

ISSN 2518-167X

# WEB OF SCHOLAR

Multidisciplinary Scientific Journal



RS Global

# INTERNATIONAL ACADEMY JOURNAL. WEB of SCHOLAR

7(25), July 2018

Vol. 1

DOI: [https://doi.org/10.31435/rsglobal\\_wos](https://doi.org/10.31435/rsglobal_wos)**Chief editor****Laputyn Roman**

PhD in transport systems, Associate Professor,  
Department of Transport Systems and Road Safety,  
National Transport University, Ukraine

**Editorial board:****Lina Anastassova**

Full Professor in Marketing, Burgas Free University,  
Bulgaria

**Mikiashvili Nino**

Professor in Econometrics and Macroeconomics,  
Ivane Javakhishvili Tbilisi State University, Georgia

**Alkhalwaldeh Abdullah**

Professor in Financial Philosophy, Hashemite  
University, Jordan

**Mendebaev Toktamys**

Doctor of Technical Sciences, Professor, LLP  
«Scientific innovation center «Almas», Kazakhstan

**Yakovenko Nataliya**

Professor, Doctor of Geography, Ivanovo State  
University, Shuya

**Mazbayev Ordenbek**

Doctor of Geographical Sciences, Professor of  
Tourism, Eurasian National, University named after  
L.N.Gumilev

**Sentyabrev Nikolay**

Professor, Doctor of Sciences, Volgograd State  
Academy of Physical Education, Russia

**Ustenova Gulbaram**

Director of Education Department of the Pharmacy,  
Doctor of Pharmaceutical Science, Kazakh  
National Medical University name of Asfendiyarov,  
Kazakhstan

**Harlamova Julia**

Professor, Moscow State University of Railway  
Transport, Russia

**Nyyazbekova Kulanda**

Candidate of pedagogical sciences, Abay University,  
Kazakhstan

**Kalinina Irina**

Professor of Chair of Medicobiological Bases of  
Physical Culture and Sport, Dr. Sci.Biol., FGBOU  
VPO Sibirsky State University of Physical Culture  
and Sport, Russia

**Imagazinov Sagit**

Director, Ph.D, Pavlodar affiliated branch «SMU of  
Semei city»

**Dukhanina Irina**

Professor of Finance and Investment Chair,  
Doctor of Sciences, Moscow State Medical Dental  
University by A. I. Evdokimov of the Ministry of  
health of the Russian Federation

**Orehowskyi Wadym**

Head of the Department of Social and Human  
Sciences, Economics and Law, Doctor of Historical  
Sciences, Chernivtsi Trade- Economic Institute Kyiv  
National Trade and Economic University

**Peshcherov Georgy**

Professor, Moscow State Regional University, Russia

**Mustafin Muafik**

Professor, Doctor of Veterinary Science, Kostanay  
State University named after A.Baitursynov

**Ovsyanik Olga**

Professor, Doctor of Psychological Science, Moscow  
State Regional University

**Nino Abesadze**

Associate Professor Tbilisi State University, Faculty  
of Economics and Business

Copies may be made only from legally acquired originals.

A single copy of one article per issue may be downloaded for personal use

(non-commercial research or private study). Downloading or printing multiple copies is not permitted.

Electronic Storage or Usage Permission of the Publisher is required to store or use electronically any material contained in this work, including any chapter or part of a chapter. Permission of the Publisher is required for all other derivative works, including compilations and translations. Except as outlined above, no part of this work may be reproduced, stored in a retrieval system or transmitted in any form or by any means without prior written permission of the Publisher.

**Publisher –**  
RS Global Sp. z O.O.,  
Scientific Educational Center  
Warsaw, Poland

Numer KRS: 0000672864  
REGON: 367026200  
NIP: 5213776394

**Publisher Office's address:**

Dolna 17,  
Warsaw, Poland,  
00-773

**Website:** <https://ws-conference.com/>  
**E-mail:** [rsglobal.poland@gmail.com](mailto:rsglobal.poland@gmail.com)  
**Tel:** +4(857) 898 55 10

The authors are fully responsible  
for the facts mentioned in the  
articles. The opinions of the  
authors may not always coincide  
with the editorial boards point of  
view and impose no obligations on it.

