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DEVELOPMENT OF PERSONNEL IN THE IMPLEMENTATION OF INNOVATION PROJECT

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Keywords: innovation project, innovation management, human resources, human capital and innovation development.

Annotation: This article discusses the mechanisms of knowledge management on the basis of information received and processed in order to develop the intellectual potential of businesses and provide training for personnel to effectively manage innovation projects, to develop and implement them.

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ОЦЕНКА ПАРАМЕТРА ВОДНОГО ПОДУШНОГО НАЛОГА, ДОХОДОВ И ЗАТРАТ НА ОБСЛУЖИВАНИЕ ПИТЬЕВОЙ ВОДЫ С 2010 ДО 2025 ГОДА (ТЕБРИЗ, ИРАН)

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Ключевые слова: подушный налог, использование полной водной стоимости, затраты на обслуживание.

Аннотация: Главная цель этого исследования - оценка параметров обслуживания подушного налога, доходов и затрат на обеспечение питьевой водой с 2010 до 2025 г.г. в Тебризе. Для этого были проведены оценки параметров на основе модели ARIMA с 2010 до 2025 г.г. Результаты расчетов показали, что расчетные параметры преувеличены. Необходим учет таких проблем в водоснабжении, как недостаточное водоснабжение, недостатки в управлении данным участком городского хозяйства, характеристика водопотерь и преодоление этих недочетов. Так за последнее время для определения потребности города в воде в разный период, исследователями составлены и апробированы конкретные, разнообразные модели, где используется различный набор показателей: статистика роста населения за длительный период, показатели количества используемой воды, форма расходования воды, количество потерь, стоимость воды и факторы, оказывающие на данные характеристики, как то уровень доходов жителей города, показатели в изменениях температуры воздуха и т.п. за исследуемый период.

Tabriz ARIMA model

1-Preface

Management of water resources in under developing countries is a complicated phenomenon. That is due to economic, political and cultural parameters. Parameters like increasing people without control, and other units and limitation of sweet water resources, is encountered this country with rigid problems. Moreover the variation of continents is complicated this problem.

The main role of water as basic component in developing country and the changing of hydrology and the conflicting on water is in all over the world, the water problem in next decade specially in middle east will be public tension and the result would be war.

So the nomination of water resources potential in our country and schematization for optimal maintenance of all possibilities is necessary.

Organizing of this paper first is abstract, then Iran water. Status, after those environmental costs in Iran is surveyed. Next is introducing model and in final part the result is presented.

2-Water in Iran

Iran is mountainous country that two range of mountain (ALBOr2- east west) and (zaghros north – south east) is lied. These two range resist for clouds and so most of Iran is thirsty, without water activities in country isn`t possible easily.

Locality distribution of water in Iran is heterogeneous. Time distribution of atmosphere raining in Iran is like locality distribution and has made various problems in various sectors especially in agricultural and sweet water of cities.

The average of water total volume is constant but demand is increasing that is resulted due to increasing population. The average of renewal water in Iran is decreasing. This number in 1961 was ssom3, it was 3400 in 1327 , 2500m3 in 1364 , 2100m3 in 1998 is decreased.

This amount is decreased to 1750 m3 in 1385 and in1400 will ba 1300m3. (poorasghar sanghchin,1991)

Irregular extracting underground waters are one of the important problems in our country that now has created irreversible damages. Table 1 show the amount of extracting in Iran and world.

Table 1.

Water extracting in Iran-middle east-World

Extravting per year			Renewable water (km ^ 3)	zone
Water extracting by user				
agricultural	industry	city		
92	2	6	70/03	Iran
79	5	16	254/99	Midle east
67	24	9	3760/00	World

World Reasources instituite, 200

As shown in table 1, agricultural sector is the biggest user in each 3 sector. In this time demand for water is increasing. Citizens need for safe water is high that in future we will encounter with leakage. (Nazemi-2008)

Population faster grow thing is the important factor for decreasing the renewable water in 80 years. Iran population in 8 decades, is seven times as much, as 10 million in 1921 his changed to 70 million now .With each rate of UN`s population grow thing, Iran will be one of ten populous countries. So renewable Water has decreased from 1300m3 in 1921 to 1750 m3 in 2006 and will be worst than before.

