THE DYNAMIC OF COMMERCE AND LOGISTIC ECONOMIC SECTORS IN THE CONTEXT OF INDUSTRY 4.0. EVIDENCES FROM THE EUROPEAN AND ROMANIAN MOUNTAIN ENTREPRENEURSHIP

Brîndușa COVACI[1], Radu BREJEA[2], Mihai COVACI[3]

Abstract. *The paper presents the conceptual and statistical dynamic of the Wholesale and Retail Commerce, Repair of Motor Vehicles and Motorcycles and Transport and Storage economic sectors in the European mountain area. European mountain entrepreneurship and commerce develops considerably in the 20th century, especially in the context of the industrial revolutions. The article analyzes the evolution of the commerce and logistic sectors between 2008-2018 and highlights the importance of the classic commerce in the contexts of e-commerce and pandemic approach. The results show that both analyzed sectors present an activity intensification during 2008-2018 period, but especially in the pandemic context.*

Keywords: commerce, industry 4.0., logistic, mountain entrepreneurship

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1. Introduction

From the first industrial revolution (year 1760, the period of industrial development associated with steam engines) to Industry 4.0 (the interaction of objects with people), the evolution of commerce and its associated logistic experienced a development that dismantled and rearranged world socioeconomic patterns. The defining factors were both Industry 2.0 (electrification and mass production) and Industry 3.0 (development of electronics, telecommunications and computers, as well as online commerce - especially against the background of globalization) [3].

Although online commerce (more immaterial) has irreversibly marked the state of world commerce, classical (material) commerce continues to be the structural basis of commerce. The classic commerce - material - will always be up to date, and the physical logistic related to transport and storage will be a problem that will require a continuous solution. This is because the immaterial in economics can only be supported by material. In this context, commerce and logistic are

[1]Prof., PhD, CBM International University, Honolulu, USA; Senior Researcher, Center for Mountain Economy Romania & Zealandina Agency UK; PhD(c), Oradea University Romania (e-mail: contact@cbmuniversity.org).
[2]Prof., PhD, Oradea University Romania; Corresponding member of the Academy of the Romanian Scientists (e-mail: rbrejea@yahoo.com).
[3]Prof., PhD, CBM University, Honolulu, USA; Assoc. Prof., Hyperion University Romania (e-mail: covaci@zealandina.co.uk).

important dominants of European as well as Romanian development. Both Europe as a whole and Romania as a separate case must be focused on the development of material and immaterial commerce. The poles of commercial power have gradually shifted from the old continent to continents / regional groups - from the penultimate (19th century) and ultimate (20th) emerging wave, such as North America, Asia, BRICS, and so on [2].
Structurally, three phenomena have left their mark on the development of world commerce, specifically urbanization, aging population and digitalization [7].

2. Materials and methods

First of all, the paper is based on a large literature on the topic which creates the scientific updated framework.

Even the technology forces the e-commerce development, consumer behavior is oriented to material retail more than immaterial retail; this is the reason why retailers "adopt new, attractive and exciting technologies to catch consumers and improve the retail management strategies" [6].

At the entrepreneurial level, e-commerce must be sustained by classic commerce. European entrepreneurship follows the rules of horizontal economic growth, known as organic growth [5]. Otherwise, companies will have an untenable growth. The best example of this principle is the conjuncture given by the new pandemic context. Under the current pandemic, the offline retail industry is stagnant, and at the same time the rest of the world economy. The pandemic has caused huge losses for the retail industry and has also developed opportunities with difficult-to-quantify results for e-commerce [8].

In recent decades, European realities have shown that the structure of the retail sector has undergone considerable changes throughout the Community. In the second half of the twentieth century, consumption patterns in developed market economies stabilized, while countries in transition developed only after the 1990s. presented an unusual dynamic after the 1990s. The rapid adaptation of Western European markets to Western norms was supported by the insertion and domination of Western capital. The potential of eastern markets, which are under-exploited domestically, as well as permissive legislation, and the consumer-oriented behavior of Western products have attracted Western retailers. The boom in the opening of Eastern markets to Western entrepreneurs has been decisive for the economic growth of the Western business sector, which is facing considerable stagnation in the 1990s. In the second half of the twentieth century, consumption patterns in developed market economies stabilized the economies of Western European countries, while countries in transition experienced this development much later, mainly at the time of EU accession. Today, the differences, changes and trends of Western Europe are widely accepted and applied in the post-socialist

countries of Europe. Eastern countries have become pillars of emerging development in the European Union, and then true partners for becoming a community. European commerce, as well as the Romanian one, has metamorphosed considerably from the 1990s to the present. As a result, there have been changes in purchasing habits, consumer behavior and preferences, with the commerce union occurring faster than in other dimensions of the acquis communautaire. At the level of commerce practiced by large retailers, consumer behaviors, both Western and Eastern, have become uniform intragenerationally as well as transgenerationally. However, at the level of local commerce, consumer preferences have diversified considerably, with local and regional markets receiving specific support from corporate and public governance in Europe [4].