## CONTENTS

## ENGINEERING SCIENCES

<i>Асадова И. Б.</i> НЕФТЕДОБЫЧА НА АПШЕРОНЕ.....	3
<i>Казак І. О.</i> УДОСКОНАЛЕННЯ КОНСТРУКЦІЇ ЛАНЦЮГА ПЛАСТИНЧАТОГО ЖИВИЛЬНИКА З МЕТОЮ ПІДВИЩЕННЯ НЕСУЧОЇ ЗДАТНОСТІ.....	6
<i>Сурьянинов Н. Г., Шляев А. С.</i> АДАПТАЦИЯ АЛГОРИТМА ЧИСЛЕННО-АНАЛИТИЧЕСКОГО МЕТОДА ГРАНИЧНЫХ ЭЛЕМЕНТОВ К РАСЧЕТУ ПЕРЕКРЕСТНО-БАЛОЧНЫХ СИСТЕМ.....	9
<i>Токар Г. М., Остапенко Н. В., Колосніченко О. В., Власенко Ю. В.</i> АНАЛІЗ АСОРИМЕНУ МАТЕРІАЛІВ ДЛЯ ВИГОТОВЛЕННЯ РОЗВАНТАЖУВАЛЬНИХ ЖИЛЕТІВ.....	15
<i>Nosova Ya. V., Shevchenko O. S., Khudaieva S. A., Ibrahim Younous Abdelhamid</i> CALCULATION OF WEIGHT INDICATORS OF THE IMPORTANCE OF USING ODORIVECTORS FOR THE PURPOSE OF FORMALIZING OLFACTOMETRY DIAGNOSIS.....	20

## TRANSPORT

<i>Берестовой А. М., Хлопецкая Л. Ф., Зинченко С. Г.</i> ОЦЕНКА РАЗВИТИЯ ИНФРАСТРУКТУРЫ МОРСКОГО ПОРТА.....	23
--	----

## ECONOMY

<i>Шемончук Д. С., Макарова А. А.</i> ТЕНДЕНЦИИ РАЗВИТИЯ МИРОВОГО И РОССИЙСКОГО РИТЕЙЛА.....	27
---	----

## AGRICULTURE

<i>Курбанов К. Я.</i> МОДЕЛИРОВАНИЕ ВЕТРОВОЙ ЭРОЗИИ НА ОБРАБАТЫВАЕМЫХ ЗЕМЛЯХ.....	32
<i>Мамедов С. Н.</i> ОБОСНОВАНИЕ РАЦИОНАЛЬНОГО РЕЖИМА РАБОТЫ ЛИНИИ КОМБИКОРМОВОГО ПРОИЗВОДСТВА .....	36
<i>Abbasov G. I.</i> EVALUATION OF THE PROCESS OF SEPARATION OF SOIL FROM POTATO HARVESTER.....	41
<i>Mustafayev R. M.</i> THE MODE OF OPERATION SUBARTESIAN WELLS AND THEIR OPTIMAL .....	45

# CALCULATION OF WEIGHT INDICATORS OF THE IMPORTANCE OF USING ODORIVECTORS FOR THE PURPOSE OF FORMALIZING OLFACTOMETRY DIAGNOSIS

<sup>1</sup>Nosova Ya. V.,

<sup>2</sup>Shevchenko O. S. prof.,

<sup>1</sup>Khudaieva S. A.,

<sup>1</sup>Ibrahim Younouss Abdelhamid

<sup>1</sup>Kharkiv National University of Radio Electronics;

<sup>2</sup>Kharkiv National Medical University

DOI: [https://doi.org/10.31435/rsglobal\\_wos/12072018/5973](https://doi.org/10.31435/rsglobal_wos/12072018/5973)

## ARTICLE INFO

**Received:** 04 May 2018

**Accepted:** 27 June 2018

**Published:** 12 July 2018

## KEYWORDS

olfactometry, sensitivity  
olfactory, expert systems,  
odorivector.

## ABSTRACT

One of the most difficult non-formalized tasks of medical diagnostics is an olfactometric study. Therefore, in this article an attempt is made to standardize the results of diagnosis of olfactory analyzer disorders. For the development of the integral indicator of olfactory sensitivity in order to formalize the diagnostic data on the basis of the method of increasing the objectivity of olfactometric studies, weighting coefficients were determined based on the method of attribution of points. A questionnaire was prepared for our study. The expert opinion of nine experts on the degree of importance of each odorant during the conduct of an olfactometric study on a scale of one to ten was taken into account. The level of expertise of the working group experts was also assessed. The obtained weighting factors will be useful in developing decision support systems in diagnostics of the olfactory analyzer.

