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Spatiotemporal Analysis of Social Media Posts on COVID-19 Based on Topic Modelling

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Abstract

Severe acute respiratory syndrome has caused widespread outbreaks and has developed into a global pandemic since the exploration of COVID-19. Numerous countries have developed numerous real-time, interactive mobile or online geographic information systems, websites, and applications for time-spatial analysis of the COVID-19 outbreak. Advances in information and communication technologies, as well as data from diverse sources, are critical for obtaining accurate and timely information about the COVID-19 outbreak. News articles shared on social media and other communication platforms contain critical information for monitoring and tracking infectious disease outbreaks. 299 news articles on the COVID-19 process published in England and Spain in March, May, and July 2020 were consulted. Documents are represented in topic modelling as a mixture of topics, while topics are represented as a probability distribution over words and topics as a probability distribution over topics. This study evaluated the predictive performance of topic modelling models when combined with conventional classification algorithms and ensemble learning algorithms for spatiotemporal analysis of social media content. The empirical results indicate that combining topic modelling and ensemble classifiers can produce promising results.

Keywords: text mining, ensemble learning, topic modelling, latent Dirichlet allocation

1. INTRODUCTION

Since the first report of COVID-19, severe acute respiratory syndrome has caused massive outbreaks and has developed into a global pandemic. Numerous people have died because of the COVID-19 pandemic, which has resulted in significant changes on a global scale in a variety of sectors, including health, education, food, and business organizations [1]. The COVID-19 pandemic process has brought together government and academic institutions, as well as industry organizations, to work toward a common goal of preventing the outbreak. This has resulted in a variety of outputs in the areas of health resource management, social policy formulation, epidemic prevention and treatment, and vaccine development [2]. Simultaneously, numerous social media posts and news articles have been shared on the Internet's media and communication platforms regarding the social policies, epidemic prevention and treatment practices, and vaccine development processes implemented in various countries worldwide during the COVID-19 outbreak. It is observed that unofficial sharing platforms on the Internet account for a sizable portion of posts about infectious diseases and epidemics, and that such platforms provide the world with the first and most up-to-date news.

All major epidemics examined by the World Health Organization (WHO) were initially shared on unofficial Internet platforms [3]. News articles shared on social media and other online communication platforms provide critical data for monitoring and tracking infectious disease outbreaks. Numerous countries around the world have developed a significant number of real-time, interactive mobile or online geographic information systems, websites, and applications to analyze the COVID-19 outbreak time-spatially. Advances in information and communication technologies, as well as data gathered from a variety of sources, are critical for obtaining accurate and timely information about the COVID-19 outbreak.

This study analyses 299 news articles published in March, May, and July 2020 in England and Spain about the COVID-19 process. The effectiveness of topic modelling based on the latent Dirichlet allocation algorithm is evaluated in the representation of text documents. This is accomplished by evaluating the text representations obtained for five distinct topic numbers (i.e., 50, 100, 150, 200, and 250) using conventional supervised learning algorithms and ensemble learning methods. In the empirical analysis, five supervised learning models (i.e., Naïve Bayes algorithm, k-nearest neighbor algorithm, random forest algorithm, support vector machines and logistic regression) have been considered in conjunction with ensemble learning models (i.e., Bagging, AdaBoost, Random Subspace, and majority voting). The empirical results indicate that combining topic modelling and ensemble classifiers can produce promising results.

The remainder of the study is organized in the following manner: The second section introduces related studies. The third section of the study discusses the methodology, the fourth section discusses the experimental results and discussion, and the final section discusses the overall findings of the study.

2. RELATED WORK

Text classification is an important application area of text mining that assigns text documents to one or more predetermined class labels [4]. Text classification has been successfully applied in many areas, including web page classification [5], sentiment analysis [6-11], spam filtering [12] and text genre identification [13]. While numerous scientific studies have been conducted on the analysis of COVID-19 posts using text mining, the remainder of this section discusses fundamental research in the field.

In their study, Jahanbin and Rahmanian [14] proposed a method based on fuzzy c-means clustering algorithm to monitor and follow the news about the epidemic and social network posts shared on social media platforms to control the process related to COVID-19. In the study performed by Ordun et al. [15], the latent Dirichlet allocation topic modeling algorithm is used for the analysis of COVID-19-related Twitter posts based on topics, key terms, and features. In another study, Peng et al. [16] analyzes the posts created on Sina Weibo, a social media platform that is widely used in China, to get help from COVID-19 pneumonia cases in a spatial-temporal manner. In February 2020, it was aimed to model the urban and spatial characteristics of the COVID-19 transmission with the data analyzed using geotagging in a ten-day period.

In another study, Li et al. [17] offers an algorithm based on the correlation annotation learning algorithm and a clinical-based dictionary to detect the stress symptoms associated with COVID-19 on a time-spatial scale in the United States. The introduced algorithm aims to increase performance by reducing human intervention compared to the latent Dirichlet allocation. Similarly, Chen et al. [18] presented a machine learning and topic modelling-based approach to analyze the time / spatial aspects of Twitter messages about COVID-19. The study aims to understand how social media users react differently over time to the COVID-19. The empirical analysis shows that there is a correlation between the number of Twitter posts and COVID-19 cases in the countries, where the analysis was conducted.

In another study, Boon-Itt and Skunkan [19] used topic modeling methods based on sentiment analysis and the latent Dirichlet allocation algorithm to analyze Twitter users' posts regarding the COVID-19 outbreak. In another study, Onan [20] examined the predictive performance of three basic n-gram models (1-gram, 2-gram, and 3-gram), part-of-speech 2-gram and part-of-speech 3-gram features, word/part-of-speech pairs, character n-gram (for, n = 2), and character n-gram (for, n= 3) features, as well as the efficiency of ensemble feature sets constructed by combining these features. To evaluate the performance of feature sets, the Naïve Bayes algorithm, logistic regression, support vector machines, C4.5 decision trees, k-nearest neighbor algorithm, and random forest algorithm are used.

3. METHODOLOGY

This section provides an overview of the data set, the latent Dirichlet allocation, the supervised learning algorithms, and the ensemble learning models that were used in the empirical analysis.

3.1. Dataset

The experimental analysis makes use of 299 news articles published in March, May, and July 2020 in England and Spain about the COVID-19 process [21]. As attributes of the relevant data set, keywords associated with news

text posts from various time periods are included. It entails using supervised learning methods to identify the time periods defined in the data set.

3.2. Latent Dirichlet allocation

The latent Dirichlet allocation model (LDA) is a probabilistic generative topic model in which each document is represented by a random mixture of latent topics, and each topic is represented by a distribution over a fixed set of words [22]. LDA's objective is to infer the latent topic structure underlying observed data. In LDA, the words of each document serve as observable data. Each document in the corpus undergoes two steps of word generation. To begin, a randomly selected set of themes is selected. Each word in the manuscript is assigned a random topic from the distribution of subjects [12]. A word is a discrete data point from a vocabulary defined by the indices 1,..., *V*, a sequence of *N* words is denoted by $w = (w_1, w_2, ..., w_n)$, and a corpus is a collection of *M* documents marked by $D = w_1, w_2, ..., w_M$. LDA's generating process is summarized in Figure 1.

For each document w in a corpus D:

1. Choose $N \sim$ Poisson (ξ).
2. Choose $\Theta \sim$ Dir (α).
3. For each of the N words w_n:
   a. Choose a topic $z_n \sim$ Multinomial (Θ).
   Choose a word w_n from $(w_n|z_n)$, a multinomial probability conditioned on the topic z_n.

Fig. 1. The generative process of latent Dirichlet allocation algorithm [22]

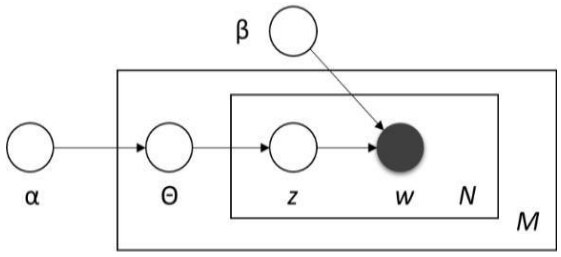

Fig. 2. The graphical representation of LDA algorithm [22]

As illustrated in Figure 2, LDA can be modelled using a three-level Bayesian graphical model in which random variables are represented by nodes and possible dependencies between variables are represented by edges. The Dirichlet parameter Θ denotes document-level topic variables, the z parameter denotes per-word topic assignment, the w parameter denotes the observed word, and β the parameter denotes the topics in this representation. As indicated by the three-layered representation, α and β are sampled once during corpus generation, document-level topic variables are sampled for each document, and document-level word-level variables are sampled for each document word [22].

Calculating the posterior distribution of the hidden variables associated with a specific document is a critical inferential task in LDA. Exact inference of the posterior distributions of the hidden variables can be an intractable problem. As a result, LDA is frequently combined with approximation algorithms such as Laplace approximation, variational approximation, Gibb's sampling, and Markov chain Monte Carlo [22].

3.3. Supervised learning algorithms

Five supervised learning models were considered in the empirical analysis (namely, the Naive Bayes algorithm, the k-nearest neighbor algorithm, the random forest algorithm, support vector machines, and logistic regression). This section summarizes supervised learning algorithms.

The Naïve Bayes algorithm (NB) is a probabilistic-based simple learning algorithm based on the Bayes theorem. It is predicated on the assumption that the features in the learning problem are independent. The NB algorithm's assumption that attributes are independent of one another when determining the class tag results in a structure with few parameters and a high degree of scalability. The NB algorithm has been successfully applied to a variety of text

mining problems, most notably filtering unsolicited e-mails, and it has been demonstrated that it can compete with more complex classification algorithms [4, 5].

The K-nearest neighbor algorithm (KNN) is a classification algorithm that uses instances. The k-nearest neighbor algorithm determines k nearest neighbors based on any distance/closeness criteria for the sample whose class label is to be determined, using the k neighbor number parameter. The instance is then assigned a class tag based on the majority vote of its neighbors' class tags.

The random forest algorithm (RF) is a learning algorithm that applies a collection of decision tree classification algorithms to various subsamples of the dataset and checks predictive accuracy and overfitting using the mean. The bootstrap parameter determines the size of the subsample [23].

Support vector machines (SVM) are a type of basic learning algorithm that can be used to solve classification and regression problems. SVMs can be used to classify problems in both linear and nonlinear fashion. The classification process is initiated in this case by dividing the data set into a high-dimensional hyperplane [24].

The logistic regression (LR) algorithm is a fundamental machine learning technique that models the probability of any event occurring using a linear function between predictive variables [25]. The probability value used to determine the class labels in the logistic regression algorithm is calculated directly on the parameters using the linear function. In natural language processing and text mining applications, it is demonstrated that the logistic regression algorithm shares numerous design advantages with the NB algorithm, is scalable, and produces highly effective results in terms of correct classification performance.

3.4. Ensemble learning algorithms

Ensemble learning algorithms are machine learning models that, rather than using a single classification algorithm, assign class labels to instances to be classified based on the output of multiple learning algorithms. In comparison to traditional classifier algorithms, ensemble learning algorithms should exhibit superior generalization capabilities and a lower risk of overfitting [26]. In the empirical analysis, four ensemble learning models (i.e., Bagging, AdaBoost, Random Subspace, and majority voting) have been considered. This section summarizes ensemble learning algorithms.

Beginning with a random sampling of subsets of the training set, the bagging algorithm begins. Then, learning models are created by training basic learning algorithms on subsets. Majority voting is used to determine the class label for the to-be-classified sample using the outputs of the basic supervised learning algorithms [27].

The boosting algorithm is designed to train basic learning algorithms recursively on training sets with varying distributions and then combine the learning models generated by the basic learning algorithms to create a single powerful classifier [28]. The AdaBoost (adaptive boosting) algorithm gradually increases the weight values of relevant samples to place a greater emphasis on samples that are difficult to classify.

The random subspace algorithm (RS), like the bagging algorithm, is an ensemble learning algorithm in which basic learning algorithms are trained using samples from the training set. However, in this case, rather than sample-based segmentation, distinct subsets of the training set are obtained using feature-space segmentation [29].

Majority voting is a frequently used aggregation rule when classification algorithms are combined. The outputs of the classifier ensemble's basic learning algorithms are subjected to a majority vote, with the class label receiving the most votes chosen as class label of the ensemble [4].

4. EXPERIMENTAL ANALYSIS AND RESULTS

This section discusses the experimental design, the evaluation criteria, and the empirical findings.