In the paper, the authors present the results of the statistical simulation for the European and Romanian commerce and logistic the mountain entrepreneurship (population of active enterprises from the mountain area). Data has been taken from Eurostat and simulated in Excel and SPSS [1].

According to Eurostat, the specific categories of commerce and logistic classes, for 2008-2018 period, are Wholesale and Retail Commerce, Repair of Motor Vehicles and Motorcycles and Transport and Storage.

3. Results and Discussions

3.1. Wholesale and Retail Commerce, Repair of Motor Vehicles and Motorcycles

At the European level, statistics on the evolution of the economic sector Wholesale and retail commerce, repair of motor vehicles and motorcycles (Figure 1, panels a - f) shows, mainly average values of 82,827.64 (Bulgaria), 561,775.18 (Italy), 51,836.73 (Austria), 60,643 (Portugal), 77,409 (Romania), 66,766 (Slovakia), with standard deviations of 4,747.31 (Bulgaria), 24,040,658 (Italy), 1,098,528 (Austria), 3,920,721 (Portugal), 12,693,011 (Romania), 3,422,343 (Slovakia).

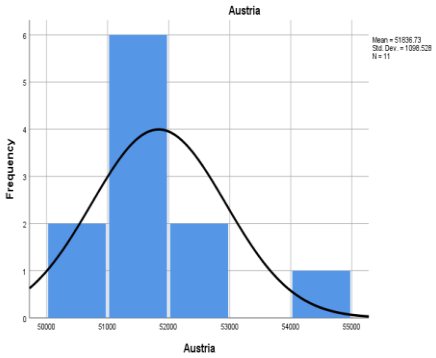

Fig. 1. a. Histogram for wholesale and retail commerce; repair of motor vehicles and motorcycles - Austria

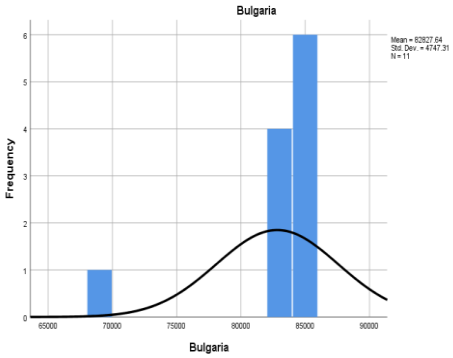

Fig. 1. b. Histogram for wholesale and retail commerce; repair of motor vehicles and motorcycles - Bulgaria

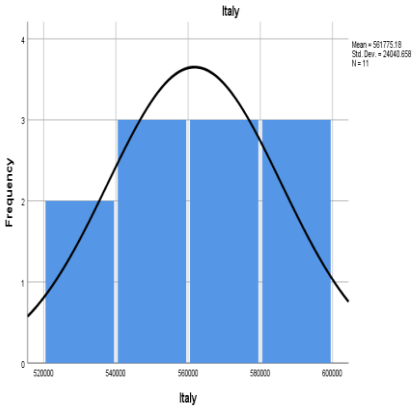

Fig. 1. c. Histogram for wholesale and retail commerce; repair of motor vehicles and motorcycles - Italy

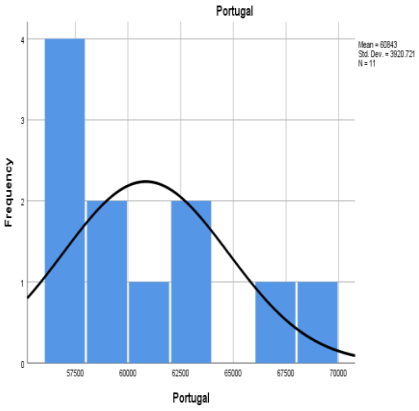

Fig. 1. d. Histogram for wholesale and retail commerce; repair of motor vehicles and motorcycles - Portugal