3- Water environmental costs in Iran

In 2007 World Bank emphasizes that decreasing of sweet water resources in Iran is 6.3 time as much the word index, declarated that agronomy decreases 91% this amount. so decreasing of sweet water resource`s per year from 1987 to 2002 was 9% in the world, in Iran was 5607% (72.9 billion m 3) . This reduction in Iran was 8.6 times as much in England,

3.3 times as much in USA and 2.7 times as much in japan. According to this estimates in this period, decreasing of sweet water resources in Iran was 5.5 times as much in poor countries and 8.9 times as much in normal countries.

The thing that absorbs our attention is the cost of water environmental damages in Iran that world band declarates:

Death, 1500 million dollar from domestic gross production illness 500 million dollar from domestic gross products, out breaking illness, 495 million dollar. Underground water derivation costs and pollution due that is 335 million dollar or 0.29% from domestic gross production, and preventing sedimentation cost is 370 million dollar. Or 0.33% from domestic gross production, (UNCTAN. 2006)

Word bank declarate in this report that: dues inquiry about leakage of water influence, minimum of cost in this topic is 1090000 dollar or 0.95% from domestics gross production and maximum cost is 3950000 dollar or 3.047% from domestic gross production.

4- Perusal on tentative studies

In this part we will perusal tentative studies on Iran water resources management. Islami. Sadralashrafr and Ahmadian (2004) surveyed Behabad plain usage management. The results show that the only water resource in this region is underground water resources that now the amount of water is low.

Each year the level of water decreases 30 cm that for balancing legal limitation and getting side cost on water cost is necessary. Chizari and Keramatzade (2005) in their study surveyed survived the water resources management by optimal devoting water in Barzoo shirvan`s dam lands and using Lindo software. The result of this survey shows that the maximum and minimum changes in devoting water toward optimal devoting is related to Tir and Farvardin respectively and the amount of devoted water in Tir that must decrease to 95% and in Farvardin decrease to 62%. Sodouhi, Soltani and Zibaie (2007) analysed underground water resources management in Narimani plain in Khorasan province. According to result of this study, government can transform the side cost of irregular maintaining of underground water resources to maintainers themselves.

Shafaghi, Shojaei, Gharshasbi (2007), in their study surrey the challenges and reaching chances to Iran water resources management. The result shows that among created chances for optimal using water resources systems we con mention to creating capacity and rising public and technical knowledge level, understanding phenomenon, creating useful work tools , using domestic technology. Nazemi (2007)Studied about schematize and water resources management. Consider special social-economic condition of Iran due to growthing population and urbanism and global hemisphere changes it is necessary that water leakage problem is surveyed. Results show that the solution of this problem not only depends on population increasing control bat also depends on balancing the supply and demand.

5- Tabriz water resources

The main Tabriz water resources is underground waters. For this purpose 100 water well has digger, and provides most of city's water. Moreover aqueduct and provides most of city's water. Moreover aqueduct and Mehranrood River, Nahand dam provide other part of city water. Among 12 aqueducts, now 7 aqueducts are existing and have 180 lit. Meantime from Shahrivar of 1999 by exploitation first line of irrigation, Zarrinerood river has main rule in providing Tabriz water. The amount of water for Tabriz city is as below:

Deep well, aqueduct and Mehranrood River 1.3 m 3/se

Nahand dam 0.7m 3/se and Zarrinerood River 1.8 m3/se

It means that Mehranrood River 34.2% , Nahand dam 18.4% and Zarrinerood river 47.4% provide Tabriz water respectively.

5-1 Tabriz Sweet water using process

Sweet water usage from 1993 to 2009 has shown in table 2.

As shown in 1993 (Population: 1139876 people) used water is 51 574495m3 which is 124 lit/day. In 2009 (population: 1535919 people used water is 100459396 which is 179lit/day.

As you see the using of water has increased proportionally growthing rate. As from 1993 to 2009 population of city is 1.4 times as much and amount of usage is 2 times as much. So government provides city water from neighbor provinces (180 km).

Surveying Statistics related to produce and usage of water Show that this statistics is increasing. Means in studied years with increasing produce has increased the usage of water. Between waste of water and produce in Tabriz is direct relation, means by decreasing waster of water, amount of water produce and investing can decrease and total cost of water can decrease too.