4.1. Experimental procedure

The basic learning algorithms and text representation methods used in the experimental analysis were implemented in Python using the scikit-learn library. In the experimental analysis, learning algorithms were evaluated using 10-fold cross validation based on their correct classification rate. Two distinct evaluation metrics, classification accuracy and the F-measure, were used to assess the performance of classification algorithms. Classification accuracy (ACC) is defined as the ratio of true positives and negatives obtained by the classification algorithm to the total number of instances, as defined in Equation 1:

$$ACC = \frac{TN + TP}{TP + FP + FN + TN} \quad (1)$$

where TN stands for true negatives, TP for true positives, FP for false positives, and FN for false negatives. Precision (PRE) is the ratio of true positives to false positives, as defined by Equation 2:

$$PRE = \frac{TP}{TP + FP} \quad (2)$$

Recall (REC) is the ratio of true positives to false positives, as defined by Equation 3:

$$REC = \frac{TP}{TP + FN} \quad (3)$$

The F-measure values ranges between 0 and 1. It is defined as the harmonic mean of precision and recall using Equation 4:

$$F - measure = \frac{2 * PRE * REC}{PRE + REC} \quad (4)$$

4.2. Experimental results

In Tables 1-4, the empirical results on UK and Spain dataset in terms of classification accuracy and F-measure values have been presented. Regarding the different number of topics considered, the highest predictive performance has been achieved when the number of topics is equal to 250, and the second highest predictive performance has been achieved when the number of topics is equal to 200. Regarding the performance of supervised learning algorithms, the highest predictive performance has been achieved by random forest algorithm, and the second highest predictive performance has been achieved by Naïve Bayes algorithm. Regarding the performance of ensemble learning methods, random subspace ensemble outperforms the other ensemble learning schemes. The highest predictive performance among the compared schemes has been achieved by random subspace ensemble of random forest with a classification accuracy of 70.41% for UK dataset and a classification accuracy of 76.54% for Spain dataset.

Table 1. Classification accuracy values obtained by classifiers and ensemble learning methods on UK Dataset

	Number of topics				
Classification Algorithm	**50**	**100**	**150**	**200**	**250**
NB	56.83	57.24	57.57	57.58	57.59
KNN	51.24	53.16	53.24	53.59	55.25
RF	57.62	57.66	57.67	57.94	58.01
SVM	56.40	56.40	56.42	56.47	56.62
LR	55.33	55.46	56.10	56.11	56.32
Bagging (NB)	59.04	59.10	59.17	59.39	59.79
Bagging (KNN)	58.02	58.08	58.10	58.12	58.12
Bagging (RF)	60.04	60.07	60.21	60.24	60.47
Bagging (SVM)	58.44	58.44	58.52	58.68	59.01
Bagging (LR)	58.15	58.23	58.28	58.34	58.41
AdaBoost (NB)	60.90	60.95	60.98	61.06	61.10
AdaBoost (KNN)	60.48	60.52	60.61	60.65	60.67
AdaBoost (RF)	62.11	62.11	62.12	62.23	62.23
AdaBoost (SVM)	61.28	61.71	61.97	61.98	62.03
AdaBoost (LR)	60.77	60.78	60.78	60.80	60.82
Random Subspace (NB)	64.19	64.34	64.52	64.91	64.95
Random Subspace (KNN)	62.31	62.37	62.44	62.46	62.49
Random Subspace (RF)	64.99	65.15	65.46	69.35	70.41
Random Subspace (SVM)	63.46	63.47	63.96	64.00	64.05
Random Subspace (LR)	62.52	62.64	62.74	62.74	62.79
Majority Voting	62.84	63.19	63.36	63.39	63.45

To summarize the main findings of the empirical results, Figure 3 and 4 summarize the main effects of the analysis in terms of number of topics and classification algorithms, respectively.

Table 2. Classification accuracy values obtained by classifiers and ensemble learning methods on Spain Dataset

	Number of topics				
Classification Algorithm	**50**	**100**	**150**	**200**	**250**
NB	64.12	64.18	64.19	64.25	64.31
KNN	61.14	61.21	61.28	61.35	61.59
RF	64.36	64.41	64.53	64.74	64.76
SVM	63.32	63.61	63.78	63.82	63.92
LR	62.08	62.30	62.31	62.83	63.17
Bagging (NB)	65.85	65.92	66.06	66.13	66.14
Bagging (KNN)	64.81	64.82	65.19	65.25	65.28
Bagging (RF)	66.36	66.39	66.43	66.45	66.51
Bagging (SVM)	65.61	65.72	65.75	65.80	65.83
Bagging (LR)	65.39	65.40	65.40	65.42	65.50
AdaBoost (NB)	67.55	67.55	67.70	67.82	67.89
AdaBoost (KNN)	66.55	66.62	66.67	66.84	67.09
AdaBoost (RF)	68.35	68.45	68.58	68.59	68.60
AdaBoost (SVM)	67.97	68.23	68.29	68.29	68.29
AdaBoost (LR)	67.22	67.26	67.30	67.30	67.53
Random Subspace (NB)	71.73	71.74	71.86	72.04	72.08
Random Subspace (KNN)	68.93	68.95	69.01	69.03	69.07
Random Subspace (RF)	72.47	72.50	73.94	73.96	76.54
Random Subspace (SVM)	70.87	70.99	70.99	71.31	71.68
Random Subspace (LR)	69.28	69.54	69.94	70.03	70.33
Majority Voting	70.42	70.45	70.46	70.68	70.76

Table 3. F-measure values obtained by classifiers and ensemble learning methods on UK Dataset

	Number of topics				
Classification Algorithm	**50**	**100**	**150**	**200**	**250**
NB	0.57	0.58	0.58	0.58	0.58
KNN	0.52	0.54	0.54	0.54	0.56
RF	0.58	0.58	0.58	0.58	0.58
SVM	0.57	0.57	0.57	0.57	0.57
LR	0.56	0.56	0.57	0.57	0.57
Bagging (NB)	0.60	0.60	0.60	0.60	0.60
Bagging (KNN)	0.58	0.59	0.59	0.59	0.59
Bagging (RF)	0.61	0.61	0.61	0.61	0.61
Bagging (SVM)	0.59	0.59	0.59	0.59	0.59
Bagging (LR)	0.59	0.59	0.59	0.59	0.59
AdaBoost (NB)	0.61	0.61	0.61	0.62	0.62
AdaBoost (KNN)	0.61	0.61	0.61	0.61	0.61
AdaBoost (RF)	0.63	0.63	0.63	0.63	0.63
AdaBoost (SVM)	0.62	0.62	0.62	0.62	0.63
AdaBoost (LR)	0.61	0.61	0.61	0.61	0.61
Random Subspace (NB)	0.65	0.65	0.65	0.65	0.65
Random Subspace (KNN)	0.63	0.63	0.63	0.63	0.63
Random Subspace (RF)	0.66	0.66	0.66	0.70	0.71

Random Subspace (SVM)	0.64	0.64	0.64	0.65	0.65
Random Subspace (LR)	0.63	0.63	0.63	0.63	0.63
Majority Voting	0.63	0.64	0.64	0.64	0.64

Table 4. F-measure values obtained by classifiers and ensemble learning methods on Spain Dataset

	Number of topics				
Classification Algorithm	**50**	**100**	**150**	**200**	**250**
NB	0.65	0.65	0.65	0.65	0.65
KNN	0.62	0.62	0.62	0.62	0.62
RF	0.65	0.65	0.65	0.65	0.65
SVM	0.64	0.64	0.64	0.64	0.64
LR	0.63	0.63	0.63	0.63	0.64
Bagging (NB)	0.66	0.66	0.67	0.67	0.67
Bagging (KNN)	0.65	0.65	0.66	0.66	0.66
Bagging (RF)	0.67	0.67	0.67	0.67	0.67
Bagging (SVM)	0.66	0.66	0.66	0.66	0.66
Bagging (LR)	0.66	0.66	0.66	0.66	0.66
AdaBoost (NB)	0.68	0.68	0.68	0.68	0.68
AdaBoost (KNN)	0.67	0.67	0.67	0.67	0.68
AdaBoost (RF)	0.69	0.69	0.69	0.69	0.69
AdaBoost (SVM)	0.69	0.69	0.69	0.69	0.69
AdaBoost (LR)	0.68	0.68	0.68	0.68	0.68
Random Subspace (NB)	0.72	0.72	0.72	0.73	0.73
Random Subspace (KNN)	0.70	0.70	0.70	0.70	0.70
Random Subspace (RF)	0.73	0.73	0.75	0.75	0.77
Random Subspace (SVM)	0.71	0.72	0.72	0.72	0.72
Random Subspace (LR)	0.70	0.70	0.71	0.71	0.71
Majority Voting	0.71	0.71	0.71	0.71	0.71

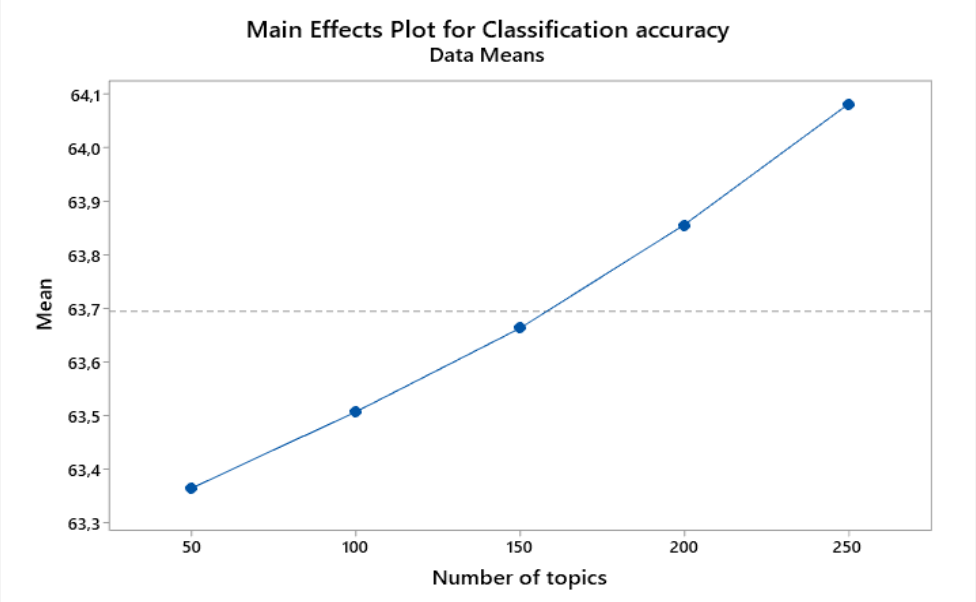

Fig. 3. The main effects plot for classification accuracy based on number of topics

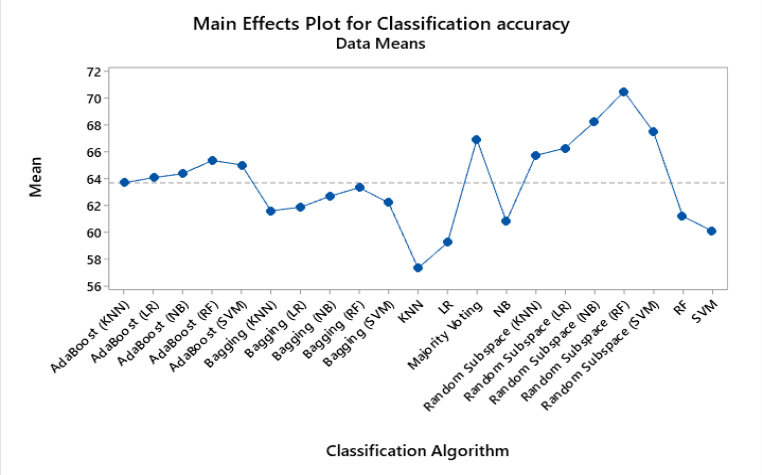

Fig. 4. The main effects plot for classification accuracy based on classification algorithms

5. CONCLUSION

Since the discovery of COVID-19, severe acute respiratory syndrome has caused widespread outbreaks and has developed into a global pandemic. Numerous countries have developed a variety of real-time, interactive geographic information systems, websites, and applications for time-spatial analysis of the COVID-19 outbreak. The advancement of information and communication technologies, as well as data from a variety of sources, are critical for obtaining accurate and timely information about the COVID-19 outbreak. The information contained in news articles shared on social media and other communication platforms is critical for monitoring and tracking infectious disease outbreaks. 299 news articles on the COVID-19 process published in March, May, and July 2020 in England and Spain were consulted. Documents are modeled as a mixture of topics in topic modeling, whereas topics are modeled as a probability distribution over words and topics as a probability distribution over topics. The purpose of this study was to determine the predictive performance of topic modeling models when used in conjunction with conventional classification algorithms and ensemble learning algorithms for spatiotemporal analysis of social media content. The empirical evidence suggests that combining topic modeling and ensemble classification can yield promising results. The highest predictive performance among the compared schemes has been achieved by random subspace ensemble of random forest with a classification accuracy of 70.41% for UK dataset and a classification accuracy of 76.54% for Spain dataset.

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Influence of China's Opinion Leader on Chinese Consumer Purchasing Intentions in E-Commerce Live Streaming

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Abstract

With the continuous advancement of streaming media technology, webcasting platforms have risen rapidly. Live broadcast is not only a form of entertainment, but an important way for users to obtain information and start social interaction. Pan-entertainment and pan-life live broadcasts have entered more subdivided vertical industries. This has found new traffic portals for traditional e-commerce companies that have passed the traffic bonus period and realized the conversion from product shopping guides to content shopping guides. The social attributes missing from traditional e-commerce. Through literature analysis, case studies, and in-depth interviews, this article finds that opinion leaders in live broadcasts play an important role in increasing the conversion rate of customer orders, and concludes: 1) The popularity of opinion leaders is not the decisive factor of consumers' purchase intentions Factors, the involvement and professionalism of opinion leaders in the product situation, as well as the interaction with consumers, can create a sense of trust among consumers, thereby affecting their willingness to buy; 2) The presentation form of the products recommended by opinion leaders affects consumers' willingness to buy The biggest impact is the consistency of opinion leaders' recommendations, especially for consumers who do not have fixed opinion leaders but have the intention of consulting. Timeliness has a greater impact on consumers with a high degree of product involvement. They pay more attention to product updates, so they are more concerned about whether the products recommended by opinion leaders are time-sensitive; 3) The professionalism of consumers can affect them. The consumer's trust in opinion leaders affects their willingness to purchase. Consumers are more likely to accept the opinions of opinion leaders with homogeneity. Consumers who have the habit of soliciting opinions from others when making purchase decisions are more likely to be influenced by the opinions of opinion leaders; 4) "Trust" is an opinion leader The key factors that affect consumers' purchase intentions.

