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"An investment in knowledge always pays the best interest." Benjamin Franklin

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## TABLE OF CONTENTS

<b>Badri Gechbaia, Merab Vanishvili, Zurab Mushkudiani</b> SEGMENTATION OF GEORGIAN POPULATION ACCORDING TO FINANCIAL CAPABILITIES AND MONEY MANAGEMENT STYLE .....	04
<b>Elmira Valiyeva, Naiba Gamzayeva</b> METHOD OF TEACHING LANGUAGES.....	09
<b>Heydar Guliyev, Aygun Imamverdiyeva, Naiba Hamzayeva, Sevinj Mahmudova, Bagdagul Mammadova, Anya Gruzina</b> EFFECTIVENESS OF USING GAMES IN TEACHING GRAMMAR.....	10
<b>Naibe Hamzayeva, Leyla Piriyeva, Vasila Valiyeva</b> STRANGERS IN A STRANGE LAND .....	12
<b>Nikoloz Onashvili, Malkhaz Mizandari</b> VALUE OF VOLUME RENDERED COMPUTED TOMOGRAPHIC ANGIOGRAPHIC IMAGES IN DETERMINATION OF HEPATIC ARTERIAL ANATOMY VARIATIONS .....	15
<b>Pavlo S. Mazurok</b> TOOLS FOR PROVIDING CORPORATE SOCIAL ACCOUNTABILITY OF AGRICULTURAL ENTERPRISES .....	24
<b>Lesya Melnyk, Kateryna Rechka</b> SIMILARITIES AND DIFFERENCES IN THE NATIONAL AND INTERNATIONAL AGRICULTURE MODELS .....	31
<b>Sevinch Mahmudova, Naibe Hadji Hemzeyeva, Gulnara Valeh Aslanova</b> AGRARIAN EDUCATION AND SCIENCE IS THE PRIORITY OF OUR GOVERNMENT .....	37
<b>Heydar Guliyev, Naiba Gamzayev, Sevinj Mahmudova, Bagdagul Mamedov</b> METHODOLOGICAL TRENDS IN TEACHING ENGLISH .....	39
<b>Yulia Demyanchuk</b> EXAMPLE OF "ENGLISH-UKRAINIAN DICTIONARY COLLOCATION OF NATO MILITARY TERMS" DEVELOPMENT .....	41
<b>Aygun Hasanova, Anna Gruzina, Sevinj Taghiyeva</b> MODAL VERBS AND THEIR STYLISTIC DIFFERENCES IN EUROPEAN AND BRITISH LEGAL DOCUMENTS .....	44
<b>Nancy Karem, Doaa Abd El Aziz Badr, Aly Fahmy Mohamed</b> IN-VITRO ASSESSMENT OF ANTICANCER POTENTIAL OF LAPATINIB AND BEE VENOM AGAINST BREAST (MCF-7) AND PROSTATE (PC-3) CANCER CELL LINES: IN-VITRO STUDY .....	48
<b>Narmin Baba-zade, Gunay Guliyeva</b> BORROWED GREEK AND LATIN WORDS .....	57
<b>Zakir Aliyev</b> SOIL-EROSION RESEARCH ON THE DETERMINATION OF THE DEGREE OF POTENTIAL HAZARDS OF MINING- BROWN STEPPED SOILS OF THE HUB-KHACHMAS ZONE OF AZERBAIJAN .....	59
<b>Loreta Ulvydienė, Živilė Agurkytė</b> TRANSLATION ACROSS CULTURES: THE BALLADS OF KUKUTIS BY M. MARTINAITIS IN ENGLISH .....	64

## SEGMENTATION OF GEORGIAN POPULATION ACCORDING TO FINANCIAL CAPABILITIES AND MONEY MANAGEMENT STYLE

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### ABSTRACT

The purpose of the article is based on the latest literary sources and rich factual materials, based on the peculiarities of the financial behavior of the Georgian population, implementation of its segmentation according to the financial capabilities and money management style.

As a result of the survey, 6 segments of the Georgian population are presented according to their financial capabilities, which are united under the following 3 relevant socio-economic statuses: Financially adapted socio-economic status (28.3% of the population); financially more or less adapted socio-economic status (35.9%); financially poor economic status (32.4%).

During the study process, 23 regulations related to money management were used, which made it possible in-depth study of the money management ways spread in the population. Based on the analysis of the answers received on the abovementioned 23 provisions, it is separated 6 segments according to money management style in Georgia: Financially Responsible (34% of the population), Having financial Fears (22%), Having business thinking (12%), Loaded with debt (16%), Spender 11%), and "Shopaholic" (5%).

The important aspects of financial behavior are discussed in the article, such as the knowledge of basic financial concepts and the ability to use in real life, personal and management of household finances, set financial goals and make concrete steps to achieve them, saving and budgeting, preparedness for financial surprise and pension age, borrow and debt management, awareness and use of financial products.

**Keywords:** socio-economic status, financial responsibility, financial fears, business thinking, loaded with debt, spender, shopaholic.

### INTRODUCTION

The reasonable financial behavior of the individual is the determining factor of its financial position in both short and long term perspectives. Some behaviors, for example, pay taxes late, or purchase of financial products without preliminary comparisons of various offers may be negatively impacted by the financial position of the individual and, consequently, its financial welfare. Therefore, it is essentially important to study the financial behaviors and based on this, the segmentation of the population according to the financial capabilities and money management style.

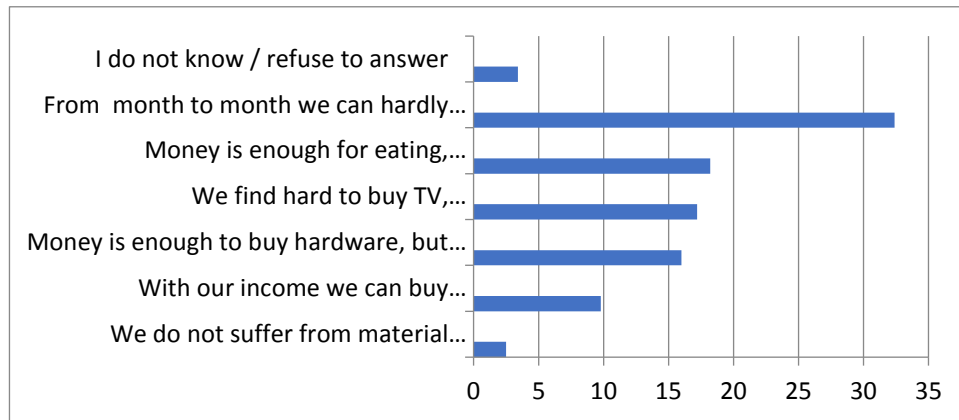
The present article is based on the initiative of the National Bank of Georgia, supported by the development program of the European Fund for South-East Europe (EFSE DF,) and the research organization is based on data collected in Georgia by the participation of sonar [1]. The data was collected through a face-to-face survey of 1,100 respondents aged 18 and 18 years across the country. The method of stratified cluster selection was used, and the selection was made according, to regions and types of settlement (city / village). Selection points were proportional to the population, and the respondents - were selected by the random selection of household" with the principle of the Last Birthday". Field work was carried out from April 1 to April 25, 2016. The data is calculated according, to region, age and sex.

Research methodology is based on the organization of the economic cooperation and development, international network of financial education (OECD / INFE) and the measurement of financial engagement of 2015 manual. 2 The OECD / INFE questionnaire includes various styles of questions which allow us to investigate the positive and negative financial behaviors that characterize the population, among them are the possibility of the possible options for acquiring financial products, to pay tax on time, make a budget, save and borrow money to survive, The data collected in Georgia is part of the OECD / INFE international comparative report of 2016 [3].

**Results of the survey:** within the scope of the survey, the segmentation was divided into 6 different parts according to the financial capabilities of the Georgian population.

- √ We can hardly survive ourselves from month to month.(32.4%)
- √ Money is enough for food, but buying clothes is a big problem (18.2%);
- √ It's hard for us to buy TV or refrigerator with our own funds or credit (17.7%);
- √ We have money to buy equipment, but we can not buy a new car (16.0%);
- √ With our revenue, we can buy everything except for a cottage or a flat (9.8% of the population);
- √ We do not suffer from material hardship, we can buy a flat or a cottage (2.5%).

Subsequently the unification under the socio-economic status of the these segments were happened Figure 1.



**Figure 1. Segmentation of Georgian population according to socio-economic status**

Financially poor – 32,4 %; Financially less or more adapted 35,9 -%; Financially adapted – 28.3%

The last three segments given in the 1-digit diagram are united under financially adapted to socio-economic status, as far as people in these segments are able to satisfy the basic requirements such as purchase of food and clothing, In addition they are characterized by relatively broader consumer opportunities. This segment is 28.3% of the total population of Georgia.

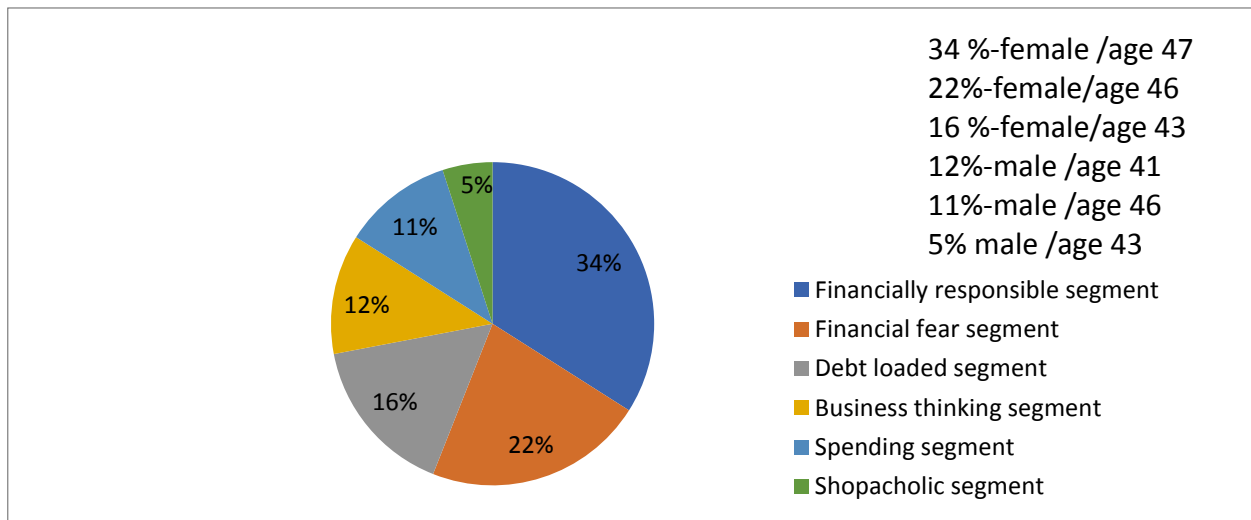
The other two segments are characterized by relatively limited consumer opportunities. However, basic requirements in these segments are more or less satisfied for people. Thus, these two segments can be grouped under financially more or less adapted socio-economic status. These segments comprise 35.9% of the Georgian population.

Finally the third of Georgian population, or 32.4%, is hard to survive financially. This segment is under financially needy economic status.

Interesting and practical directions in the process of developing financial education initiatives offer segmentation of population according to the money management style. In the present study, 23 regulations related to money management were used, which made it possible, in-depth study of the the money management resources spread in the population.

Based on the analysis of the answers received on the abovementioned 23 provisions, 6 different segments were allocated according to the money management style in Georgia: Financially responsible, having of financial fears, having of business-minded, loaded with debt, spender and "shopaholic" (Figure 2).

**Figure 2. Segmentation of Georgian population according to money management style**



It is remarkable that the lowest scores of financial education are associated with the spender, "Sshopaholic" and the segment of having financial fears. The segment of having financial fear has the most limited financial possibilities and that is why it has a low spending experience, while the spender and shopaholic respondents are characterized by so called "active

spending" experience. In addition, financially responsible segment is the most common in Georgia (34% of the population), which is followed by the segments of loaded with debt(16%) and having of financial fears (22%) Detailed analysis of each segments are presented below

**Financially responsible segment:** Respondents in this segment are agree with the following provisions:

- √ I pay taxes on time
- √ I'm trying to get back the debt quickly, because it's very worrying;
- √ Before I buy something, I carefully think over how much I can afford;
- √ I can borrow money only in extreme case
- √ How hard it is to earn money, it should be spent with caution as well
- √ My finances are thoroughly controlled and planned.

The financially responsible segment is the largest all over the world(34.3%) and in it are people who are distinguished with the ability to practical financial behaviors, in the process of spending money with caution, by controlling their own finances, timely covering manner of liabilities and planning of finances. This segment is the least inclined to buy credit products. Loan obligations are bothering him and trying to release from loans on time. 61% of this segment is women, and the average age is 47.6 years. In this segment, the highest proportion of people are over 65 years. The probability of meeting this segment in Guria, Adjara and Shida-Kartli is high; It is difficult to find this segment in Kakheti and Kvemo Kartli and in Samtskhe-Javakheti it is practically impossible.

The financial education score of the financially responsible segment is quite high and 63.0 out of 100 points (Table 1). With this index, the financially responsible segment is in the second place in the country after having of business-minded segment.

**Table 1: General Indicators of financial education of financially responsible segment**

Financial knowledge	Financial behavior	Financial Attitude	Financial education (100-point scale)
Point	Point	Point	Point
4.71	5.37	3.15	58.8

**Segment with Financial Fears:** Respondents in this segment agree with the following provisions:

- √ I often worry about how much I will manage to cover my current and basic expenses;
- √ My financial position does not give me a chance to do many things that are important to me.

It is noteworthy that the segment with financial fears is the second in the country by volume. (21.6%). This segment is distinguished with the scarce financial possibilities and the sense of fear and vulnerability in terms of financial issues.

53.4% of the above segment is found in rural areas, which is quite high considering that in fact only 43% of the total population of Georgia live in rural areas. The average age of this segment is 46.1 years, and it is here that most of respondents, whose ages range between 56 and 65 years. In addition, a large part of this segment is unemployed. In the regional context, most often this segment the will be meet in Samtskhe-Javakheti, Kakheti and Kvemo Kartli. In Tbilisi and Imereti, the proportion of this segment is sharply lower than average. As well as in case of the financially responsible segment, the proportion of women in this segment is slightly higher than the average indicator of market

The financial education score of the segment of financial fears is lower than the average indicator of country and is 56.2 points from 100 (Table 2).

**Table 2: General indicators of financial education of the segment of financial fears**

Financial knowledge	Financial behavior	Financial Attitude	Financial education (100-point scale)
Point	Point	Point	Point
4.26	4.52	3.02	56.2

**Segment with business-minded:** Respondents in this segment agree with the following provisions:

- √ I aim for long-term financial goals and I try to achieve them
- √ I always distribute my monthly income so that I will have opportunities to make even small savings;
- √ I am ready for some risk, when I collect money or make any investment.

The segment of business-minded is only 11.7% of the population. The average age of this segment is the lowest in the country - 41.1 years. The proportion of age groups in this segment is violated for the benefit of 18 to 45 years of age groups. In other words, the probability that we will meet people aged 18-45 in this segment is sharply higher than the average indicator of market. In this segment we will not be able to meet people older than 66 years.

It is interesting that in the country a business-minded man is more than a woman. This segment is the most common in Tbilisi (37.7%), later in Kvemo Kartli(12.3%) and Samegrelo (12.3%)

The probability of the segment meeting in Kartli, Adjara and Mtskheta-Mtianeti is low and it is practically equal to zero

in Guria. A person with business-minded distributes income so that to remain possibilities of make savings, aims at the long-term of financial plans, trying to achieve more and do not be afraid of a measurable risk. Therefore, this segment is the most standing financially.

The segment of business minded gained the highest score of financial education in the country - 65.6 points from 100 (Table 3).

**Table 3: General Indicators of Financial Education with a Business-Thinking Segment**

Financial knowledge	Financial behavior	Financial Attitude	Financial education (100-point scale)
Point	Point	Point	Point
<b>4.89</b>	<b>6.19</b>	<b>2.69</b>	<b>65.6</b>

**The segment of loaded with debt:** Respondents in this segment agree with the following provisions:

- √ At this stage I have too much debt;
  - √ I live with debt from salary to salary.
- √ I am trying to distribute monthly income and cannot do it. I still waste it senselessly.
- The segment of loaded with debt is hidden in debt and it is hard for him to live from salary to salary as well as management of his own scarce financial possibilities, despite repeated attempts. 80% of the segment has a current loan. The structure of this segment is the type of settlement and is approached to the average data of market in the gender context; The main distinctive mark of the segment is age and regional distribution. Among the age groups, in this segment the proportion of people over the age of 66 and young people aged 18-25 are sharply lower than the average data of market. Instead, the share of age groups from 36- to 55-years has increased in the regional context, this segment will be met mainly in Mtskheta-MtiaNati, Shida Kartli and Samtskhe-Javakheti.

The indicator of financial education of the segment of loaded with debt is lower than the average indicator of the country and it is up to 57.7 points from 100 (Table 4).