**Citation:** Nosova Ya. V., Shevchenko O. S., Khudaieva S. A., Ibrahim Younouss Abdelhamid (2018) Calculation of Weight Indicators of the Importance of Using Odorivectors for the Purpose of Formalizing Olfactometry Diagnosis. *International Academy Journal. Web of Scholar.* 7(25), Vol. 1. doi: 10.31435/rsglobal\_wos/12072018/5973

**Copyright:** © 2018 Nosova Ya. V., Shevchenko O. S., Khudaieva S. A., Ibrahim Younouss Abdelhamid  
This is an open-access article distributed under the terms of the **Creative Commons Attribution License (CC BY)**. The use, distribution or reproduction in other forums is permitted, provided the original author(s) or licensor are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

**Introduction.** Uncertainty in medical practice is becoming a major problem on the way to a precise diagnosis, since it prevents you from choosing the best solution and, consequently, can cause a poor response. [1]. There are various approaches to creating medical diagnostic systems, for example, expert systems that deal with unformalized tasks that require a non-standard approach. One of the most difficult non-formalized tasks of medical diagnostics is an olfactometry study.

There are many methods for assessing olfactory disturbances, among which are the most popular sniffing sticks test, the University of Pennsylvania Smell Identification Test (UPSIT) and others [2], but the main difference is the number of used odorivectors, which makes formalization of olfactory abnormalities difficult. Therefore, it seems advisable to propose an integral criterion for assessing olfactory disturbances. The choice of odorivectors in olfactory tests is also due to a geographic factor: olfactory stimuli should be easily detected by the subjects. Another aspect for effective olfactometry research is the use of objective measurement tools, lack of objectivity is a disadvantage of the most popular tests (UPSIT, Sniffing sticks test, etc.).

Taking into account the above, it seems necessary to develop an integral indicator of olfactory sensitivity in order to formalize diagnostic data in the development of decision support systems based on a method for increasing the objectivity of olfactometry research [3-5], with the help of which it is possible to perform objective investigations of respiratory and olfactory disorders and it fully meets the requirements.

**Results of the study.** It is necessary to make a determination of the importance of the selected private indicators (the degree of sense of the odorivectors), in other words, the weight coefficients used in the integral functions. One of the most common ways of determining weighting factors is the method of expert assessments (attribution of points). In contrast to the ranking method, experts here, depending on the importance of the indicator, set points from 0 to 10, and it is allowed to estimate the importance of the indicator by fractional values, as well as the same indicators can be assigned the same points. The level of competence of the experts of the working group (M) must meet the following condition:

$$0,67 \leq M \leq 1,00 \quad (1)$$

Moreover, the value of M is calculated by the following formula:

$$M = \frac{1}{m} \cdot \sum_{j=1}^m K_j, \quad (2)$$

where  $K_j$  – is the j-th expert's level of competence,  
m – is the number of experts in the working group.

In order to evaluate the level of competence ( $K_j$ ) of each j-th expert ( $j = 1, m$ ) by the authors [6], it is proposed to use the following equation:

$$K_j = \frac{1}{5} \sum_{i=1}^5 K_{ij} \quad (3)$$

Expression (3) includes five generalized  $K_{ij}$  indicators taken into account in assessing the level of competence of the j – expert, while ( $0 \leq K_{ij} \leq 1$ ).

$K_{1j}$  – takes into account professional qualifications, seniority and experience;

$K_{2j}$  – takes into account the level of awareness in the field of scientific publications;

$K_{3j}$  – takes into account, on the basis of self-esteem, the desire for professional growth, the ability to work in the team, as well as discipline and organization;

$K_{4j}$  – takes into account the personal qualities of the expert given to him by colleagues experts;

$K_{5j}$  – takes into account the level of coordination of the expert's actions with the members of the formed working group when performing the test assignment.

To determine the weight coefficients of odorivectors in developing the integral indicator of olfactory sensitivity, the expert opinion of nine experts on the degree of importance of each odorous substance during the conduct of an olfactometry study was taken into account. The level of competence of the experts of the working group is  $M = 0,88$ , which satisfies condition (1), hence the formed group is competent.

Experts in the field of otorhinolaryngology were offered questionnaires, where it was proposed to put points from 1 to 10 in terms of the importance of using odorivectors (1 - tincture of valerian, 2 - acetic acid, 3 - ammonia) to detect olfactory disturbances. Where 1 point is not important, 5 is of average importance, 10 is very important. Then we measured the weight of each indicator counted by each expert.

According to the method of attributing points [7]:

$$r_{ij} = \frac{n_{ij}}{\sum_{j=1}^m h_{ij}} \quad (4)$$

where  $r_{ij}$  – the weight of the j-th indicator, determined by the i-th expert,  $h_{ij}$  – the score of the i-th expert, exhibited to the j-th indicator, m – the number of indicators. Finally, the weight coefficients of the indicators are determined by the formula:

$$w_j = \frac{\sum_{i=1}^n r_{ij}}{\sum_{j=1}^m \sum_{i=1}^n r_{ij}} \quad (5)$$

where n – the number of experts.

Calculation of weight coefficients by the method of assigning points is given in table 1.