Table2.

Population statistic, production, consumption, waste statistics and number of user

Waste (percent)	House use liter/peopl e/day	Sweet water usage (m^3)	Sweet water consumption (m^3)	population	year
20.4	124	51574495	64821000	1139876	1372
15.2	152	66232000	78068000	1195720	1374
20.5	176	81506000	102575000	1269900	1379
15.0	185	93074145	113520763	1375800	1384
16.5	189	96314243	115408187	1398100	1385
16.3	185	98068633	117196594	1450122	1386
16.6	185	99534146	121679033	1477066	1387
15.9	179	100459396	119425245	1535919	1388

Ref: East Azerbaijan city water an waste water

Table 3

Usage, total cost, sold price and depreciation

Depreciat ion (rial)	Sold price (rial)	Total cost (rial)	Percapita usage	Exploitation cost (million rial)	Year
279	787	996	171	48130	1382
395	873	1147	172	58223	1383
517	855	1218	185	72875	1384
544	857	1390	189	84802	1385
602	1038	1540	185	110870	1386
898	1056	1820	185	143707	1387
954	1235	2047	179	155134	1388

Ref: East Azerbaijan city water and waste water company

AS you can See in this years total cost of water and fee of sale in Tabriz has increased, means total cost of water 637 rial in 2000 has increased to 2047 rial in 1388 and fee of water, 57 rial in 2000 has increased to 123 rial in 2009 as shown in table 3 the fee of sold water is less then cost Of water, bat with increasing cost of water, sold fee has increased too. Surveying statistics and information related to fee of sold water and used water in Tabriz show the direct relation between these parameters. Means by increasing water costs, using rate has increased too. One of reasons for this claim is increasing population and hygienic level. We have direct relation between depreciation and total Cost of water and fee of sold water.

6-Introduce the surveying method

In this study ,decompose the principle component method is used for analyzing depreciation index portion, exploitation costs, produce rate, total use and waste of water in total cost of water. The reason of using this method in this study is that by using this method we can recognize indexes and influence able components and effective on total cost of water without using

regration analysis. In this technic first correlation matrix is created between depreciation rate , exploitation costs, production rate, total usage and waste of water, then by using agent matrix common in gradients and each index relative importance is specified.

Then eigenvectors for all nonzero Eigen relates is computed.

Based on Eigen values that is computed, indexes have mare relative importance that have more eigenvalue. The results related to this method on our parameter are shown in table 4.

Table 4.

Results of severance of survey parameters

Principal Components Analysis
Date: 09/25/10 Time: 21:52
Sample: 1382 1388
Included observations: 7
Computed using: Ordinary correlations
Extracting 5 of 5 possible components

Eigenvalues: (Sum = 5, Average = 1)

Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	4.090041	3.258603	0.8180	4.090041	0.8180
2	0.831437	0.780896	0.1663	4.921478	0.9843
3	0.050542	0.030570	0.0101	4.972019	0.9944
4	0.019971	0.011962	0.0040	4.991991	0.9984
5	0.008009	---	0.0016	5.000000	1.0000

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3	PC 4	PC 5
LDEP	0.478037	0.215654	-0.666869	0.404706	0.341281
LCOST	0.476868	0.260137	-0.205305	-0.720378	-0.379249
LPQ	-0.254470	0.938856	0.205318	0.067954	0.083791
LCONC	0.489346	-0.033180	0.556881	-0.185822	0.644045
LQ	0.489758	0.057182	0.401078	0.527372	-0.563811

Ordinary correlations:

	LDEP	LCOST	LPQ	LCONC	LQ
LDEP	1.000000				
LCOST	0.979072	1.000000			
LPQ	-0.335338	-0.296620	1.000000		
LCONC	0.932304	0.942188	-0.529249	1.000000	
LQ	0.957026	0.957561	-0.460600	0.985070	1.000000

