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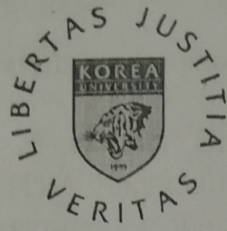
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# Theoretical Bases, Methods and Technologies of Development of the Professional Activity Analytical Estimation Intellectual Systems

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**Abstract** — In this paper the question of research formalizing of the development of fundamentally new theory and modern methods of the intellectual information systems of analytical estimation construction within the framework of State classification and passing to the nontariff systems of labour remuneration are given.

**Keywords**— *analysis of professional activity theory, information system, methods and technologies of intellectual systems*

## I. INTRODUCTION

Today's society is on the verge of the fourth industrial revolution. Development of engineering and information technology in the field of genetics, artificial intelligence, robotics, nanotechnology, 3D printing technology and biotechnology complementary processes and accelerate innovation in almost all industries. This will lay the foundation for a revolution more comprehensive and all-encompassing than anything we have ever seen. Smart systems—homes, factories, farms, grids or cities—will help tackle problems ranging from supply chain management to climate change [1].

This will lead to revision the cooperation forms and job content and in turn to corresponding changes in the remuneration system where key trends will transition to a non-tariff systems based on an assessment of the complexity of work.

In terms of information systems concept ESS (employee self-service) will receive intensive development, that empower employees to manage personal information and get all the information yourself using access to information systems resource management.

In these conditions the development of business management concepts become actual and come to the fore task of developing intelligent information systems of professional activities analytical assessment and their integration with enterprise resource planning systems.

The scientific developments of the scientists in industrially developed countries of the world such as: Wilson M., Harvey R.J., Lozada - Larsen S.R., Peterson N.G., Barman W.G., Fleishman E.A., Mumford M.D., Jeanneret P.R., Fine S.A., Wiley W.W., McCormick, E.J. and other in area of the automated support of analysis of works (job analysis) were devoted to creation of methods of information treatment and on formalization of certain factors of professions, that was subjects of the estimation. As a result, in the industrially developed countries of the world the information systems: PAQ, CMQ, FJA, JEL, FJAS, MOSAIC, OAI, WPS, CODAP, PMPQ, Executive Checklist, O\*NET) are used.

Fundamental principles and approaches of the analysis of works were developed by the American researcher McCormick E.J., that examined work from the point of view of the so-called approach oriented to work (worker - oriented), using a factor analysis [2,3].

Method FJA (Function Job Analysis is a method of functional analysis of work) by C. Fine used by USA government service of employment inclusive 2000th for forming of "Dictionary of the works names" [4].

The method CMQ (Common Metric Questionnaire is a questionnaire of general indexes) is worked by Harvey R.J., is the part of the general CMS (CMS - Common Metric System) system [5].

The most wide distribution at the end of 1990th was got by the method of O\*NET - Occupational Information Network - Information network of analysis of works, that examines work from two aspects: maintenance of work in wide sense and requirement to the person, that executes work [6,7].

Small class of enterprise resources management systems are also exist, that is built on simple evaluation of certain aspects of work, which were defined subjectively by authors of the projects, that was developed in accordance with requirements that is produced to the systems of class of MPRII and ERP.



- Development of information technology analytical assessment of professional activities to further its implementation as appropriate independent application of information systems or modules of existing enterprise resource planning systems.
- The development of common principles and structure of the intelligent system for evaluating of professional activities in part of weakly formalized structural model entities for the purpose of further integration with the functional modules of enterprise resource planning information systems, built on object-oriented approach.

When conducting research is planned using of the theory of mathematical logic, methods of expert assessments, decision theory, communications theory, methods, parametric and nonparametric statistics, fuzzy set theory, methodology, functional modeling, object-oriented methodology of analysis, theory of algorithms and programming using procedural and declarative languages.

Virtually all the processes of mathematical modeling providing ideal building design, content or the so-called conceptual model. Based on the fundamental studies that formalize mathematical models to analyze phenomena like physics and other sciences, building content models and its components presented structural model can be made within the phenomenological models and hypotheses.

Since the object and the subject of this study are in constant development and almost no clear formalized theories to assess the complexity of operations in quantitative expression, the least studied element model of professional activity is possible to present by hypothesis is tentative description of the process that can not be proven once and for all and the data can be refuted as a result of practical application.