**Table 4: General indicators of financial education of the segment of loaded with debt**

Financial knowledge	Financial behavior	Financial Attitude	Financial education (100-point scale)
Point	Point	Point	Point
<b>4.49</b>	<b>4.79</b>	<b>2.84</b>	<b>57.7</b>

**Spending Segment:** Respondents in this segment agree with the following provisions:

- √ Spending money gives me more pleasure than to delay and accumulate for long-term purposes;
  - √ I live today and I am less worried about tomorrow;
  - √ Money is to spend it.
- The most frequently in the spending segment you will meet young people aged 18-25 years and in it the share of men is sharply higher than the share of women. In the regional context, the most often representatives of this segment are found in Tbilisi and Samegrelo. It is very low probability that the representatives of this segment will be met in Shida Kartli and Samtskhe-Javakheti.

The spending segment considers that it is created for its own pleasure and the money should be served this purpose too. People who are in this segment live today, they are less worried about the future, and are oriented on short-term goals and spending. Consequently, representatives of the segment of receiving pleasure from spending are less the saver of money.

The indicator of financial education of the spending segment is the lowest in the country and equals to 49.2 points from 100 (Table 5).

**Table 5: General indicators of financial education of the spending segment**

Financial knowledge	Financial behavior	Financial Attitude	Financial education (100-point scale)
Point	Point	Point	Point
<b>4.43</b>	<b>4.19</b>	<b>1.70</b>	<b>49.2</b>

**"Shopaholic" segment:** Respondents in this segment agree with the following provisions:

- √ Sometimes I suddenly, spontaneously buy something, and later I realize that I have not had any means now;
- √ I am irritated by such a person who constantly distributes and calculates money;
- √ If I want something very much, I will borrow money for that too.



By its own nature, the "Shopaholic" segment looks like a spending segment. "Shopaholics" puts consumer wishes ahead of financial possibilities, money is borrowed to the satisfaction of their own desires, spontaneous decisions are received concerning on purchase and annoyed by people who constantly count and distribute money. Generally spending segment is focused on spending, while "shopaholics" are concentrated on specific consumer temptations. It is interesting that in this segment the proportion of men is high too. In the age group, in this segment the shares of 18-35 respondents are higher than the average, while the share of 56-65 respondents are sharply lower. Mainly this segment is found in - Javakheti, Samegrelo, Kvemo Kartli, Guria and partly in Imereti. It is almost zero, the probability of finding this segment in Mtskheta-Mtianeti and Kvemo Kartli. Unlike the segment of receiving pleasure from spending, the proportion of Tbilisians among shopaholics is lower than all other segments

The financial education score of "Shopaholics" is quite low and is 50.2 points from 110 (Table 6).

**Table 6: General indicators of financial education of the segment of "shopaholic"**

Financial knowledge	Financial behavior	Financial Attitude	Financial education (100-point scale)
Point	Point	Point	Point
<b>3.99</b>	<b>3.82</b>	<b>2.74</b>	<b>50.2</b>

## CONCLUSIONS

The data obtained as a result of the survey are important for the purpose of fixing certain standards and orientations in the direction of financial behavior of the population, as well as for the development and implementation of separate programs within the National Strategy of Financial Conduct.

Despite the fact that the society is well behaved with responsibilities such as paying taxes on time and think over of financial possibilities before purchasing any item, there are often such behaviors which lead to financially unfavorable results.

It is important that consumers set as a habit, creating a personal and household budget, active saving and long-term goals so that their financial decisions will be represented as a part of the wide financial plan and not spontaneous and thoughtless steps.

It is noteworthy that the positive connection between the healthy culture of saving and the indicator of financial withdrawal is highlighted;

People without the culture of saving often may find themselves in a situation where a person gets a new loan to pay for the old one

In order to encourage useful financial behaviors, it is important to exist special channels where reliable and comparable information is available, such as resource centers, Internet portals and mobile channels. Besides it is recommended to activate campaigns on the benefits of saving and elaboration and dissemination of various mechanisms for promoting saving.

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## METHOD OF TEACHING LANGUAGES

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### ABSTRACT

This article is about that, the teacher has correctly chosen the method of teaching of different foreign languages. Languages may be synthetic and analytical according to their grammatical structure. In synthetic languages such as for instance Russian, the grammatical relation between words are expressed by means of inflections. In analytical languages, such as English, the grammatical relations between words are expressed by means of form words and word order: e.g. / the roof of the house The Structure of a language's never purely synthetic or purely analytical.

**Keywords** : language, method, pronunciation, aspect, the sentence, part of sentences, predicative, the common case, the possessive case, to define, word order, the meaning, scarcity of synthetic forms, the grammatical relations.

Great teaching today is equivalent to a scientist discovering DNA and only sharing it with themselves. Not sharing a great teaching method could be just as harmful. A foreign language is a language indigenous to another country. It is also a language not spoken in the native country of the person referred to, i.e., an English speaker living in Spain can say that Spanish is a foreign language to him or her. These two characterizations do not exhaust the possible definitions, however, and the label is occasionally applied in ways that are variously misleading or factually inaccurate. Some children learn more than one language from birth or from a very young age: they are bilingual or multilingual. These children can be said to have two, three or more mother tongues: neither language is foreign to that child, even if one language is a foreign language for the vast majority of people in the child's birth country. For example, a child learning English from his English father and Irish at school in Ireland can speak both English and Irish, but neither is a foreign language to him. This is common in countries such as India, South Africa, or Canada due to these countries having multiple official languages.

In general, it is believed that children have advantage to learning a foreign language over adults. However, there are studies which have shown adult students are better at foreign language learning than child students. It is because adults have pre-existing knowledge of how grammar works, and a superior ability of memorizing vocabulary.

Word order in English for example, is of much greater importance than in Russian. Due to the wealth of inflexions word order in Russian is rather free as the inflexions show the function of each word in a sentence. As English words have hardly any inflexions and their relation to each other is shown by their place in the sentence and not by their form, word order in English is fixed. We cannot change the position of different parts of the sentence at will, especially that of the subject and the object.

The inverted order of words is widely used when a word or a group of words is put in a prominent position, i.e. when it either opens the sentence or is withdrawn to the end of the sentence so as produce a greater effect. So, word order often becomes a means of emphasis, thus acquiring is not due to the structure of the sentence but to the author's wish to produce a certain stylistic effect.

Most schools around the world teach at least one foreign language and most colleges and high schools require foreign language before graduation. By 1998 nearly all pupils in Europe studied at least one foreign language as part of their compulsory education, the only exception being Ireland, where primary and secondary schoolchildren learn both Irish and English, but neither is considered a foreign language (although Irish pupils do study a third European language). On average in Europe, at the start of foreign language teaching, learners have lessons for three to four hours a week. Compulsory lessons in a foreign language normally start at the end of primary school or the start of secondary school. In Luxembourg, Norway and Malta, however, the first foreign language is studied at age six, and in Flanders at age 10. In Wales, all children are taught Welsh from the first year of primary school. The Welsh language is also compulsory up to the age of 16, although a formal GCSE qualification is optional.

In some countries, learners have lessons taken entirely in a foreign language: for example, more than half of European countries with a minority/regional language community use partial immersion to teach both the minority and the state language. This method is also highly used in Canada, wherein anglophone students spend all of most of their lessons learning the materials in French.

In 1995, the European Commission's White Paper on Education and Training emphasized the importance of schoolchildren learning at least two foreign languages before upper secondary education. The Lisbon Summit of 2000 defined languages as one of the five key skills. Despite the high rate of foreign language teaching in schools, the number of adults claiming to speak a foreign language is generally lower than might be expected. This is particularly true of native English speakers: in 2004 a British survey showed that only one in 10 UK workers could speak a foreign language and less than 5% could count to 20 in a second language. In 2001, a European Commission survey found that 65.9% of people in the UK spoke only their native tongue.

Since the 1990s, the Common European Framework of Reference for Languages has tried to standardize the learning of languages across Europe.

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## EFFECTIVENESS OF USING GAMES IN TEACHING GRAMMAR

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### ABSTRACT

The main goal of teaching grammar is to help students speak English with organized and correct structures. If students learn English with clear and right structures when they are young, they will be good communicators in the future. Without grammar, students are able to communicate effectively only in limited situations. Besides, grammar is regarded as very essential part of the study of language and ideas. In fact, grammar helps humans to analyze and describe their language.

**Keywords:** English grammar; grammar teaching approach; games.

Games are regarded as very useful and important strategy to stimulate language acquisition. They are defined as a form of play concerning competition, rules and fun. So, teachers should use games in teaching to attract students' attention, decrease students' stress and give them the opportunity to communicate effectively. They increase students' proficiency. That is, playing games in the classroom can increase students' ability in using language as students have an opportunity to use language with a purpose in the situations provided.

Games can focus on various skills, grammar, listening, speaking, writing, reading, pronunciation, so they can be extremely complex. Games also help the teacher to create contexts in which the language is useful and meaningful. 'Games provide one way of helping the learners to experience language rather than merely study it.' (Wright et al., 2006: 2). When exposed to language, students acquire it better. For example, words related to shopping can be better practiced in actual shopping games, than using worksheets with exercises. Games also offer the possibility of repeated use of language items. By making language convey information and opinion, games provide the key features of 'drill' with the opportunity to sense the working of language as living communication. Thus, learning is better absorbed than learning based on mechanical drills (Hadfield, 1990).

Games must not be seen as a way of passing the time, because their purposes are multiple. Besides the major importance of games of spurring motivation and reducing the stress level in the classroom, games have a great advantage in the sense that students learn without knowing they are learning (Hadfield, 1990). During games, students do not worry much about grammar mistakes, they are focused on what they are trying to convey. Apart from having fun, they will learn a grammatical rule just by playing an appropriate game. 'Students stop thinking about language and begin using it in a spontaneous and natural manner within the classroom.' (Mubaslat, 2012)

Playing games in the classroom can enormously increase students' ability in using language because they have a chance to use it with a purpose and in the situations mentioned. Naturally when playing games, students are trying to win or to beat other teams for themselves or on the behalf of their team. They are so competitive while playing since they want to have a turn to play, to score points and to win. In the class, learners will definitely participate in the activities. Therefore, in groups or in pairs, they are more willing to ask questions, communicate and discuss with their partners and think creatively about how to use English to achieve the goal. The competition in the games gives students a natural opportunity to work together and communicate in English with each other a lot.

Games are student-focused activities requiring active involvement of learners. In Crookal's (1990) opinion, learners and teachers change their roles and relations through games and learners are encouraged to take active role in their learning process. As a result, games provide learners with a chance to direct their own learning. From an instructional view point, creating a meaningful context for language use is another advantage that games present. By using games, teachers can create contexts which enable unconscious learning because learners' attention is on the message, not on the language. Therefore, when they completely focus on a game as an activity, students acquire language in the same way that they acquire their mother tongue, that is, without being aware of it (Cross, 2000, p. 153).

Games allow for creativity, independence and higher order thinking. Usually, questions posed by the classroom teacher are fact based and have only one answer, not allowing for creativity, personal expression, or testing hypotheses. The answer is either right or wrong, but games can allow for multiple answers. They improve participation, self-esteem, and vocabulary usage and allow the learners to see that there are many ways to solve the same problem.

According to Crystal (2004, p.123), "Grammar is the structural foundation of the ability to express ourselves. The more we are aware of how grammar works, the more we can monitor the meaning and effectiveness of the way we and others use language. It can help foster precision, detect ambiguity, and exploit the richness of expression available in English."

Vernon (2008:1) mentioned four reasons to teach grammar with games: First, by using games in teaching grammar, students not only gain knowledge but also can apply and use what they learn. So, games are regarded as communicative activities. Second, it is obvious that fun learning games usually contain repetition, which make the language easier and understandable by students. Third, using games motivate students and increase the cooperation and competition in the classroom and this creates positive atmosphere. Fourth, learning a new language requires a great and tiring effort. Games

facilitate the matter because they are amusing and challenging and they allow meaningful use of the language in context.

“Games enhance repetition, reinforcement, retention and transference” (El-Shamy 2001: 10). Because each game has a specific learning objective in mind, each player’s turn deals with the same concept or skill in a different way. Therefore, what students do not learn on their own turn, they may grasp from someone else’s turn. Moreover, the responsibility for learning and practicing is the job of the student and it is willingly accepted.

Yu (2005:34) pointed out that:

Games have different characteristics such as:

- A game involves a challenge against either a task or an opponent.
- A game is governed by a definite set of rules.
- A game is freely engaged in.
- Psychologically, a game is an arbitrary situation clearly separate from real-life.
- Socially, the events of a game situation are considered, in and of themselves, to be of minimal importance.
- A game has a definite number of possible solutions; that is, only a finite number of things can happen during play.
- A game must always end, although the end may come simply because time has run out.

Summing up, the basic characteristics of games in general are:

- A game is fun and interesting.
- A game is rule-governed.
- A game is goal defined.
- A game is engaging.
- A game is competitive.
- A game has a closure.

According to Deesri (2002:2), when teachers want to choose certain games to be played in the class, they should first consider the games' purpose, students' characteristics whether they are old or young, and the suitable time of playing the game. Some games should be used in the morning, others in the afternoon and others on Friday.

The use of innovative educational games in the classroom can increase enthusiasm and reinforce previously presented didactic information. It is also a positive, interactive alternative method of teaching and information sharing. In addition, team learning and active peer-to-peer instruction are strongly reinforced by educational games.

Games increase students' involvement, motivation, and interest in the material and allow the instructor to be creative and original when presenting topics. Games also challenge students to apply the information, thus allowing them to evaluate their critical thinking skills. They create a challenging constructively competitive atmosphere that facilitates interaction among students in a friendly and fun environment.

Games have a great pedagogical value providing language teachers with many advantages when they are used in foreign language classes. The review of the studies related to language games indicates that games are crucially important in foreign language teaching and learning in a variety of areas. games in teaching grammar to the young learners not only can play a positive role in the development of grammar knowledge of the learners in the language classes but also it can pave the way for language development of the learners in a less stressed situation, motivating the learners to improve their own abilities in various aspects of second language development.

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## STRANGERS IN A STRANGE LAND

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### ABSTRACT

US universities are recruiting increasing numbers of students from abroad, but many worry about the students' disconnection from campus life. In interviews with 40 international students at four research universities, Chris R. Glass was struck by the relative absence of Americans from his subjects' stories. The interviewees, half undergraduate and half graduate students, described close relationships with their international peers, including those coming from countries other than their own. But while they frequently characterized their American classmates as friendly or helpful, only rarely did they seem to play a significant role in their lives.

"Only one student has described a significant relationship with a U.S. peer and that student was from Western Europe and that peer was her boyfriend," said Glass, an assistant professor of educational foundations and leadership at Old Dominion University. "That to me is a striking omission from the stories that they're telling."

**Keywords:** lack of interest, domestic students, roommates, undergraduates, alliterative name, campus, gravitate, international administrators.

### INTRODUCTION

As the number of international students at U.S. colleges continues to rise – and as the mix of international students has shifted in favor of undergraduates -- there are increasing concerns as to how well they're being integrated into campus life. There have been periodic reports of racist incidents and – overt discrimination aside – there is the question of disconnection raised by Glass's research. Another study authored by Elisabeth Gareis, a communication studies scholar at Baruch College, found that nearly 40 percent of international students reported having no close American friends. In explanation, many of the students cited "internal factors" such as limited language proficiency or shyness, but they also described a perceived lack of interest on the part of American students in other cultures.

At the recent Association of International Education Administrators annual conference, a roundtable session on the integration of international students (co-moderated by this *Inside Higher Ed* reporter) drew a standing-room only crowd, as attendees discussed the difficulties they've encountered in encouraging and equipping American and international students to (productively) interact. Domestic students are not necessarily cross-culturally competent – a point made lucidly when one audience member described the tendency of American study abroad students to request compatriots as roommates. At the same time, international students may not always be interested in initiating contact. An audience member from a Midwestern institution shared his observation that a fair number of students from China – a rapidly growing and by far the biggest group of international undergraduates on U.S. campuses – seem to be more interested in interacting with one another than with their American classmates.

Yet, even those students who are interested may find social structures on campus to be exclusionary or mystifying or both. On American campuses dominated by fraternity and sorority life, or obsession over intercollegiate athletics, or where everyone seems to have gone to the same high school, international students may feel foreign in ways that go beyond their nationality. "The lack of interaction is as much due to individual attributes as it is to social context," said Glass, who is conducting his qualitative research in collaboration with Rachawan Wongtrirat, the assistant director of Old Dominion's international initiatives office. Given the natural tendency of people to gravitate toward others who are like them (what social psychologists call the "similarity-attraction effect"), "are universities creating contexts where these interactions can happen?" he asked.

In interviews with *Inside Higher Ed*, researchers and professionals in international education spoke about the challenges in this regard and their efforts to create opportunities for meaningful interactions between domestic and international students through programming. It seems that many universities have a long way to go in living up to the promise presented by increasing numbers of international undergraduates – the promise being increased opportunities for sustained and meaningful cross-cultural interactions in classrooms, dorm rooms, and so forth.

### 'Encounters With Difference That Make a Difference'

"It's a combination of factors that have made this issue so salient," said Larry A. Braskamp, the president of the Global Perspective Institute and a professor emeritus at Loyola University Chicago. "One is there are just a lot more international students on campus now, particularly at institutions that have not historically had a lot. The second is that everybody is interested in global learning: we know we need to prepare students to be more globally competent. And the third is that these students represent on some campuses a fairly significant contribution to the bottom line. Most of these students pay full tuition and as a result a lot of institutions see them as one way to balance the budget. So, they have to make sure that the retention rate is high; they have to develop a good reputation so that other students will come."