Keywords: E-commerce live broadcast; Opinion leaders; Purchase intention; In-depth interviews

I. INTRODUCTION

With the continuous development of the Internet and live broadcasting technology, web live broadcasting has gradually become an important way for people to obtain information, meet their needs, and seek social interaction. At the same time, it has also become a new marketing method that major industries are vying to use. Since 2016, webcasting has shown explosive growth in China. China's authoritative data statistics platform shows that as an emerging mode of communication, webcasting will have a great impact on the conversion rate of e-commerce. The opinion leaders in the webcasting will have a direct impact on consumers' purchase intentions, with the help of online opinions. Leaders' online live broadcast has become a new marketing method that major companies are vying to use. Among them, the most representative is Jumei Youpin. Therefore, the author has made the following thoughts:

1. Why does the webcast have such a big impact on the increase of e-commerce conversion rate?
2. What are the advantages of webcasting compared with other media?

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3. What are the influence factors of opinion leaders on consumers' purchase intention in the webcast?

This article mainly focuses on the interpretation of the communication and marketing aspects of the emerging e-commerce live broadcast, and analyzes the influence factors of opinion leaders on consumers' purchase intentions in the e-commerce live broadcast through the case study method and in-depth interview method, through Maxwell's " "5W" communication process theory determines the research content as the influence of ten factors on the communication effect of three aspects, including the characteristics of opinion leaders in e-commerce live broadcast, the characteristics of recommended product information, and the characteristics of consumers themselves. Through data analysis, it is found that the influence factors of opinion leaders on consumers' purchasing intention are the influence of opinion leader's characteristics on consumers' purchasing intention, the influence of opinion leaders' recommended product information characteristics on consumers' purchasing intention, and the influence of consumer characteristics on consumers' purchasing intention. Impact. It is hoped that the conclusions of this study can provide reference opinions for the operation of traditional e-commerce platforms. In addition, this article completes the theoretical research on the influence of e-commerce live broadcast on the degree of consumer purchase intention, provides data support for subsequent, more in-depth research, and promotes the inheritance of theoretical research. This article studies e-commerce live broadcasts under the opinion leader theory, which can provide some theoretical guidance for e-commerce companies to effectively use live broadcasts to improve economic benefits.

2. THEORETICAL BASIS OF RELATED RESEARCH

Summarizing the relevant research results at home and abroad in recent years, I found the research results related to the author's questions and thinking. Mainly include webcast and e-commerce live broadcast, opinion leaders and online opinion leaders, buying opinions and "5W" mode. At present, the research on webcasting is mostly discussed from the technical level, as well as the application in distance education and medical treatment. There are few research results on the combination of live broadcasting and e-commerce, but there are many theoretical works on "opinion leaders" and user purchase intentions in the commodity transaction process and related research issues raised in this article. For example, Chris Anderson said in his book "Long Tail Theory": "With the rise of user-driven networks, there are more trustworthy individuals, fewer trustworthy organizations, and the most effective advertising comes from peers. Nothing is more effective than word-of-mouth, as we have seen with our own eyes, the Internet is an unprecedented word-of-mouth amplifier in the world (Chris Anderson, 2015)."

Gold Smith stated in his paper "Innovative Consumers and Market Experts"-As an opinion leader, he influences others in various ways: recommending information to others, giving directions to others, and thinking of himself as good Something tells others and so on. All of these can have a direct impact on the search and purchase of products by the affected (Goldsmith R.E., Flynn L.R, Goldsmith, E.B, 2003).

Flynn pointed out in "Opinion Leaders and Opinion Seekers: Two New Measurement Standards" that consumers trust the recommendations of opinion leaders because in their opinion, the advice or information provided by opinion leaders is what they need. Products are directly related, and opinion leaders often exist as consumption and identity, and do not represent businesses. Therefore, the information they provide is easier to be trusted by consumers than advertisements placed by businesses (Flynn LR, Goldsmith RE Eastman). JK, 1996).

Whether it is a traditional e-commerce company or an e-commerce company that has added live broadcast elements, their goal is to monetize traffic, increase user stickiness, and increase customer order conversion rates. Therefore, the main reason they use webcast as a medium is to increase users' willingness to buy in the live broadcast, rather than simply opening a pan-life live broadcast platform.

Willingness to behave is the prerequisite for producing behavior, and willingness determines behavior. Schiffman said in "Consumer Behavior" that if you want to know the likelihood of a consumer's purchase, you can measure the consumer's willingness to buy, and the willingness is positively correlated with the likelihood of purchase (Schiffman L.G. Kanuk L.L, 2000). If you want to use opinion leaders to increase users' purchase intentions, the first thing you need to do is to establish trust between opinion leaders and users.

China's domestic research on "e-commerce + live broadcast" is still in its infancy. This research object is also relatively new in the academic field.

Rui Yifang pointed out in his paper "Live Streaming + E-Commerce Outlet: Optimizing Shopping Experience and Trying the Waters" that live streaming has been favored by so many e-commerce companies in a short period of time because it has solved the two problems of traditional e-commerce companies for a long time. Pain points: First, the authenticity is doubtful. Traditional e-commerce companies mostly use pictures and videos to display product

details, but both pictures and videos can be modified later. With the expansion of audience knowledge, this lack of authenticity of product introduction is not conducive to consumers making shopping decisions of. The live broadcast can ensure that the picture that consumers see is real-time, reducing the risk of "retouching". The second is the lack of interactivity in e-commerce. Shopping is actually a social behavior. Today, when the consumption level is escalating, "good quality and low price" is no longer the first element of people shopping. What is more important is the fun generated through shopping behavior. When shopping becomes a social behavior and lifestyle, the customer service function of traditional e-commerce is obviously unable to meet the needs of consumers. The live broadcast is real-time. Consumers can ask the host various questions about the product in the live broadcast, and they can also interact with other consumers watching the live broadcast through barrage and other methods. Therefore, the emergence of live broadcast makes up for the lack of social attributes of traditional e-commerce (Rui Yifang, 2016).

The rest of the literature is roughly the same as the above-mentioned literature in terms of research, and they are all analyzed from the aspects of marketing, network traffic, and online shopping experience.

It is worth mentioning that in 1948, the well-known American sociologist Harold Laswell proposed the famous "5W" theory in communication. The relationship between the five elements of the communication process is: communicator, information, Communication channels, audiences, and communication effects, that is, who said what to whom through what channels? What effect has it achieved? This view has been affirmed by many scholars. This research is inspired by this theory in determining the research method and research focus.

3. RESEARCH METHODS

After summarizing and concluding the relevant research literature and determining the research topics and methods, the author determined the research content as control analysis (features of opinion leaders in e-commerce live broadcasts) and content analysis (recommendations) through Laswell's "5W" communication process theory. Product information characteristics) and audience analysis (the influence of consumers' own characteristics on the communication effect); then determine the in-depth interview outline, conduct in-depth interviews, analyze the interview results and test the validity, and finally draw conclusions.

This article mainly takes Jumei Live as an example and uses case analysis and in-depth interviews to explore the influence of opinion leaders on users' purchase intentions in e-commerce live broadcasting. It is hoped that we can start from the case of Jumei Live to understand the entire e-commerce live broadcast industry. The reason for the popularity. Conduct in-depth interviews with direct users of Jumei Live, find out the influence factors of opinion leaders in e-commerce live broadcasts on users' purchase intention from the interview content, and use the interview content as an empirical analysis to supplement the research argument.

In-depth interview is the main research method of this topic. In-depth interview is one of the qualitative research methods. The focus is not on the size of the sample, but whether the sample can answer the question to be studied relatively completely and accurately, and whether the sample drawn can provide a complete research during the interview process Required information. Purposeful sampling is used to ensure that the research subjects who can provide the greatest amount of information for the main research question are interviewed. However, due to the limited number of interviews, in addition to purposive sampling, in-depth interviews should also cover different types of interview subjects through diversity sampling to maximize coverage and reflect the differences in the research subjects. (Sun Xiaoe, 2012).

First of all, the author adopts "purposive sampling" to determine the pre-interview targets as users in the Jumei Live fan group through pre-established research purposes, and consumers who have purchased products recommended by opinion leaders in the live broadcast room. Secondly, using "diversity sampling", the formal interviewees are identified as the staff from the non-live broadcast division of Jumei Youpin, their friends, and consumers collected from the fan base of relevant opinion leaders. Then, establish a complete database of interviewees. In order to make the research effect universal, the research objects are required to be dispersed as much as possible in demographic variables such as occupation, age, gender, education level, etc., to be able to cover and reflect the differences of the research objects to the maximum extent. Finally, the interviewee needs to sign the informed consent form, agree to record during the interview, allow me to write relevant interview materials into a paper, and be willing to cooperate with the follow-up necessary follow-up and validity verification work.

This article adopts a semi-structured in-depth interview. In order to accurately grasp the direction and content of the in-depth interview, an interview outline needs to be drawn up in advance. According to Laswell's "5W" model, this research divides the interview outline into three major modules: the characteristics of opinion leaders, the information characteristics of the products recommended by opinion leaders, and the characteristics of the audience

itself, which are combined with existing research results and related theories at home and abroad. Pre-interview outline. Then use the pre-interview outline to conduct small-scale pre-interviews and modify and improve the interview outline based on the results of the pre-interview. Conduct a formal in-depth interview with the revised interview outline.

4. CONCLUSIONS

Three interesting phenomena were discovered through the collation and analysis of the interview data. One is that the higher product participation, professionalism, and interactivity of opinion leaders have a greater impact on consumers than their popularity. Second, consumers will be greatly affected by the presentation of products and the consistency of recommendations. Third, the professional level of consumers will also affect their willingness to buy. In general, the most direct factor that affects consumers' purchase intention is the credibility of opinion leaders. The validity test carried out by combining "participant test" and "expert test" also verified this situation.

Based on the analysis of in-depth interview data, this study draws the following conclusions:

1.In e-commerce live broadcasts, the popularity of opinion leaders is not a decisive factor that affects consumers' willingness to buy. Consumers are more concerned about whether opinion leaders have a high degree of product participation, whether they are professional, and whether they are highly interactive. These characteristics can make consumers trust opinion leaders, and then affect their purchase intentions.

2.The presentation of the product has the greatest impact on consumers' purchase intentions. Thanks to the real-time nature of webcasting, opinion leaders can describe, test, evaluate, etc., products in real-time in the live broadcast room. This kind of "live on-site" shopping experience that also comes with self-explanation increases consumers' perception of opinion leaders and The degree of trust in its recommended products has strengthened the willingness to buy. Timeliness and consistency of recommendations do not have as much influence on consumers' purchase intentions as the form of product presentation.

3.The characteristics of consumers themselves also have an impact on the recommendation effect of opinion leaders. The more professional the consumers themselves, the weaker their trust in opinion leaders, and the more self-thinking about the products they recommend. Conversely, when the consumer's own professionalism is relatively weak, the easier it is to trust the more professional opinion leader, and then increase the willingness to buy under the influence of the opinion leader. The recommendations of opinion leaders are more effective for consumers with higher similarities. If consumers have the habit of actively soliciting opinions from others when making purchasing decisions, their purchasing decisions are more likely to be influenced by the attitude of opinion leaders.

4.Trust is an intermediate factor that affects consumers' willingness to buy, and it is also the most critical factor. Opinion leaders' high product involvement, professionalism, interactivity, presentation form of recommended product information, consumer self-professionalism, and homogeneity can all affect consumers' trust in opinion leaders. After consumers have trust in opinion leaders, they will have a willingness to buy the products they recommend.

5. RECOMMENDATIONS

Through the research on the influence of e-commerce webcast opinion leaders on consumers' purchasing intention, it is found that consumers' purchasing intention will be affected by ten factors related to opinion leaders in three aspects, and it will have a direct impact on the product supply structure of manufacturers. . Based on this conclusion, the following three suggestions are put forward for the majority of merchants or companies who wish to increase product awareness and sales through live broadcast platforms.

1. Pay attention to the influence of opinion leaders.

Nowadays, the influence of opinion leaders is not limited to the influence on consumers' purchasing intentions. The more direct impact is that the product supply structure of merchants and manufacturers will be adjusted according to the influence of opinion leaders on consumers' purchasing intentions, and even many Merchants will produce and sell products based on the recommendations of opinion leaders. This influence will promote the innovation of e-commerce platforms. Moreover, more and more opinion leaders have begun to own their own brands, which shows that their influence is great. Therefore, e-commerce platforms should pay enough attention to opinion leaders, adjust the product supply structure under the mode of cooperation with opinion leaders, and introduce more product creative sales models.

