDONALD'S WORLDWIDE RESTAURANTS (ξ_i)	PARABOLIC TENDENCY OF THREE DEGREE							
		t_i	t_i^2	t_i^3	t_i^4	t_i^6	$t_i^3\xi_i$	$\xi_{t_i} = a + b\cdot t_i + ct_i^2 + dt_i^3$	$\lvert\xi_i - \xi_{t_i}\rvert$
2005	**30766**	-7	49	-343	2401	117649	-10552738	30789.77156	24
2006	**31046**	-6	36	-216	1296	46656	-6705936	31050,36167	4
2007	**31377**	-5	25	-125	625	15625	-3922125	31408,06478	31
2008	**31967**	-4	16	-64	256	4096	-2045888	31847,71271	119
2009	**32478**	-3	9	-27	81	729	-876906	32354,13729	124
2010	**32737**	-2	4	-8	16	64	-261896	32912,17033	175
2011	**33510**	-1	1	-1	1	1	-33510	33506,64367	3
2012	**34480**	+1	1	+1	1	1	+34480	34744,23853	264
2013	**35429**	+2	4	+8	16	64	+283432	35357,02371	72
2014	**36258**	+3	9	+27	81	729	_978966	35945,57647	312
2015	**36525**	+4	16	+64	256	4096	+2337600	36494,72866	30
2016	**36899**	+5	25	+125	625	15625	+4612375	36989,31209	90
2017	**37241**	+6	36	+216	1296	46656	+8044056	37414,15859	173
2018	**37855**	+7	49	+343	2401	117649	+12984265	37754,09999	101
TOTAL	**478568**		280		9352	369640	4876175	478568	1522

$$a = \frac{\sum_{i=1}^{n} t_i^4 \sum_{i=1}^{n} \xi_i - \sum_{i=1}^{n} t_i^2 \sum_{i=1}^{n} t_i^2 \cdot \xi_i}{n\sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2\right)^2} = \frac{9352\cdot 478568 - 280\cdot 9582811}{14\cdot 9352 - 280^2} = 34122{,}38913$$

$$b = \frac{\sum_{i=1}^{n} t_i^6 \cdot \sum_{i=1}^{n} t_i \cdot \xi_i - \sum_{i=1}^{n} t_i^4 \cdot \sum_{i=1}^{n} t_i^3 \cdot \xi_i}{\sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} t_i^6 - \left(\sum_{i=1}^{n} t_i^4\right)^2} = \frac{369640\cdot 150329 - 9352\cdot 4876175}{280\cdot 369640 - 9352^2} = 621{,}3254597$$

$$c = \frac{n\cdot \sum_{i=1}^{n} t_i^2 \cdot \xi_i - \sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} \xi_i}{n\sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2\right)^2} = \frac{14\cdot 9582811 - 280\cdot 478568}{14\cdot 9352 - 280^2} = 3{,}051972281$$

$$d = \frac{\sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} t_i^3 \cdot \xi_i - \sum_{i=1}^{n} t_i^4 \cdot \sum_{i=1}^{n} t_i \cdot \xi_i}{\sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} t_i^6 - \left(\sum_{i=1}^{n} t_i^4\right)^2} = \frac{280\cdot 4876175 - 9352\cdot 150329}{280\cdot 369640 - 9352^2} = -2{,}52802916$$

$$v_{III} = \left[\frac{\sum_{i=1}^{m} \left|\xi_i - \xi_{t_i}^{III}\right|}{n} : \frac{\sum_{i=1}^{m} \xi_i}{n}\right]\cdot 100 = \frac{\sum_{i=1}^{m} \left|\xi_i - \xi_{t_i}^{III}\right|}{\sum_{i=1}^{m} \xi_i}\cdot 100 = \frac{1522}{478568}\cdot 100 = 0{,}318032129\%$$

- if the technique of the processing for ξ variable, where ξ **= the number of McDonald's worldwide restaurants,** „stylizes" an exponential route $\xi_{t_i} = ab^{t_i}$, *a* and *b* will be [2]:

$$\lg a = \frac{\begin{vmatrix} \sum_{i=1}^{n} \lg \xi_i & \sum_{i=1}^{n} t_i \\ \sum_{i=1}^{n} t_i \lg \xi_i & \sum_{i=1}^{n} t_i^2 \end{vmatrix}}{\begin{vmatrix} n & \sum_{i=1}^{n} t_i \\ \sum_{i=1}^{n} t_i & \sum_{i=1}^{n} t_i^2 \end{vmatrix}} = \frac{\sum_{i=1}^{n} \lg \xi_i \sum_{i=1}^{n} t_i^2 - \sum_{i=1}^{n} t_i \lg \xi_i \sum_{i=1}^{n} t_i}{n\sum_{i=1}^{n} t_i^2 - \left(\sum_{i=1}^{n} t_i\right)^2} \qquad \lg b = \frac{\begin{vmatrix} n & \sum_{i=1}^{n} \lg \xi_i \\ \sum_{i=1}^{n} t_i & \sum_{i=1}^{n} t_i \lg \xi_i \end{vmatrix}}{\begin{vmatrix} n & \sum_{i=1}^{n} t_i \\ \sum_{i=1}^{n} t_i & \sum_{i=1}^{n} t_i^2 \end{vmatrix}} = \frac{n\cdot \sum_{i=1}^{n} t_i \lg \xi_i - \sum_{i=1}^{n} \lg \xi_i \sum_{i=1}^{n} t_i}{n\sum_{i=1}^{n} t_i^2 - \left(\sum_{i=1}^{n} t_i\right)^2}$$

Table 6. The „galaxy” of the McDonald’s worldwide restaurants if these indicate an exponential route