In Braskamp's research, he's found that entering American freshmen do not tend to think complexly, are not comfortable amidst difference and do not typically have friends who are unlike them. "We've said, O.K., the implication of

all this is we need to create 'encounters with difference that make a difference,' he said. "I've thought of it as students being on a journey: they start with rather simplistic views of themselves, of their social interactions and the ways in which they understand the world around them. So, in some ways what we need to do in college is increasingly provide them opportunities for encounters to get them to rethink who they are, how they think, and how they relate to others. In many ways, international students coming on campus is an opportunity for students, faculty members, and international administrators to take advantage of that difference and that diversity. But it's really hard work."

Such encounters can be curricular, co-curricular or informal: in fact, Braskamp's research suggests that informal encounters such as discussion of current events with other students may be the most impactful. Still, he emphasized that there's much more that can be done in the classroom to facilitate such encounters. In a sample of about 48,000 undergraduates at more than 140 four-year colleges, he found that about one-third report never having taken a course that "focuses on significant global/international issues or problems" or that "included opportunities for intensive dialogue among students with different backgrounds and beliefs."

As one audience member at the AIEA conference said, unless faculty members are on board, all the student services programs in the world won't be enough: "Students really look to their professors to give them direction and advice and deepen their conversations, so if faculty were taught to embrace these conversations about 'difference' and 'other' and 'cross-cultural competencies' and international challenges in engineering, then those conversations would take on meaning for the students," she said. Participants in the session described the value of professional development programs such as Duke University's Intercultural Skills Development Program for faculty and staff.

Case Western Reserve University is another institution that has begun to offer training designed to help professors better serve international students and integrate them into the classroom: according to Molly Watkins, the university's director of international affairs, the first two trainings focused on Chinese students and attracted 60 to 70 faculty members each. "There's obviously a need," Watkins said.

#### **Opportunities for Meaningful Interaction**

At the AIEA session, audience members discussed co-curricular strategies such as peer mentoring or "buddy" programs, living-learning communities and other residence life initiatives, and more robust orientations for international students. Many universities have some iteration of one or all of the above: Mount Holyoke College, for example, has a new "Global Partners" program that pairs returning study abroad students with new international students and holds "re-orientation" events for international students during the academic year. The University of Iowa is launching a new required online orientation program that will begin in the summer before the students arrive and continue with five to eight small-group sessions throughout the fall semester.

The University of Arkansas at Fayetteville, which had 611 international undergraduates last fall, has a host of programs with alliterative names like Campus Cousins, Friendship Families and Global Greeks, which pair international students with American students, local families and fraternity or sorority members, respectively. Wesleyan University is "trying to capitalize on the idea of roommates," hosting a dinner for first-year international students and their roommates at the beginning of the fall semester, according to Alice Hadler, the associate dean for international student affairs and an instructor of English. St. Norbert College, a Roman Catholic institution in Wisconsin, has a living-learning community with 25 international and domestic students (international students are the resident advisers) and a 10-member interfaith group consisting of Muslim students from Saudi Arabia and domestic Christian students. Initiatives such as these reach only a small number of students, concedes Marcy O'Malley, St. Norbert's director of international programming, but, she said, "What I've seen work is one-on-one."

"Instead of superficial contact with a lot of people, do more meaningful contact with a smaller number, and let them be your ambassadors to the larger student body," she said.

Christopher J. Viers, the associate vice president for international services at Indiana University at Bloomington, has used the International Student Barometer to survey students about their experiences, and cited the surprising finding that international students rate their relationships with American students as those that are most important to them (as compared to relationships with other students from their home country or international students in general). "In looking at the feedback that came in we thought very critically about what we could do to help facilitate opportunities for international and domestic students to interact in meaningful ways to hopefully have conversations and potentially build relationships," Viers said.

In talking with colleagues across the country, Viers said he's come to the conclusion that "too often our programming is limited to the one-time, big, annual event." This event, which often takes the form of an international student fair or show, can be good in celebrating international students' contributions to campus and perhaps can help a domestic student learn a bit about another culture or cultures, but, he said, "opportunities for meaningful transformative learning are pretty limited." As such, he continued, "We work hard to provide the big annual event that helps to showcase the contributions of our students and the diversity of the population with the excitement and food and entertainment, but not a week goes by when we're not putting together, hand-in-hand with students, small, highly interactive opportunities for domestic and international students to get together. We run a weekly noon concert series, for example, where students from our Jacobs School of Music perform classical music or folk music from their home country and then there's a free lunch that's provided. That regularly gets people who have an interest in music together."

## CONCLUSION

"It's absolutely essential as colleges are putting in place plans to actively grow international enrollment that appropriate levels of service and support are put in place, and then the students have responsibilities as well," Viers said. "So much of just about anything in life in terms of what you gain from an experience has much to do with what you put into it yourself. This is where at times perhaps those of us in the field of international education are not vocal about some of the very real, very significant additional hurdles and challenges that students from other countries face while they're here: the enormous pressures that they're under to succeed academically and to move as quickly as possible through a program. It's very expensive to come to the U.S. to pursue an undergraduate degree. There are often major expectations from family members and others; there's a lot of pressure to succeed and do well." And then there are the extra academic challenges inherent in pursuing a degree in a non-native language. Is it any wonder that not every student will want to come out for mixers and "cultural coffee hours"?

I think that sometimes we underestimate that pressure, and apply a different kind of meaning to the experience that we perceive a student is having.

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## VALUE OF VOLUME RENDERED COMPUTED TOMOGRAPHIC ANGIOGRAPHIC IMAGES IN DETERMINATION OF HEPATIC ARTERIAL ANATOMY VARIATIONS

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### ABSTRACT

**Purpose:** The knowledge and reliable depiction of hepatic arterial architecture is of crucial importance in several situations like surgery in the hepatico-biliary pancreatic area, as well as in interventional radiological therapy.

The aim of our study was to assess the value of VR images in determination of hepatic arterial anatomy variations.

**Methods:** The study implied the retrospective evaluation of the abdominal MDCTA data of 65 patients. The image analysis assumed the determination of hepatic arterial anatomy variant.

The determination of hepatic arterial anatomy variant was based on: 1. VR images alone; and 2. Whole MDCTA data. The findings of VR images' interpretation were compared with the whole MDCTA findings, which served as the standard of reference. Accuracy, sensitivity (Sn), specificity (Sp) of the VR images was calculated.

**Results:** arterial anatomical variations were correctly identified in 56 out of 62 cases and overall accuracy of VR images in determination of Michel's anatomy type was 90.32%. False results were found in 6 patients and included accessory left and right hepatic arteries. All other branches were correctly identified on colored 3D images. Accordingly, accuracy, sensitivity and specificity of the VR images for the detection of all other arteries were 100%.

**Conclusion:** According to our study volume rendered images are valuable in determining hepatic arterial anatomy type.

**Keywords:** liver, arterial anatomy, 3D volume rendering, computed tomography

### INTRODUCTION

The knowledge and reliable depiction of hepatic arterial architecture is of crucial importance in several situations like surgery in the hepatico-biliary pancreatic area, as well as in interventional radiological therapy [1; 2; 3; 4].

The patterns of arterial blood supply to the liver are variable. In the typical scheme the liver receives its total arterial inflow from the hepatic branch of the celiac trunk. In the variant configurations, the liver receives arterial flow through branches coming from the superior mesenteric artery, left gastric artery, abdominal aorta or other visceral branches. Moreover, these vessels may be replaced, representing the primary arterial blood supply to the liver, or accessory, occurring in addition to the normal arterial supply.

Both in the early and in the most recent literature in this subject authors made an effort to compare the several types of variation in order to obtain a single scheme for the most common variants [5; 6; 7; 8; 9; 10]. One of the earliest publications regarding liver arterial anatomy belongs to Michels, who classified the variations into ten variants (Table 1) [11; 12].

Table 1. Michels' classification of hepatic arterial anatomy variations [9].

Type	prevalence %	description
I	55	RHA, MHA and LHA arise from the CHA
II	10	RHA, MHA and LHA arise from the CHA; replaced LHA from the LGA
III	11	RHA and MHA arise from the CHA; replaced RHA from the SMA
IV	1	Replaced RHA and LHA
V	8	RHA, MHA and LHA arise from the CHA; accessory LHA from the LGA
VI	7	RHA, MHA and LHA arise from the CHA; accessory RHA
VII	1	Accessory RHA and LHA
VIII	4	Replaced RHA and accessory LHA or replaced LHA and accessory RHA
IX	4.5	Entire hepatic trunk arises from the SMA
X	0.5	Entire hepatic trunk arises from the LGA

CHA: Common hepatic artery, LGA: Left gastric artery, LHA: Left hepatic artery, MHA: Middle hepatic artery, SMA: Superior mesenteric artery



Digital subtraction angiography (DSA) is regarded as the gold standard in the evaluation of vascular structures, although its invasive nature significantly limits its role. In recent years, the introduction of multidetector CT (MDCT) and its ability to image vascular structures of small diameter have led to a significant reduction in the utilisation of invasive DSA examinations. MDCT angiography permits comprehensive and accurate assessment of the hepatic vascular anatomy prior to the embolization and surgical procedures [13-17].

The rapid development of MDCT has also resulted in new applications for CT. One of these applications, three-dimensional (3D) CT with volume rendering, is now a major area of clinical and academic interest. One of the greatest advantages of CTA with 3D volume rendering is that it provides all the necessary information in a single radiologic study (and therefore at the lowest possible price) in cases that previously required two or more studies. Three-dimensional volume rendering generates clinically accurate and immediately available images from the full CT data set without extensive editing. It allows the radiologist and clinician to address specific questions concerning patient care by interactively exploring different aspects of the data set. In contrast to the growing problem of information overload presented by the large acquisition rates of modern scanners, 3D volume rendering has the potential to simplify the standard radiologic study.

Interpretation of the standard MDCTA study assumes the review of the axial, Multi Planar Reformatted (MPR), Maximum Intensity Projection (MIP) and Volume Rendered (VR) images in complex. Whereas interpretation of VRT-s requires much less effort compared with the whole MDCTA set, and can save much time of interpreting radiologist. Besides, these images are more easily perceptible by surgeons and other specialty physicians.

To our knowledge there is little information regarding to the value of VR images alone in the determination of hepatic arterial anatomic variants.

The aim of our study was to assess the value of VR images in determination of hepatic arterial anatomy variations.

## MATERIALS AND METHODS

The study implied the retrospective evaluation of the abdominal MDCTA data of 65 patients (14 women and 51 men; mean age 54 years) who had undergone CTA for hepatic vascular mapping in 2012-2014 years. They were 53 with HCC, 6 with liver metastases, 3 with intrahepatic cholangiocellular carcinoma (CCC), 2 with giant focal nodular hyperplasia (FNH) and 1 with giant hemangioma. Differential diagnosis of hepatic masses was made either with the pathological analysis of the biopsy specimen or combination of the clinical, laboratory and radiological data. Diagnostic criteria for the noninvasive diagnosis of HCC corresponded to the AASLD guidelines.

CT technique: The scan was done on either 64 slice or 16 slice CT machine using standard abdominal CTA protocols (table 2). The pre-contrast series was obtained by using a 3 mm slice thickness. The post-contrast study was done using 100 ml of low osmolar non-ionic contrast medium at a flow rate of 4-5 ml/sec, then the CT scan was performed with the following acquisition parameters 170-300 ma, 120 kV, 512 × 512 matrix, 0.984 or 0.625 pitch, 64X0.625 mm or 16 × 1 mm section collimation, 1mm reconstruction increment. Patients were requested to hold their breath during the precontrast, hepatic arterial, portal venous and delayed phase of acquisition. Automated bolus tracking with bolus detection at the level of the descending aorta above the diaphragm ensured accurate timing of the data acquisition in an arterial phase. For the display of the portal and hepatic venous anatomy, a third CT image set was acquired, with an effective delay of 55–60 s after initiation of the contrast material injection. The whole examination takes about 80 s.

Delayed phase was done after 10 minutes of contrast injection.

### Image processing and interpretation

The data was transferred to the Philips or Toshiba workstation for further workup. Image postprocessing, MPR, MIP and coloured VR images' generation was done by the technician with 4 years of experience at the CT suite. Generation of VR images assumed formation of coloured 3D-s with 6 standard views (antero-posterior, postero-anterior, right lateral, left lateral, upper and lower) and various non-standard or oblique views according to the experience of the technician. Opacity and colour settings were adjusted individually in every patient for the best visualisation of the arteries. Automated bone removal technique was used. After the postprocessing the images were sent to the PACS workstation for the interpretation by radiologists.

The interpretation was made by two radiologists with more than 5 years experiences in abdominal CT based on agreement. In case of disagreement the consensus was reached by involvement of the third radiologist. The image analysis assumed:

- a) Determination of hepatic arterial anatomy variant.
- b) Assessment of the quality of VR images using 6 score scale (0 – lowest and 5 - highest).

The determination of hepatic arterial anatomy variant was based on:

1. VR images alone; and
2. Whole MDCTA data (Axial, MPR and three-dimensional post processing images (MIP and VR technique)).

Identification of the anatomy by 3D images was blinded - during the determination of the arterial anatomy type with VR images the radiologists were not aware of the results of the MDCTA interpretation.

Table 2. MDCTA protocols for abdominal CTA

	<b>64 slice</b>	<b>16 slice</b>
<b>Voltage (kv)</b>	120	120
<b>Current (ma)</b>	170-300	170-300
<b>Slice Thickness (mm)</b>	3	3
<b>Collimation (mm)</b>	64X0.625	16X1
<b>Rotation Time (s)</b>	0.5	0.5
<b>Scan FOV (mm)</b>	400	400
<b>Pitch</b>	0.984	0.625
<b>Post Processing</b>	MPR, MIP, VR	MPR, MIP, VR
<b>Phases</b>	native, arterial portal venous, delayed	native, arterial portal venous, delayed
<b>IV Contrast</b>	100 ml of omnipaque, 4ml/s + 50 ml saline flush	100 ml of omnipaque, 4ml/s + 50 ml saline flush
<b>Oral Contrast</b>	water, or omnipaque	water, or omnipaque

FOV – field of view, MPR – multiplanar reformat, MIP – maximum intensity projection, VR – volume rendering

The anatomical findings were classified as normal if the common hepatic artery originating from the celiac trunk and the right and left hepatic arteries arising from hepatic artery after gastroduodenal branching were observed. Anatomical variations were grouped according to Michels' classification. Arterial variants not included in Michels' classification were recorded separately.

The quality of 3D volume rendered images was estimated by scores, which were assigned according to:

1. Opacification of the arteries.
2. Signal to noise ratio.
3. Contrast between liver arteries and overlying organs;

The findings of VR images' interpretation were compared with the whole MDCTA findings, which served as the standard of reference. Accuracy, sensitivity (Sn), specificity (Sp) of the VR images was calculated.

## RESULTS

3 patients were excluded from the study due to inadequate quality of CT scan, or 3D (score - 0) images and impossibility to determine the arterial anatomy type.

Anatomical variants seen on the VR and MDCTA are summarized in table 3.

Table 3. Arterial variations in our study

		Michel's Type	VR images	MDCTA
Standar Normal Anatomy		I	28	28
	Variant Anatomy	II	1	1
		III	9	10
		IV	1	-
		V	5	5
		VI	5	5
		VII	-	-
		VIII	7	7
		IX	1	1
		X	-	-
Unclassified	double hepatic artery		4	4
	hepatogastric trunk, splenic artery from aorta		1	1
<b>Total</b>			62	62

Arterial anatomy on the MDCTA: Standard anatomy (Michels' type I) was seen in 28 (45.2%) patients (Fig. 1a).