2. Independently cultivate opinion leaders.

In view of the prominent role of opinion leaders in product recommendations in e-commerce live broadcasts, e-commerce platforms should take the initiative to cultivate their own opinion leaders. First of all, we can find some consumers who are highly involved and professional in a certain type of product as the key training objects, and we must further deepen their product involvement and professionalism; secondly, we must also recommend product information to opinion leaders Make strict requirements and use the timeliness of the live broadcast to display all the details of the product as much as possible, including basic information, usage methods, effects, etc.; again, the personal taste and image of opinion leaders are also very important, with high personal taste and image The opinion leaders of opinion leaders are more likely to arouse consumers' desire for the products recommended by opinion leaders; finally, it is necessary to cultivate the literacy and ability of opinion leaders to interact with consumers during live broadcasts. Only a good attitude and good communication skills can give consumers trust in opinion leaders.

3. Use the live broadcast to regenerate the brand image.

Brand image refers to the personality characteristics of a company or a certain brand in the market and in the minds of the public. It is reflected in the public, especially consumers' evaluation and cognition of the brand. E-commerce platforms should use live broadcasts to create a good and honest brand image. Allowing users to purchase products while they can see the product will not only increase consumers' sense of participation, but also eliminate consumers' concerns about counterfeiting and increase consumers' sense of trust.

6. RESEARCH LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Due to the limitations of my research ability and research conditions, I only studied a part of the influence factors of e-commerce live broadcast opinion leaders on consumer psychology and behavior. Other aspects cannot be fully involved, and future scholars need to improve in the research process.

The limitations of this study mainly include the following:

1.Limitations of the survey sample. In order to improve the pertinence of the research, the research object of this research is limited to users of Jumei Live, making the sample selection range single. And the samples come from different regions of the country. Due to different cultural backgrounds and living habits, consumer preferences may be different. Moreover, the number of samples is limited, and the representativeness of the interviewees is not comprehensive enough. In the future, relevant research can conduct research on e-commerce live broadcasts for consumers in different regions and different cultures, and can also collect a large amount of data for universal analysis.

2.Limitations of the research scope. This research studies ten factors in three aspects: the characteristics of opinion leaders themselves, the characteristics of recommended product information and consumers' perceptions in live broadcast of e-commerce. However, these ten factors are not all factors that influence the consumers' willingness to purchase by opinion leaders. Due to the limitation of research conditions and limited in-depth exploration, future research can start from the perspectives of the specific attributes of the product, the knowledge of the product channel and the product experience, and combine this research to explore the process of consumer purchase intentions into purchase behaviors. , Carry out targeted research.

3.Limitations of research methods. The main source of the in-depth interview outline used in this research is the relevant research results and related theories at home and abroad. After sorting out, various questions are obtained. Although the data test results show good validity, due to the existence of subjective factors of the interviewees, The subject's understanding of the problem is not accurate enough, which may cause confusion, and the data may be biased. Future research can adopt quantitative analysis research methods. In the literature review and research part, theoretical research methods are used to analyze and summarize the research objects and research results of existing related research, analyze the shortcomings of related research, put forward research hypotheses and further build research models. By distributing questionnaires in a larger area, information collection and data analysis are made more objective, and the conclusions are more credible.

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EU Funds in Western Balkans during Pandemics as Part of Pre-Accession Instrument - Albanian Case

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Abstract

The pandemics had a twofold impact on the relations between EU and Western Balkan countries. It has delayed their integration process due to internal EU issues and on the other hand increased the risk to engage authoritarian measures in order to control the spread of pandemics. From the democracy point of view, the Covid-19 pandemics represented steps backward for the Western Balkans countries. But EU as well showed hesitation regarding their future integration. The most awkward thing was that during the first year of the pandemics, Western Balkans countries were considered as all other non-EU member states, and the help was conceived through the COVAX mechanism of United Nations. From March 2021 things started to change, by adding more funds to the pre-assistance financial help, IPA III. Western Balkan representatives were added also to several EU health institutions as observers and in order to share information about the pandemics. The pandemics situation is still ongoing, but it can be said that several lessons have emerged, and some aspects of coordination have improved. What is still to be seen is the internal reformation and deeper democratization and integration of Western Balkans countries.

Keywords: EU Integration, Pandemics, Western Balkans, Albania.

1. INTRODUCTION

The pandemics impact on the Albanian economy was devastating. Early in 2021, Central Bank of Albania estimated that the pandemic gave a significant blow to the economic activity, jobs and investments, seeing businesses and families in difficulty in coping with financial needs and obligations[1]. EU and its main political and financial institutions have been one of the main sources in supporting during the pandemics in the Western Balkans countries. However, in dealing with different internal problems, EU has a hard time when thinking about the best way in helping Western Balkan countries.

The Pre-Accession Instrument (IPA) has been one the most important tools that the EU has used to deliver financial assistance to countries in this region, including Albania. About €510 million have been awarded during IPA I, while for IPA II the allocation of funds was nearly €639.5 million[1]. Despite the progress of Albanian institutions and integration structures in the programming and implementation of IPA funds, it has emerged a continuous problem in the efforts to budget programming and implementation, together in monitoring and evaluation[2]. Nevertheless, it was precisely, as part of IPA funds that the Covid -19 pandemics emerged as part of the EU Recovery Plan for the Western Balkans.

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[2] EU Hub. (2017). Mësimet e nxjerra nga -ndërhyrja e fondeve IPA në Shqipëri - EU Policy Hub HUB MONITOR. Retrieved from: http://www.eupolicyhub.eu/wp-content/uploads/2017/09/Mesimet_e_nxjerra_nga_nderhyrja_e_fondev.pdf

1.1. Background and problem statement

Evidence from the implementation of IPA I and IPA II, in Albania and in the Western Balkans regions, shows that these countries have still problems regarding indirect and direct funds management. Until now, EU funds have offered an opportunity for their economic development and prosperity. However, many challenges still remain. First of all, they lack the necessary capacities and dedicated structures to improve the process of tenders and contracting, which until this moment is under the Albanian Ministry of Finance direct responsibility. The legal framework for the establishment and operation of these structures exists but requires an efficient implementation and better coordination policies between these institutions.

The main goal is to direct the EU assistance toward Albanian strategic plans, which in turn needs to accomplish the requirements of the EU integration process. EU is looking for realistic and practical local strategies in terms of costs and identification of achievable and measurable indicators. These financial mechanisms need to meet the requirements as well for a more programming and well-planned budget support. Connection with medium-term budget planning is also essential in securing ownership of the process. Better coordination and involvement of all actors, including civil society organizations, is a key factor to long success programming, implementation and monitoring of IPA funds[3].

The EU Recovery Funds for the Covid -19 pandemics in the Western Balkan region shall be considered in this financial framework, which has been proved difficult and challenging even before the emergence of these funds. On the other hand, EU is looking also for a better democratic governance, which during the pandemics in some Western Balkan countries has worsened. According to Tzifakis (2020) 'in the Western Balkans, as elsewhere around the world, governments took extraordinary measures to effectively contain the spread of COVID-19, measures that entailed serious restrictions to individual freedoms. They also introduced extra powers that upset the ordinary division and balance of governmental power. In this context, several analysts have expressed concern that the authoritarian trend observed in the region during the last decade will become further entrenched'[4].

On the other hand, EU has not yet a clear plan or strategy regarding its enlargement policy, although is requesting a 'deeper economic integration of the Western Balkans'[5]. A year ago, it tried to introduce and develop a new integration methodology (Ibid.), which has not yet approved, and Western Balkans countries have not yet a clear EU integration path. Despite of this, it seems that European Commission is using the pandemics to show its financial, medical and political support for these countries. In this paper, it is going to be analyzed only the financial dimension of EU support as part of IPA funds.

2. IMPLEMENTATION OF IPA I AND IPA II IN ALBANIA

After 2000s, the European financial assistance mechanism has been moving at very high speeds, not only regarding its very rapid evolution, but also on the very wide use of policy instruments and as well their great geographical expansion[6]. Thus, the Instruments for Pre-Accession (IPA) is an external financial instrument[7] (Koeth, 2014: 101), which is used together with a set of political and economic conditions. It was a programmed in different phases, lasting at least 5 years for each Western Balkan country. It was never used in emergency situations, although some of the projects were complemented between two or more allocations.

The EU has provided funding assistance to Albania under the Instrument for Pre-Accession (IPA I) 2007-2013 response with a total disbursement of €594 million. The assistance was predominantly implemented under the direct management of the EU Delegation in Tirana. The indirect management model was presented with a pilot for the

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[7] Koeth, Wolfgang. (2014). The new instrument for Pre-Accession Assistance (IPA II): Less Accession, More Assistance? European Institute of Public Administration, p.101.

national IPA national program of 2012 and 2013. Thus, the Instrument for Pre-Accession (IPA) is one of the most important external instruments of EU financial assistance[8].

During IPA II (2014-2020), Albania's benefits from pre-accession assistance, together with the priorities set out in the strategic indicative document, have a distribution of € 649.4 million. The IPA II Agreement entered into force in April 2015. The 2014-2017 Action Plans for Albania provided €170 million, and by promoting reforms in key sectors such as democracy and governance, rule of law and fundamental rights, and provided €113 investments in competition and growth. For the year 2018 Action Plan for Albania, €64 million were distributed for law enforcement and justice reform, and €30 million for environmental protection and economic development. It was included the budget support as well for public finance management operations, public administration and justice reform, employment and vocational education[9].

It is important to assess that IPA I invested more for the local infrastructure in Albania, while IPA II is more focused in increasing public administration capacities and justice reform. For example, IPA during the year 2007 allocated approximately €24 million for the implementation of the Acquis regarding infrastructure, which is an example that goes in favor of the social and economic development of the country '[2]. While the Hungarian expert on European integration, Tamas Szemler (2008), noted that regarding the validity of IPA in helping the countries of the Western Balkans to achieve their goals of progress towards EU membership, there are two basic aspects that need to be studied: IPA efficiency in helping the Western Balkan countries to join EU & if IPA program contained the necessary incentives for progress. He also raised the issue if the financial IPA framework was in line with the needs of the Western Balkan countries?[3]. The paper will have some of these issues in focus by analyzing with different political and economic criteria on the progress of the implementation of the instrument in the Western Balkan countries, by focusing especially on the Covid – 19 emergency funds as part of the Pre-Accession Instrument.

3. **IPA 3 & PANDEMIC FUNDING**

The Third Instrument for Pre-Accession Assistance (IPA III), already adopted, will cover the period from the year 2021 to 2027, and it has been regulated by a new regulatory framework. The text of this new regulation no longer includes financial and horizontal governance issues, which will depend on the general agreement in the multiannual financial frameworks. Pre-accession assistance will support beneficiaries in adopting and implementing key policy, institutional, social and economic reforms that need to align with EU values and progressively align with EU rules, standards and policies[4]. In its recommendations, the EU Council proposed that the document shall focus on the essential topics[5]. This meant that 'the partners seeking to join the Union had to meet the main criteria (Copenhagen criteria) focusing on fundamental rights, economic governance, and the strengthening of democratic institutions and public administration. In this way, the IPA III instrument will focus specifically on meeting these criteria. While the other purpose of the instrument was to mobilize strategic investments in their connection with infrastructure, SMEs, energy efficiency, innovation and digital economy. The Council also sought to have a greater impact through increased coherence. The instrument would ensure coherence and complementarity with the Instrument for Neighborhood, Development and International Cooperation (NDICI). It would also increase synergies with EU domestic policies in several areas such as migration, research and innovation, environment and climate change, transport and energy connections.

IPA III is positioned in the context of the new Western Balkans strategy, adopted in February 2018, and which is based on flexibility following the evolution of the situation in Turkey. It is also designed to complement EU domestic policy. Through the IPA III documents it becomes clear that what the member states are already seeking through their representatives in the Council is a balance between performance, fair allocation and predictability of assistance. IPA III, like IPA I and IPA II, is based on a programming framework or strategic document which is focused on the priorities of the accession process, which should cover all specific objectives and for the entire programmed period (indicative content and allocations). For this reason, each IPA instrument has its specific objectives, which in broad terms do not differ from the previous two instruments: IPA I & IPA II.

Thus, the main objectives of IPA III are: (i) strengthening the rule of law, democracy, respect for human rights and international law, civil society and security, and improving immigration management, including better management of borders; (ii) strengthening and effectiveness of public administration and supporting structural reforms

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[8] Koeth, Wolfgang. (2014). The new instrument for Pre-Accession Assistance (IPA II): Less Accession, More Assistance? European Institute of Public Administration, p.101.

[9] European Commission. (2019). "IPA Multi -country Programme Coordination Meeting" Tirana: EU Delegation.

and good governance at all levels; (iii) shaping the rules, standards, policies and practices of the beneficiary countries listed in terms of rapprochement with the EU and to re-strengthen conflict mitigation and good neighborly relations, as well as contacts and communication between people; (iv) to strengthen economic and social development including increasing connectivity and regional development, agricultural and rural development as well as employment policies, to strengthen social protection, increase attention to climate change, accelerate towards reducing carbon consumption in economics and to develop digital economy and society; and to support territorial and cross-border cooperation[6] (EC, 2021). For the period between the years 2021-2027, the Commission has proposed an allocation of 12.9 billion euros for the IPA III program, which represents a reduction of 1.1% compared to the IPA II instrument[7].