YEARS	NUMBER OF MCDONALD’S WORLDWIDE RESTAURANTS (ξ_i)	EXPONENTIAL TENDENCY				
		$\lg \xi_i$	$t_i \lg \xi_i$	$\lg \xi_{t_i} = \lg a + t_i \lg b$	$\xi_{t_i} = ab^{t_i}$	$\lvert \xi_i - \xi_{t_i} \rvert$
2005	**30766**	4,488071036	-31,41649725	4,48492108	30543,66023	222
2006	**31046**	4,429005653	-26,95203392	4,491751456	31027,83377	18
2007	**31377**	4,496611418	-22,48305709	4,498581832	31519,68234	143
2008	**31967**	4,504701881	-18,01880752	4,505412208	32019,32763	52
2009	**32478**	4,511589277	-13,53476783	4,512242584	32526,89322	49
2010	**32737**	4,515038878	-9,930077757	4,519072960	33042,50467	306
2011	**33510**	4,525174428	-4,525174428	4,525903336	33566,28951	56
2012	**34480**	4,537567257	+4,537567257	4,539564088	34638,89968	159
2013	**35429**	4,549358894	+9,098717789	4,546394464	35187,99033	241
2014	**36258**	4,559403845	+13,67821153	4,553224840	35745,78509	512
2015	**36525**	4,562590225	+18,25036090	4,560055216	36312,42193	213
2016	**36899**	4,567014597	+22,83507298	4,566885592	36888,04101	11
2017	**37241**	4,571021334	+27,42612801	4,573715968	37472,78471	232
2018	**37855**	4,578123251	+32,04686275	4,580546344	38066,79769	212
TOTAL	**478568**	63,45827197	1,912505425			2426

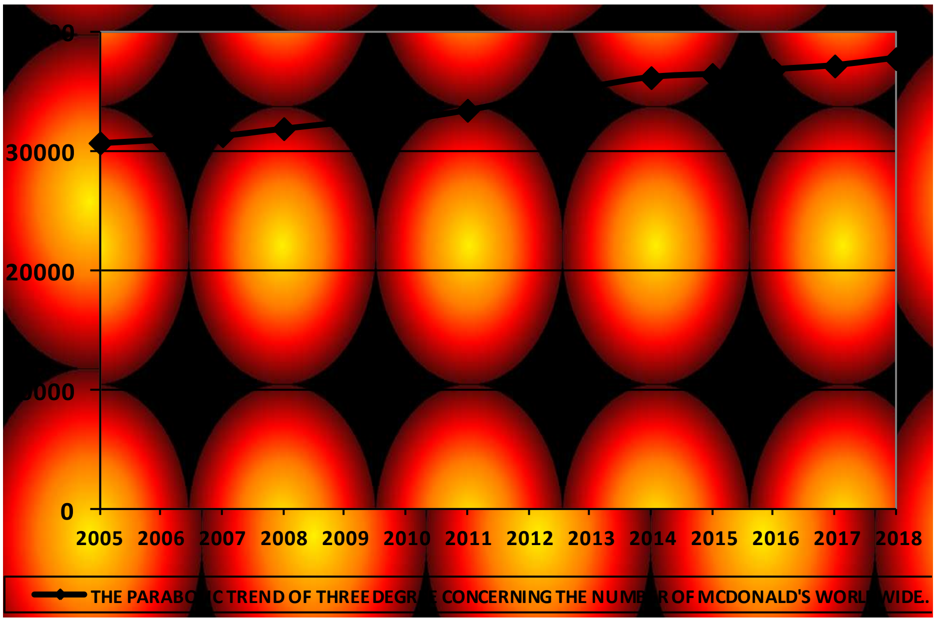
$$\lg a = \frac{63{,}45827197\cdot 280 - 1{,}912505425\cdot 0}{14\cdot 280 - 0^2} = 4{,}532733712$$

$$\lg b = \frac{14\cdot 1{,}912505425 - 63{,}45827197\cdot 0}{14\cdot 280 - 0^2} = 0{,}006830376$$

$$v_{\exp} = \left[\frac{\sum_{i=1}^{n} \left| \xi_i - \xi_{t_i}^{\exp} \right|}{n} : \frac{\sum_{i=1}^{n} \xi_i}{n} \right] \cdot 100 = \frac{\sum_{i=1}^{n} \left| \xi_i - \xi_{t_i}^{\exp} \right|}{\sum_{i=1}^{n} \xi_i} \cdot 100 = \frac{2426}{478568} \cdot 100 = 0{,}506929\%$$

$$v_{III} = 0{,}318032129\% < v_{\exp} = 0{,}506929\% < v_{II} = 0{,}512988\% < v_I = 1{,}16\%$$

The „mix” of the processing, which has as target **the number of McDonald’s worldwide restaurants**, pursues a quadratic route of three degree $\xi_{t_i} = a + b\cdot t_i + ct_i^2 + dt_i^3$



Graph 1. The quadratic route of three degree for the packet unveiled by the values which indicate the number of McDonald’s worldwide restaurants, in the spell of time 2005-2018

$$\xi_{2019}^{McDonald's\_worldwide\_restaurants} = 34122{,}38913 + 621{,}3254597\cdot 8 + 3{,}051972281\cdot 8^2 + (-2{,}52802916)\cdot 8^3 = 37993{,}9681 \cong 37994$$

3. The architecture of the processing focused on the mix from the panel of data reflected by the values of the McDonald's worldwide revenues, where the target is the selection of the trend

- if the technique of the processing for λ variable, where λ = **the McDonald's worldwide revenues**, „stylizes" a linear route $\lambda_{t_i} = a + b \cdot t_i$, *a* and *b* will be [2]:

Table 7. The string of numbers concerning the McDonald's worldwide revenues, if this „galaxy" specifies a linear route

