

REVIEW

on a thesis submitted for acquisition of the educational and scientific degree of doctor in the professional field 3.8. Economics, doctoral programme "Economics and Management (Industry)"

Reviewer: Prof. Lyubcho Varamezov, Ph.D., Department of Industrial Business and Entrepreneurship, D. A. Tsenov Academy of Economics - Svishtov

Author of the doctoral thesis: Emre Zafer Guney, Full-time Doctoral Student, Department of Industrial Business and Entrepreneurship, D.A.Tsenov Academy of Economics - Svishtov

Title of the doctoral thesis: „Algorithms to Forecast Workforce”

Grounds: №406/30.06.2021 of the Rector of D. A. Tsenov Academy of Economics - Svishtov

I. General presentation of the dissertation

The subject of research of the dissertation is establishing algorithms for workforce requirements per 30-minutes periods and flexible work schedules for the departments of Cashiers, Stockers and Butchers with the help of time study observations and analysis of sales data using python and cplex tools. **The aim** of the study is to increase efficiency in workforce management in Migros, one of the largest grocery retail stores in Turkey. The author has indicated five research **tasks** that are logically arranged and allow the achievement of the formulated scientific goal of the dissertation.

The main **thesis** advocated in the dissertation research is that the development of algorithms for workforce forecasting can lead to increased efficiency in its management, which will allow the company to reduce labor costs and gain an advantage over competitors.

The problem chosen for research directly corresponds to the important issue of competitiveness for each business entity and the author pointed this out at the beginning of the introduction to the dissertation (introduction, p.10). Adequate workforce management is a solid prerequisite for achieving company competitiveness and growth. In this sense, the

topic of the dissertation is extremely relevant. In this sense, the relevance of the topic of the dissertation is indisputable - today companies are looking for various opportunities to achieve competitive advantages, including by improving workforce management. The author rightly notes that employees are a key factor and happy employees also mean happy customers (happy employees provide quality services, which triggers to higher customer satisfaction and in return the store gains more revenue).

The total volume of the dissertation is 232 pages and includes title pages, table of contents, list of tables, list of figures, terms and abbreviations used, introduction, four main parts (Chapters I, II, III and IV), conclusion, references and appendices. The main parts of the dissertation are proportional, interconnected and developed in a logical sequence. The volume meets and even exceeds the generally accepted requirements for the volume of such research. The author widely uses non-textual components (102 tables, 10 figures and a number of applications), facilitating the reader's perception of the ideas and content of the dissertation. The doctoral student indicated a total of 114 used sources related to the topic of the dissertation. At the end of the dissertation, on 38 pages, there are many appendices, thus facilitating the presentation in the main parts.

The successful formulation of the topic of the dissertation facilitates its structuring and development of the doctoral student's ideas. The research methodology integrates traditional, widely applied in research work scientific approaches (systemic, historical, structural, functional, process, etc.) with various research methods (working time study, method of modeling and programming, SWOT analysis, comparative method, method of analysis and synthesis, descriptive, graphical, etc.).

The dissertation contains scientific and scientifically applied results, which will be discussed later, and is a proof of the author's theoretical knowledge and abilities to conduct independent research. Its type and volume meet the requirements of the Law for Development of the Academic Staff of the Republic of Bulgaria and the Regulations for Development of the Academic Staff in D. A. Tsenov Academy of Economics – Svishtov, and the obligatory according to Law for Development of the Academic Staff of the Republic of Bulgaria declaration of originality is placed in the dissertation's abstract.

II. Assessment of the form and content of the dissertation

The author has chosen the structure of the dissertation with four main parts. Each chapter ends with summaries and conclusions. In the introduction he substantiates the relevance of the topic, successfully defines the object and subject of research, goals and objectives and derives the research thesis. The objective limitations previously drawn by Emre Guney outline the conceptual framework of the overall scientific research. According to the author of the dissertation, the results of the research will help the store management to organize the workforce so that the adaptation time is reduced, the company will have better control over labor costs and provide better services to consumers. In addition, as the author notes, other companies can benefit from these results, which will increase the efficiency of workforce management to a new, higher level. It is fair to note that, unlike many other studies, Guney's research is characterized by the use of solid mathematical models, while the issues of the impact of management decisions on the human factor are not neglected. In this sense, theoretical analyzes, methodological developments, empirical research, the importance of scientific contributions, which will be discussed later, as well as the ideas of PhD student Emre Guney to improve workforce management should be highly valued.