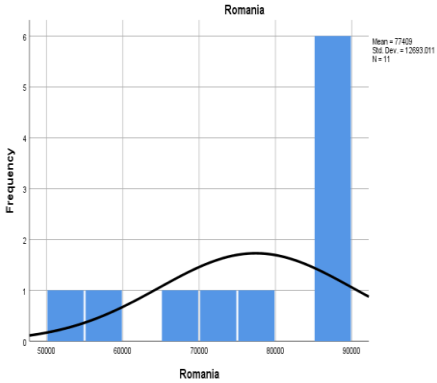

Fig. 1. e. Histogram for wholesale and retail commerce; repair of motor vehicles and motorcycles - Romania

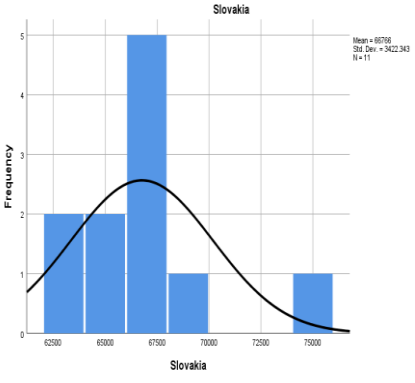

Fig. 1. f. Histogram for wholesale and retail commerce; repair of motor vehicles and motorcycles - Slovakia

Source: Author processing according to Eurostat data - Business Demography Statistics.

Regarding the Romanian realities, the statistics related to the evolution of the field of activity Wholesale and retail commerce; the repair of motor vehicles and motorcycles (Figure 2, panels a-b) shows mainly an average value of 77,409 with a standard error of 12,693.011.

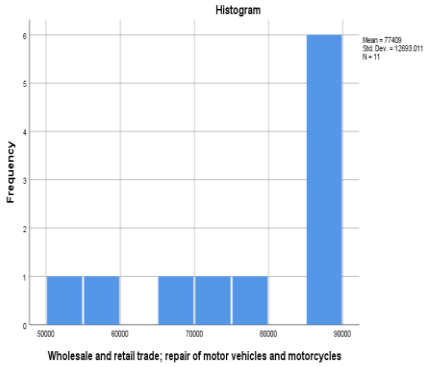

Fig. 2. a. Histogram for wholesale and retail commerce, repair of motor vehicles and motorcycles

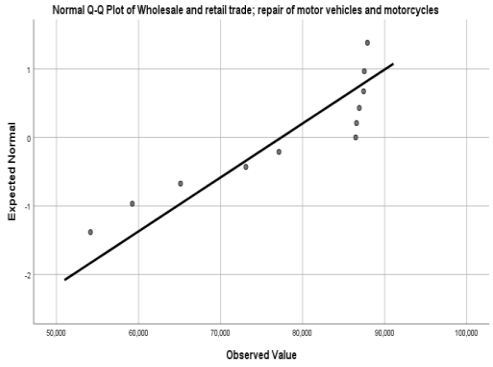

Fig. 2. b. Distribution chart Q-Q normal plot for Wholesale and Retail; repair of motor vehicles and motorcycles by logarithm

Source: Author processing according to Eurostat data - Business Demography Statistics.

3.2. Transport and storage

Statistics for the economic sector Transport and storage (Figure 3, panels a-f) show averages of 12,462.91 (Bulgaria), 58,331.27 (Italy), 8,762.45 (Austria), 5,976.45 (Portugal), 18,845.27 (Romania), 8,660.73 (Slovakia), with standard deviations of 1,543,081 (Bulgaria), 3,774,077 (Italy), 359.93 (Austria), 398.84 (Portugal), 5,262,442 (Romania), 1,120, 484 (Slovakia).