Ref :Survey solution

As the results show we can say that depreciation amount parameters and exploitation cost respectively have the mast eigenvalue among other indexes as water depreciation with eigenvalue 4.09 has the biggest eigenvalue and then exploit costs index with eigenvalue 0.83 has relative importance. More over these values. The amount of variance indexes show that depreciates indexes and exploits costs has the amount of variance proportion (98.4%) and has more proportion in total index variance. Results shows that eliminating eigenvectors proportional with eigenvalues, 1st, 2nd, 3rd with and 5th vectors is not selected. And results based on first and second vectors has analyzed. First and second eigenvectors show relative weight and proportional of each depreciation amount index, exploit costs waste of water, produce and total water usage so we can say that in first and second vectors the proportional of depreciation amount parameter is 0.48 and 0.21 respectively whereas exploit cost's parameter in these is 0.47 and 0.26. Waste of water parameters, amount of produce and usage has proportional and weight -0.25, 0.94, 049, 0.057, 0.49, - 0.033 in determining total cost of water. With respect to results studding deprecation amount parameters and exploit costs has the most influence on total water cost among others like waste of water index, total produce and usage of water. So principles must give suitable solution and politics to reduction of depreciation costs and exploit costs for decreasing produce and total water costs.

7- Research parameter estimates

In this study for estimating water usage percapita, incoming and costs of exploitation for 2010-2025 the ARIMA model is used. For this purpose before estimating parameter we need to research about stability of parameter and then we must fit the most suitable regration model and specify correlogram. In this study researching about stability of model parameters KPSS test is used. This statistics is one of nonparametric statistics and in comparison with augmented Dickey- fuller test is better for researching about stability of parameters.

Unlike other test's statistics, in this test's statistic zero hypothesis shows the stability of parameter.

The results of parameter's stability test is shown in Table 5 :

Table 5.

Result of KPSS test for research about model parameters stability

KPSS test statistic			
Survey in area			Parameters
Result	With distance from era and time process	With distance from era	
stable	0/145	0/44	LC
stable	0/5	0/45	LI
stable	0/15	0/61	LQ
stable	0/14	0/51	LPCONS

Ref: survey results

With respect to results, all of studied parameters in this surrey were stable. In the next stage all parameters are stable. So estimated model of parameters transforms to ARM(p,q) model. For estimating model parameter in 2010-2025 based on 1993-2010 statistics , estimated to regration model in common square method and then the best regration model has estimated based on Akaik – shawrtz – Bizn information.

Finally a model for predicting model parameters is settled that has minimum mistake.

Estimated results that are based on ARMA (p.q) model. Is shown in Table (6). (7):

Table 6

Results of fitting computation statistics computation and estimated error using ARMA model. income and exploitation cost

Result of ARMA(1,2) model computation, income	Result of ARMA(1,4) model computation, exploitation costs	Formula	Test statistic name
0/97	0/99	$R^2 = 1 - \frac{SWRR_M}{SWRR_{M0}}$	Nomination coefficient
0/95	0/99	$R^{\bar{2}} = 1 - (1 - R^2)\frac{n-1}{n-k}$	Balanced Nomination coefficient
-3/06	-5/68	$AIC = -2l/T + 2K/T$	Akaike test statistic
0/21	0/077	$MAPE' = \frac{\sum_{i=1}^{T}\lvert y_i - \hat{y}_i\rvert}{\sum_{i=1}^{T} y_i}$	Average Absolute Percentage Error
0/024	0/009	$MAE = \frac{1}{T}\sum_{i=1}^{T}\lvert y_i - \hat{y}_i\rvert$	Mean Absolute Error
0/036	0/011	$RMSE = \sqrt{\frac{1}{T}\sum_{i=1}^{T}(y_i - \hat{y}_i)^2}$	Root Mean Square Error
0/0015	0/0005	$Theil = \frac{\sqrt{\frac{1}{T}\sum_{i=1}^{T}(y_i - \hat{y}_i)^2}}{\sqrt{\frac{1}{T}\sum_{i=1}^{T} y_i^2}}$	Theil's Inequality Coefficients

Ref: Survey computation

Table7
Results of fitting computation statistics computation and estimated error using ARMA model. usage and production