According to a report by the European Parliament these small changes have occurred as a result of several factors. First, IPA III needs to be clearly positioned in the context of the Western Balkans strategy, in order to maximize its impact on various initiatives and to reflect developments in relations with Turkey and to create the flexibility to adjust to evolving circumstances. Secondly, while the new strategy of the Western Balkans for 2018 has indicated 2025 as a potential date for the accession of some Western Balkan countries, the increase of funds is expected to be essential in ensuring a fast and flexible mobilization in the coming period. If some Western Balkan countries meet the criteria, they need to increase funding over the next decade, on the one hand to ensure the gradual transition from pre-accession status to member state status and to allow the absorption capacity needed to develop[8].

It should also be noted that IPA III coincided with the entry into force of the EU Green Europe Agreement, which focuses on climate and environmental issues and interrelated challenges. The European Green Deal is a response to these challenges and a new growth strategy of the EU, and which aims to transform it into an honest and prosperous society, a modern and competitive economy where there will be no more concessions to harmful emissions into the atmosphere starting in 2050. These climate and environmental protection goals also appear to be reflected in the IPA III Programming, linking it to the United Nations 2030 Agenda for Sustainable Goals and other priorities announced and by policy guidelines[9]. Moreover, during the year 2020 the European Commission adopted the EU Enlargement Package. 'This is the first Package since the new methodology on EU accession was introduced in February this year. The additional conditionality's that were introduced with the new methodology, which are supposed to ensure that accession countries stick to reforms, are now accompanied by more economic assistance to the countries. Specifically, the Commission adopted an Economic and Investment Plan for the Western Balkans, which sets out to provide up to €9 billion of EU funding for investment in sustainable connectivity, clean energy, environment, digitalization, human capital and competitiveness'[10]. The Report elaborates what kind of reforms are needed in each of the countries, providing 'clearer and more precise recommendations and guidance on the next steps. In general, the areas in which all the countries are underperforming most are the rule of law and the fight against corruption[11].

In contrary to what was initially allocated, the EU Commissioner for the Enlargement Oliver Varhelyi stated early in the year 2021 that European Commission was planning to increase the pre-accession IPA funds for the countries of the Western Balkans in the next EU budget and is preparing an economic plan for the region[12]. 'The new budget envisages 14.5 billion euros of pre-accession assistance for the countries of the Balkans and Turkey, in relation to the 11.7 billion that was allocated in the period from 2014 to 2020'[13]. The EU Commissioner for the Enlargement clearly stated that the additional financial funds shall be used 'to combat the economic consequences of the pandemic' in order to 'prevent the widening of the economic gap after the pandemic'[14].

4. NOT SATISFACTORY RESULTS, BUT MORE FUNDING

For many reasons, the EU integration process for the countries of the Western Balkans have not progressed toward the EU membership, and the Covid – 19 pandemics was not the main cause. The EU conditions list for these countries have increased exponentially since the main Copenhagen criteria, however, this is not expressed as such in the main EU integration documents. As it was explained in the previous parts of the paper, the European Commission officially states that the EU conditions are simple and easy, but the Western European countries usually have irrational justifications for their non-membership in the EU. Somehow their fate is interrelated with a 'deeper economic integration' between Western Balkans countries[15]. And this is expressed also on the conditionality of the allocation of the pre-accession funds IPA. 'The experience of the Visegrad countries has shown that greater EU integration can indeed spur deeper regional ties'[16]. But it is important also to mention that many authors and researchers suggest that the funds are insufficient for the Western Balkan countries since the allocated amount represent only '1% of the GDP of the Western Balkans countries'[17]. Other researchers assess that EU financial support is effective in the short term, and it has empowered the Western Balkan countries during the health crisis[18]. Nevertheless, in the long run, 'the democratic return of EU resources may be jeopardized by the institutional and political context of the Western Balkan

countries' such as: government accountability, the competitive authority of opposition forces, and judicial system effectiveness[19].

But, on the other hand, the Covid-19 pandemic has profoundly affected the economic and political structures of European governance, questioning its foundation and relations among the countries[20]. In this context, the Recovery Fund could open a new phase of the European federal project[21], but for the Western Balkan countries the emergency funds represent the status quo or even a delay in their upcoming integration in the EU. As Di Mino & Siraguza point out 'the new European project could change the relations between member states but also with the external partners such as the 'candidate or potential member states' of the Western Balkans (Serbia, Bosnia Herzegovina, Montenegro, North Macedonia, Kosovo and Albania). The enlargement process, which engages these countries, is suffering a lack of credibility and a dangerous stalemate[22].

Therefore, the Covid -19 pandemic had different impacts and deteriorated even more the equilibriums inside and outside Western Balkans countries. For several months, it was created a gap between EU countries and non-member countries, that had a pressure on hospitals and on the economy. EU firstly reacted by adding its financial help and then by distributing vaccines for Western Balkan countries that were included inside the COVAX scheme, which was not a visible help of European Commission since it was hide after a United Nations programme. But, somehow from March to June 2021, the European Commission started to create a better outlook and perspective for the Western Balkans countries in many aspects such as: by sharing information from the European Centre for Disease Prevention and Control (ECDC) and the EU's Early Warning and Response system. All Western Balkans countries ('partners' in the main documents) have been invited as observers in the EU Health Security Committee. Governments have been invited to join the EU's Joint Procurement Agreement for medical equipment and countries negotiating their accession can also apply for the EU Solidarity Fund[23]. In total, 'EU mobilized a support package of €3.3 billion to address the socio-economic consequences of the COVID-19 crisis in the Western Balkan countries. Within this package, the EU is providing €41.5 million to procure medical equipment and set up a long term Economic and Investment Plan for the region's recovery. A total of €88 million supports the needs of the health and water sectors. Socio-economic recovery from the consequences of the pandemic is funded with more than €761 million from various EU programmers'[24].

However, all of these, did not moved the integration process forward. Politically, the integration process did not provide nothing new, and it has now stopped for different reasons. Firstly, EU is looking to approve a new integration methodology for these countries, and secondly, their fate has been interrelated to each other by no obvious reason. For instance, officially the EU integration of Albania has related to that of Northern Macedonia. If Bulgaria puts a veto against Northern Macedonia, this means that Albania is as well penalized. It is a nonsense logic, and researchers are looking forward to having the methodology with new criteria's while the pandemics still continues.

5. CONCLUSIONS

The pandemics had a twofold impact on the relations between EU and Western Balkan countries. It has delayed their integration process due to internal EU issues and on the other hand increased the risk to engage authoritarian measures in order to control the spread of pandemics. Thus, from the democracy point of view, the Covid-19 pandemics represented steps backward for the Western Balkans countries. But EU as well showed hesitation regarding their future integration. From 1990s, the EU went beyond the democratic conditionality used for Southern Europe, and beyond the Copenhagen criteria as defined during 1993: stability of democratic institutions, rule of law, respect for human and minority rights. But economic, social and cultural rights such as the independence of the judiciary, anti-corruption measures, the further elaboration of a range of human and minority rights (especially underlining the extreme conditions of the Roma), but also the trafficking of women and children and gender equality became important for the EU integration. Then conditionality began to become more specific based on the problems of each country. Considering the recent conditionality of the Council of Europe for Albania, the conditions for 2020 include: Electoral Reform; Judicial Reform; Fight Against Corruption; Fight Against Organized Crime; Other issues such as anti-defamation law, public administration reform, transparency of the civil service, etc. It should be noted that these conditions have been increasing every year and more, especially starting in 2015. While the European Commission used three modalities for the implementation of EU budget support: (i) Direct Management: all tasks of implementing the EU budget is executed directly by its departments or EU delegations or European executive agencies; (ii) Co-Management: implementation is delegated to member countries. (iii) Indirect Management: responsibilities are transferred to a Contracting Authority in the partner (or beneficiary) country. The Contracting Authority is responsible for tendering and contracting and financing the administrative management of projects. The most awkward thing was

that during the first year of the pandemics, Western Balkans countries were considered as all other non EU member states, and the help was conceived through the COVAX mechanism of United Nations. From March 2021 things started to change, by adding more funds to the pre-assistance financial help, IPA III. Western Balkan representatives were added also to several EU health institutions as observers and in order to share information about the pandemics outgoing. The pandemics situation is still ongoing, but it can be said that several lessons have emerged and some aspects of coordination have improved. What is still to be seen is the internal reformation and deeper democratization and integration of Western Balkans countries.

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Strategic Orientations of SMEs with an International Presence during the COVID-19 Pandemic

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Abstract

Companies live in a turbulent world where the issue of maintaining competitiveness in the market becomes extremely important in crisis conditions. Company managers follow certain principles of strategic management aimed at improving the overall performance of the company, or so-called strategic orientations. The constraints that companies had to follow in 2020 have dramatically changed the business processes of many companies. The empirical research is focused on detecting changes in strategic orientations of small and medium enterprises with an international presence that occurred during the COVID-19 pandemic year with a view to formalize possible strategic behavior patterns emerging in response to the crisis. The method of empirical research is a case study of 8 SMEs with an international presence. The study shows that during the crisis, companies with a high level of strategic orientations, which were defined as 'Strategic Winners', turned out to be more successful. However, companies with a high level of 1 or 2 strategic orientations also survived the crisis period caused by the COVID-19. The results of the study give rise to the practical application of strategic orientations in business.

Keywords: Strategic orientations, COVID-19, SMEs, an international presence.

1. INTRODUCTION

Nowadays companies live in a VUCA-world and the issue of staying competitive on the market is becoming exceptionally relevant under crisis conditions. In response to this environmental turbulence, companies' managers follow certain principles of strategic management aimed at improving the overall performance of the company, or so-called strategic orientations[1] adjusting them to attain fit with external conditions. The basic set includes entrepreneurial, market, and learning orientations. Properly formulated strategic orientations that the firm follows have been shown to relate to greater firm performance.

In the current turbulent environment caused by COVID-19 companies are facing even more intense competition and an unstable external environment, which make them search for alternative ways to maintain a steady market position. The unpredictable nature of the coronavirus had introduced a number of restrictions, both on the lives of citizens and on business activities. Critically in a crisis environment suffer small and medium-sized enterprises due to the "liability of smallness".[2] Some SMEs were flexible and took those crisis conditions as an advantage to strategic and functional improvement, while others suffered both financially and strategically and had almost fall bankrupt or went out of business. In a crisis situation when the key issue is not a success of a business, but a survival and maintaining competitiveness, in addition to government support, SMEs are forced to develop special models of strategic development, maintaining stability and the ability to withstand external support.[3]

In 2020 the rapid international spread of the new disease influenced the speed of spreading the economic contagion which negatively influenced the economy worldwide. The COVID-19 has changed purchasing behavior, as well as traditional business processes, due to the fact of lockdowns.[4] The global transitions of businesses into online one had saved most companies, however for industries connected to travelling, transportation, or other closely connected with

public presence as well as food services the transition was hard or impossible to achieve due to different external factors.

Currently multinational companies are reckoning with the effects of the pandemic, but there is no single number or empirical base that reliably reflects or predicts the impact of COVID-19 on SMEs. Moreover, subjects that are studied through the concept of strategic orientations usually are large or multinational companies. There are articles and research papers on the topic of strategic orientations that consider each of them separately in the context of a certain period or certain action (crisis concept, learning, knowledge management). Arguably, the literature on small and medium-sized enterprises indicates that large firm models should not be applied to SMEs, due to the 'resource poverty' condition.[5] The business approach of SMEs tends to be much more informal and entrepreneurial than larger firms run by owners, who tend to be more environmentally conscious. However, nowadays, the entrepreneurial or start-up spirit is searched by a lot of large corporations because this approach is accelerating the speed of innovation, so the boundaries of a classical MNC with the strict hierarchical organizational structure are disappearing, which makes it possible to apply a strategic orientation approach to small and medium-sized enterprises.

The research was formulated in order to detect changes in strategic orientations of small and medium enterprises with international presence that occurred during the COVID-19 pandemic year with a view to formalize possible strategic behavior patterns emerging in response to crisis. The object of the study are SMEs with an international presence. The subject of the study is their strategic orientations during the coronavirus crisis. A number of research questions should be asked in order to achieve the goal formulated:

Q1: How do SMEs with an international presence respond to changing business environment in the context of COVID-2019.

Q2: What strategic orientations were taken by the international SMEs before COVID-2019 and what was the level of SO in those companies?

Q3: What strategic orientations are taken by the international SMEs in the context of COVID-2019 and what is the level of SO in those companies?

Q4: What strategic behavior patterns emerge within international SMEs during the crisis caused by the COVID-19 pandemic?

1.1. About the subjects and objects of the study

An enterprise is 'any entity engaged in an economic activity, irrespective of its legal form'. However, SMEs have some visible differentiation from big enterprises. According to the European Commission report on SMEs, SMEs include both the size (employees, turnover) and the resources (ownership, partnership, linkages).[6]

Regarding the term 'an international presence', the basic terminology describing the definition of an international company is the following: an international company is an organization that has business operations in more than 1 market across the globe. The international presence is any kind of international activities, such as foreign clients or international diversification: when the company is operating on more than 1 market or has a global presence.