The weights take the following values:

$$w_1 = \frac{5,927}{9} = 0,659$$

$$w_2 = \frac{2,603}{9} = 0,289$$



$$w_3 = \frac{0,471}{9} = 0,052$$

Table 1 – Determination of weight coefficients by the method of attributing points

Experts	Score points			Sum	Weights of indicators		
	$n_{i1}$	$n_{i2}$	$n_{i3}$		$r_{i1}$	$r_{i2}$	$r_{i3}$
1	10	10	5	25	0,400	0,400	0,200
2	10	8	0	18	0,556	0,444	0,000
3	10	5	0	15	0,667	0,333	0,000
4	9	3	1	13	0,692	0,231	0,077
5	10	2	0	12	0,833	0,167	0,000
6	10	3	1	14	0,714	0,214	0,071
7	10	1	0	11	0,909	0,091	0,000
8	9	5	1	15	0,600	0,333	0,067
9	10	7	1	18	0,556	0,389	0,056
				Sum	5,927	2,603	0,471

The small value of odorivector weighting factor 3 (ammonia) does not mean that this indicator should not participate in the integral assessment of olfactory sensitivity. Ammonia alcohol is informative only when there are no indices when testing for tincture of valerian and acetic acid, that is, with anosmia, but the olfactory-taste sensitivity remains functioning.

**Conclusions.** Thus, the level of competence of the experts of the working group was assessed, the weighting factors (by the method of attributing scores), the sensations of three odorivectors were determined by the method of increasing the objectivity of olfactometric studies to determine the integral index of olfactory sensitivity with the support of decision-making in olfactometric diagnosis.

#### REFERENCES

1. Goncharova A.B., Sergeeva E.I. System of support of decision-making in medicine for diagnostics of diseases. Innovations in science: a scientific journal. No. 1 (62). - Novosibirsk., Pub. ANS «SibAK», 2017, P. 23-25.
2. Avrunin O, Shushlyapina, N., Nosova Ya., Bogdan O. Olfactometry diagnostic at the modern stage. Bulletin of NTU «KhPI». Series: New solutions in modern technologies. Kharkiv: NTU «KhPI», 2016, 12 (1184), 95-100, doi:10.20998/2413-4295.2016.12.13
3. Nosova Ya. The use of statistical characteristics of measured signals to increasing the reliability of the rhinomanometric diagnosis // Ya. Nosova, N. Shushliapina, S. V. Kostishyn, L. G. Koval, Z. Omiotek, et al. // Proc. SPIE 10031, Photonics Applications in Astronomy, Communications, Industry, and High-Energy Physics Experiments. – 2016. – 100312M – doi:10.1117/12.2248364
4. Sakalo SM, Semenets VV, Azarhov O.Yu. High frequencies in medicine (therapy and diagnostics): Teaching manual - X.: KNURE; Collegium, 2005. - 264 pp.
5. A method for increasing the objectivity of olfactometric studies: Pat. 110453 C2 Ukraine: IPC A61V 5/08 (2006.01) / Avrunin O.G., Zhuravlev AS, Shushlyapina N.O., Nosova Y.V., Faruk Kh., Applicant and Patent Owner Kharkiv National University of Radio Electronics. - №201500604; Stated. 2015/06/25; Published May 25, 2015, Bul. # 10 – 2p.
6. Postnikov V.M., Spiridonov S.B. Approach to calculation of weighting coefficients of experts' rank assessments when selecting a development option for an information system. Science and education. Bauman Moscow State Technical University, 2013, #8, P.396 - 412, DOI: 10.7463/0813.0580272
7. Makarova I.L. The analysis of methods for determining weight coefficients in the integral indicator of public health. International scientific journal «Symbol of Science», 2015, # 7, p.87-94

# INTERNATIONAL ACADEMY JOURNAL WEB OF SCHOLAR

DOI: [https://doi.org/10.31435/rsglobal\\_wos](https://doi.org/10.31435/rsglobal_wos)

7(25), July 2018

Vol. 1

## SCIENTIFIC EDITION

Indexed by:



RS Global

INDEX COPERNICUS  
INTERNATIONAL



Academia.edu



BIBLIOTEKA  
NARODOWA

Google  
scholar

НАУЧНАЯ ЭЛЕКТРОННАЯ  
БИБЛИОТЕКА  
LIBRARY.RU

Passed for printing 05.07.2018. Appearance 12.07.2018.

Typeface Times New Roman.

Circulation 300 copies.

Publisher RS Global Sp. z O.O., Warsaw, Poland, 2018

Numer KRS: 0000672864

REGON: 367026200

NIP: 5213776394

<https://ws-conference.com/>