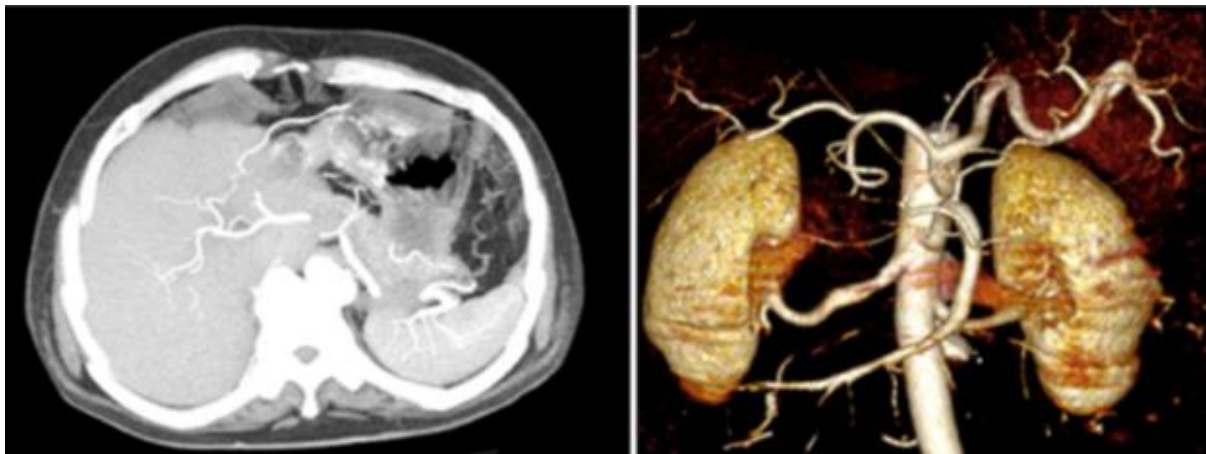
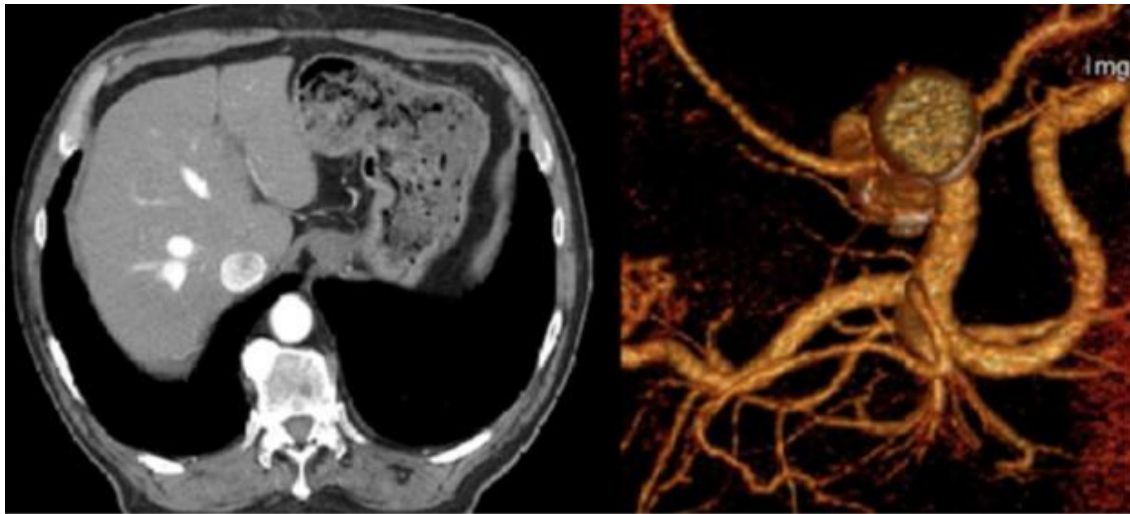


Fig 1 Michels' type I (standard) hepatic arterial anatomy.

MIP (1a) image shows standard branching pattern of the of the celiac artery  
 VR (1b) image show standard branching pattern of the of the celiac artery

The rest 34 patients (55.8%) had anatomical variations. Among those 1 patients had left hepatic artery (LHA) replaced to the left gastric artery (LGA) (Fig. 2a).



**Fig 2** Michel's type II hepatic arterial anatomy.

Axial (2a) image shows the LHA passing through the fissure of the ligamentum venosum.  
 VR image (2b) shows the replaced LHA to the LGA

10 patients were found to have replaced right hepatic artery (RHA) from the superior mesenteric artery (SMA). Accessory LHA originating from the left gastric artery was found in 5 patients. Accessory RHA arising from the SMA was seen in 5 patients. Simultaneous existence of the replaced RHA and accessory LHA was encountered in 7 cases. Replaced CHA to the SMA was found in 1 patient. Double hepatic artery was found in 4 patients. Besides there was 1 case of hepatogastric trunk combined with the splenic artery arising from aorta.

*Arterial anatomy on the VR images:* Standard anatomy (Michel's type I) was seen in 28 (45.2%) patients (Fig. 1b). The rest 34 patients (55.8%) had anatomical variations. Among those 1 patients had LHA replaced to the left gastric artery LGA (Fig. 2b). 9 patients were found to have replaced RHA from the SMA (Fig. 3).



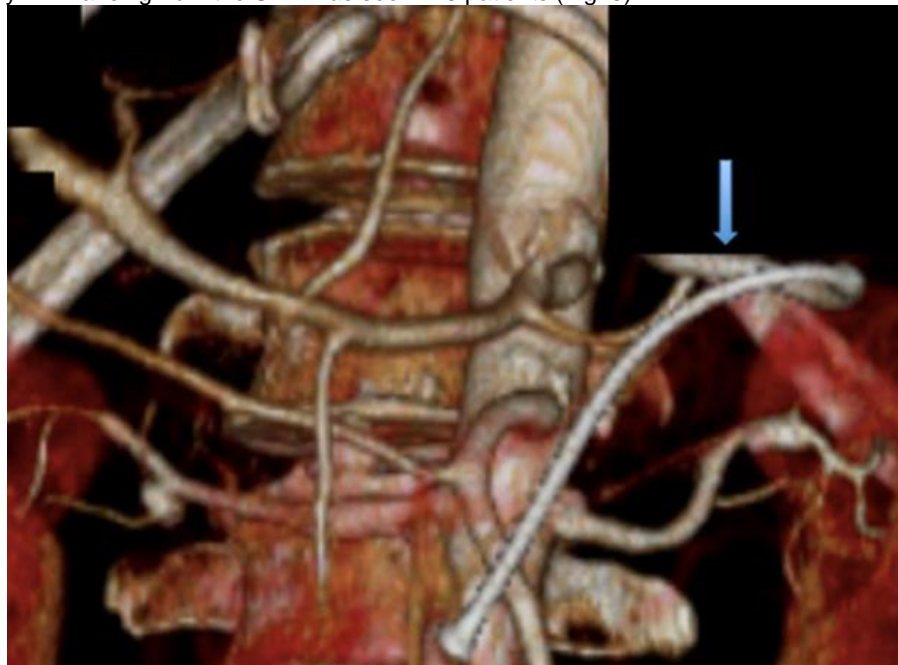
**Fig 3** Michel's type III hepatic arterial anatomy. VR image shows the RHA replaced to the SMA

Replaced RHA and LHA were found in 1 case. Accessory LHA originating from the left gastric artery was found in 5 patients (Fig. 4).



**Fig 4** Michel's type V hepatic arterial anatomy. VR image shows the accessory LHA from the LGA

Accessory RHA arising from the SMA was seen in 5 patients (Fig. 5).



**Fig 5** Michel's type VI hepatic arterial anatomy. VR image shows the accessory RHA from the SMA. Note the biliary drainage catheter (arrow)

Simultaneous existence of the replaced RHA and accessory LHA was encountered in 7 cases. Replaced CHA to the SMA was found in 1 patient. Double hepatic artery was found in 4 patients (Fig. 6).



**Fig 6** Arterial anatomical variant which is not included in Michels' classification. VR image shows the double hepatic artery.

Besides there was 1 case of hepatogastric trunk combined with the splenic artery arising from aorta.

**DATA ANALYSIS**

Determination of diagnostic test parameters: arterial anatomical variations were correctly identified in 56 out of 62 cases and overall accuracy of VR images in determination of Michel's anatomy type was 90.32%. False results were found in 6 patients. These included the patients with Michel's type I, III, V, VI, VIII arterial anatomy types. Among them were false negative accessory LHA (FN-aLHA), false positive accessory LHA (FP-aLHA) and false positive accessory RHA (FP-aRHA), 2 patients each. The diagnostic test parameters for the detection of aLHA and aRHA are summarized in table 4.

Table 4. Diagnostic test parameters for the detection of aLHA and aRHA

	aLHA	aRHA
Accuracy (%)	93.55	96.77
Sensitivity (%)	83.33	100
Specificity (%)	96.00	96.55
Positive predictive value (%)	83.33	66.67
Negative predictive value (%)	96.00	100

aLHA – accessory left hepatic artery, aRHA – accessory right hepatic artery

All other branches were correctly identified on colored 3D images. Accordingly, accuracy, sensitivity and specificity of the VR images for the detection of all other arteries were 100%.

**Determination of dependency between VR image quality and there diagnostic performance:** The average quality of the VR images was 3.88. Average quality of VR images for the true and false results was 3.89 and 3.83 respectively. The scores of the false results are summarized in Table 5.

Table 5. VR images' quality scores of the CT-s with false results.

Patient	3D Score	Arterial Anatomy 3D	Arterial Anatomy MDCTA	Error
# 1	3	I	VI	FP aRHA
# 2	5	VI	I	FP aRHA
# 3	2	IV	VIII	FN aLHA
# 4	5	VIII	III	FP aLHA
# 5	4	V	I	FP aLHA
# 6	4	I	V	FN aLHA

VR – volume rendered, aRHA – accessory right hepatic artery, aLHA – accessory left hepatic artery, FP – false positive, FN – false negative

## DISCUSSION

Over the years, 3D rendering techniques have been compared on the basis of a wide range of criteria. Initially, SSD and MIP clearly had advantages over 3D volume rendering in terms of rendering speed and hardware costs, which were often seen as prohibitive in a clinical setting. Several generations of computers have come and gone since the introduction of volume rendering, and now it is legitimate to focus on the accuracy of each of the rendering techniques in clinical applications. This is clearly the research agenda seen in the literature: More than 500 articles that present the merits of SSD, MIP, or 3D volume rendering. Artifacts and limitations remain for each of the techniques. In addition, interoperator variability of user-determined rendering parameters calls for more careful review and suggestions for 3D protocols. Studies have demonstrated that significant levels of accuracy are achievable with volume rendering and that 3D volume rendering has some potential advantages over other rendering techniques.

There are many applications for 3D volume rendering in medicine. Perhaps the most important long-term application is for routine reading of volume data. Although such an application has not yet got the attention that other, more novel emerging research areas generate, it is likely to be the development that affects the radiologist most profoundly in daily practice. However, the attention this focuses on the analytic abilities the radiologist brings to other areas such as diagnosis and treatment planning underlines his or her vital role in the medical community. Indeed, surgeons will someday have their own interactive volume displays, which suggests how the role of radiology will rest more firmly on shared resources and expanded communication. The role of 3D volume rendering in radiology continues to grow rapidly [14].

Three-dimensional volume rendering can be a catalyst for the emergence and evolution of medical procedures. Rubin et al first reported that 3D imaging allowed the radiologist to more accurately detect variant renal vascular anatomy, thereby affecting the surgical approach [16].

Volume rendering is a flexible, accurate 3D imaging technique that can help the radiologist more effectively interpret the large volumes of data generated by modern CT scanners. To obtain accurate results, however, effect of parameter selection on the resulting image must be well understood. With the availability of fast, inexpensive workstations that can support volume rendering, many new clinical applications in addition to those discussed in this article will likely emerge for this promising technology [18.19].

According to our study volume rendered images are valuable in determining hepatic arterial anatomy type. At the Department of Diagnostic and Interventional Radiology we routinely perform pre procedure mapping MDCTA for the assessment of hepatic arterial anatomy prior to the endovascular procedures. The later usually involves embolization of liver masses. The interpretation of these scans assumes determination of liver arterial anatomy type, assessment of tumour feeding vessels, reassessment of abdominal organs for various abnormalities including identification of new lesions and etc. The scans include VR images too. By this time main information extracted from the CT examination is based on whole set of scans. As is evident from our study only VR images can give precise information about hepatic arterial architecture and they alone may be in some extent used for the identification of special arterial anatomy type. However in the latter case the information provided by the CT about abdominal organs is sacrificed. Also, one must be cautious when dealing with accessory left or right hepatic artery because false results in our study included these arteries only.

For the current study we used Michel's classification system for the categorization of anatomy type. We found it to be

one of the most detailed descriptions of the liver arteries. Nevertheless in some situations in some clinical situations it may be more convenient to use other classification systems as well according to the clinical situation and institutional preference.

As a reference standard we used MDCTA data and not DSA data. The reason for this is twofold: 1. recently we conducted a study comparing the diagnostic capabilities of the MDCTA and DSA in determining hepatic arterial anatomy type and tumor feeders. Other studies have also estimated the value of MDCT in assessing arterial anatomy. The results were excellent and as shown by us MDCTA provided results which were 100 percent accurate in this regard; 2. Even if the MDCTA has some occasional pitfalls in the assessment of liver arterial anatomy, it does not make any sense to take DSA as a gold standard because in the clinical setting when interventional or surgical procedure is planned CT is the best non-invasive modality of choice routinely applied for this purpose.

Our study implies that it can be more likely that false results of VR images are mainly related to accessory RHA and LHA. It is less likely that 3D image quality plays role in the overall success of VR image interpretation.

Limitations of our study first of all includes the lack of the standardisation of generating VR images, AP (anteroposterior) view was always present in the set of 3D-s but the other views were generated according to the technician's experience.

In conclusion, it must be stated that 3D VR images alone have potential to be used for the assessment of hepatic arterial anatomy, however this matter needs standardization of the rendering techniques. Also, care must be taken about accessory right and left hepatic arteries.

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## TOOLS FOR PROVIDING CORPORATE SOCIAL ACCOUNTABILITY OF AGRICULTURAL ENTERPRISES

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### ABSTRACT

Social accountability of agricultural enterprises implies proper quality of products (goods and services), high level of the products safety (goods and services), comfortable work conditions for the staff. Implementation of corporate social accountability is a tool for risks management in the social and labor relations, increased employee motivation, creating a positive image and brand in the market.

The article aims to develop approaches to the development of tools to ensure corporate social accountability of farms.

To achieve the aim the following tasks were done:

- to make a map of risks management in the corporate social accountability;
- to identify the areas of improving information transparency and openness of agricultural enterprises as one of the conditions for successful management of corporate social accountability;
- to develop methods for evaluating internal audit of the effectiveness of corporate social accountability on CSR farms.

The article developed the following guidelines to ensure CSR farms:

1. Agricultural enterprises should consider their own sites as one of the main channels of communication with its stakeholders
2. farm sites should contain information on business goals, strategy development, strategy and corporate social responsibility reports on the results of their achievements.
3. Used on their own sites should post more information on key non-financial indicators.
4. Environment is increasingly concerned about civil society and international investors.
5. An important component of transparency farm is to present information that reveals the results of financial and economic activity.
6. Agricultural enterprises should improve their system of navigation sites.

The practical significance of the results is proposed in the paper deepen and broaden the range of modern economic science research to ensure CSR farms in the contemporary economy.

**Keywords:** agricultural enterprise, tools, provision, corporate social responsibility, risks, information transparency, internal audit.

### РЕЗЮМЕ

В статті вирішено важливе науково-практичне завдання, присвячене розвитку інструментарію забезпечення корпоративної соціальної відповідальності сільськогосподарських підприємств. Сформовано карту ризиків функціонування сільськогосподарських підприємств із урахуванням ризику корпоративної соціальної відповідальності. Визначено напрями підвищення рівня інформаційної прозорості та відкритості діяльності сільськогосподарських підприємств як однієї із умов успішного управління корпоративною соціальною відповідальністю. Розроблено прийоми внутрішнього аудиту для оцінювання рівня ефективності забезпечення корпоративної соціальної відповідальності сільськогосподарських підприємств.

**Ключові слова:** сільськогосподарське підприємство, інструментарій, забезпечення, корпоративна соціальна відповідальність, ризику, інформаційна прозорість, внутрішній аудит.

### РЕЗЮМЕ

В статье решено важное научно-практическое задание, посвященное развитию инструментария обеспечения корпоративной социальной ответственности сельскохозяйственных предприятий. Сформирована карта рисков функционирования сельскохозяйственных предприятий с учетом риска корпоративной социальной ответственности. Определены направления повышения уровня информационной прозрачности и открытости деятельности сельскохозяйственных предприятий как одного из условий успешного управления корпоративной социальной ответственностью. Разработаны приемы внутреннего аудита для оценки уровня эффективности обеспечения корпоративной социальной ответственности сельскохозяйственных предприятий.

**Ключевые слова:** сельскохозяйственное предприятие, инструментарий, обеспечение, корпоративная социальная ответственность, риски, информационная прозрачность, внутренний аудит.

### INTRODUCTION

Modern agricultural enterprises have been seeking to maximize the efficiency of financial and economic activity,

but this goal is impossible to achieve without the social component.

Social accountability of agricultural enterprises implies proper quality of products (goods and services), high level of the products safety (goods and services), comfortable work conditions for the staff. It is a voluntary duty of an enterprise to implement such policies, make decisions and follow financial economic activities that are desirable in terms of the society goals and values.

Using the concept of corporate social accountability and implementing its principles into financial economic activity of agricultural enterprises is a reliable instrument aimed at controlling risks in social and labor relations, increased motivation of the staff, creating a positive image of the agricultural enterprise and its brand in the market, entering into continuous cooperation with stakeholders.

Theoretical and methodological foundations as well as methodological provision of corporate social accountability are represented in the papers of Bobko L.O. [1], Bukovynska M.P. [2], Hrytsyna L.A. [3], Karataev A.A. [4], Karmazinova V.D. [5], Kytsak TG [6] M. Kir'yakova [7], Kryvovs V. [8], Oliynyk O.O. [10], Stankiewicz Yu.Yu. [11], Sheludko V.I. [12], Bashir Khodaparasti R. [13], Błażej Balewski [14].

Analysis the scientists' research reveal that the existing approaches to corporate social accountability provision are focused on stable economic conditions though modern processes of domestic enterprises development are characterized by instability and stagnation. In addition, tools providing corporate social accountability have not been represented in the financial and economic literature.

Therefore, there is a need to develop new approaches to providing corporate social accountability of agricultural enterprises and to improve the existing ones.

The article aimed to develop approaches to the development of tools ensuring corporate social accountability of agricultural enterprises.

To achieve the objectives the following tasks were defined:

- to draw a map of risks of functioning agricultural enterprises considering the risk of corporate social accountability;
- to identify areas of improving agricultural enterprises information transparency and openness level as one of the conditions for successful management of corporate social accountability;
- to develop methods of internal audit for evaluating the efficiency of corporate social accountability of agricultural enterprises.