In the first chapter, which has both a purely theoretical and to some extent methodological nature, the author, based on a review of literature, consistently traces the history of labor management, reviews the needs of the workforce, work schedules and study of the workforce. time. However, these issues are well enough clarified in the literature and in this part of the dissertation no contribution moments should be expected. In my opinion, the author did not even strive to achieve this. Here he rather demonstrates good theoretical knowledge and literary awareness, skillful handling of scientific terminology, theoretical and methodological readiness, analytical abilities, skills for argumentation of one's own views.

In the second chapter, the author describes the history of the global grocery retail sector, the state of this sector in Turkey, its potential, as well as the key players in it. A

SWOT analysis of the Turkish grocery retail sector was performed and the object of the study - the company Migros and its structure - was presented. In summary, it is concluded that: the way of retail trade has changed over the past decade; the coronavirus changed the market in an unprecedented way and forced retailers to change their growth strategies; new investment opportunities open up for the Turkish market; Migros needs more and more initiatives to maintain its leadership in the sector.

Chapter three focuses on the development of an algorithm for determining the need for staff in three key Migros departments. The work in each department has its own specifics and the study of working hours was conducted in different days and formats. The results of the study provide empirical data that help develop algorithms for forecasting the needs of employees for each department. In conclusion, the defined conclusions and summaries at the end of this section is a demonstration of the author's research and analytical abilities.

The fourth chapter is devoted to the development of an algorithm for personnel planning in three departments of Migros, the subject of the study. The effects that would be obtained from the application of this algorithm are calculated.

In the conclusion of the dissertation the doctoral student makes a summary of the achieved results, which confirm the formulated research thesis.

In developing the dissertation, the author has followed the rules of scientific ethics. Literature sources are cited correctly.

Along with the dissertation, Emre Guney presented, as required, an abstract. The abstract in its volume (48 pages), form, structure, scope and content is developed according to the usual practice. Synthesized and reliably reflects the achievements of the dissertation. The scientific-applied and applied contributions of the dissertation are correctly indicated.

In his dissertation, Emre Guney also presented a list of publications, which includes a total of 4 titles (three articles and one report), all of which are independent works. They are sufficient in quantitative terms, are related to the topic of the dissertation, reflect some important aspects of the work on it and meet the requirements requirements of the Law for Development of the Academic Staff of the Republic of Bulgaria.

III. Scientific and applied contributions of the dissertation

As noted above, Emre Guney's dissertation is an original work on a topical and significant issue for any company.

The following can be singled out as more significant scientific and applied scientific contributions:

First, unused areas for implementing software solutions and achieving time efficiency by forecasting the workforce and optimizing the work schedules of Migros employees have been identified.

Second, a methodology for research, development and improvement of an algorithm for forecasting requirements of workforce in three key departments of the studied company has been developed.

Third, based on the methodology proposed by the author for research and analysis of data, development and subsequent improvement of an algorithm for forecasting workforce requirements at the company level (following the example of Migros, Turkey), an algorithm for planning the workforce of department level, tested as an organizational and management tool for finding and identifying opportunities to achieve time efficiency based on a key performance indicator (SER - Scheduling Efficiency Rate).

Fourth, through the development, testing and implementation of the workforce forecasting algorithm, a number of positive effects have been achieved for the company.

IV. Critical notes and recommendations on the dissertation

PhD student Emre Guney has successfully completed his research task. My assessment of the quality of the dissertation, the achieved scientific and applied results is high. I do not find any serious weaknesses and I do not have any significant critical remarks.

V. Summarized assessment of the dissertation and conclusion

The dissertation presented for review on the topic "Algorithms to Forecast Workforce" is an original scientific study, with significant results for theory and practice.

I believe that the dissertation presented by doctoral student Emre Guney in its volume, structure, relevance, practical significance and scientific value meets the requirements of the Law for Development of the Academic Staff of the Republic of Bulgaria and the Regulations for Development of the Academic Staff in D. A. Tsenov Academy of Economics – Svishtov for acquisition of the educational and scientific degree of doctor in the professional field 3.8. Economics, doctoral programme "Economics and Management (Industry)". All this gives me sufficient grounds to declare my positive vote and to offer the esteemed members of the scientific jury to support with their vote the award of the educational and scientific degree "Doctor" of Emre Zafer Guney in professional field 3.8. Economics, doctoral program "Economics and Management (Industry)".

Svishtov,
August, 2021

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(Prof. L. Varamezov, Ph.D.)

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