Crisis management professionals have focused on large organizations, with little association with small businesses. However, for the SMEs crisis has a more precise meaning, speaking about which small companies are more susceptible to adverse effects and negative consequences of the crisis. Small companies have a lack of time and resources to regulate the crisis issues in comparison to large companies. According to the statistics of TASS to August 2020 Russian economy has lost a million of companies. 1 million 95 thousand 423 SMEs and every fifth business in Russia has been closed due to the pandemic in 2020.[7] After the global introduction of COVID-19 containment measures from March 2020, the real gross domestic product (GDP) in the OECD area in the second quarter of 2020 fell approximately by 10 %, which is the largest drop ever recorded even in comparison with the low estimates after the global financial crisis of 2008 when 2.3% fall was recorded. COVID-19 restrictions as well as lockdowns influenced the purchasing behavior and changed the house holding norms.[8]

2. THEORETICAL FRAMEWORK. DEFINITION OF STRATEGIC ORIENTATION. STRATEGIC ORIENTATIONS

According to the Oxford dictionary, the definition of 'strategic' is 'done as part of a plan that is meant to achieve a particular purpose or to gain an advantage' and definition of 'orientation' is 'the type of aims or interests that a person or an organization has; the act of directing your aims toward a particular thing'.[9] However, there is no universally accepted definition of Strategic Orientation.

Gatington and Xuereb define strategic orientation as the organization wide and collective action that is supported by successful communication, interpretation, adoption, and enactment of information. The authors of a number of research papers and article note that strategic orientation exists at the business level of the organizational hierarchy.

According to B. Engelland and J. Sammey, 'strategic orientation characterizes how the firm sees the competitive process, and subsequently prescribes how the firm will behave in a competitive environment'. Also, strategic orientations are viewed as principles that direct and influence the activities of a firm and generate the behaviors intended to ensure the viability and performance of the firm – to steer the activities of the organization, or representation of an organization's adaptive culture which steers its interaction with its environment.[10]

The roots of the strategic orientations concept lied in the strategic management theory, in which the key task was to create a dimension that can highlight the multifaceted nature of this concept, as well as enable comparisons between the strategies of different firms. Venkatraman proposed the measurement for the strategic orientation of business enterprises based on 6 components: aggressiveness, analysis, defensiveness, futurity, proactiveness, and riskiness.[11]

The following characteristics of strategic orientations were determined: strategic orientation sets a pattern for the strategic behavior of the company, is manifested in the behavior of the firm as well as in its processes and activities, is formed at the strategic management level during the process of decision-making, refers to the business level, and aims at achieving goals and improving firm performance. Different strategic orientations emphasize different principles of strategic management, form unequal behavior of companies and answer differently the question of how to compete in a particular market segment.

2.1. Entrepreneurial Orientation

G. Mintzberg[12] and P. Khandwalla[13] in their works found that the entrepreneurial approach to developing strategies are characterized by a willingness to take risky and proactive decisions in the search of market opportunities, while later D. Miller[14] wrote that entrepreneurial orientation encompasses innovativeness, proactiveness, and risk-taking in the firm's strategic posture. It is assumed that a company can be considered entrepreneurially oriented if all the conditions described above are equally developed.

Innovativeness is expressed through the search for new ideas, the desire to introduce new methods in business processes, creative business approaches, innovative thinking willingness to experiment, and development of new activities or products even in traditional areas. Moreover, innovation affects positively in terms of gaining competitive advantages. Proactiveness is responsible for firms' capacity to be 'up-to-date' and preventive in terms of new trends, taking advantage of the first move and not waiting until the competitor launches a new strategy, but predicts it before and reacts as soon as possible. Risk-taking may be formulated as an ability of the company to invest its resources in projects, even though the result of participation is difficult to predict in advance and the losses are evident.

Moreover, entrepreneurial orientation (EO hereunder) from the definition includes competitive aggressiveness, which means 'challenging competitors to achieve entry or improve position, that is, to outperform industry rivals.[15]

2.2. Market Orientation

The formation of the concept of market orientation (MO hereunder) dates back to the 'marketing concept', a business philosophy based on the recognition of the need for a comprehensive understanding of the needs and desires of consumers and the subsequent offer of products and services within this understanding. Market orientation is often studied and almost universally recognized as one of the main factors for the success and effectiveness of the company.[16]

2.3. Learning Orientation

Definition of learning orientation (LO hereunder) originates in the literature on organizational learning. According to D. Garvin, 'a learning organization is an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights.[17] Without learning enterprises are constantly repeating old practices. Moreover, most scholars define organizational learning as a dynamic process that is improving over time and connected to the knowledge acquisition and performance. Therefore, a commitment to learning requires continuous improvements. LO can be defined as 'a process of information acquisition, information dissemination and shared interpretation that increases both individual and organizational effectiveness due to the direct impact on the outcomes'.[18]

3. THE ROLE OF STRATEGIC ORIENTATIONS IN THE FIRM'S PERFORMANCE (WITH THE FOCUS ON SMES)

Today there is no suitable complex theoretical model that would encompass all three orientations and provide a holistic assessment of the relationship between strategic orientations (SOs hereunder) and the performance. However, different approaches and evidence bases have been applied multiple times in Russian and foreign studies. Most of the conditions for the development of orientations and their relation to the results of firms are associated with certain market restrictions, such as the crisis, developing countries, small and medium-sized companies.[19]

The latest studies on strategic orientations have shown that orientations are positively correlated with organizational performance and influence business effectiveness. From the definition of strategic orientations, it is seen that SOs are influencing the activities of an organization which are intended to ensure the firm's viability and performance.[20]

Organizational performance and business strategy are connected to the competitive advantage. The goal of most business strategies is to gain a sustainable competitive advantage. In order to retain a stable market position in an extremely competitive environment companies endeavor to provide and maintain long-term competitive advantage. According to Oxford University Press, competitive advantage incorporates an advantage over competitors which is gained by offering consumers greater value, for instance, by means of lower prices or by providing greater benefits and better servicing facilities that could justify higher prices. Competitive advantage may be achieved by various methods including increased performance, improved distribution methods, innovations.

Theoretically speaking, the correlation between entrepreneurial orientation and performance has a positive nature. Firms that implement entrepreneurial-oriented strategy has the following benefits, reflecting in an increased firm performance: first-mover advantage, quick response to market trends, catching opportunities, and gaining competitive advantages. A high level of innovativeness stimulates firms to be the first-movers and to realize new products and techniques in response to the consumer's demand.[21] Risk level is approved by the higher outcomes and provides increased value including the financial one. Through entrepreneurial or market orientations may be achieved objectives related to financial indicators such as increased profits or revenues or higher returns on investments. Market orientation is also delivering superior value in terms of market proactiveness, which underlines the importance of discovering and satisfying not only the needs of existent customers but of the future one's as well.

Learning orientation has an intense effect on organizational performance. A lot of studies highlighted the existence of a positive relationship between LO and business (Foley & Fahy, 2004; Frank, Kessler, Mitterer, & Weismeier-Sammer, 2012; Hakala, 2013). Barrett et al. (2005) conducted a study reported that LO correlates with EO and this interaction produces a synergistic effect that improves organizational performance.[22]

Entrepreneurial orientation and market orientation are different variables. However, even though the concepts have been discussed separately, the scholars do not argue the fact that the combination of these variables can optimize the firm's performance. Although, there are some studies proving the fact of correlation between EO-LO and MO-LO, as far as both EO and MO are learning constructs[23] and companies that learn more effectively than competitors have a 'basis for rapid improvement' which can lead to better product success, profitability, market share, and the possibility of gaining sustainable competitive advantage.[24] In addition to the relationship between EO and LO: SMEs, especially high-tech ones, face the challenge of maintaining a competitive edge to compete with large companies through innovation and learning. SMEs and innovation are usually explored from an entrepreneurial perspective, but recently there has been the need to expand that statement because organizational learning practices can benefit SMEs in promoting learning and development to drive innovation and influence innovation outcomes. However, in 2009 Baker and Sinkula provided research on the effects of MO and LO on the performance of small businesses. They take into account the model when both EO and MO are influencing a firm's profitability and each other. Small firms need to be aware of the need to balance a strong EO with a strong MO due to the fact that a high level of entrepreneurial orientation without a high level of market orientation will provide the effect that companies will successfully and proactively identify market opportunities but will not prioritize them correctly. When a high level of MO and a low level of EO can help to focus on customer satisfaction (MO), but not on the ability to actively exploit new market opportunities (EO).

Strategic orientations of SMEs are influencing the performance of the firm despite the concept of liability of smallness. Learning orientation is connected with both market orientation and entrepreneurial orientation.

3.1. Approach to the measurement of SOs

The complex approach to the measurement of strategic orientations is observed in the article as far as it implies detailed functions description and fewer limitations in terms of research. It should be noted that the measuring scales of strategic orientations as a universal approach to understanding the level of each in the company, is not a proven fact. For instance, Covin et al. tested measures of entrepreneurial orientation scales in the USA and took into account

the national features and cultural aspects. Herewith, each country and industry has a different business predilection. Therefore, the application of this approach while carrying out analysis needs to take into account cross-cultural characteristics, and external factors (environmental, economic, political, social factors) as well as the influence of national culture on the development of the entrepreneurial mindset in different countries.[25]

3.2.1. Entrepreneurial orientation

In order to implement the measurement of strategic orientations, it is required to specify which approach to conceptualization was implemented. I am taking into account that constituents of strategic orientations (mainly innovativeness, proactiveness, risk-taking) are highly correlated with each other and influencing the level of entrepreneurship orientation within the company. Due to the fact that EO in its description has a complex definition that encompasses different business practices and decision-making system, the applied model of measuring is reflective one[26] when EO encompass all of its constituents and the linkage between each other is evident.

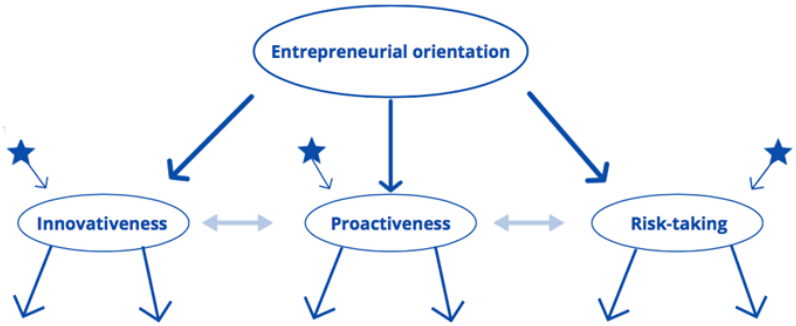

Figure 1. Reflective model of measuring

3.2.2. Market and learning orientation

The assumption was taken, that the learning and market orientation may exist by approximately the same model, due to the fact that factors are dependent on each other and shaping orientations from the bottom to the top. For instance, the learning orientation is formed by the level of commitment to learning, shared vision, and open-mindedness.[27] The key traits of orientations and their influence on the firm's performance were described earlier.

4. THE STRATEGY OF EMPIRICAL RESEARCH

Successful competition and leading positions for small- and medium-sized companies were replaced by another question of 'staying afloat' and surviving the current crisis situation caused by the pandemic and the overall economic decline, which was detailed earlier. Minding the instability within SMEs case studies have been chosen as an acceptable empirical research strategy. This article is focused on directly related to the events of 2020, and interviews were conducted in January and February 2021, which shows the relevance of the information. The case method is also considered suitable for describing, explaining, predicting, and managing related processes.[28]

According to Eisenhardt, the quantity of the cases for the multiple case-study should vary from 4 to 10 companies, which influenced the sample of 8 companies in this analysis.

The key criteria of choice of the companies for the case study were:

- SMEs including individual entrepreneurs with a staff of fewer than 250 people (by an EU standard).
- Companies operating on 1, 2, or several markets, but which have an international activity including international clients, international partners, or somehow operating in a global environment, which subsequently may be represented in several markets.
- Different types of workflow.

The research is primarily focused on the holistic multiple case study. Multiple, due to the fact that it was important to see the situation in different industries with different conditions. And holistic because in this research it is important

to look at different aspects of firms' performance at COVID-19 conditions: to look at each multiple cases but to see the general picture.

The key principle of data collection for the research was the semi-structured interview method and the surveys (primarily source), in addition with secondary (company's website, published interviews and articles, social media of the company's, databases) as well as information on company performance from the database. The approach of different data sources was also chosen in order to achieve data triangulation, implying the use of different methods of data collection to ensure the validity of the conclusions drawn from the data.

Steps of information gathering and interpretation:

1. Conduction of pre-interview research to select appropriate SMEs;
2. Prepare for the interview and create a list of questions and topics to be covered during the interviews;
3. Conducting interviews;
4. Transcribing records;
5. Analysis of secondary data sources;
6. The analysis of the collected data: individual analysis and cross-case analysis.