## MATERIAL AND METHODS

A number of methods, including method of synthesis and comparison, abstract logical methods and graphical method of economic analysis were used in the research.

The principles of corporate social accountability and requirements to its elements are presented in the International standards for Social accountability (SA 8000) [9].

We conducted a sociological study of social accountability in risks control in the social and labor relations in agricultural enterprises of Ukraine according to the Standards requirements of social accountability (SA 8000) [9].

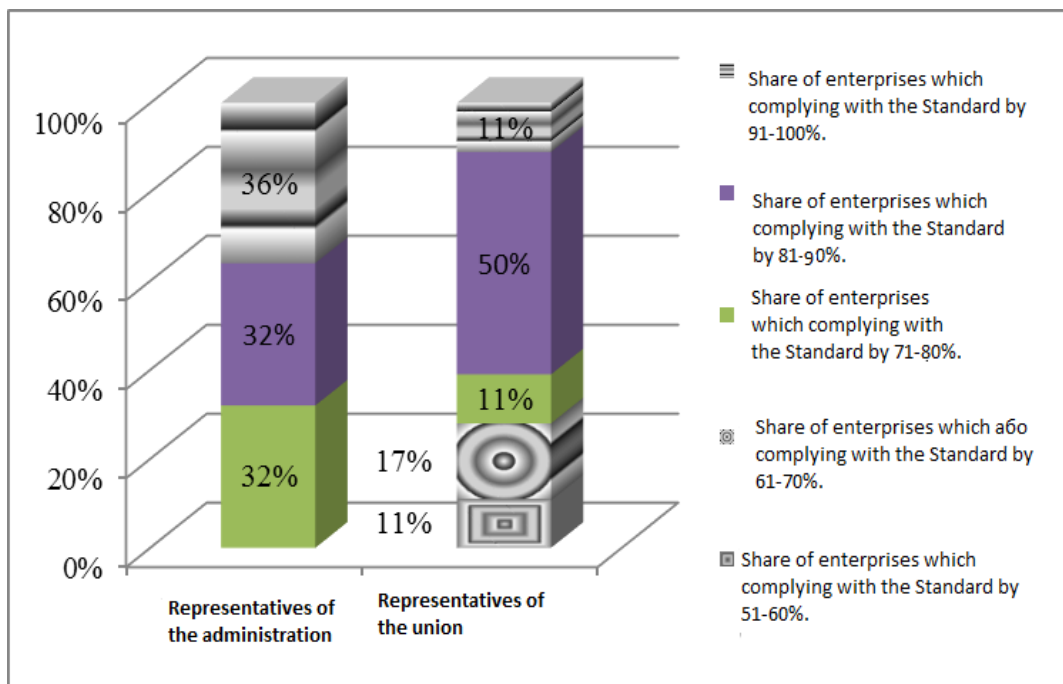
The questionnaire contained 43 questions, 42 of which duplicate the requirements of the Standard for 9 units and the rest one was respondents' subjective assessment of the enterprise social accountability concerning their staff. The questions were answered by both administration officials and trade unions representatives (on the farms where they were available). The survey was conducted during March 2016 on 30 agricultural enterprises, with trade unions representatives surveyed on 18 farms.

According to the survey, the first point to be mentioned was that social accountability does not comply by 100% with the international standards of social accountability (SA 8000) [9] on any of the enterprises. This level of compliance differs significantly from the point of view of the administration and the trade unions (Fig. 1).

According to the responses of the administration, the lowest level of compliance was about 70% with nearly uniform distribution within 70-100%, while the responses of the trade union representatives revealed the lowest value of this index - only half of the conformity and almost 30% of the enterprises did not reach the 70% level of their corporate social accountability compliance with the International standards for social accountability (SA 8000) [9].

Meanwhile, the responses of trade unions representatives revealed exceeding the compliance level which were stated in their questionnaires by administration officials on 12% of enterprises. In particular, the employer admitted lack of hygienic conditions for storing food at the enterprise, as well as the fact that salaries were not paid regularly, while the trade union representative denied that. This may indicate lack of awareness of trade union activists of the state of industrial relations at the enterprise or their unwillingness to recognize the existing problems even in an anonymous survey. Under such circumstances, employees do not have a strong enough defender of their labor and social interests as well as an effective representative in the contractual risks management in social and labor relations.

As for some of blocks of questions characterizing corporate social accountability to their staff, it is only in the field of discrimination on various grounds that enterprises provided 100% CSA. For all other paragraphs of the standard, the rate of corporate social compliance does not reach the maximum.



**Fig. 1. Distribution of farms by the corporate social accountability compliance with the International standards for Social accountability (SA 8000)**

On average, the public opinion poll revealed that social accountability of enterprises compliance with the International standards for Social accountability (SA 8000) [9], according to the administration, was 86%, and according to representatives of trade unions it made 80%. These values of the index increase the probability of risks of social and labor relations, contribute to negative trends aggravation and demonstrate significant problems in their regulation efficiency.

As for assessment of corporate social accountability, it was in only two cases, that the respondents confessed that their farms are socially unaccountable to their employees.

Enterprises' support for the measures preventing child labor is the most problematic aspect farm in the area of child labor. Thus, according to 20% of administration respondents, their enterprises do not implement these measures that could become a precondition of future infringements in this area.

We revealed differences in the responses of the administration and trade unions representatives concerning employee's health and safety protection, it complied with the International Standard on Social Accountability (SA 8000) [9] by 96% and 89% respectively. The most critical is the situation with the procedure of detecting potential threats to personnel health and safety. The administration officials noted that 80% of enterprises had such a procedure, while the trade union representatives reported that only on 61% of enterprises the threats detection was actually carried out.

Under these conditions, the probability of both the risk of the staff temporary disability and industrial accidents as well as occupational diseases increases greatly. And these are the risks of social and labor relations, causing not only moral, social, but also significant economic losses for workers, employers, and society and the state as a whole. Under such conditions, prevention of such risks is more necessary and cost-effective than post factum responding to them - compensation for damage.

An important part of contract risk management in corporate social accountability is the position of trade unions on farms and the administration's attitude to the rights of workers to such associations.

The survey results indicate that the concepts of corporate social accountability in risk management are underutilized at this stage. The reasons for this is the low awareness of agricultural enterprises of the principles and benefits of corporate social accountability, lack of effective incentives and support for voluntary initiatives of entrepreneurs in the field of corporate social accountability, like the use of taxation and investment instruments, social labeling etc.

On the assumption of the above, we defined the directions of improving information transparency and openness of agricultural enterprises activity as one of the conditions for successful management of corporate social accountability (Table. 1).

In view of the above, we developed indicators of corporate social accountability of agricultural enterprises (Table 2).

The results of the study make it possible to group the local indicators of corporate social accountability by the following components: content, strategy and reporting, navigation.

**Table 1. Areas of enhancement of agricultural enterprises activities information transparency and openness**

Area	Description
Importance and completeness	Reveals the information lack or misinterpretation of which may influence the user's making decision
Timeliness	Reveals information in the time which allows to use it efficiently in decision making
Reliability	Reveals the information containing no errors or significant distortions that could influence the decision-making process. In addition, the information is reliable provided that the external and internal control mechanisms are implemented effectively.
Equal access to information and ease of distribution	Equal treatment of the information users in the course of its disclosing in accordance with legislative requirements and ensuring equal access to information. The main ways of information dissemination include its revealing at general meetings, publication in the press and in the public information database, the direct provision of documents or the copies at agricultural enterprises, documents presentation on a website of an agricultural enterprise.

The integrated content index defines the availability of full details of the main aspects of corporate social accountability, corporate management, labor relations, keeping of human rights, environmental policy, fair operating practices, relationships with stakeholders and community development.

The integrated strategy and reporting index reflects the development of the business strategy of agricultural enterprises and the strategy on corporate social accountability, financial reporting and corporate social accountability.

The integrated navigation content defines the ease of access to any information on corporate social accountability.

Since corporate social accountability indices differ in their significance, integral index calculation should be figured out by the method of modified sums:

$$I_i = \sum_{j=1}^m w_j K_j, \quad (1)$$

where  $I_i$  - integral index of corporate social accountability for health, strategy and reporting, navigation components;

-  $w_j - K_j$  in  $I_i$  ponderability;

$K_j$  - an index of corporate social accountability of agricultural enterprises;

$K_j \in [1; m]$ ,  $m$  - the number of indices of corporate social accountability of agricultural enterprises.

In this regard, the formula for calculating the integral index of CSR farms will be as follows:

$$CSA = \sum_{i=1}^n I_i \quad (2)$$

where  $CSA$  - a complex integral index of corporate social accountability of agricultural enterprises;

$I_i$  - integral index of corporate social accountability for health, strategy and reporting, navigation components;

$I_i \in [1; n]$ ,  $n$  - the number of components of corporate social accountability of agricultural enterprises,  $n = 3$ .

As to the nature and content of complex integrated index of corporate social accountability of agricultural enterprises, it aims to establish the accountability level.

If  $CSA \in [75; 100]$ , the level of CSR farms is high; if  $CSA \in [50; 74]$  - it is normal; if  $CSA \in [25; 49]$

- the level is low; and if  $CSA \in [0; 24]$  - it is very low.

Having considered the abovementioned, we carried out the assessment of corporate social accountability of agricultural enterprises. The results are represented in Table 3.

## CONCLUSIONS

1. Agricultural enterprises should consider their web-sites as one of the main channels of communication with the stakeholders including future employees, clients and representatives of the community which houses the agricultural enterprise. Accordingly, the information on the web-site should meet the interests of these groups stakeholders.

2. Agricultural enterprises web-sites should contain information on business objectives, development strategy and the strategy of corporate social accountability as well as reporting on the results of their achievements. Presenting this information in an open access is a sense of transparency.

3. Usually agricultural enterprises web-sites contain a sort of information required by law (financial reports, anti-corruption policy). However, they have to place more information on key non-financial indicators: human rights; labor relations, average wage, arrears in payments; relations with the community.

**Table 2. Indices of corporate social accountability of agricultural enterprises**

	Component	Component matter
Content	Corporate management	Agricultural enterprise management: availability of information about the managers
		Agricultural enterprise structure
		Code of Ethics and the results of its implementation
		The existence of compliance policies and anti-corruption policies (including information on who the compliance officer reports to and the results)
		Representing information on wage policy, bonuses and awards of the company management
		Availability of information on corporate social accountability management, including corporate social responsibility obligations
	Human rights	Availability of information on human rights, non-discrimination, politics and results
		Availability of information on the physically challenged employment policies and the results
		Availability of information on gender equality policies and the results
	Labor relations	Availability of union contract
		Availability of trade union
		Staff development: policy and the result
		Health and safety: policy and the result
		Availability of information on vacancies on the web-site
	Fair operation practices	Published information on tenders and results
		Information on procurement plans
	Relations with stakeholders	Plan of stakeholders drawing in
		Contacts and other details
	Ecology	Ecological policy and results: CO2, water, emission
		Promulgation of information on ecological audit and its results, penalties
Community support and development	Availability of the strategy for region support and the results	
Financial reporting	Financial reporting or its parts are represented on the web-site	
Findings of financial reporting audit	Findings of financial reporting audit is represented on the web-site	
Business strategy (business goals)	Agricultural enterprise promulgates its strategy and/or business goals on the web-site	
Strategy for corporate social accountability	Agricultural enterprise promulgates its strategy for corporate social accountability on the web-site	
Report on corporate social accountability or non-financial indicators promulgation	Agricultural enterprise promulgates the report on corporate social accountability or non-financial indicators promulgation on the web-site	
Navigation	Languages	
	Clicks number (max. 3 clicks)	
	Feedback	
	Internal search (on the web-site)	
	Regular renewal	

- An important component of transparency in agricultural enterprises is not only information on policies and various initiatives in the area of corporate social accountability, but information that reveals the results of financial and economic activity as well.
- Agricultural enterprises should also improve navigation system of their websites, i.e. to place information on non-financial indicators of financial and economic activity. This will allow the main stakeholder groups to find quickly and update the information and introduce the system of feedback.
- Prospects for further research in this area. Current economic conditions are characterized by negative impact of the crisis, the lack of investment resources, high inflation, financial risk, high interest rates on bank loans, low liquidity and solvency. Therefore, in order to manage corporate social accountability on agricultural enterprises efficiently, it is appropriate to conduct its constant monitoring, to determine its strengths and weaknesses, to identify opportunities and threats. Formation of information provision and implementation of controlling the corporate social accountability

management on agricultural enterprises arms is the subject of further research.

**Table 3. Complex integral indices of corporate social accountability of agricultural enterprises**

Enterprise	Complex integral index
«Chervonoslobidske» Agricultural PJSC	66
«Agroprod-ZPT» Agricultural PJSC	34
«Honorivske» Agricultural PJSC	38
«Chechelnytske» Agricultural PJSC specializing in growing sugar beet seeds	30
«Бродецьке» Agricultural JSC specializing in growing sugar beet seeds	26
«Moivske» Agricultural PJSC	51
«Obodivske» Agricultural PJSC specializing in growing sugar beet seeds	28
«Tomashpilske» Agricultural JSC specializing in growing sugar beet seeds	24
«Toporivske» Agricultural PJSC	31
«Podillya» Agricultural PJSC	37
«Pervukhinske» Agricultural PJSC	23
«Sverdlovske» Agricultural PJSC	22
«Novoselytske» Agricultural PJSC	21
«Nasinnyk» Agricultural PJSC	32
«Shramkivske» Agricultural PJSC	21
«Beresyno» Agricultural PJSC	17
«Krym-Aromat» Agricultural PJSC	35
«Black Sea Perl» Agricultural PJSC	17
«Rodina» Agricultural PJSC	22
«Olvia» Agricultural PJSC	22
Agricultural PJSC named after Olshantsi	21
«Podillya» Agricultural PJSC	14
«Podilske» Agricultural PJSC	39
«Dnister» Agricultural PJSC	33
«Bronnytske» Agricultural PJSC	32
«Yurkivske» Agricultural PJSC	28
«Plodorozsadnyk» Agricultural PJSC	26
«Ukraine» Agricultural PJSC	25
«Kolos» Agricultural PJSC	25
«Svitanok» Agricultural PJSC	24

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## SIMILARITIES AND DIFFERENCES IN THE NATIONAL AND INTERNATIONAL AGRICULTURE MODELS

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### ABSTRACT

The article deals with a theoretical analysis of multiple approaches to defining the content and main characteristics of the national agriculture model, with a focus on a comparative analysis of the national model and modern models in highly developed countries.

**Keywords:** agriculture model, criteria, economic structure, technical and technological level of agriculture, property and business forms.

### PROBLEM FORMULATION

The increasing globalization of economic processes and the integration of Ukrainian agrarian sector in the world market highlight the fundamentally new task of developing a new agriculture model as follows: 'It is the time to develop an innovative and advance model for Ukraine's agricultural production. Global macroeconomic challenges made to Ukraine's society and economy determine the key objective for the state to achieve: a transition from commodity export to investment and innovative type of economy' [2, p. 3]. Its realization is more complex and long-term compared to the market transformation of the sector transferred into the state ownership. It is the model that can help the agribusinesses to become competitive in both domestic and foreign agrarian markets, to provide proper food security and significant improvement in the welfare of the peasants and of the population as a whole.

Thus, it is urgent to define conceptual propositions for assessing the current agriculture model and comparing it with current models in developed countries.

Methodological and practical issues on developing a market-type agriculture model, increasing effectiveness and economic sustainability, competitive agricultural businesses are constantly being focused by agrarian scientists. To solve the existing problems specific approaches have been suggested by the scientists, namely, V.Ya. Ambrosov, V.H. Andriichuk, N.V. Zubets, Yu.A. Lupenko, M.Y. Malik, V.Ya. Mesel-Veseliak, P.T. Sabliuk, V.V. Yurchyshyn and others.

Giving credit to the studies made by the researchers, it should be noted that there remains aspects of this broad problem area waiting for their thorough investigation. One of the aspects is similarities and differences in the national agriculture models and the agriculture models of developed countries. The study, based on findings of the research made by other scientists and the author, presents an in-depth investigation of the issue stated in the article title.

### KEY RESEARCH FINDINGS

The domestic studies in the field lack for comprehensive research with a systematic assessment of Ukraine's current agricultural production model and its comparison with the foreign ones. The studies show the prevalence of one-sided approaches based on one or another characteristic with business size as the most common characteristic: 'according to the size the established business forms correspond to the international models in the sector: large agricultural businesses – to the US and the former Soviet Union models, farms – to European and American ones, and personal subsidiary plots – to Japanese and Chinese ones' [10, p. 142].

The above provision, in our opinion, is simplified, since for assessing the agriculture model only one parameter – the size of farms - is applied, which is insufficient. Proceeding from the size of farms, virtually any country has all the said agriculture models, with Japanese and Chinese model as prevailing. For example, in the USA, according to the last census (2012) the agriculture sector numbered 2 million 109 thousand farms (the average size amounted to 434 acres), including 224 thousand used from 1 to 9 acres and 590 thousand - from 10 to 49 acres. More than 1/4 (28.5% of the total area of the farms), which is 600 thousand farms, produced 0.1% of commodity products, or 118 dollars per one farm per year [12].

In relation to Ukraine, P.T. Sabliuk says, 'The individual farms are similar to the size of the Japanese and Chinese models (1-2 ha)' [8, p. 27]. Indeed, as of the end of year 2013 the average individual farm size amounted to 1.52 ha, including for commodity agricultural production only 0.67 ha [9, p. 66]. Based on these indicators we can conclude that the marketability of the farms accounts for about half.