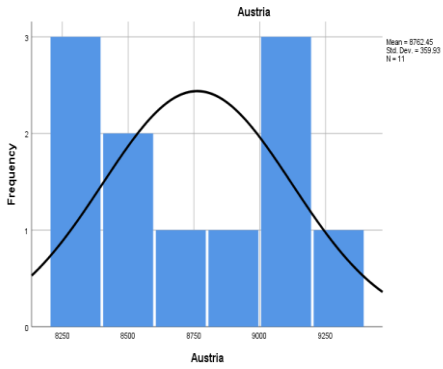

Fig. 3. a. Histogram for the Transport and Storage Sectors - Austria

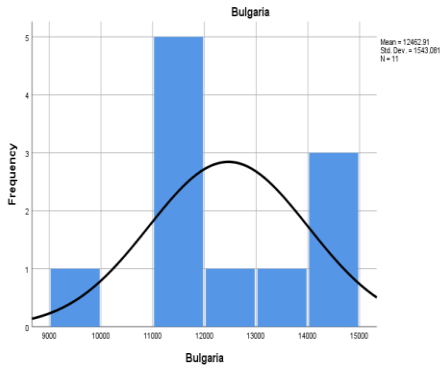

Fig. 3. b. Histogram for the Transport and Storage Sectors – Bulgaria

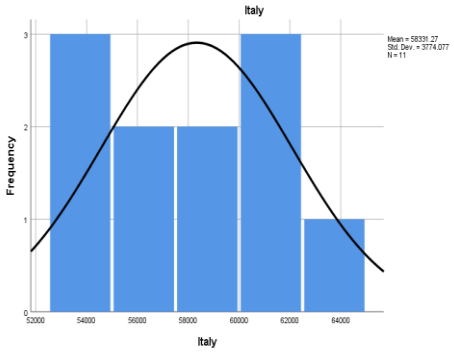

Fig. 3. c. Histogram for the Transport and Storage Sectors - Italy

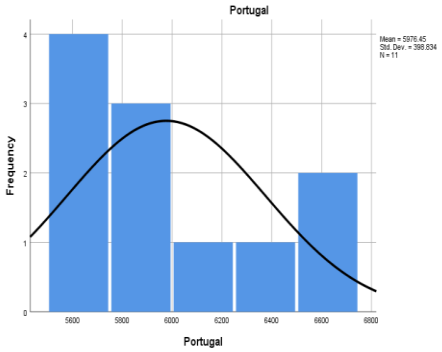

Fig. 3. d. Histogram for the Transport and Storage Sectors - Portugal

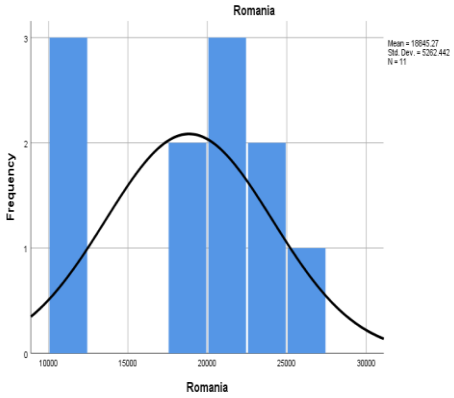

Fig. 3. e. Histogram for the Transport and Storage Sectors - Romania

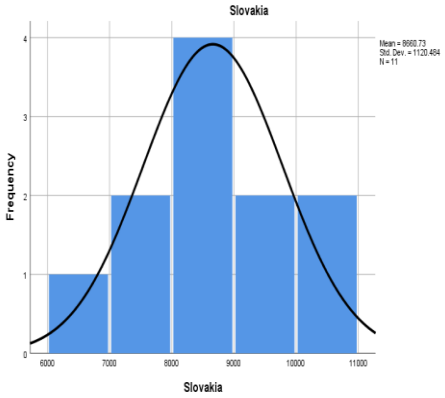

Fig. 3. f. Histogram for the Transport and Storage Sectors – Slovakia

Source: Author processing according to Eurostat data - Business Demography Statistics

The statistics for the Romanian economic sector Transport and storage (Figure 4, panels a-b) show an average of 18,845.27 with a standard error of 5,262.442.

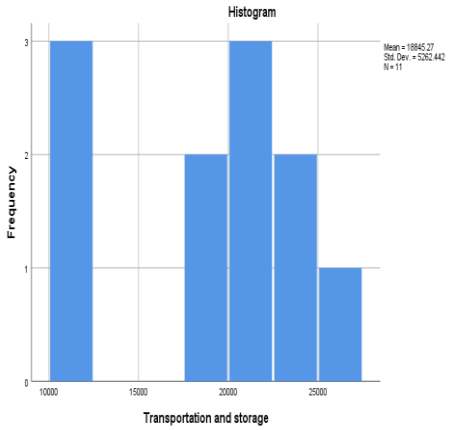

Fig. 4. a. Histogram for the economic sector Transport and storage

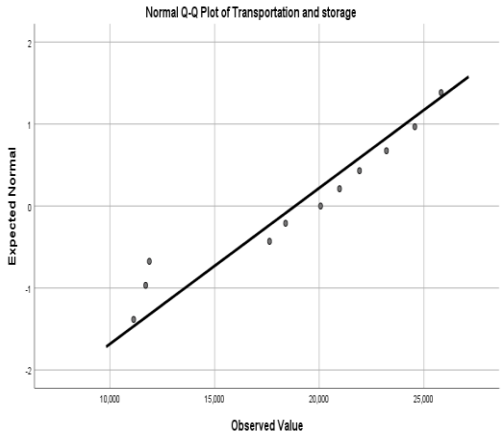

Fig. 4. b. Graph of the Q-Q normal plot distribution for the Transport and storage economic sector, by logarithm

Source: Author processing according to Eurostat data - Business Demography Statistics

At the European level, both for the Wholesale and retail commerce, repair of motor vehicles and motorcycles and Transport and storage sectors, the distribution curves of the presented countries are relatively symmetrically central, and the scores around the mean are very concentrated, with the appearance of leptocurtoosis, although the distribution is unimodal. Working hypothesis: the distribution of scores is considered normal and therefore parametric tests will be applied.