Table 1. Description of the interviewed SMEs

Company	**Who was interviewed**	**Industry and key product**	**Size of the company**	**Foundation, year**	**Markets involved in the operations**	**Does the company have an office?**
TOUCH	Commercial director	*Technologies*: an ecosystem for EV, the charging stations for electric vehicles	11	2014	Russia, Germany, Italy, Spain, Finland,	+
ProfIntern	CEO and founder	*Education*: internships for foreigners in Russia	Individual entrepreneur (1) with 3 outsource employees	2013	All countries	—
Stormwall	Co-founder	*Information security: p*rotection against DDoS attacks	41	2013	All countries (except for Australia)	—
Coinloan	Co-founder	*FinTech:* cryptocurrency loans	19	2017	All countries except Livan, Iran, Australia	—
Speaker Guru	Co-founder	*EdTech:* VR educational platform	5 + outsource	2019	Russia, EU	—
Bordo Chateau	Founder	*Tourism:* guided wine and gastronomic tours	Individual entrepreneur (1) with 2 outsource employees	2019	France, Russia, EU	+
Robbo	Founder	*Robotic EdTech:* programming courses	72		21 country worldwide (franchise)	+
Dominanta	CEO and founder	*Organizational Consulting:* refresher courses and diagnostic HR tools	17	2007	Russia, Belorussia Kazakhstan, CIS countries	+

Table 2. COVID-19 influence on SMEs

COMPANY	Expectations from 2020	Result of 2020 and what influenced that	What had been changed?	What were the limitations because of Covid-19?

TOUCH	Promising year, a lot of new beneficial laws and regulations for EV owners.	The PP of the majority of people decreased. But the market has demonstrated a relatively high growth rate (higher level of awareness).	Change in the prioritized TA (hotels groups, leisure centres, and shopping malls) Change in integration with clients (online).	Companies froze budgets and mainly were focused on survival, not on innovation. The production of suppliers was suspended.
ProfIntern	A lot of new clients for months ahead.	The number of clients fell almost by 50 percent over 2020, the situation didn't stabilize yet.	The year for growth, the introduction of remote internships.	With closed borders, clients still cannot come freely to Russia (except for a few countries).
StormWall	The company had regular plans to achieve, such as growth in revenue and introduction to new markets.	Clients from the tourism industry fell off, but the company 2020 was a successful year with high revenue (greater than expected, 21% increase). Firms began to actively move online and even small companies needed information protection.	Started to focus on online business more Formulated the concept of Information Sustainability.	Cancellation of offline conferences, which contributed to the search for new customers and partners.
CoinLoan	The plans were the same as for the previous year, to increase the number of clients, to raise awareness, to achieve new markets.	The number of clients had almost doubled, the number of funds in circulation increased 3–3.5 times. An increase in demand (people started to spend more online).	The company didn't open an office as planned, strategic focus had changed to 100% online.	Did not develop any new products and services due to the fact that there was no offline interaction.
SpeakerGuru	The first year for the company revenue growth, new opportunities.	The company paid off faster than it was expected, which was caused by the increased demand for online services and education.	The company didn't change its operations at all.	Carried out usual routine.
Bordo'Chateaux	Great plans on attracting new clients, a lot of programs bookings.	The company had to stop its operations for more than 3 months and was opened only in July with a few local clients. The revenue dropped by 78%.	The sector in which the company is operating demands offline presence, therefore BC had to wait until the stabilization of the situation.	Closed borders, lockdowns are still taking place in France.
Robbo	Planning of opening and development of programming schools in Moscow and Thailand, participation in international projects.	Company and opened up new directions that the company had never thought about. Many of the current plans were not fully implemented (limited budgets).	The company had successfully launched distance learning courses and looked from the long-term perspective and didn't stop the development of offline activities.	Offline courses were mostly cancelled.
Dominanta	Introduction of new services, planning of the business trips abroad.	The company had to stop providing its key service (Refresher course: management competencies of a modern leader), the office was closed.	The company took a wait-and-see tactic and hoped for a quick return to normal. They are working remotely for 80 percent of the time and just started to have normal activities.	The office should have been closed, company (Dominanta is a B2B company) had limitations in budget, health care restrictions.

4.2. Measurement of strategic orientations in SMEs with international presence

This subchapter presents the analysis of the results of the interviews and surveys for each company, which help to determine what strategic orientations were used by small and medium-sized enterprises with an international presence and what was the level of each orientation in the company. Based on the analysis of the activities of the companies presented above and the strategic orientations of the companies from the in-depth interview (with CEOs, founders, and directors) and on the survey conducted were measured the current level of companies' strategic orientations in the COVID environment with the focus on EO, MO, and LO, taking into account the reflective model of SO described above. So, the dimensions of each strategic orientation are interrelated. They are forming the lever of EO, MO, and LO in each organization. Also, a comparison of SO for each company before COVID-19 and a year after the rise of the pandemic was made.

In order to estimate the approximate level of SO in each company before COVID-19 and a year after the start of COVID-19 measurement scales of strategic orientations were used which were adapted in order to make the survey in Google Forms for the company's representatives.

Each block includes from 2 to 9 criteria with an assessment scale from 1 to 5 points. Company representatives (from 1 to 3 representatives from each company, depending on the size of the company) determined the level for each of the criteria. By calculating the arithmetic mean for each of the criteria, the level of strategic orientations was determined. The level of SO was determined before COVID-19 and a year after the pandemic in order to compare how SO was changed for SMEs with international presence and which of SO were affected more than others. The table below presents the common results of the survey; the graph below visually represents the difference between Q12020 from Q12021. The survey conducted was divided into 2 parts, which were made to analyze the situation before the pandemic and a year after the pandemic. All surveys were conducted in 2021, so retrospective measurements were used: how the company saw the level of its strategic orientations in 2020 before the crisis and in 2021 a year after the start of the pandemic.

Table 3. Levels of SO for SMEs with international presence before COVID-19 and a year after

Company	SO	Level of each SO taken separately before COVID-19 (Q12020)	Level of each SO taken separately a year after COVID-19 had started (Q12021)	The overall level of SO before COVID-19 (Q12020)	The overall level of SO a year after COVID-19 (Q12020)
TOUCH	***EO***	3,93	4,4	3,92	4,28
	MO	4,14	4,34		
	LO	3,67	4,11		
ProfIntern	***EO***	3,67	3,95	3,66	3,99
	MO	3,74	3,8		
	LO	3,56	4,22		
StormWall	***EO***	4,27	4,31	4,21	4,35
	MO	4,38	4,52		
	LO	4	4,22		
CoinLoan	***EO***	4,21	4,32	4,03	4,2
	MO	4	4,13		
	LO	3,89	4,11		
SpeakerGuru	***EO***	4,37	4,58	4,07	4,27
	MO	4,06	4,35		
	LO	3,78	3,9		
Bordo' Chateaux	***EO***	3,06	3,48	3,43	3,9
	MO	3,8	4,13		
	LO	3,44	4,11		
Robbo	***EO***	4,21	4,42	4,25	4,44
	MO	4,33	4,53		
	LO	4,22	4,36		
Dominanta	***EO***	3,14	3,34	3,21	3,6
	MO	3,2	3,46		
	LO	3,3	4		

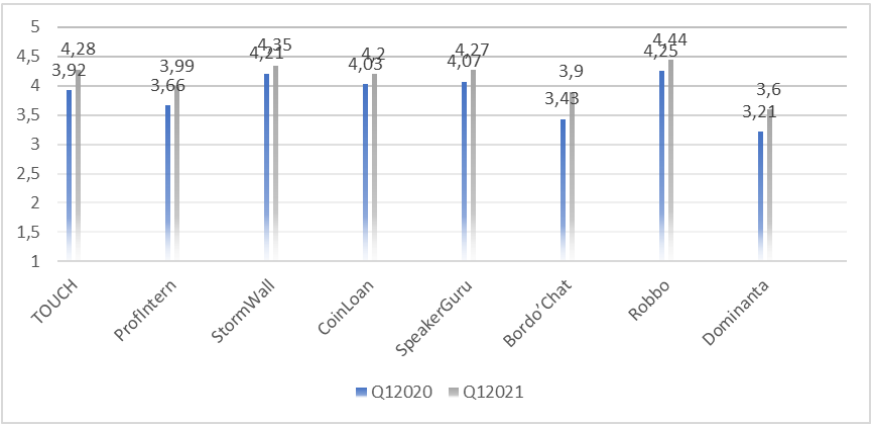

Figure 2. Level of SO for each company: comparison of Q12020 with Q12021

The overall level of SO had increased from Q12020 to Q12021, which is not a critical estimation due to the fact that the concept of SO is not a clear numerical value, but the overall strategic philosophy of the company. Interestingly the level of SO had increased more dramatically in the following companies: ProfIntern (on 0,69); Bordo'Chateaux (on 0,47); Dominanta (on 0,37) and TOUCH (on 0,37). 3 companies out of 5 had a difficult and challenging year from the point of view of financial indicators and are not in the innovative and technological sector. Below the detailed analysis for each company is presented which describes the changes in SO for the chosen SMEs.

4.3. Patterns of Strategic Behavior

Various patterns of strategic behavior were emerged out of a combination of strategic orientations depending on the prevalence of a particular strategic orientation. Taking into account the theoretical perspective and the analysis of the measurement scales of strategic orientations described for SMEs mentioned above, 7 patterns were deduced that characterize the different relationships between LO, MO, and EO. Based on what pattern the company adheres to, it is possible to analyze its position in the market through the concept of strategic orientations. The introduced concept is the first step towards the practical application of strategic orientations, a description of the limitations is given in the 'Limitation of the research' section.

Figure 3. Patterns of Strategic behavior

Strategic Losers: companies with low levels of Strategic Orientations. They are not focused on the market, learning, or entrepreneurship orientation. Usually common for small domestic companies which are not interested in globalization or entering the foreign market. As far as SOs are positively correlated with organizational performance and business effectiveness the low level of each strategic orientation has a negative influence on the firm's viability and performance.[29] For such company's crisis conditions are perceived as a disaster which they usually canot survive at least if they continue to use the same strategic behavior.

Entrepreneurial Enthusiasts: companies with a high level of Entrepreneurial Orientation and a low (or medium to low) level of market and learning orientations. Usually companies with a high level of risk-taking, innovative companies which are concentrated on 1 maximum 2 markets and which are not focused on learning or market orientation. Companies that might be aggressive towards their competitors. However, the level of risk-taking, proactiveness, and innovation is limited by the fact that MO and LO are yet to be developed, therefore such companies either do not leave long on the market or are trying to develop the level of MO and LO.

Entrepreneurial Learners: companies with a high level of entrepreneurial and learning orientation, but low, or medium to low level of market orientation. Such companies are usually innovative and proactive and committed to learning, which in aggregate strengthen the overall SO level, however, a low level of market orientation does not let such companies create high value for customers. Companies which have this pattern are dynamic and continuously improving the knowledge within the organization.

Market Enthusiast: companies with a high level of market orientation and low, or medium to low level of learning and entrepreneurial orientation. Companies that are following this pattern have good cross-functional coordination and are tracking their competitors. The company aims to understand the needs of the client and then offer products and services within this understanding, however, a low level of EO and LO does not let those companies become the leaders of the market.

Market Learners: the combination of a high level of Market and Learning Orientation makes the companies highly committed to learning and open towards the client's needs. Moreover, companies have good cross-functional coordination, they are open to learning within the organization and dynamic, although such companies do not have a high level of entrepreneurial orientation which stops their development in terms of innovation. Companies are not proactive enough which can make them overlook some new market opportunities.

Market Entrepreneurs: companies that have a high level of market and entrepreneurial orientation, but a low level of learning orientation, which is usually normal for young organizations and start-ups as far as those companies had just entered the market and they are focusing more on the market opportunities and competitive advantage gained through a high level of innovativeness, risk-taking, and proactiveness.

Learning Enthusiasts: companies which are following the pattern of high learning orientation, but low market and entrepreneurial orientation are dynamic but yet more focused on the future generated in terms of the process of gaining knowledge within the organization than on up-to-dates activities. For such companies, crisis conditions are not the best environment as far as they cannot proactively adapt to a new environment and are not concentrated too much on the client's needs, but the needs of the organization.

Strategic Winners: companies that have a high level of entrepreneurial orientation, market orientation, and learning orientation. These companies have a lot of resources and develop their strategic orientations fairly evenly on a high level. As far as SO are positively correlated with organizational performance and influence business effectiveness high level of all 3 orientations influence the activities of an organization which are intended to ensure the firm's viability and performance. This pattern of strategic behavior is usually the most successful one in crisis conditions due to the fact that the performance of the company is not damaged but boosted.

4.4. Patterns of Strategic behavior for the analyzed companies

TOUCH: TOUCH company was more of a Market Enthusiasts before COVID-19, with a high level of MO (4,14) and lower level of EO (3,93) and LO (3,67). A year after the start of the pandemic the level of the company's strategic orientations had changed that was that the company had tracked a pattern of Market Entrepreneurs (with the EO = 4,4, MO = 4,34 and lower level of LO = 4,1);

ProfIntern: before the pandemic, the company minding the level of its strategic orientations were closed to the pattern of Strategic Losers (EO = 3,67; MO = 3,74; LO = 3,56). However, ProfIntern had survived the crisis conditions due to the fact that they've refocused on Learning Enthusiasts (EO = 3,95; MO = 3,8; LO = 4,22).

StormWall: in the beginning of 2020, a company was more a Market Entrepreneur (EO = 4,27; MO = 4,38; LO = 4) and with the strengthen the level of SO they have become Strategic Winners with a small focus on MO (EO = 4,31; MO = 4,52; LO = 4,22).