YEARS	MCDONALD'S CORPORATION WORLDWIDE REVENUES (billions \$) (λ_i)	LINEAR TENDENCY				
		t_i	t_i^2	$t_i\lambda_i$	$\lambda_{t_i} = a + bt_i$	$\lvert\lambda_i - \lambda_{t_i}\rvert$
2005	19,12	-7	49	-133,84	22,47632144	3,36
2006	20,90	-6	36	-125,40	22,70592858	1,81
2007	22,79	-5	25	-113,95	22,93553572	0,15
2008	23,52	-4	16	-94,08	23,16514286	0,35
2009	22,75	-3	9	-68,25	23,39475000	0,64
2010	24,08	-2	4	-48,16	23,62435715	0,46
2011	27,01	-1	1	-27.01	23,85396429	3,16
2012	27,57	+1	1	+27,57	24,31317857	3,26
2013	28,11	+2	4	+56,22	24,54278571	3,57
2014	27,44	+3	9	+82,32	24,77239286	2,67
2015	25,41	+4	16	+101,64	25,00200000	0,41
2016	24,62	+5	25	+123,10	25,23160714	0,61
2017	22,82	+6	36	+136,92	25,46121428	2,64
2018	21,03	+7	49	+147,21	25,69082142	4,66
TOTAL	337,17		280	64,29	337,17	27,75

$$a = \frac{337{,}17 \cdot 280 - 64{,}29 \cdot 0}{14 \cdot 280 - 0^2} = 24{,}08357143$$

$$b = \frac{14 \cdot 64{,}29 - 0 \cdot 337{,}17}{14 \cdot 280 - 0^2} = 0{,}229607142$$

$$v_I = \left[\frac{\sum_{i=1}^{m} \left| \lambda_i - \lambda_{t_i}^I \right|}{n} : \frac{\sum_{i=1}^{m} \lambda_i}{n} \right] \cdot 100 = \frac{\sum_{i=1}^{m} \left| \lambda_i - \lambda_{t_i}^I \right|}{\sum_{i=1}^{m} \xi_i} \cdot 100 = \frac{27{,}75}{337{,}17} \cdot 100 = 8{,}23\%$$

- if the technique of the processing for λ variable, where λ = **the McDonald's worldwide revenues**, „stylizes" a parabolic route $\lambda_{t_i} = a + b \cdot t_i + ct_i^2$, *a* and *b* will be [2]:

Table 8. The string of numbers regarding the McDonald's worldwide revenues, if this „galaxy" specifies a quadratic route

YEARS	MCDONALD'S CORPORATION WORLDWIDE REVENUES (billions \$) (λ_i)	PARABOLIC TENDENCY						
		t_i	t_i^2	t_i^3	t_i^4	$t_i^2\lambda_i$	$\lambda_{t_i} = a + bt_i + ct_i^2$	$\lvert\lambda_i - \lambda_{t_i}\rvert$
2005	19,12	-7	49	-343	2401	936,88	18,46524738	0,65
2006	20,90	-6	36	-216	1296	752,40	20,49292220	0,41
2007	22,79	-5	25	-125	625	569,75	22,24397124	0,55
2008	23,52	-4	16	-64	256	376,32	23,71839447	0,20
2009	22,75	-3	9	-27	81	204,75	24,91619190	2,17
2010	24,08	-2	4	-8	16	96,32	25,83736354	1,76
2011	27,01	-1	1	-1	1	27,01	26,48190938	0,53
2012	27,57	+1	1	+1	1	27,57	26,94112366	0,63
2013	28,11	+2	4	+8	16	112,44	26,75579211	1,35
2014	27,44	+3	9	+27	81	246,96	26,29383476	1,15
2015	25,41	+4	16	+64	256	406,56	25,55525160	0,15
2016	24,62	+5	25	+125	625	615,50	24,54004266	0,08
2017	22,82	+6	36	+216	1296	821,52	23,24820791	0,43

YEARS	MCDONALD'S CORPORATION WORLDWIDE REVENUES (billions $) (λ_i)	PARABOLIC TENDENCY						
		t_i	t_i^2	t_i^3	t_i^4	$t_i^2\lambda_i$	$\lambda_{t_i} = a + bt_i + ct_i^2$	$\lvert\lambda_i - \lambda_{t_i}\rvert$
2018	**21,03**	+7	49	+343	2401	1030,47	21,67974736	0,65
TOTAL	**337,17**		280		9352	6224,45	337,17	10,71

$$a = \frac{\sum_{i=1}^{n} t_i^4 \sum_{i=1}^{n} \lambda_i - \sum_{i=1}^{n} t_i^2 \sum_{i=1}^{n} t_i^2 \cdot \lambda_i}{n\sum_{i=1}^{n} t_i^{\,4} - \left(\sum_{i=1}^{n} t_i^2\right)^2} = \frac{9352 \cdot 337{,}17 - 280 \cdot 6224{,}45}{14 \cdot 9352 - 280^2} = 26{,}84982942$$

$$b = \frac{\sum_{i=1}^{n} \lambda_i t_i}{\sum_{i=1}^{n} t_i^{\,2}} = \frac{64{,}29}{280} = 0{,}229607142$$

$$c = \frac{n \cdot \sum_{i=1}^{n} t_i^2 \cdot \lambda_i - \sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} \lambda_i}{n\sum_{i=1}^{n} t_i^{\,4} - \left(\sum_{i=1}^{n} t_i^2\right)^2} = \frac{14 \cdot 6224{,}45 - 280 \cdot 337{,}17}{14 \cdot 9352 - 280^2} = -0{,}138312899$$

$$v_{II} = \left[\frac{\sum_{i=1}^{m} \left|\lambda_i - \lambda_{t_i}^{II}\right|}{n} : \frac{\sum_{i=1}^{m} \lambda_i}{n}\right] \cdot 100 = \frac{\sum_{i=1}^{m} \left|\lambda_i - \lambda_{t_i}^{II}\right|}{\sum_{i=1}^{m} \xi_i} \cdot 100 = \frac{10{,}71}{337{,}17} \cdot 100 = 3{,}18\%$$

- if the technique of the processing for λ variable, where ξ **= the McDonald's worldwide revenues,** „stylizes" a parabolic route of three degree $\lambda_{t_i} = a + b \cdot t_i + ct_i^2 + dt_i^3$, *a, b, c* and *d* will be [2]:

Table 9. The string of numbers concerning the McDonald's worldwide revenues, if this „galaxy" specifies a quadratic route of three degree