The extreme values of the distribution, although in very small numbers, change the appearance of the histogram, by inducing a positive asymmetry, being still statistically important. The concentration of a large number of scores around the averages produces a certain leptocurtosis of the distribution, due to the related phenomena in the European mountain economy.

The logarithm of the values obtained, according to the universally accepted statistical rules, allowed to balance the distribution according to the normal Gauss-Laplace curve.

The importance of these tests is given by the need to carefully observe the influences of certain factors in the evolution of wholesale and retail commerce; repair of motor vehicles and motorcycles. Following the application of normality tests, after logarithmization, the null hypothesis must be rejected and the working hypothesis can be analyzed.

The descriptive and inferential analysis was done considering the distribution of scores within normal limits, according to the working hypothesis, for which the parametric tests are applied.

The central trend for this sector in the analyzed period shows that the European mountain population of the active enterprises in the studied sector increased from 2008 to 2018. In the analyzed period, the hypothesis of activity intensification was verified. The statistics, presented above, and the histogram confirm the intense agglomeration and development trend of this sector in mountain Europe. At the same time, the statistics confirm the intensification of the growth of this sector.

At the Romanian level, at first glance, the distribution curves are relatively symmetrically central, and the scores around the mean are very concentrated, with the appearance of leptocurtosis, although the distribution is unimodal.

Working hypothesis: the distribution of scores is considered normal and therefore parametric tests will be applied. The extreme values of the distribution, although in very small numbers, change the appearance of the histogram, by inducing a positive asymmetry, being still statistically important. The concentration of a large number of scores around the average produces a certain leptocurtosis of the distribution, due to the related phenomena in the Romanian economy. The logarithm of the values obtained, according to the universally accepted statistical rules, allowed to balance the distribution according to the normal Gauss-Laplace curve.

The Q-Q normal plot test, after logarithm, shows a distribution of real scores around normal values, represented by the oblique line on the graph, which corresponds to a normal distribution.

The Q-Q detrended plot test, on the dispersion of empirical scores to normal, represented by the right with the score $z = 0$ for average and standard deviation 1, after logarithm, shows that they fall within a standard deviation, corresponding to a normal distribution.

By logarithm, the scores obtained were subjected to a statistical processing, after which all the factors involved in the study were taken into account, in order to obtain data as close as possible to the reality recorded in Romania, even if the measures taken in the economy unbalanced the distribution of scores. short period of time.

The importance of these tests is given by the need to carefully observe the influences of certain factors in the evolution of the economic sector “Wholesale and retail commerce; repair of motor vehicles and motorcycles”. Following the application of normality tests, after logarithmization, the null hypothesis must be rejected and the working hypothesis can be analyzed. The descriptive and inferential analysis was done considering the distribution of scores within normal limits, according to the working hypothesis, for which the parametric tests are applied.

The central trend for this economic sector in the analyzed period shows that the population of mountainous Romania of active enterprises in the studied sector increased from 2008 to 2018. In the analyzed period, the intensification of activity hypothesis was verified.

The statistics, presented above, and the histogram confirm the intense agglomeration and the development trend of this sector in Romania. At the same time, the statistics confirm the intensification of the growth of this economic sector.

Conclusions

(1) The paper analyzed statistical dynamic of the Wholesale and Retail Commerce, Repair of Motor Vehicles and Motorcycles and Transport and Storage economic sectors in the European mountain area.

(2) The results pointed out that the European mountain entrepreneurship and commerce developed considerably in the 20th century, especially in the context of the industrial revolutions.

(3) The analysis of the evolution of the commerce and logistic sectors between 2008-2018 highlighted the importance of the classic commerce in the contexts of e-commerce and pandemic approach.

(4) The results showed that the both analyzed sectors present an activity intensification during 2008-2018 period, but especially in the pandemic context.

(5) In Romania, it was also noticed that the population of mountainous Romania of active enterprises in the studied sector increased from 2008 to 2018.

(6) Also, in the analyzed period, the empirical results emphasized an intensification of the activity in the both studied sectors.

R E F E R E N C E S

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