According to some published data on rural households, in terms of marketability, 40% produce only for their own consumption, 30% - natural-commodity and 30% mainly commodity. Rural households total 5.2 million units [7].

Ukraine's current agriculture model is a combination of Euro-American and Sino-Japanese models. The national economic structure is peculiar for over 2 million rural households of the natural-consumer type and the same number of the natural-commodity type. Consequently, Japanese and Chinese agriculture models in term of the size of land are more or less similar to those rural households with a size of more than 1 hectare. But in general, in all countries with developed market economies small farmers are small-sized agribusinesses with a fairly high level of specialization and cooperation.



For a long time, these countries have no analogues to our personal subsidiary plot of the natural-consumer type. It is obvious that the main trend in the development of rural households is their transformation into farms of the market and business type.

In other words, today the market transformation of the share, which is currently the most commodity one (about 1.5 million households), is crucial for both rural households sector and agrarian sector as a whole. They will lay a basis for small businesses. It '... may include almost 900 thousand individual farms with commodity production ...' [10, p. 743]. They can become for their owners the main source of revenue, the main and rather the only employment area, a contributor to food security, particularly by producing organic and labor-intensive products.

P.T. Sabliuk focuses on the following signs of economic model as a whole and of agriculture model in particular: 'Ukraine's post-industrial economic model (draft) includes:

- Consolidating land capital and industry capital;
- Applying advanced information technology to ensure the highly profitable operation of the consolidated capital;
- Allocating the majority of profits earned to solve social and rural problems' [8, p. 25].

The key concept in 'post-industrial model' is definitely 'post-industrial'. Let us consider its economic meaning. It is known that production is based on productive forces - the means of production and individuals who bring them into operation. Together the latter can be defined as a technical and human system (including appropriate technologies, technical and organizational, economic relations). In the context of the latter, from the standpoint of the most generalized approach, the following stages can be suggested: 1) pre-industrial stage, i.e. primitive technique, the use of draft animals mainly (horses and oxen) and significant amounts of manual labor; 2) industrial stage, i.e. reinforced ties between agriculture and the first sphere of agricultural complex, the purchase and use of various agricultural machinery and mechanized basic processes; in agriculture, the use of fertilizers, plant protectants, land reclamation, etc; 3) post-industrial stage i.e. the use of up-to-date equipment and technology. Each developmental stage of the technical and human system gradually replaces the previous ones, although they can exist simultaneously.

Since term 'industrial' means manufacturing, correspondingly 'post-industrial' refers to a higher level as compared to 'industrial'. Thus, it is logical to conclude that category 'post-industrial economic model' describes any economic system in terms of its technical and technological equipment and appropriate 'human capital', professional staff that are able to use these technical and technological resources efficiently and effectively. This, to a great extent, depends on current socioeconomic relations.

The socioeconomic context of the agriculture model also matters 'further development of agrarian sphere ... requires socio-economic approaches to be applied in order to assess various producers of agricultural products which provides for taking into consideration not only economic, but also non-economic results of their activities, including their participation in reproducing the social and natural environment they operate in, producing public benefits, achieving objectives of rural development' [7, p. 31].

V.G. Andriichuk distinguishes an undoubtedly important criterion for the agriculture model, - state regulation in the agriculture sector. Therefore, the author, from the standpoint of generalization method, distinguishes two agriculture models: of the EU, the USA and Canada, and of Latin America (with the exception of the Chinese model due to its unique specific character).

The Euro-American model is based on the massive support of farmers and of rural structure development, the protectionism of the domestic market (domestic producers) by imposing high import duties and technical barriers for foreign products to enter the domestic market, the prevalence of small-sized farms, especially in Europe, providing alternative employment for rural population, etc. (e.g., strict regulation on cultivating GMO crops and selling land to foreigners).

In Latin America, government support for farmers is much weaker, or sometimes absent at all, there exist much less restrictions on the cultivation of GMO crops and land sales to foreigners, large corporations are predominant, and average sizes of farms are significantly bigger. For example, in Brazil, which according to important parameters for agriculture development has a lot of similarities with Ukraine, an average-sized farm cultivates 1.5 thousand hectares of land. Though, the country has a lot of corporate structures with an area of up to 50 thousand ha. Regulatory levers for agriculture development in Latin America differ significantly from Euro-American ones against the background of significant differences in the size of land utilized by businesses in agrarian production.

The above provisions give grounds to state that '... until now neither science nor the legislative body or government administrative structures have provided a clear answer to the key strategic issue: what agriculture model is being built and what it will be in the future' [1, p. 5].

Initial conditions for determining the future agricultural development model is an assessment of the current one, comparing it with the models of developed countries.

First, we present the economic content of categories 'economic model' in general and 'agriculture model' in particular. An analysis carried out gives grounds to suggest the following provision. An economic model is a simplified selection in a particular economic system or national economy, at least such socio-economic parameters and level of technical and human system as follows.

1. Property and management forms.
2. Regulatory mechanisms (economic mechanism and its components) in general and the government one in particular.

3. Developing the technical and human component of agricultural production, and the productivity and efficiency of the latter.

4. The social aspect of the agrarian sector (all its components, i.e. agriculture, welfare of farmers, etc.).

Each of these key criteria requires a special study. This article provides only a sketchy review on them.

To begin with proprietary and business relations, their current distinctive characteristics include:

– Three forms of ownership of productive resources (including land) and products of labor, i.e. state, municipal and private. The latter is the basis for joint public-private ownership;

– Cooperative farms owned by the state or transferred into the state ownership (state farms and collective farms) were transferred into various private and joint public-private business forms. In the agribusiness sector, in terms of numbers, farms are prevalent businesses (as of July 1, 2013 - 40.9 thousand units, i.e. 73.2% of their total number), and state-owned enterprises are the least numerous (278 units and 0.5% correspondingly). At the same time in terms of 'economic importance', i.e. the share of the gross agricultural output, in the year 2013 farm enterprises were significantly inferior to other non-state enterprises - only 7.6% of total gross agricultural production [9, p. 46; 51];

– The personal subsidiary plot sector has changed significantly, namely for the period 1990-2013 the area of land use increased 6 times, and as well as its share in agricultural gross production from 29.6% to 46.0%, the marketability of the personal subsidiary plots increased [9, p. 46; 80]. In general, the personal subsidiary plot sector lost its subsidiarity, having become if not leading than significant in terms of amount of gross farm commodity, employment and income received by their owners.

With respect to the Soviet-era economic mechanism, the market mechanism operated mostly formally (to a greater extent in relation to collective farms, personal subsidiary plots and collective farm market). At least in the public sector (collective and state farms) major organizational issues of any economic system, notably what, how much, how, who with and who for to produce, were solved centrally by the party-state apparatus. Today, decision-making is the prerogative of business entities themselves in private agristructures, based on market management principles. The state (ours not to the best advantage) deals with those issues that either cannot be solved at the micro level or by the market as a whole, or can be solved more effectively at the state or municipal levels.

With respect to distinguishing agribusinesses into entrepreneurial and non-entrepreneurial, the State Statistics Committee of Ukraine provides a somewhat simplistic solution. Legal entities registered by their primary activity are deemed to be entrepreneurial. Correspondingly, personal subsidiary plots (amounting to over 10 million) are excluded. The issue requires a careful examination. So, it just should be noted that marketability is an economic parameter for classifying farms as entrepreneurial. They are entrepreneurial as much as they are marketable. It is incorrect to use the legal status as a criterion of entrepreneurship. Economic relations are to be primary in relation to legal ones. Market-based economy, particularly stiff competition, serving both as basis for selecting the best economic executives, economic bankruptcy, risk, etc., and as incentive to exercise creativity, innovation, entrepreneurship in the business of any commodity producer.

Thus, an entrepreneurship entity in relation to agriculture is any agribusinesses that produces and sells goods in the market. These are also a certain percentage of rural households (about half).

Scientist economists from the National Research Centre Institute of Agrarian Economy believe that in Ukraine, production pattern and manufacturing execution system within the land and agrarian reform implementation have almost been completed. Almost all existing management forms will retain their places in the rural economy [10, p. 13]. Undoubtedly, from a review perspective, the economic structure of the agriculture will have no significant changes. This process is influenced by a range of circumstances. But the state has to take into account the fact that in socio-economic terms the best option for preserving the peasantry as such and the rural network for the society and the agrarian sector in particular is an agrarian production model, which efficiently combines agristructures of any sizes.

The above provisions give reason to state that the designed and implemented national agriculture model is predominantly private and of a market and entrepreneurial type. Incidentally, this provision is officially recognized by the international community. And in this context it is similar to foreign ones. Although, a significant number of subsistence farms on homestead lands make it peculiar. They actually are a form of households. In addition, in Ukraine the market and entrepreneurial environment is not civilized, even malformed, as it is favorable for abuses and violations related to ownership and management. The efficiency of the agrarian policy does not meet international standards either.

The current model of agrarian production in terms of technical and technological agricultural equipment is characterized as follows. Prior to the agrarian reform, collective and state farms had enough agricultural machinery, although it was qualitatively inferior to the best foreign analogues. Today it must be admitted that the resource base of agricultural enterprises has significantly decreased in number and has become morally and physically obsolete. Only about 10% of agribusinesses apply advanced agricultural technologies and most agricultural entities predominantly use loss-making technologies [2]. The exception is an enclave of large agro-industrial units, most of which are 'agricultural holdings'.

On an international scale scientists describe 'technique' as follows: "... at one pole there is highly intensive and technology-supported agriculture in developed countries, i.e. the USA, the EU, Canada, Australia and New Zealand; at another - backward, insufficiently equipped, based on a draft animal power and manual labor agriculture in less developed countries with high-tech enclaves which are export-oriented and experimental farms. Between these two poles there is an intermediate layer of transition agrarian economies, which include Ukraine, China and India, where agriculture is combined with a large amount of manual labor and agrarian relocation in villages' [10, p. 522].

According to scientists, in general, by technique level the domestic agriculture lags behind the same in the EU Member States on average as much as 8-10 times [6].

Today the USA and other economically developed western countries are in general following the innovative post-industrial model of agrarian economy. It is clear that it does not refer to all and any agristructures. A lot of them operate as 'industrial'. The post-industrial agristructures are relatively not numerous, but they produce more than half of all marketable products. That is the post-industrial sector in the agriculture of Western countries leads and forms the base for the national food security. If it included, for example, in the USA, multi-marketable agristructures, 'million-farms', i.e. an amount of agricultural products sold per year of 1 million dollars and more, then, according to the last US agricultural census in 2012 a number of such agristructure amounted to only 79.2 thousand (3.8% of the total), but their share in the total volume of US agricultural products sold amounted to 66, 4% [12].

And with it, for Ukraine the post-industrial agriculture model is already a reality as to an enclave of agricultural farms. In general, the domestic agricultural sector includes agricultural households of any above types. Additionally, the personal subsidiary plot sector is predominantly pre-industrial, as rural households are the households of small-sized land area (in 2013, average 1.18 ha) with poor technique and outdated manufacturing technologies.

The expanding international relations of Ukraine's agrarian sector as a result of its associate membership of the EU will definitely increase competition in the domestic and foreign agricultural markets. Under these conditions, innovative agribusinesses, with new equipment, technology and modern management, will be primarily competitive.

Based on the context of the problem raised we can argue that a priority in the agricultural production is its transition to post-industrial principles, which will allow to significantly increase a volume of agricultural production, ensure a proper level of food security for all kinds of products, significantly improve profitability and competitiveness of agribusinesses. The said in turn requires a lot of problems to be solved. The major problem is introducing modern types of equipment and technology, providing agribusinesses with competent staff, administrative staff including the efficient use of the technical and human system. And this requires considerable funds; their sources can be state support, loans and business income. The current state support for business innovation is insufficient.

Existing agricultural lending does not meet real needs. According to the Ministry of Agrarian Policy and Food of Ukraine, nearly 2/3 of agribusinesses require long-term loans (for a term of 5-20 years). The volume of agricultural lending needs to be increased several times.

Today, profit can be the main source of investment in agribusinesses. But the proportion of businesses that received a net loss of total activity in 2013 was 19.8% and in 2011 - 16.5%, i.e. increased. Net profit of agribusinesses in Ukraine in 2013 amounted to 15.8 bn UAH (in 2012 26.7 bn UAH). The scientists found that the cost of re-equipment of the agricultural production with technology, manufactured in leading countries will be almost 710 bn UAH, and for five years it will require 142 bn UAH per year [10, p. 122-123]. As compared with the year 2013, profits totaled 15.8 bn USD, that is almost 10 times less. Hence there is an urgent need to substantially increase agribusinesses profitability. The profit is not only used to renew equipment.

As is generally known, profit is, determined by a number of internal and external factors. In terms of the latter it ultimately depends on prices for agricultural products. Unfortunately, the free market does not self-provide equivalent intersectoral exchange, i.e. the agriculture with the first and third areas of agricultural sector.

If external environment is considered as it is at a certain moment in time, in one or another national economy, in particular in its agricultural sector, internal factors take on special significance. Their priority components are: 1) development of the man-machine system; 2) a size of the business (within optimal limits); 3) business management. They all are important, but the latter factor, in our view, is initial in terms of solving profitability issues. A proof for this point is that in the same external market environment there are always high-yielding businesses at one pole and loss-making ones at the other pole. To some extent it is determined by natural factors. But the decisive factor is the competence of managers at all levels. If they meet current economic demand, the managers, based on the given market conditions, decide, at the highest level possible, technical and technological, and personnel, and organizational issues as to creating effective internal economic relations. After all, these agristructures (usually of the innovative type) external price factor does not result in losses. But a profit margin gives the opportunity to intensive innovation-based operation.

The domestic agriculture model significantly differs as compared to respective models of developed countries not only in terms of technical and technological equipment and effectiveness, but also in terms of advanced processes, e.g. cooperation, integration, creation and operation of various farm associations.

It is generally known that the latter in developed countries are cooperative and specialized ones. Thus, in the Scandinavian countries, Denmark, the Netherlands and Japan all farmers are covered by cooperation. The cooperation is widely supported by the International Labour Organization, the *General Confederation of Agricultural Cooperatives* in the *European Union* (COPA - COGECA) and the International Cooperative Alliance. Therefore, cooperatives occupy an important place in the agriculture sector of developed countries. They are one of the main forms of self-organization and self-help for agricultural producers.

In Ukraine, as of July 1, 2013 active agricultural service cooperatives totaled only 562 units. In addition, now in Ukraine service cooperatives have nearly been stopped being established, in some regions they have completely ceased their operation, arousing concern. In perspective, agricultural service cooperatives, according to some estimation, are expected to increase to 5 thousand, although it had to be twice as large in terms of needs to ensure agricultural

production [11, p. 31; 13].

The above provisions give reason to believe that the domestic agriculture model has much in common with the models of developed countries. It is primarily about private and public-private joint ownership of the means and products of labor, economic and legal independence of business entities, their market external relations, a variety of business forms of agribusinesses, substantial differentiation in size, and the state's regulatory role in the agriculture sector.

However, the national agriculture model has some peculiarities unfortunately characterized in negative terms.

On a large scale, the current national agriculture model in terms of technical and technological equipment, efficiency and socialization is inferior to advanced foreign models and even the pre-reform one.

It is generally known that Ukraine has indisputable competitive advantage exactly in agriculture. It is about the resource potential of the latter, based on highly agricultural land and favorable agro-climatic conditions. Accordingly, Ukraine has significant possibilities to increase agricultural production, to contribute to food and energy security and to increase export potential. Instead, unfortunately, Ukraine's agriculture is unable to provide own people with basic food products within rational consumption rates, not to mention the export component [3, p. 112]. That is why Ukraine has an urgent '<...> need to form <...> in the near future innovative agriculture model that is able to ensure its sustainable accelerated growth' [10, p. 13].

Social problems inherent in the domestic agrarian sector need to be solved. For Ukrainian agriculture the social component appears to be a key problem, which in terms of unresolved problems is from other components of sustainable development - economic and environmental ones.

Increased agricultural production efficiency achieved in recent years due to the implementation of the land reform and the development of private businesses in rural areas does not result in an adequate improvement of living standards of rural population, and legal and organizational factors for rural development provided for by law do not work. A primitive approach of obtaining short-term benefits should be changed to a farsighted one - a long-term self-sustained progress based on the principles of sustainable development.

The sustainable development of the agrarian sector means a harmonized achievement of integrated strategic objectives in various spheres - economic (efficiency), social (progress and justice) and environmental (safety) simultaneously. It is already about the development of a pure agrarian economy with intensification and concentration aimed at ensuring profitability [10, p. 47; 189; 471].

It is generally known that the productivity, efficiency, sustainability, ecological compatibility of the agrarian sector, its social aspect are determined by a number of factors. At the micro level is first of all business management. At the macro level is the effectiveness of the state regulation. Perhaps one could argue that in developed countries it is efficient and effective. Unfortunately, in Ukraine the state agrarian policy requires improvement in all directions. In particular in relation to its quality researchers, not without reason, say, 'There exists a significant lag in adapting to changing economic conditions because the frequent reforming of the agrarian sector has never been completed, resulting in a deep crisis in the industry, deteriorating socio-economic conditions of the rural population, which undermined confidence in any government innovation of rural life, increased migration, complicated the demographic situation in rural areas, which in turn impact human resources' [4, p. 24].