YEARS	MCDONALD'S CORPORATION WORLDWIDE REVENUES (billions $) (λ_i)	PARABOLIC TENDENCY OF THREE DEGREE							
		t_i	t_i^2	t_i^3	t_i^4	t_i^6	$t_i^3\lambda_i$	$\lambda_{t_i} = a + b \cdot t_i + ct_i^2 + dt_i^3$	$\lvert\lambda_i - \lambda_{t_i}\rvert$
2005	**19,12**	-7	49	-343	2401	117649	-6558,16	19,54860015	0,43
2006	**20,90**	-6	36	-216	1296	46656	-4514,40	20,74768680	0,25
2007	**22,79**	-5	25	-125	625	15625	-2848,75	21,82729697	0,96
2008	**23,52**	-4	16	-64	256	4096	-1505,28	23,02790575	0,49
2009	**22,75**	-3	9	-27	81	729	-614,25	24,18998827	1,44
2010	**24,08**	-2	4	-8	16	64	-192,64	25,25401964	1,17
2011	**27,01**	-1	1	-1	1	1	-27,01	26,16047499	0,85
2012	**27,57**	+1	1	+1	1	1	+27,57	27,26255805	0,31
2013	**28,11**	+2	4	+8	16	64	+224,88	27,33913600	0,77
2014	**27,44**	+3	9	+27	81	729	+740,88	27,02003839	0,42
2015	**25,41**	+4	16	+64	256	4096	+1626,24	26,24574032	0,84
2016	**24,62**	+5	25	+125	625	15625	+3077,50	24,95671693	0,34
2017	**22,82**	+6	36	+216	1296	46656	+4929,12	25,85970129	3,04
2018	**21,03**	+7	49	+343	2401	117649	+7213,29	20,59639458	0,43
TOTAL	**337,17**		280		9352	369640	1578,99		11,74

$$a = \frac{\sum_{i=1}^{n} t_i^4 \sum_{i=1}^{n} \lambda_i - \sum_{i=1}^{n} t_i^2 \sum_{i=1}^{n} t_i^2 \cdot \lambda_i}{n\sum_{i=1}^{n} t_i^{\,4} - \left(\sum_{i=1}^{n} t_i^2\right)^2} = \frac{9352 \cdot 337{,}17 - 280 \cdot 6224{,}45}{14 \cdot 9352 - 280^2} = 26{,}84982942$$

$$b=\frac{\sum_{i=1}^{n}t_i^6\cdot\sum_{i=1}^{n}t_i\cdot\lambda_i-\sum_{i=1}^{n}t_i^4\cdot\sum_{i=1}^{n}t_i^3\cdot\lambda_i}{\sum_{i=1}^{n}t_i^{\;2}\cdot\sum_{i=1}^{n}t_i^6-\left(\sum_{i=1}^{n}t_i^4\right)^2}=\frac{369640\cdot 64{,}29-9352\cdot 1578{,}99}{280\cdot 369640-9352^2}=0{,}560962346$$

$$c=\frac{n\cdot\sum_{i=1}^{n}t_i^2\cdot\lambda_i-\sum_{i=1}^{n}t_i^2\cdot\sum_{i=1}^{n}\lambda_i}{n\sum_{i=1}^{n}t_i^{\;4}-\left(\sum_{i=1}^{n}t_i^2\right)^2}=\frac{14\cdot 6224{,}45-280\cdot 337{,}17}{14\cdot 9352-280^2}=-0{,}138312899$$

$$d=\frac{\sum_{i=1}^{n}t_i^2\cdot\sum_{i=1}^{n}t_i^3\cdot\lambda_i-\sum_{i=1}^{n}t_i^4\cdot\sum_{i=1}^{n}t_i\cdot\lambda_i}{\sum_{i=1}^{n}t_i^{\;2}\cdot\sum_{i=1}^{n}t_i^6-\left(\sum_{i=1}^{n}t_i^4\right)^2}=\frac{280\cdot 1578{,}99-9352\cdot 64{,}29}{280\cdot 369640-9352^2}=-0{,}009920814$$

$$v_{III}=\left[\frac{\sum_{i=1}^{m}\left|\lambda_i-\lambda_{t_i}^{III}\right|}{n}:\frac{\sum_{i=1}^{m}\lambda_i}{n}\right]\cdot 100=\frac{\sum_{i=1}^{m}\left|\lambda_i-\lambda_{t_i}^{III}\right|}{\sum_{i=1}^{m}\xi_i}\cdot 100=\frac{11{,}74}{337{,}17}\cdot 100=3{,}48\%$$

- if the technique of the processing for λ variable, where λ **= the McDonald's worldwide revenues**, „stylizes" an exponential route $\lambda_{t_i}=ab^{t_i}$, *a* and *b* will be [2]:

Table 10. The string of numbers regarding the McDonald's worldwide revenues, if this „galaxy" specifies an exponential route

YEARS	MCDONALD'S CORPORATION WORLDWIDE REVENUES (billions $) (λ_i)	EXPONENTIAL TENDENCY				
		$\lg\lambda_i$	$t_i\lg\lambda_i$	$\lg\lambda_{t_i}=\lg a+t_i\lg b$	$\lambda_{t_i}=ab^{t_i}$	$\left\lvert\lambda_i-\lambda_{t_i}\right\rvert$
2005	**19,12**	1,281487888	-8,970415216	1,348807868	22,32584308	3,21
2006	**20,90**	1,320146286	-7,920877717	1,353122128	22,54873216	1,65
2007	**22,79**	1,357744325	-6,788721626	1,357436388	22,77384644	0,02
2008	**23,52**	1,371437317	-5,485749270	1,361750648	23,00120814	0,52
2009	**22,75**	1,356981401	-4,070944203	1,366064908	23,23083970	0,48
2010	**24,08**	1,381656483	-2,763312965	1,370379168	23,46276377	0,62
2011	**27,01**	1,431524584	-1,431524584	1,374693428	23,69700324	3,31
2012	**27,57**	1,440436766	+1,440436766	1,383321948	24,17252110	3,40
2013	**28,11**	1,448860846	+2,897721691	1,387636208	24,41384641	3,70
2014	**27,44**	1,438384107	+4,315152321	1,391950468	24,65758097	2,78
2015	**25,41**	1,405004665	+5,620018660	1,396264728	24,90374886	0,51
2016	**24,62**	1,391288049	+6,956440243	1,400578988	25,15237434	0,53
2017	**22,82**	1,358315640	+8,149893840	1,404893248	25,40348197	2,58
2018	**21,03**	1,322839273	+9,259874909	1,409207508	25,65709652	4,63
TOTAL	**337,17**	19,30610763	1,207992849			27,94