CoinLoan: the company had a pattern of Market Entrepreneurs (EO = 4,21; MO = 4; LO = 3,89) a year ago and currently they are more a Strategic Winners with the small predominance on EO (EO = 4,32; MO = 4,13; LO = 4,11).

Bordo'Chateaux: the company's strategic pattern was Strategic Losers (EO = 3,06; MO = 3,8; LO = 4,11), that had made 2020 a difficult year for Bordo'Chateaux, the company was on the edge of becoming bankrupt, Currently the company is taking the pattern of a Market Learner, which had strengthened the company's positions (EO = 3,48; MO = 4,13; LO = 4,11).

Robbo: it is the only company that did not change its strategic pattern as war as they had already been the – Strategic Winners before COVID-19 which had helped them to achieve even greater performance in 2020 than they've expected (EO = 4,21/4,42; MO = 4,33/4,53; LO = 4,22/4,36).

Dominanta: the company had luckily managed to change its pattern from Strategic Losers (EO = 3,14; MO = 3,2; LO = 3,3) to Learning Enthusiasts (EO = 3,34; MO = 3,46; LO = 4) which had saved the company and created a platform to further strengthen strategic orientations.

Speaker Guru: the company had started 2020 as an Entrepreneurial enthusiast (EO = 4,37; MO = 4,06, LO = 3,78), which is quite common for the new-coming company, however the company had strengthened its market positions by the shift to the pattern of Market Entrepreneurs (EO = 4,58; MO = 4,35; LO = 3,9).

A qualitative study was carried out without a large sample, which does not prove the 100% probability of survival of companies adhering to the same patterns in a crisis, however, using the example of 8 companies described in this paper, 8 out of 8 remained on the market. 4 out of 8 companies achieved better results than last year and the high level of strategic orientations also influenced this. For 3 companies out of 8 (ProfIntern, Dominanta, Bordo'Chateaux) 2020 was a difficult year according to their description, but it also correlates with their chosen strategic patterns. It is important to highlight that despite the fact that certain types of strategic orientations predominate, the prevalence for some is very small. The answer to the Q4: What strategic behavior patterns emerge within international SMEs during the crisis caused by the COVID-19 pandemic is provided.

5. CONCLUSION

In this article, the analysis of strategic orientations of small and medium enterprises with an international presence was conducted. The COVID-19 crisis is known as one of the external factors which negatively influenced the firm's performance. However, there are different tools supporting companies even in crisis conditions. In the article, the strategic orientations of SMEs were analyzed as one of the qualitative instruments supporting the performance of companies. Even though 2020 was a year that negatively influenced most of the businesses and especially small enterprises, the companies did not stop their strategic development and took a lot of actions for the long-term period which could change their effectiveness in the future. Some companies were more affected than others due to the higher level of strategic orientations. Strategic orientations are influencing the effectiveness of the company from a different perspective which is seen from the interview and the analysis provided. Some companies, which were more focused on supporting all 3 dimensions with a high level of EO, MO, and LO showed better performance than those companies which were more focused on only one dimension, like learning one. However, learning orientation is a dynamic and constant orientation the influence of which is more seen in the long-term. Generally, the level of strategic orientations had increased for all of the companies which were analyzed, but the companies with the higher level of EO and MO had shown greater performance in 2020 and were less affected by the COVID-19.

The companies chosen for the research were SMEs with an international presence. It is an important fact that influenced the companies' choice of strategic orientations as well as helped them stay afloat. For companies concentrated on 1 market, the situation described would be different since an international presence helped the companies to concentrate their activities on different markets.

The work provides answers to 4 research questions:

• Q1: How do SMEs with an international presence respond to changing business environment in the context of COVID-2019?

In 2020 companies with an international presence had to relook their strategies to be competitive or just stay afloat and keep their businesses. A lot of companies had to introduce online activities or make a full transition to online business. A lot of market opportunities were hard to fully achieve due to the limitations as an effect of the pandemic.

• Q2: What strategic orientations were taken by the international SMEs before COVID- 2019 and what was the level of SO in those companies?

At the beginning of 2020, 4 case companies out of 8 had a high overall level of strategic orientations (StormWall, CoinLoan, SpeakerGuru, Dominanta), whereas the rest 4 companies had a significantly lower level of SO. Those companies that had a rather successful year predominantly were focused on the development of all three orientations on the high level.

• Q3: What strategic orientations are taken by the international SMEs in the context of COVID-2019 and what is the level of SO in those companies?

The year after the pandemic the SMEs had positively changed their SO, even those companies that had a difficult and challenging year (Dominanta, Bordo'Chateaux, ProfIntern) had increased the level of SO with the most focus on the learning orientation.

• Q4: What strategic behavior patterns emerge within international SMEs during the crisis caused by the COVID-19 pandemic?

Companies followed different strategic patterns during the crisis conditions caused by COVID-19, but there were a lot of 3 Strategic Winners, 2 Market Entrepreneurs, 2 Learning Enthusiasts, and 1 Market Learner. The case companies had followed those patterns of strategic behavior and all 8 companies out of 8 had survived the crisis conditions, but the companies that adhered to the Strategic Winners pattern suffered the least.

Based on the analysis of the literature and the empirical analysis, patterns of strategic behavior were deduced, taking into account the correlation of all 3 strategic orientations. It cannot be said that the described characteristics are an absolute guarantee of the survival of small- and medium-sized enterprises in a crisis (COVID-19) period. However, all the companies that were analyzed survived 2020, some with larger losses than others, some, on the contrary, reaching a new level due to the predominance of one or another strategic orientation (like Stormwall, Robbo, CoinLoan, which had a relatively high level of entrepreneurial and market orientation). Moreover, the research not only integrates strategic orientations and reveals their relationship and impact on small and medium-sized companies, but also shows the practical application of strategic orientations. By measuring the level of strategic orientations in companies, one can relate the company to one of the 7 types of organization. The practical application of strategic orientations has not been previously researched, which increases the relevance of the research and gives a starting field for further researches. However, the limitations should be taken into account.

Limitations of the research

For each limitation (L) the future research directions (F) are provided. There are several significant limitations. First of all, the effectiveness of change in SO from Q12020 to Q22021 cannot be fully estimated yet due to the time limitations (L1). For some companies, which were more focused on learning orientation and took 2020 as a year of search for new opportunities and developments the effectiveness of the taken decision should be estimated furtherly a year after, therefore further research is needed. To estimate the patterns of strategic behavior in the long term and figure out how dynamic the concept is (F1). However, by the analysis provided it is seen that strategic orientations are influencing the company's effectiveness and most of the companies were quite successful even in crisis conditions.

Moreover, the sample analyzed is small, which makes generalization impossible (L2). In order to apply the patterns of strategic orientations to practice, further research should be provided with a larger sample (F2). Despite the prevalence of certain types of strategic orientations, the prevalence for some is marginal, for example, entrepreneurial orientation prevails, but the gap between education and market orientation is minimal.

Another limitation is that the sample that was analyzed is heterogeneous and not homogeneous one which gives limitations in terms of making a concrete conclusion for each sector of business, but for different small and medium enterprises with international presence (L3). In further researches, SMEs with an international presence of 1 sector should be analyzed and compared in order to make a general assumption (F3).

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Correlation between Wearing of Protective Masks and an Increase in the Number of the Bacterial Flora and CFU of Microorganisms in Population during COVID-19 Pandemic

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Abstract

The outbreak of the COVID-19 pandemic forced the governments of many countries to introduce an order to wear protective masks. Current analysis focus on stopping the transmission of the virus and other microorganisms, but provides an excellent environment for the development of pathogens such as bacteria and fungi.

The aim of the study was to assess the composition of the bacterial flora and CFU of microorganisms on the inner surface of protective masks by collecting them from randomly encountered people of Zielona Góra. The masks were transported to the microbiological laboratory for analysis of bacteria colony cultured on Columbia Agar.

A total of 303 mask were collected from obtained from public spaces to acquire the most diverse research group. The groups varied between men and women, and smokers and non-smokers. Obtaining a large number of masks also allowed us to find the age range from 18 to over 60 years of age.

The time of wearing a protective mask and a type of storage place of them was also studied and filled a questionnaire that we collected from each person.

Study resulted in an increase in the number of Staphylococcus Aureus presence among the respondents.

Keywords: COVID-19, face masks, bacteria, patogens

1. INTRODUCTION

COVID-19 is an infectious disease that affects the respiratory system. It is caused by infection with the SARS-CoV-2 virus. The first known case to the medical world was identified in Wuhan, China in December 2019. (Velavan & Meyer, 2020) Since the outbreak of the COVID-19 epidemic, masks have become an integral part of everyday life around the world. Depending on the country, the regulations regarding their use differ, but they have one common denominator - they are necessary to prevent the transmission of SARS-CoV-2. (Cheng, Lam, & Leung, 2020) Face masks were introduced during the COVID-19 pandemic as public and personal health controls against the spread of SARS-CoV-2. (Feng et al., 2020) In Poland, the obligation to wear masks in public space was introduced on April 16,

2020. ("Rozporządzenie Rady Ministrów W sprawie obowiązku zakrywania ust I nosa W miejscach publicznych," 2020)

Currently, it is recommended to cover the mouth and nose only with a mask in public confined spaces. There is much controversy about the use of masks. Since the beginning of the pandemic, face masks have had their supporters and opponents. They limit the transmission of SARS-CoV-2 and other microorganisms, but they are an excellent environment for the development of pathogens such as bacteria and fungi.

The aim of the study was to assess the composition of the bacterial flora and CFU of microorganisms on the inner surface of protective masks. In our work, we specified specific groups of people to use the Score indicator be able to compare their masks with each other.

2. METHODS

The study was conducted by 6 medical students (5 male/1 female). Masks were obtained from public spaces in Zielona Góra, where it was possible to obtain protective masks from the most diverse research group. The students were looking for people willing to donate the mask for research. While collecting masks they asked respondents to find out a questionnaire. In return, the respondents received a new surgical mask from a disposable package.

Then the masks were transported to the microbiological laboratory, each packed separately in a zip-bag. The masks were imprinted on Columbia Agar under laminar flow cabinet to prevent any contamination that might affect the study. After 2 days, visible colonies were picked and screened on MacConkey agar. Then, the cultured microorganisms were identified, including with rabbit serum identifying *Staphylococcus aureus*. All activities were performed under the microbiological laminar. The Score index defining CFU was used to estimate the number of bacterial colonies in a given sample.

Obtaining masks from respondents was accompanied by collecting questionnaires. The questionnaire included questions about the general characteristics of the subject, i.e. sex, age, profession and other factors likely to affect the composition of the bacterial flora present on the inner surface of the protective masks.

The respondents were asked questions about such factors as: the place where the mask was stored, whether the respondent smoked tobacco products, and the presence of facial hair was observed. In the question about smoking, the respondent could choose the answer "no" and the answer "yes", specifying the number of cigarettes smoked during the day.

3. RESULTS

A total of 303 masks were collected, including 173 from women. 132 masks were collected from smokers, including 111 from women. There were 44 people with facial hair in the group of respondents. The age structure was divided into 4 groups. There were 10 people in the group under 18 years of age, 110 people in the group between 19 and 30 years old, 101 people in the group between 31 and 60 years of age, and 71 people in the group over 61 years of age.

4. DISCUSSION

COVID-19 is an infectious disease that affects the respiratory system. It is caused by infection with the SARS-CoV-2 virus. The first known case to the medical world was identified in Wuhan, China in December 2019.

Symptoms are variable, but the most common symptoms are cough, fever, headache, fatigue, trouble breathing, and loss of taste or smell.

In order to prevent the spread of the disease quickly, the authorities of many countries have introduced the obligation to cover the nose and mouth. For this purpose, mainly surgical masks were used. After that, information about the harmfulness of long-term obstruction of the respiratory tract appeared in the media and television. In our healthy population, wearing a face mask does not appear to cause any harmful consequences, and the potentially lifesaving benefits of wearing protective face masks seem to outweigh the discomforts. Evidence suggests that masks operate primarily through source control and therefore the act of taking them off (such as smoking cigarettes) adversely affects their effectiveness.

5. CONCLUSION

The order to wear protective masks, introduced during the COVID-19 pandemic, resulted in an increase in the number of *Staphylococcus Aureus* presence among the respondents in the ratio of the population percentage of carriers.

The time of wearing a protective mask has a significant impact on the number of colonies of bacteria on the protective mask. A longer time of use of the one increases the number of colonies of bacteria on it.

A similar relationship has been revealed in relation to the possession of facial hair by men. The presence of facial hair resulted in an increased number of colonies of bacteria on the inner surface of the protective mask. This proves that male stubble is an excellent habitat for pathogens.

Also in people who reported the fact of disease symptoms during the tests, the study showed a significant increase in the number of bacterial colonies on the protective mask.

A similar relationship was noted for people who smoke cigarettes. The amount of cigarettes smoked per day also turned out to be significant.

The type of storage place of the protective mask used has a minimal effect on increasing the number ofcolonies of bacteria.

We hope that our research will increase people's awareness, which will translate into more frequent changes of protective masks or increase their attention to personal hygiene or limiting or maybe even quitting smoking, which will positively affect their health.

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