'Since Ukraine obtained independence and began implementing market reforms, the state has been developing new techniques and mechanisms of agrarian policy adequate to the market economy conditions. However, Ukraine's agrarian policy has not become a factor for sustainable growth of the agrarian sector yet. The lack of a clear, scientifically proven vision of strategies for developing the agrarian sector, principles and forms of relations between the state and agriculture, state mechanisms for supporting production and rural areas and, in addition, brought more instability in the agrarian sector, constant changes in reproduction conditions' [10, p. 256].

We consider that the essence of change lies primarily in the fact that the state should focus on solving the most pressing problems of the sector, including technical and technological one, the agrarian market regulation, proper food security, social development of agrarian sphere etc. In addition, the state can and must apply a number of effective, already proven all over the world, ways and instruments to regulate the agriculture, taking into account the national circumstances.

The practice of developed countries and Ukraine suggest that the market economy does not provide equivalent intersectorial exchange that would create conditions for efficient agrarian sector. In this connection, state interference is necessary in market pricing.

The state has great opportunities to make loans and leases more accessible for farmers. However, the successful implementation of the post-industrial agriculture model in a decisive way '... can only provide highly qualified managerial personnel and therefore a proper attention should be paid to the formation and efficient use of management personnel in the sector' [5, p. 15].

Successful operation of innovative businesses across Ukraine corroborates the provision.

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## AGRARIAN EDUCATION AND SCIENCE IS THE PRIORITY OF OUR GOVERNMENT

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### ABSTRACT

Agriculture is the process of producing food, feed, fiber and many other desired products by the cultivation of certain plants and the raising of domesticated animals (livestock). The practice of agriculture is also known as "farming", while scientists, inventors and others devoted to improving farming methods and implements are also said to be engaged in agriculture. Subsistence farming, who farms a small area with limited resource inputs, and produces only enough food to meet the needs of his/her family. At the other end is commercial intensive agriculture, including industrial agriculture.

**Keywords:** farming, intensive agriculture, husbandry, agricultural products, traditional production.

### REZÜME

Məqalədə ölkə mizin kənd təsərrüfatı, ya ni əkinçilik, heyvandarlıq, onların intensiv və ənənəvi istehsal sahələridən bəhs olunur. Əkinçilikdə ilə rəzində istehsal olunan məhsullar, onlara sərf olunan əmək, istifadə olunan torpaq və su növlərindən danışılır. Azərbaycanın ənənəvi kənd təsərrüfatı məhsullarını istifadə etməklə üçün lazımı potensial imkanlarından söhbət açılır. Azərbaycan Kənd Təsərrüfatı Nazirliyinin apardığı işlər, Azərbaycanda Aqrar elmin inkişafı və əldə olunan nə aliyyətlər həmişə dövlətin ən öncül və zifəlrindəndir.

**Açar sözlər:** kənd təsərrüfatı, intensiv kənd təsərrüfatı, əkinçilik, heyvandarlıq məhsulları, ənənəvi istehsal

### РЕЗЮМЕ

В этой статье говорится о сельском хозяйстве, значит о земледелии, скотоводстве, о интенсивном и традиционном производстве. В земледелии говорится о использованном за год видов земли и воды. Для того чтобы производить Азербайджане традиционные сельско - хозяйственные продукты, используют нужные потенциальные возможности. Аграрное научное развитие в Азербайджане и достигнутые успехи один из первоначальных профессий нашего государства.

**Ключевые слова:** сельское хозяйства, интенсивное сельское хозяйства, земледелие, скотоводства, национальное производства.

### INTRODUCTION

Agriculture is the traditional production sector in Azerbaijan, which is among the countries where crops and nomadic cattle husbandry first developed. Archaeological excavations show that cereals were grown in Azerbaijan 6,000-8,000 years B.C. Crops are mainly irrigated though people grow rainfed cereals, potato and sainfoin in mountains and foothills. More than half the population live in the countryside and agriculture has the largest share of employment. According to 1988 data nearly 1,139,000 people are engaged in agriculture and forestry: 30.8 percent of employees in the country. A third of the population is directly engaged in agriculture.

Azerbaijan has great potential opportunities and comparative advantages in producing traditional agricultural products. Favourable soil-climatic condition, relatively cheap labour and access to rail transport makes the agrarian sector a major priority of the non-oil sector. Agriculture has two major parts – crops and livestock. In crop production – cereals, cotton, vegetables, potatoes, fruit, viticulture, tobacco and forage prevail; in livestock production – cattle, sheep, horse, camel and poultry husbandry dominate.

Agrarian Scientific Center (ASC) of the Ministry of Agriculture controls scientific-research works in agricultural sphere of Azerbaijan Republic. ASC implements scientific support of agrarian sphere in our country; participates in working out of national policy, works out scientific strategy of its implementation; determines positive tendencies of agrarian investigations; organizes and implements scientific-research works. There are 8 Regional ASC (in Beylagan, Guba, Terter, Ganja, Sheki, Salyan, Lenkeran, Kurdamir) engaged in speeding-up, extension of the range and of profitability of application of scientific achievements; and the need of the regions in scientific-research works. Achievements of agrarian science are published in the magazine "Azerbaijan Agrarian Science".

Agabeyli Agakhan Alesker oglu, the Doctor of Agricultural Sciences, the professor, the honored man of science, the correspondent member of All-Union Academy of Agricultural Sciences, was the advisor of about 50 candidates and doctors of sciences. The author of 200 scientific works, books and manuals. His articles, books and manuals on buffalo-breeding was published in Azerbaijan, Russia, India and other countries.

Akhundzadeh Idris Mammadhuseyn oglu. The former director of Azerbaijan Scientific-Research Institute of Perennials, the doctor of sciences, the professor, an honored man of sciences, the author of 4 sorts of olive, 3 sorts of feykhoa, 1 sort of apple and 1 sort of unabi. The author of more than 250 scientific works. He had been awarded with the order of "Star" by the government of Afghanistan for working out and implementation of the project on growing of new subtropical plantation in Afghanistan; with order 'Red Flag of Labor', series of medals and Diplomas for services in the

development of the science in Azerbaijan and the title honored man of science of Azerbaijan.

Agriculture, also called farming or husbandry, is the cultivation of animals, plants, fungi, and other life forms for food, fiber, biofuel, medicinals and other products used to sustain and enhance human life.

Agriculture was the key development in the rise of sedentary human civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies.

Aliyev Jalal Alirza oglu, born in 1928. The head of department at the Scientific-Research Cropping Institute of Azerbaijan and the Botanic Institute of the Azerbaijan NAS, the doctor of biological sciences, the academician of Azerbaijan NAS, an honored man of science. He played has trained of more than 300 young professionals; played great role in gathering and investigation of the valuable gene pools of crops and in creation of more than 50 sorts of crops corresponding the world standards.

### CONCLUSION

Agriculture was the key development in the rise of sedentary human civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies.

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## METHODOLOGICAL TRENDS IN TEACHING ENGLISH

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### ABSTRACT

The teaching and learning process is a dynamic process and therefore it keeps changing as the civilization demands. The teachers keep reforming and reapplying their knowledge in order to keep abreast with the changing techniques. English is an International language. English language learning depends on various factors which are related to effective teacher, effective teaching and effective teaching methods. So English teacher has to give up traditional methods and has to adopt innovative methods to teach English language. English teacher has to play various roles like facilitator, communicator, motivator, mentor, guide and build bridge between theory and practice.

Pedagogical knowledge such as creating and providing learning atmosphere, arousing interest, motivating students, enable the use of technology in teaching, creating positive vibrations towards learning, creating stress-free environment etc. pedagogical knowledge enriches the teaching effective. So, the teacher plays a key role to enable the students good at English language. So, the teaching is challenging to the teacher in modern era. The innovative methods are helpful to face the challenge.

**Keywords:** English language teaching, innovative methods, different approaches of teaching

McKay distinguishes the following methodological trends:

### THE GRAMMAR-TRANSLATION METHOD

The first method which we shall look at in this historical examination, which has prevailed a long time in the teaching of English and of other modern languages, is based on grammar and translation. It is a deductive, intellectual method, according to which the language is acquired by memorising the grammatical rules and paradigms and long lists of vocabulary, and is practised by the application of this knowledge in exercises of direct and inverse translations.

### THE DIRECT METHODS

Once it was decided that when learning a foreign language, the objective should be the ability to communicate with speakers of that language, rather than just the ability to read literary works, the method using grammar and translation was seen as no longer serving a purpose, or could not at least be employed exclusively.

### THE STRUCTURAL OR AUDIO-LINGUAL METHOD

This method, also known as "linguistic", as it was the first to be consciously and intentionally based on a determined concept of language and its acquisition. This method began to invade the education system at all levels: university faculties, technical schools, secondary schools etc.

### THE COGNITIVE APPROACH

According to this approach, the learning of a language consists in acquiring a conscious control of its structures and its phonetic, lexical and grammatical elements, by means of, above all, the study and analysis of these structures, organised into coherent groups of knowledge.

### THE COMMUNICATIVE APPROACH

The communicative approach is a general philosophy which has been at the forefront of foreign language learning. Its basic argument is that the learning of a foreign language should be directed towards the student acquiring communicative competence, that is to say, the acquirement of a series of skills which permit him to communicate with native speakers of the language in the most common situations of daily life.

According to Richards J., and Rodgers T., there are different approaches concerning methods of teaching English. They list the followings:

**1. Scientific Approach:** improved methods of Teaching English are urgently needed as it is the language of modern technology, science, art, politics, medicine, etc. A systematic and scientific approach is required for its adequate teaching. It causes a lot of confusion if taught haphazardly; really a hard task to accomplish. Unless the teacher adopts befittingly structured and cautiously designed methods, ultimate success is unthinkable. Concerted efforts are needed to charter a well - planned program for the purpose.

**2. Community Language Learning:** as the name indicates, this method follows a "humanistic" approach which was supported by Charles A. Curran, a specialist in counseling and a professor of psychology at Chicago University. His method is known as Counseling-Learning, and it redefines the roles of the teacher (counselor) and learners (the clients) in the language classroom.

**3. Inculcating an attitude to learn:** modern trends of education regard the student as the center of all activities. Teacher strives hard to capture his interest and attention as these are vital to all efficient teaching. The success of the



teacher does not lie in impressive teaching only rather depends upon the fact how far has he set the student exploring new horizons for himself. It is how to inculcate an attitude to learn; that is all important.

**4. Learning by doing:** a lot of emphasis is laid on teaching the action verbs by actually performing the actions. The concepts thus formed sink deep into the mind and one tends to become what one does. Activity provides vividness to experience.

**5. Functional Approach:** before the Functional Approach was taken into fashion, reading and writing were initiated with the letters of alphabets which are abstract to the students and is devoid of interest at all. The modern trend opines to establish the functional approach in the teaching of the both. It is necessitated to begin with the words of immediate interest to them and come from the range of their experience. They should also be provided with variety of exercises for the purpose to prepare them to read and write conveniently. The readiness tenure is considered to be a very significant one.

**6. Audio- Visual Aids:** modern trend of Teaching English emphasizes a lot on the use of Audio-Visual aids to attract the interest of the students.

**7. Oral Work:** with a view to laying a concrete foundation in the teaching of English, oral work is highly recognized as the vital skill.

**8. Controlled Vocabulary:** The modern trend is in favor of teaching scientifically selected and suitably graded structures and vocabulary. The words of high frequency should precede those words which occur less frequently in the course of speaking and reading. The teacher should not impart everything whatsoever strikes his mind or comes his way. He should rather follow a carefully chartered program and well-tried methods and principles of selection and gradation.

**9. Play-way-Method:** Play-Way-Method captures the attention of the student yielding remarkable results and feedback. Plays, dialogues, declamation contests, debates and competition of vocabulary tests stimulate the interest of the students in language learning.

**10. Problem solving approach:** the way the modern trend fascinates the students, is throwing out a problem challenging the students to solve it. It targets at creating in them the habits of reflection and thinking.

**11. Brain Storming:** is an advanced and modern teaching technique in which the teacher is not to be a full time participant or speaker rather provides opportunity to the students to guess or seek answers. Having given some clues, the teacher strives to elicit answers from them. Students guess the answers of the desired questions or the meanings of the new vocabulary using hit and trial method but the right answer is finalized by the teacher in the end. The method enhances the capabilities, potentialities and self - confidence of the student.

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## EXAMPLE OF “ENGLISH-UKRAINIAN DICTIONARY COLLOCATION OF NATO MILITARY TERMS” DEVELOPMENT

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### ABSTRACT

Despite the fact that mankind has been compiling dictionaries for the past few millennia, lexicography as a science is relatively young and its conceptual system and the terminology still haven't resolved. Having manuals and instructions for developing standards the terms and definitions of military terminology dictionaries somewhat reduce the importance of design. However, management can replace a design only if the generated dictionary refers to the type described in the manual. The conditions and resources of the project correspond to the vocabulary, from which come the authors of the normative document. Most translation dictionaries of special vocabulary are descriptive. Unfortunately, the tool for the military descriptive dictionaries special vocabulary is not enough, they are very general and are poorly covered practical issues of designing and compiling dictionaries. The limited nature of these benefits the authors acknowledge. There is not yet a special guidance on the compilation of translation dictionaries of special vocabulary. Therefore, it is important to start developing vocabulary collocation NATO military terms.

In this article “the development of English-Ukrainian dictionary-thesaurus of NATO military terms”, their systematization by alphabet and keyword-collocates is considered. The dictionary is based on the popular terminology collocation official documents of the military alliance. The author made a conceptual clarification, addition and terminological apparatus necessary for the design of translation dictionaries of military special vocabulary; identified, classified and described factors influencing the choice of the characteristics of a translation dictionary of military special vocabulary and the process of working on it; developed general guidelines for the implementation of translation dictionaries special vocabulary. English collocation submitted to Ukrainian translation, which can be used as a special custom application to specialized parallel corpus RNC (Russian National Corpus).

**Key words:** collocation, word-collocate, electronic dictionary, official documents, NATO military terms, parallel corpus, RNC.

### FORMULATION OF THE PROBLEM AND A STATEMENT OF SCIENTIFIC RESEARCH

Development of specialized dictionaries-thesaurus requires a special corpus-linguistic approach and linguistic-grammatical knowledge. This is especially related to creating vocabulary collocation of NATO military terms. The main characteristics of thesauruses' design with military specific technologies are: inventory; clarify and supplement terminological apparatus; identification, classification of description the factors that influence the choice of characteristics of the specific lexicon dictionary and the process of its creation. It's important to take into account the level of knowledge of users at the conclusion of dictionaries of special vocabulary (in this case international lawyers, members of the military), their overall language training, and lexicographic competence.

The relevance of the study is the ability of the specialized electronic dictionary to match the structure of translation in the National Corps of Russian Language. Frequencies of the use of grammatical categories of different parts of speech, frequency distributions of grammatical forms in the paradigm of inflexion and most collocation frequency words, must be represented in such industrial thesauruses. In this case, a dictionary will give an opportunity to get frequency listings for texts of different functional styles and genres. It also will give the opportunity to watch after the change in using of military grammatical units and phrases in the process of parallel bilingual or multilingual translation. On the problem of creation terminological and frequency dictionaries have worked Alekseiev P. M. [1], Balaban M. A., Dorokhina L. V., Mazina I. V., Salii A. D. [2], Balanaieva O. V., Borysov V. V. [4], Vlavatska, M. V. [5], Herd A. S. [6], Marchuk Iu. N. and others. Instead of that, a vocabulary collocation NATO military terms – is the first authorial development of important sectoral addition to NKRM [9].

**Aim of the article and conceptual tasks** – to develop an “English-Ukrainian dictionary of popular collocation of NATO military terms” (after the alphabet of “A-B-C”), to offer the translation as an addition to Russian National Corpus.

### EXPOSITION OF BASIC MATERIAL

Idiomatic collocation in bilingual dictionary serves as a unit of language. It can be considered as an alternative to the usual tokens (synonymic or antonymic), thereby expanding the vocabulary level of dictionary. Collocation in active dictionary contains a number of common features. They are one of tools of lexicographical description the meaning of the word and show systematic semantic and stylistic contrast between the lexical units.

In the role of the nearest word context the collocation executes following functions: sets values of the total number of meanings, reserved for it in a given period; establishes paradigmatic relations between elements of the semantic structure of a word; distinguishes synonymy; gives new shades of meaning in the semantic structure of a word; shows the comparative potential of a word with other specialized lexemes. Collocation is important in the microstructure of dictionary.

An offer example of dictionary of collocation of NATO military terms is divided into two levels: 1) word-collocate, as initial basis for output the collocation; 2) lexical phrases (collocation), consisting of the main parts of speech, combined with each other in content and categorical phrases when one of the words may be combined with another word or words from a limited list (Table 1) [8].