Works of scientists towards constructing of professional work models and their analysis, and the western approaches of practical implementation of the information systems, the detailed analysis is made in the prior [2-6], give the reason and opportunity to develop models of the second level - phenomenological model that already contain a mechanism to describe the process, although this mechanism cannot be confirmed by practical researches and data and use of certain simplifications and assumptions.

The authors have proposed a radically new theory of analytic evaluation of professional activity, namely the description of professional activity in terms of systems analysis, the separation of any activity on a number of functional (structural) elements that may be described in the abstract information model "Entity - Communications" [8]. This is a fundamentally new approach to this kind of research is methodologically based on a previously conducted authors study [9].

As based on mathematical description and classification approach the basic structural elements of profession information models have already approved by the authors [10,11].

The special features of the research should include the need for processing large amounts of statistical data by expert

methods and modeling techniques of real professional activities.

Formulation of the problem of experimental investigation of the mutual influence of the structural elements of the professional activity information model involves formalizing scales of variables measurement and model entities, attributes identifying appropriate statistical methods to evaluate the magnitude and connection between these attributes and entities directly.

In this formulation, the problem of empirical research involves the collection and processing of various types of professional activities and search relationship (correlation) between the derived variables (fig.2).

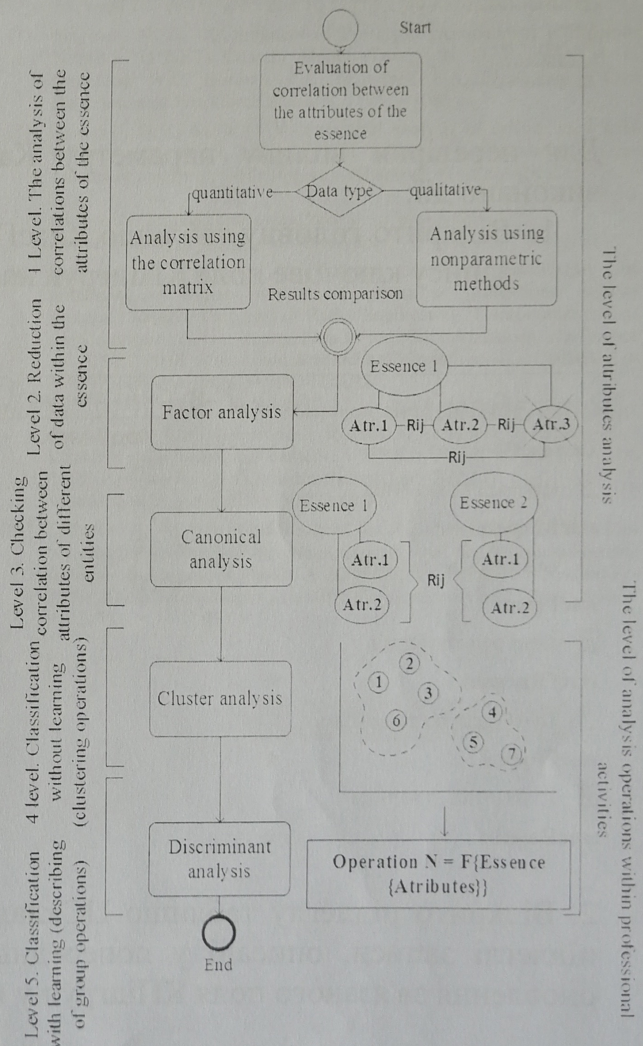


Fig. 2. Stages of the statistic research

## CONCLUSIONS

The authors have obtained new information relationships, rules and algorithms of assessments, that will allow entities to develop new methods and new IT, which will allow the creation of both theoretical and methodological foundations of



analytical assessment of professional activities and human resource management of enterprises.

Scientific methods and advanced information technology, scheduled to create by authors must ensure the creation of a common information environment for professional activities analytical assessment and integrate data of State classifiers within the framework of the Ministry of Social Policy and each company in Ukraine.

The theory of analytic evaluation will expand the existing classification groups from nine at present to a certain number of new groups united by other than educational qualification principle that will significantly increase the depth and level of detail evaluation and will go to non-tariff systems remuneration according to the requirements of the bill of 15/09/2016 p. №5130, giving businesses in Ukraine appropriate theoretical and methodological framework for intelligent use of modern information systems.

Experimental verification of the adequacy and reliability of the developed methods and information technologies will be held at a test in operating high-tech enterprises.

Investigation meet contemporary global trends and directions, are working on the leading scientists of the industrialized countries with organization of enterprise resource planning and transition to non-tariff assessment form and pay as part of the European integration.

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