Result of AR (1) model computation. production	Result of AR (1) model.percapita usage	Result of ARMA (1,2) model computation. percapita usage	Test statistic name
0/99	0/91	$R^2 = 1 - \frac{SWRR_M}{SWRR_{M0}}$	**Test statistic name**
0/98	0/90	$R^{\bar{2}} = 1 - (1 - R^2)\frac{n-1}{n-k}$	**Nomination coefficient**
-4/82	-4/37	$AIC = -2l/T + 2K/T$	**Balanced Nomination coefficient**
0/15	0/46	$MAPE' = \frac{\sum_{i=1}^{T}\lvert y_i - \hat{y}_i\rvert}{\sum_{i=1}^{T} y_i}$	**Akaike test statistic**
0/027	0/024	$MAE = \frac{1}{T}\sum_{i=1}^{T}\lvert y_i - \hat{y}_i\rvert$	Average Absolute Percentage Error
0/031	0/028	$RMSE = \sqrt{\frac{1}{T}\sum_{i=1}^{T}(y_i - \hat{y}_i)^2}$	Mean Absolute Error
0/0008	0/0027	$Theil = \frac{\sqrt{\frac{1}{T}\sum_{i=1}^{T}(y_i - \hat{y}_i)^2}}{\sqrt{\frac{1}{T}\sum_{i=1}^{T} y_i^2}}$	Root Mean Square Error

Ref: Survey computation

As shown in Table (6),(7), we can see computed nomination coefficient for exploitation costs, percapita usage and production is 0.99, 0.97, 0.91 and 0.99 respectively. Balanced nomination coefficient R2 for ARMA model is 0.99, 0.95, 0.90, and 0.98 that declare the fitting of models is good. One of other index for determining of model fitting, is using AIC=-2l/T+2k/T formula. In this equation T is the sample volume k is the number of estimated parameters and L is the logarithm of minimum likelihood function. The amount of test statistic AIC for estimated models is computed- 5. 68, -3.06, 4.37 and – 4.82. That whatever this amount was smaller shows that the influence of terms square summation reduction due to increasing number of estimated parameters is dominated. In continuation various indexes is used about ARMA model's attributes that we cam mention average absolute percentage error. Mean absolute error, root mean square error and Thiele's inequality coefficients. Based on these criterions we can compare ARMA model with other models. Mean absolute error percentage for ARMA models is 0.077, 0.21.0.46.015. That shows the mean absolute error percentage is low. Moreover pervious index, we can use mean absolute error for researching about model estimated error. The amount of mean absolute error for estimated models is 0.009. 0.024, 0.024 and 0.027. One of other criterion for determination of fitting model is using root mean square error, that in tentative studies is used more than others. Based on this test statistics, amount of root mean square error for estimated models is 0.011. 0.036 0.028 and 0.031 that shows low error in estimated models. The last criterion for researching about estimated error in ARMA model is Theil's inequality coefficients that is using more and more for analyzing estimated error. Thiele's coefficient is 0.0005, 0.0015, 0.0027 and 0.0008 that shows the estimated model's errors is low.

8. Conclusion

The main purpose of this survey is estimating water percapita usage parameters, in coming and exploitation costs for sweet water from 2010-2025 for Tabriz. We used from Tabriz in formation from 1993- 2010. The results created from water percapita usage, production rate, income and exploitation costs from 2010-2025 by using ARIMA model Shows that the parameters are increasing.

By using the results, depreciation rate parameters and exploitation costs has most influence one total water Cost determination in comparison with production total water usage index. So Principles must pay attention to reduce depreciation costs and exploitation costs by repairing Tabriz water system and so they Can reduce production costs and water's total costs.