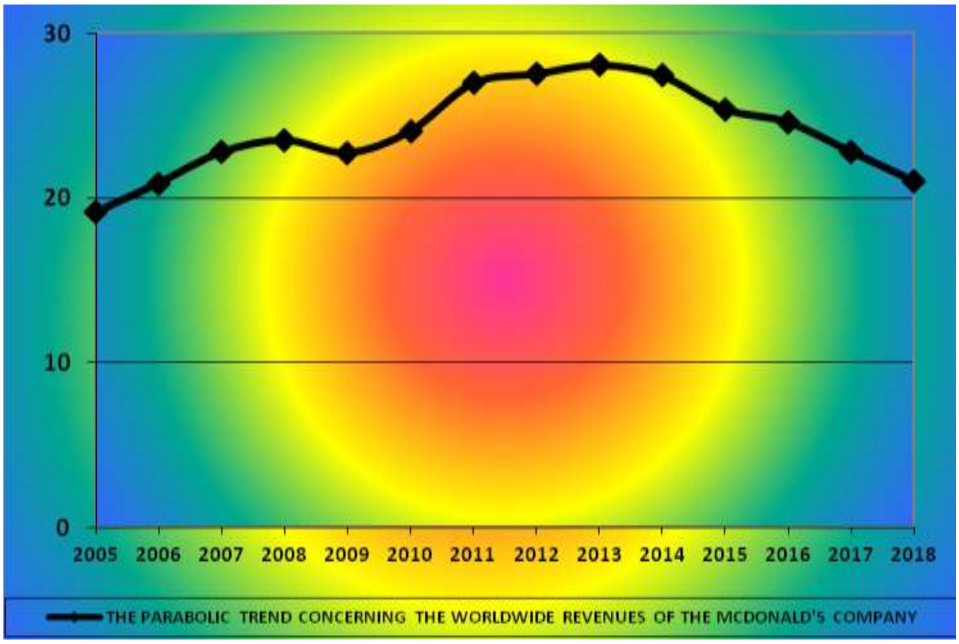
$$\lg a=\frac{19{,}30610763\cdot 280-1{,}207992849\cdot 0}{14\cdot 280-0^2}=1{,}379007688$$

$$\lg b=\frac{14\cdot 1{,}207992849-19{,}30610763\cdot 0}{14\cdot 280-0^2}=0{,}00431426$$

$$v_{\exp}=\left[\frac{\sum_{i=1}^{n}\left|\lambda_i-\lambda_{t_i}^{\exp}\right|}{n}:\frac{\sum_{i=1}^{n}\lambda_i}{n}\right]\cdot 100=\frac{\sum_{i=1}^{n}\left|\lambda_i-\lambda_{t_i}^{\exp}\right|}{\sum_{i=1}^{n}\xi_i}\cdot 100=\frac{27{,}94}{337{,}17}\cdot 100=8{,}29\%$$

$$v_{II}=3{,}18\%<v_{III}=3{,}48\%<v_{I}=8{,}23\%<v_{\exp}=8{,}29\%$$

The „mix” of the processing, which has as target **the McDonald's worldwide revenues**, pursues a quadratic route $\lambda_{t_i} = a + b \cdot t_i + ct_i^2$



Graph 2. The quadratic route of the packet unveiled by the values which specify the worldwide revenues of the McDonald's Company, in the spell of time 2005-2018

4. The statistical processing whereby it predictions the McDonald's American Customer Satisfaction Index, in the spell of time 2019-2030

- if the technique of the processing for γ variable, where γ = **the McDonald's American Customer Satisfaction Index**, „stylizes” a linear route $\gamma_{t_i} = a + b \cdot t_i$, *a* and *b* will be [2]:

Table 11. The „serial” of numbers concerning the McDonald's American Customer Satisfaction Index, if this string indicates a linear route

YEARS	MCDONALD'S AMERICAN CUSTOMER SATISFACTION INDEX (%) (γ_i)	LINEAR TENDENCY				
		t_i	t_i^2	$t_i\gamma_i$	$\lambda_{t_i} = a + bt_i$	$\lvert\gamma_i - \gamma_{t_i}\rvert$
2006	**63**	-6	36	-378	-92,05494506	155
2007	**64**	-5	25	-320	-65,22527473	129
2008	**69**	-4	16	-276	-38,39560440	107
2009	**70**	-3	9	-210	-11,56593407	82
2010	**67**	-2	4	-134	+15,26373626	52
2011	**72**	-1	1	-72	+42,09340659	30
2012	**73**	0	0	0	+68,92307692	4
2013	**73**	+1	1	+73	+95,75274725	23
2014	**71**	+2	4	+284	+122,5824176	52
2015	**67**	+3	9	+603	+149,4120879	82
2016	**69**	+4	16	+1104	+176,2417582	107
2017	**69**	+5	25	+1725	+203,0714286	134
2018	**69**	+6	36	+2484	+229,9101098	161
TOTAL	**896**		182	4883	**896**	1118

$$a = \frac{\sum_{i=1}^{n}\gamma_i \sum_{i=1}^{n} t_i^2 - \sum_{i=1}^{n}\gamma_i t_i \sum_{i=1}^{n} t_i}{n\sum_{i=1}^{n} t_i^2 - \left(\sum_{i=1}^{n} t_i\right)^2} = \frac{896 \cdot 182 - 4883 \cdot 0}{13 \cdot 182 - 0^2} = 68{,}92307692$$