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Index and appendix

Diagram (1): Test statistics for Estimating of production logarithm in 2010-2025

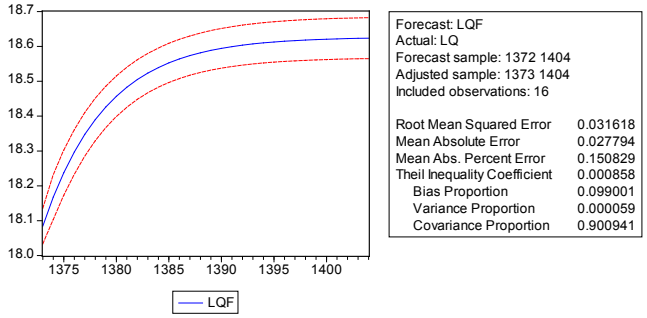
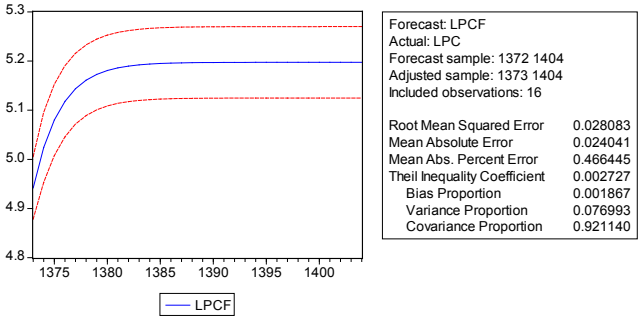
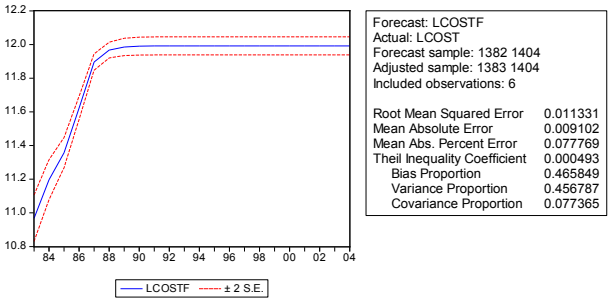


Diagram (2):Test statistics for Estimating of percapita usage logarithm in 2010-2025

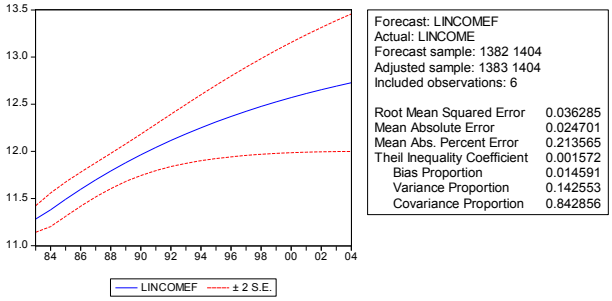


Ref:Research results

Diagram(3):Test statistics for logarithm parameter of estimated exploitation cost in 2010-2025



Diagram(4):Test statistics for logarithm parameter of estimated income in 2010-2025



Ref:Research results

THE ESTIMATION OF PARAMETER OF WATER CAPITATION , INCOME AND MAINTENANCE COSTS ABOUT SWEET WATER FROM 2010 TO 2025 (TABRIZ, IRAN)

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Keywords: capitation uses total water cost; maintenance costs.

Annotation: The main purpose of this study is about estimation of parameter of cater capitation, income and maintenance costs about sweet water from 2010 to 2025 in Tabriz. For this intention, the information from 2010 to 2025 is used and we estimated parameter, from 2010 to 2025 using ARIMA models. The results show that the parameters are increased. Moreover in this study for identifying impressive parameter on water costs, is used from analyzing to main exploitation parameter in comparison with perish, produce and used water. So official exploitation to reduce of depreciation to reduce of depreciation costs and exploitation cost by using repair and correction Tabriz water for reducing produce costs and total water costs.

УДК 331.102.142

АНАЛИТИЧЕСКАЯ ДЕЯТЕЛЬНОСТЬ УПРАВЛЕНИЯ: ТЕОРЕТИЧЕСКИЙ АСПЕКТ

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Ключевые слова: анализ; синтез; управление; функции управления; аналитическая деятельность; регламентация аналитической деятельности.

Аннотация: В статье рассмотрены вопросы аналитической деятельности управления, направленной на оптимизации процесса управления, то есть достижения наилучшего результата с наименьшей затратой сил, времени и средств.

В рамках аналитической деятельности анализ и синтез представляют собой движение в пространстве знаний и деятельности (ситуационное пространство), не ограничивающееся получением новых знаний путем дедуктивного вывода, то есть не ограничивающееся проявлением дедуктивной компетентности. Как пишет М.К. Мамардашвили: «…различение «аналитических» и «синтетических» суждений здесь неприменимо, ибо с этой точки зрения каждый момент движения мысли был бы синтетичен и, следовательно, в нем нельзя было бы увидеть никаких различий» [1].

Особенно часто термин «анализ» в отрыве от «синтеза» используется в названиях научных дисциплин. Например, «математический анализ». Но ведь такое именование теории представляющей собой дифференциальное (анализ) и интегральное (синтез) исчисление оказывается односторонним. Введение бесконечно малых не является самоцелью, а производится для одновременного