$$b = \frac{n\sum_{i=1}^{n}\gamma_i t_i - \sum_{i=1}^{n}t_i \sum_{i=1}^{n}\gamma_i}{n\sum_{i=1}^{n}t_i^{\,2} - \left(\sum_{i=1}^{n}t_i\right)^2} = \frac{13\cdot 4883 - 0\cdot 896}{13\cdot 182 - 0^2} = 26{,}82967033$$

$$v_I = \left[\frac{\sum_{i=1}^{n}\left|\gamma_i - \gamma_{t_i}^{I}\right|}{n} : \frac{\sum_{i=1}^{n}\gamma_i}{n}\right]\cdot 100 = \frac{\sum_{i=1}^{n}\left|\gamma_i - \gamma_{t_i}^{I}\right|}{\sum_{i=1}^{n}\gamma_i}\cdot 100 = \frac{1118}{896}\cdot 100 = 124{,}78\%$$

- if the tehnique of the processing for γ variable, where ω= **the McDonald's American Customer Satisfaction Index**, „stylizes" a quadratic route $\gamma_{t_i} = a + b\cdot t_i + ct_i^2$, *a* and *b* will be [2]:

Table 12. The „serial" of numbers regarding the McDonald's American Customer Satisfaction Index, if this string indicates a quadratic route

YEARS	MCDONALD'S AMERICAN CUSTOMER SATISFACTION INDEX (%) (γ_i)	PARABOLIC TENDENCY						
		t_i	t_i^2	t_i^3	t_i^4	$t_i^2\gamma_i$	$\gamma_{t_i} = a + bt_i + ct_i^2$	$\lvert\gamma_i - \gamma_{t_i}\rvert$
2006	**63**	-6	36	-216	1296	2268	-95,67032966	159
2007	**64**	-5	25	-125	625	1600	-67,03296703	131
2008	**69**	-4	16	-64	256	1104	-38,72427572	108
2009	**70**	-3	9	-27	81	630	-10,74425575	81
2010	**67**	-2	4	-8	16	268	+16,90709290	50
2011	**72**	-1	1	-1	1	72	+44,22977023	28
2012	**73**	0	0	0	0	0	+71,22377622	2
2013	**73**	+1	1	+1	1	73	+97,88911089	25
2014	**71**	+2	4	+8	16	284	+124,2257742	53
2015	**67**	+3	9	+27	81	603	+150,2337662	83
2016	**69**	+4	16	+64	256	1104	+175,9130869	107
2017	**69**	+5	25	+125	625	1725	+201,2637363	132
2018	**69**	+6	36	+216	1296	2484	+226,2857143	157
TOTAL	**896**		182		4550	12215	896	1116

$$a = \frac{\sum_{i=1}^{n}t_i^4\sum_{i=1}^{n}\gamma_i - \sum_{i=1}^{n}t_i^2\sum_{i=1}^{n}t_i^2\cdot\gamma_i}{n\sum_{i=1}^{n}t_i^{\,4} - \left(\sum_{i=1}^{n}t_i^2\right)^2} = \frac{4550\cdot 896 - 182\cdot 12215}{13\cdot 4550 - 182^2} = 71{,}22377622$$

$$b = \frac{\sum_{i=1}^{n}\gamma_i t_i}{\sum_{i=1}^{n}t_i^{\,2}} = \frac{4883}{182} = 26{,}82967033$$

$$c = \frac{n\cdot\sum_{i=1}^{n}t_i^2\cdot\gamma_i - \sum_{i=1}^{n}t_i^2\cdot\sum_{i=1}^{n}\gamma_i}{n\sum_{i=1}^{n}t_i^{\,4} - \left(\sum_{i=1}^{n}t_i^2\right)^2} = \frac{13\cdot 1225 - 182\cdot 896}{13\cdot 4550 - 182^2} = -0{,}164335664$$

$$v_{II} = \left[\frac{\sum_{i=1}^{n}\left|\gamma_i - \gamma_{t_i}^{II}\right|}{n} : \frac{\sum_{i=1}^{n}\gamma_i}{n}\right]\cdot 100 = \frac{\sum_{i=1}^{n}\left|\gamma_i - \gamma_{t_i}^{II}\right|}{\sum_{i=1}^{n}\omega_i}\cdot 100 = \frac{1116}{896}\cdot 100 = 124{,}55\%$$

- if the technique of the processing for γ variable, where γ **= the McDonald's American Customer Satisfaction Index,** „stylizes" a parabolic route of three degree $\gamma_{t_i} = a + b \cdot t_i + ct_i^2 + dt_i^3$, *a, b, c* and *d* will be [2]:

Table 13 The „serial" of numbers concerning the McDonald's American Customer Satisfaction Index, if this string indicates a quadratic route of three degree

YEARS	MCDONALD'S AMERICAN CUSTOMER SATISFACTION INDEX (%) (γ_i)	PARABOLIC TENDENCY OF THREE DEGREE							
		t_i	t_i^2	t_i^3	t_i^4	t_i^6	$t_i^3\gamma_i$	$\gamma_{t_i} = a + b \cdot t_i + ct_i^2 + dt_i^3$	$\lvert\gamma_i - \gamma_{t_i}\rvert$
2006	**63**	-6	36	-216	1296	46656	-13608	289,5924907	227
2007	**64**	-5	25	-125	625	15625	-8000	-67,03296713	131
2008	**69**	-4	16	-64	256	4096	-4416	-248,8676324	318
2009	**70**	-3	9	-27	81	729	-1890	-290,9353980	361
2010	**67**	-2	4	-8	16	64	-536	-228,2601565	295
2011	**72**	-1	1	-1	1	1	-72	-107,5404318	180
2012	**73**	0	0	0	0	0	0	71,22377622	2
2013	**73**	+1	1	+1	1	1	73	237,984682	165
2014	**71**	+2	4	+8	16	64	568	369,3930237	298
2015	**67**	+3	9	+27	81	729	1809	430,4249085	363
2016	**69**	+4	16	+64	256	4096	4416	386,0564436	317
2017	**69**	+5	25	+125	625	15625	8625	201,2637364	132
2018	**69**	+6	36	+216	1296	46656	14904	-158,9771061	228
TOTAL	**896**		182		4550	134342	1873	896	3017

$$a = \frac{\sum_{i=1}^{n} t_i^4 \sum_{i=1}^{n} \gamma_i - \sum_{i=1}^{n} t_i^2 \sum_{i=1}^{n} t_i^2 \cdot \gamma_i}{n\sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2\right)^2} = \frac{4550 \cdot 896 - 182 \cdot 12215}{13 \cdot 4550 - 182^2} = 71{,}22377622$$

$$b = \frac{\sum_{i=1}^{n} t_i^6 \cdot \sum_{i=1}^{n} t_i \cdot \gamma_i - \sum_{i=1}^{n} t_i^4 \cdot \sum_{i=1}^{n} t_i^3 \cdot \gamma_i}{\sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} t_i^6 - \left(\sum_{i=1}^{n} t_i^4\right)^2} = \frac{134342 \cdot 4883 - 4550 \cdot 1873}{182 \cdot 134342 - 4550^2} = 172{,}7625569$$

$$c = \frac{n \cdot \sum_{i=1}^{n} t_i^2 \cdot \gamma_i - \sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} \gamma_i}{n\sum_{i=1}^{n} t_i^4 - \left(\sum_{i=1}^{n} t_i^2\right)^2} = \frac{13 \cdot 12215 - 182 \cdot 896}{13 \cdot 4550 - 182^2} = -0{,}164335664$$

$$d = \frac{\sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} t_i^3 \cdot \gamma_i - \sum_{i=1}^{n} t_i^4 \cdot \sum_{i=1}^{n} t_i \cdot \gamma_i}{\sum_{i=1}^{n} t_i^2 \cdot \sum_{i=1}^{n} t_i^6 - \left(\sum_{i=1}^{n} t_i^4\right)^2} = \frac{182 \cdot 1873 - 4550 \cdot 4883}{182 \cdot 134342 - 4550^2} = -5{,}837315462$$

$$v_{III} = \left[\frac{\sum_{i=1}^{m} \left|\gamma_i - \gamma_{t_i}^{III}\right|}{n} : \frac{\sum_{i=1}^{m} \gamma_i}{n}\right] \cdot 100 = \frac{\sum_{i=1}^{m} \left|\gamma_i - \gamma_{t_i}^{III}\right|}{\sum_{i=1}^{m} \gamma_i} \cdot 100 = \frac{3017}{896} \cdot 100 = 336{,}72\%$$

- if the technique of the processing for γ variable, where γ = **the McDonald's American Customer Satisfaction Index**, „stylizes" an exponential route $\gamma_{t_i} = ab^{t_i}$, *a* and *b* will be [2]:

Table 14. The „serial" of numbers regarding the McDonald's American Customer Satisfaction Index, if this string indicates an exponential route

YEARS	MCDONALD'S AMERICAN CUSTOMER SATISFACTION INDEX (%) (γ_i)	EXPONENTIAL TENDENCY				
		$\lg\gamma_i$	$t_i \lg\gamma_i$	$\lg\gamma_{t_i} = \lg a + t_i \lg b$	$\gamma_{t_i} = ab^{t_i}$	$\lvert\gamma_i - \gamma_{t_i}\rvert$
2006	**63**	1,799340549	-10,79604330	1,824777517	66,80016220	4
2007	**64**	1,806179974	-9,030899870	1,826973586	67,13880175	3
2008	**69**	1,838849091	-7,355396363	1,829169655	67,47915802	2
2009	**70**	1,845098040	-5,535294120	1,831365724	67,82123971	2
2010	**67**	1,826074803	-3,652149605	1,833561793	68,16505556	1
2011	**72**	1,857332496	-1,857332496	1,835757862	68,51061436	3
2012	**73**	1,863322860	0	1,837953931	68,85792495	4
2013	**73**	1,863322860	1,863322860	1,840150000	69,20699621	4
2014	**71**	1,851258349	3,702516697	1,842346069	69,55783707	1
2015	**67**	1,826074803	5,478224408	1,844542138	69,91045650	3
2016	**69**	1,838849091	7,355396363	1,846738207	70,26486351	1
2017	**69**	1,838849091	9,194245454	1,848934276	70,62106717	2
2018	**69**	1,838849091	11,03309454	1,851130345	70,97907658	2
TOTAL	**896**	23,8934011	0,399684575			32

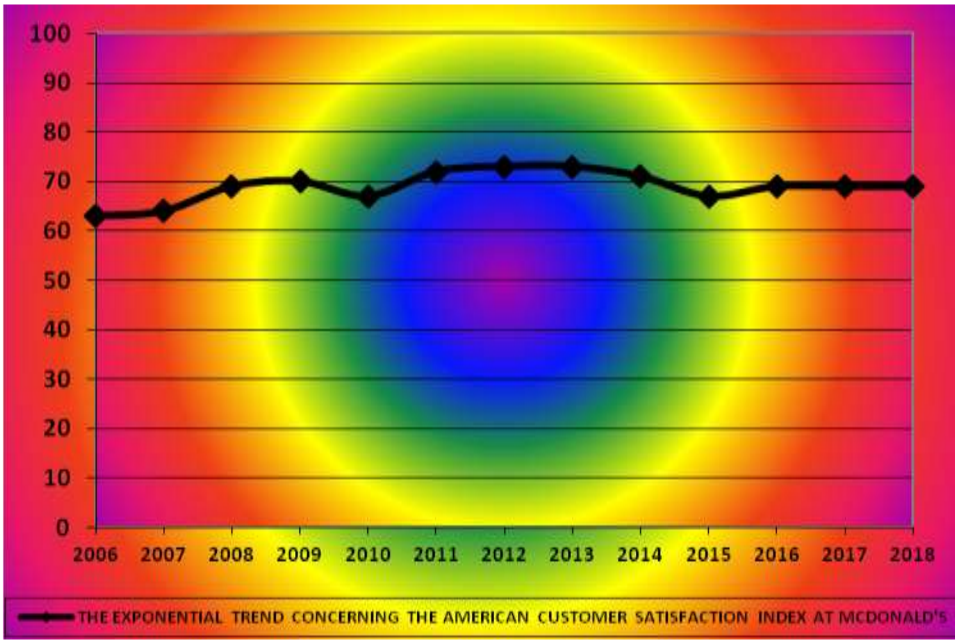
$$\lg a = \frac{\sum_{i=1}^{n}\lg\gamma_i \sum_{i=1}^{n} t_i^2 - \sum_{i=1}^{n} t_i \lg\gamma_i \sum_{i=1}^{n} t_i}{n\sum_{i=1}^{n} t_i^2 - \left(\sum_{i=1}^{n} t_i\right)^2} = \frac{23{,}8934011 \cdot 182 - 0{,}399684575 \cdot 0}{13 \cdot 182 - 0^2} = 1{,}837953931$$

$$\lg b = \frac{n \cdot \sum_{i=1}^{n} t_i \lg\gamma_i - \sum_{i=1}^{n}\lg\gamma_i \sum_{i=1}^{n} t_i}{n\sum_{i=1}^{n} t_i^2 - \left(\sum_{i=1}^{n} t_i\right)^2} = \frac{13 \cdot 0{,}399684575 - 23{,}8934011 \cdot 0}{13 \cdot 182 - 0^2} = 0{,}002196069$$

$$v_{\exp} = \left[\frac{\sum_{i=1}^{n}\left|\gamma_i - \gamma_{t_i}^{\exp}\right|}{n} : \frac{\sum_{i=1}^{n}\gamma_i}{n}\right] \cdot 100 = \frac{\sum_{i=1}^{n}\left|\gamma_i - \gamma_{t_i}^{\exp}\right|}{\sum_{i=1}^{n}\gamma_i} \cdot 100 = \frac{32}{896} \cdot 100 = 3{,}57\%$$

$$v_{\exp} = 3{,}57\% < v_{II} = 124{,}55\% < v_I = 124{,}78\% < v_{III} = 336{,}72\%$$

The „mix" of the processing, which has as target the values of the **McDonald's American Customer Satisfaction Index**, pursues an exponential route $\gamma_{t_i} = ab^{t_i}$



Graph 3. The exponential route of the packet unveiled by the values which specify the evolution of the McDonald's American Customer Satisfaction Index

$$\xi_{2019}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{7} = 71,3389 \cong 71\%$$
$$\xi_{2020}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{8} = 71,7005 \cong 72\%$$
$$\xi_{2021}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{9} = 72,064 \cong 72\%$$
$$\xi_{2022}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{10} = 72,4293 \cong 72\%$$
$$\xi_{2023}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{11} = 72,7965 \cong 73\%$$
$$\xi_{2024}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{12} = 73,1656 \cong 73\%$$
$$\xi_{2025}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{13} = 73,5365 \cong 74\%$$
$$\xi_{2026}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{14} = 73,9093 \cong 74\%$$
$$\xi_{2027}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{15} = 74,2839 \cong 74\%$$
$$\xi_{2028}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{16} = 74,6605 \cong 75\%$$
$$\xi_{2029}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{17} = 75,039 \cong 75\%$$
$$\xi_{2030}^{McDonald's\_American\_Customer\_Satisfaction\_Index} = 68,85792495\cdot(1,005069442)^{18} = 75,4194 \cong 75\%$$

5. Conclusions

The laudable age of 79 years old, accomplished by the McDonald's Company, expresses a real longevity as effect of the adaptation concerning the savour of the consumers. The McDonald's Company touched the approximate value of 38000 restaurants in more than 100 countries. In the „World's Most Valuable Brand 2019 List", which is synthesized by Forbes, the McDonald's Company is placed on the ten position with $ 43,8 billions. At the same time, in the „World's Best Regarded Companies 2019 List", the McDonald's Company is located on the one hundred and six level. We can see in 2019, comparative to 2018, an increase with 139 of the value concerning the number of the McDonald's worldwide restaurants, because the prevision touched the position of 37994 restaurants. Also, we can observe that, the values regarding the McDonald's worldwide revenues, in the spell of time 2005-2018, „sketch" a quadratic „itinerary", respectively the values concerning the McDonald's American Customer Satisfaction Index pursue an exponential „rally". The forecast performed on the McDonald's American Customer Satisfaction Index, in the horizon of time 2019-2030, shows a dynamics of the values from 69 % in 2018, to 71 % in 2019, respectively to 75 % in 2030 and these indicate a growth with 2 % in 2019 relative to 2018, respectively with 6 % in 2030 relative to 2018.

References

1. *Bardhan A. – "Globalization and a High-Tech Economy: California, the United States and Beyond", Springer Publishing House, Berlin, 2004.*
2. *Gauss C.F. - „Disquisitiones Arithmeticae and other papers on number theory", english translation Springer Publishing House, New York, 1986.*
3. *Kahneman D. – "Thinking, Fast and Slow", Farrar, Straus and Giroux – Macmillian Publishing House, New York, 2011.*
4. *Kotler A. – "Kotler on Marketing: How to create, win and dominate markets", Free Press Publishing House, New York, 2014.*
5. *McClate J.T., Benson P.G., Sincich T. – „Statistics for Business and Economics", Pearson Publishing House, London, 2017.*
6. *Miller D. – "Building a Story Brand: Clarify Your Message So Customers Will LIsten", HarperCollins Leadership Publishing House, New York, 2017.*
7. *Trout J. – "Trout on Strategy: Capturing mindshare, conquering markets", McGraw Hill Education Publishing House, New York, 2004.*