Table 1. Example of development of "English-Ukrainian dictionary of collocation of NATO military terms"

<i>Terminological collocations</i>	<i>Word-collocate</i>
<p><b>access point</b> – 1. контрольно-пропускний пункт; 2. пункт пропуску (пункт в'їзду-виїзду в забороненій зоні).</p> <p><b>access routes</b> – під'їзні шляхи.</p> <p><b>acoustic bullets</b> – акустичні кулі.</p> <p><b>active air defence</b> – активна протиповітряна оборона.</p> <p><b>active decontamination</b> – дезактивація, спеціальна обробка.</p> <p><b>active denial system</b> – активна система заборони.</p> <p><b>advance account</b> – авансовий рахунок.</p> <p><b>advance party</b> – передова група.</p> <p><b>area control centre (ACC)</b> – 1. районний диспетчерський центр (РДЦ); 2. диспетчерський пункт сектора УВС.</p> <p><b>area denial operation</b> – блокування району.</p> <p><b>Army Combat Uniform (ACU)</b> – польова форма (СВ США).</p> <p><b>army corps</b> – армійський корпус.</p> <p><b>battle damage repair (BDR)</b> – аварійний ремонт у бойових умовах.</p> <p><b>biological ammunition</b> – біологічні боеприпаси.</p> <p><b>Biological and Toxin Weapons Convention (BTWC)</b> – Конвенція про біологічну і токсичну зброю.</p> <p><b>black marketeering</b> – торгівля на "чорному ринку".</p> <p><b>black obscurant smoke</b> – чорна димова завіса.</p> <p><b>blasting fuse</b> – вогнепровідний шнур, детонатор.</p> <p><b>blasting payload</b> – заряд вибухової речовини (ВВ).</p> <p><b>blasting powder</b> – порошкоподібна ВВ.</p> <p><b>border break</b> – позарамкове оформлення (на полях аркуша карти).</p> <p><b>border control</b> – прикордонний контроль.</p> <p><b>border troops</b> – прикордонні війська.</p> <p><b>Capabilities Coordination Cell (NATO)</b> – Група координації сил та засобів (НАТО).</p> <p><b>capabilities package (CP)</b> – комплекс сил і засобів.</p> <p><b>cargo documentation</b> – документи на вантаж, супровідна документація до вантажу.</p> <p><b>cargo inspection</b> – інспекція вантажів, огляд вантажів.</p> <p><b>central analysis team</b> – центральна аналітична група.</p> <p><b>Central European Pipeline Management Agency (CEPMA)</b> – агентство з управління центральноєвропейським трубопроводом.</p> <p><b>chemical attack</b> – терористичний акт з застосуванням хімічної зброї.</p> <p><b>chemical, biological and radiological (CBR)</b> – радіологічний, хімічний, біологічний (РХБ).</p> <p><b>civil affairs agreement</b> – угода про зв'язки з цивільною владою.</p> <p><b>civil affairs operation</b> – робота з цивільною владою і населенням.</p> <p><b>crisis intensity</b> – інтенсивність кризи.</p> <p><b>crisis life cycle</b> – цикл розвитку кризи.</p> <p><b>crisis management (CM)</b> – врегулювання кризових ситуацій.</p> <p><b>daily allowance</b> – добова віддача.</p> <p><b>daily patrols</b> – щоденне патрулювання.</p> <p><b>damage assessment</b> – 1. оцінка характеру і ступеня пошкоджень; 2. оцінка збитку.</p> <p><b>damage control</b> – боротьба за збереження корабля.</p> <p><b>defence and security sector</b> – військова організація держави.</p> <p><b>defence area</b> – район оборони, смуга оборони.</p> <p><b>early warning</b> – раннє попередження.</p> <p><b>early warning ground-based radar (EW GBR)</b> – наземна РЛС раннього попередження (НАТО).</p> <p><b>economic mobilization</b> – економічна мобілізація.</p> <p><b>economic options</b> – економічні варіанти (наприклад санкції).</p> <p><b>effective and efficient</b> – результативний і дієвий, ефективний.</p> <p><b>effective date</b> – дата вступу в силу (договору, угоди).</p> <p><b>effectiveness</b> – ефективність; бойова стійкість.</p> <p><b>fire for effect</b> – вогневе ураження.</p> <p><b>fire hose</b> – пожежний рукав.</p> <p><b>fire plan</b> – планування вогню; система вогню.</p> <p><b>force planning</b> – планування створення збройних сил.</p> <p><b>force planning guide</b> – керівництво з планування створення збройних сил.</p> <p><b>Force Planning Process (FPP)</b> – процес планування сил і коштів.</p>	<p><b>access</b> – 1. доступ; 2. допуск.</p> <p><b>accountability</b> – 1. підзвітність; 2. відповідальність.</p> <p><b>acoustic</b> – акустичний.</p> <p><b>activation</b> – 1. введення в дію; 2. введення до бойового складу; 3. введення в лад; 4. постановка на озброєння; 5. мобілізаційне розгортання; 6. приведення в дію (міни, фугаси, СВУ).</p> <p><b>active</b> – активний.</p> <p><b>advance</b> – висування військ (етап розгортання військового формування).</p> <p><b>area</b> – (район, площа, область військової дії).</p> <p><b>army</b> – 1. армія; 2. сухопутні війська (СВ).</p> <p><b>battle</b> – бій.</p> <p><b>biological</b> – біологічний.</p> <p><b>black</b> – чорний.</p> <p><b>blasting</b> – підривні роботи</p> <p><b>border</b> – 1. межа; 2. рамка, лист карти.</p> <p><b>Capabilities</b> – 1. потенціал; 2. сили і засоби.</p> <p><b>cargo</b> – вантаж.</p> <p><b>central</b> – центральний.</p> <p><b>chemical</b> – хімічний.</p> <p><b>cold</b> – холодний.</p> <p><b>civil</b> – цивільний.</p> <p><b>crisis</b> – кризовий.</p> <p><b>daily</b> – денний, добовий.</p> <p><b>damage</b> – ураження цілі.</p> <p><b>DASG</b> – заступник помічника генерального секретаря.</p> <p><b>dazzle</b> – 1. зброя осліплюючої дії; 2. осліплення.</p> <p><b>deception</b> – 1. обман; 2. обман противника, введення противника в оману.</p> <p><b>defence</b> – оборона.</p> <p><b>demilitarization</b> – 1. демілітаризація; 2. роззброєння.</p> <p><b>disaster</b> – 1. лихо; 2. катастрофа</p> <p><b>distribution</b> – 1. розподіл; 2. видача (матеріальних засобів); 3. доставка матеріальних засобів.</p> <p><b>early</b> – ранній.</p> <p><b>economic</b> – економічний.</p> <p><b>effect</b> – вплив; результат</p> <p><b>electromagnetic</b> – електромагнітний.</p> <p><b>engagement</b> – 1. взаємодія; 2. бій; 3. бойова робота; 4. залучення до участі.</p> <p><b>exercise</b> - 1. навчання, 2. тренування.</p> <p><b>fighter</b> – 1. винищувач; 2. бойовик.</p> <p><b>fire</b> – вогняний.</p> <p><b>fare</b> – 1. сигнальна ракета; 2. освітлювальний патрон; 3. теплова пастка.</p> <p><b>flash</b> – спалах.</p> <p><b>force</b> – сила.</p> <p><b>fuse</b> – детонатор.</p>

Interpretation of the compatibility of words in the dictionary can be represented by means of:

- 1) lexical series that combine with constant expression;
- 2) suggestions;
- 3) phrases and sentences;
- 4) records of formula;
- 5) units of words;
- 6) thematic groups with comparing of idioms;
- 7) lexical functions.

The latter method is the main and universal for all languages and promotes the distribution of specific lexicon for the semantic features. At the same time it shows the main types of idiomatic compatibility.

## RESEARCH RESULTS

Differential structure of collocation dictionary is a feature of its development. It allows selecting a constant idiomatic expression from a keyword-collocate. Thus, from the main collocate the idiom became formed.

For example: економіс – економічний → economic mobilization (економічна мобілізація); economic options (економічні варіанти (For example, sanctions); economic reconstruction (відновлення економіки); economic sanctions (економічні санкції); economic security (економічна безпека); economic shipping (економічні морські перевезення); economy of scale (економія на масштабах, економія за рахунок зростання масштабу виробництва). Crisis – кризовий → crisis intensity (інтенсивність кризи); crisis life cycle (цикл розвитку кризи); crisis management CM (врегулювання кризових ситуацій).

It should also be emphasized that some military idiomatic terms and specialized topics relate to the field of economy, trade, business, medicine, biology, etc. Such a factor makes it possible to compare military idiom of NATO and other international instruments (e.g. economic terms World Trade Organization). Interpretation and comparison of terms in combinatorial collocation dictionary should contain the following dictionary area C3: 1) English term and its grammatical characteristics; 2) interpretation of the term in Ukrainian; 3) translated Ukrainian equivalent with designation accent; 4) English definition; 5) description of the compatibility of word using the normative examples; 6) prepositional syntactic model (mandatory and optional compatibility), supported by examples; 7) synonymic series, if it's possible.

## 4. CONCLUSIONS

An offer example of development of dictionary can be considered as an important system collocation addition to RNC. It is possible thoroughly to investigate the vocabulary of military international sphere, connect the concept system with other criteria, for example by the frequency changes of terminological constant expressions due to the collocations system.

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## MODAL VERBS AND THEIR STYLISTIC DIFFERENCES IN EUROPEAN AND BRITISH LEGAL DOCUMENTS

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### ABSTRACT

Researches in languages for special purposes have qualified legal texts as a distinctive type of texts. The purpose of this study is to describe linguistic features of modal verbs which were found in different types of legal writing and to examine the reasons for their use. In this paper, I will try to compare the use of modal verbs in European Directives and British Statutes and to investigate the expression of obligation in legal texts such as contracts which are texts which lay down the obligations and the rights of the parties to the contract.

**Keywords** coherence, obligation, modality, legislation, variety, statement, behavior.

### INTRODUCTION

There are different types of legal writing. According to their purpose there are operative legal documents, expository documents and persuasive documents. Legal language is widely spread in all areas of social life and it can be combined with language from different domains. The function of the law is double: regulative and constitutive. The legal genre represents a sublanguage which includes a wide range of texts and situational patterns. The legal genre contains a variety of sub-genres such as statutes, conventions and contracts.

There are different ways of expressing obligation in legal English. Legal documents may prohibit certain actions, may confer rights or create obligations, may permit or authorize certain actions. Therefore, there are four types of legal rules: authorizations, obligations, prohibitions and permissions. There are certain rules used in legal language to formulate these rules but these are not subject to grammar rules but to drafting principles. The present study will focus on the investigation of grammatical ways of expressing obligation through the use of modal verbs [1].

The textual organization of a contract contains the following elements: title, introduction, recitals, and definitions, body of the documents, provisions, signatures and dates. The contract law developed in the 19th century and derives from the principles which characterized the Industrial Revolution. Nevertheless, the origins of contract law are much more ancient than that and are to be found in the early common law of the Middle Ages. The main preoccupation of society at that time was land ownership and law developed very quickly in relation to the protection of ownership of land or of interests in land. As a result, the law of that time was also mainly concerned with property rights. The distinction that the law drew in terms of identifying the enforceability of rights was between formal agreements and informal ones. A formal agreement was one made in writing and which was authenticated by the practice of 'sealing'. This is the origin of the deed, which was the method accepted for transfer of land and interests in land up to 1989, when the requirement to complete the document by the process of sealing was relaxed in favor of the already common practice of witnessing the document.

Narrative contracts often contain ambiguities (e.g., conflicts and gaps) and these must be avoided or at least the conflicts arising from them resolved. Furthermore, there may be complex interdependencies between contract clauses that can be hard to track down. The content of the contract has to be in conformity with the legal framework and it forces the parties to involve themselves in politeness strategies in order to avoid the face threatening acts.

The modal verbs occurring in contracts have double or triple functions and this applies to the modals shall, will, can and must. The modal will may be used to express either an obligation or a prediction, may and can express permission or possibility while must may express obligation (deontic use) or logical necessity. The strategies placing the parties to the contract under some kind of obligation are the most frequently used directives in English contracts. In order to express obligation in a contract the modal shall is used and expresses the illocutionary force of an order: "The distributor shall pay commission on a quarterly basis..."

The regulation of behavior in a contract can be made by issuing prohibitions and here the modal verb shall is used again:

"The Representative shall not be entitled to enter into any contract or obligation on behalf of the Company without the express written consent of the Company being first obtained" [2].

Statements of permission issued by some authority are usually conveyed with the help of the modal verb may: "The employer may determine the hiring at any time by giving one month's previous notice in writing..."

The contract also stipulates the limitations of liability and the assignment of benefits which are expressed with the help of shall. In this case the most frequently used verbs in connection with the auxiliary shall are: entitle, relieve, accept, have power, etc.

In the language of contracts shall represents the principal means of expressing obligations. Obligations and intentions are the main aspects dealing with a contract.

The modals shall and will have each been used to express modal meanings and to mark future time. But shall is rarely used to indicate future time. Shall is a modal used to impose obligation on the subject of a sentence. In contract law, it conveys

the meaning “has a duty to”. Lawyers tend to avoid using the modal must, because they find it too bossy. Another alternative instead of shall could be will but it seems less promising.

Even if many legal drafters tend to avoid using the modal must, this may be an alternative to shall as a means of expressing obligation. The use of must instead of shall may express any obligation whether it is imposed on the subject of a sentence. For example: “The Company must reimburse the Sales Manager for all authorized expenses”. “The meeting must take place at the company’s headquarters”. But a disciplined use of shall to impose an obligation on the subject of the sentence makes clear who owes the obligation: “The Company shall reimburse the Sales Manager for all authorized expenses.” An obligation can be expressed in other ways by using passive voice: “The Sales Manager shall be reimbursed for all authorized expenses.” Or one could use “is entitled to”: “The Sales Manager shall be entitled to be reimbursed for all authorized expenses.”

Shall is also used to express future time in contracts and these may result in confusion. There are cases when the simple present tense would be more appropriate as for example: “This agreement shall be governed by the Los Angeles law.”

Due to the fact that shall is unusual in ordinary speech, this modal verb has been criticized by the Plain English Campaign, which recommends the use of must to express obligations. (Tiersma, 214) [3].

### Comparative Analysis of Modal Verbs in European Directives and British Statutes

Modal verbs usually appear in the sequence of verbs in a verb phrase. They are finite verb form with no inflected endings and no past tense. They are followed by the short infinitive. The most frequently used modals in legal English are: shall, may, must, would, will followed by can, ought to, should. According to the European style guide the enacting terms of the EU legislation can be divided into two linguistic categories: imperative terms and declarative terms. The imperative terms may be further divided into positive and negative commands and permissions and the declarative terms are those terms that are implemented by virtue of being declared.

The study of modality is concerned with the meaning of the modals. Legal language contains both deontic and epistemic modality. Epistemic modality shows how certain is a speaker about an expressed utterance. Deontic modality involves both language and action and refers to the instances when the speaker orders, promises or places an obligation to someone. Deontic modality can be divided into: a) directives (expressing possibility by the use of may or necessity by the use of must); b) commissives (expressing promises) and imperatives [4].

We carried out a comparative analysis to show the frequency of the modals in both European and British legislative texts. The European directives used in this work were taken from the Official Journal of the European Communities and the Acts of Parliament from the online UK Statute Law Database.

Table 2

Act of Parliament Directive ↓ ↓		
Shall	→	60 301
Should	→	20 150
Will	→	10 6
Would	→	30 12
Must	→	90 1
Can	→	5 30
Could	→	10 5
May	→	100 96

According to table 1 the most frequently used modal verb in the European directive is shall, while may is the most frequently used modal in the British Act of Parliament. EU legal drafters tend to use modal verbs in prescriptive statements and should is used instead of must because it is less strong than must. Bhatia states that “shall not only sustains the myth of precision in legal language but also perpetuates a style and language that differentiates the genre from that of other professions”. (Bhatia, 101-102) The verb shall is one of the most frequently used modal auxiliary in legislative writing, especially in European legal texts, and therefore it fulfils a variety of functions. Crystal and Davy talk about the different uses of this modal verb and state that in legal English: “Shall is invariably used to express what is to be the obligatory consequence of a legal decision, and not simply as a marker of future tense, which is its main function in other varieties.” (Crystal and Davy, 206-207) [5].

In the European legal text shall is used to indicate a positive command, as for example:

“For authorization as a payment institution, an application shall be submitted to the competent authorities of the home Member State...”

Shall may be also used to give directions or to indicate future events as in the following example:

“Each element shall be included in the sum with its positive or negative sign.”

Here the verb shall may have the meaning of is to be included, but it can be also interpreted as a future event meaning that after the directive comes into force each element will be included in the sum.

Shall is also used in both European and British texts to express an order:

“ If the payment service user provides information additional to that specified in Articles 37(1)(a) or 42(2)(b), the payment service provider shall be liable only for the execution of payment transactions in accordance with the unique identifier

provided by the payment service user.” (Directive 2007/64/EC, 319-31)

In this example taken out from the European directive, the modal verb shall indicates the obligations of the payment service provider which represents the addresser. So, according to this provision the addresser must conform to this obligation of executing the payment transactions [6].

In British legal texts shall is used to express an obligation:

“Accordingly, in determining in the case of an offender whether it should take steps as mentioned in subsection (1), the court shall also have regard to the matters mentioned in those paragraphs.” (Criminal Justice and Immigration Act, Part 2, p. 8).

In this example taken from Criminal Justice and Immigration Act shall expresses the obligations of the court and the steps that have to be taken in determining the case of the offender.

Shall can be used to express the application of a directive:

“This Directive shall apply to payment services provided within the Community.” (Directive 2007/64/EC, 319-9) [7].

Shall can also be used to state rules:

“This Section shall apply to other payment transactions, unless otherwise agreed between the payment service user and his payment service provider, with the exception of Article 73, which is not at the disposal of the parties.” (Directive 2007/64/EC, 319-30)

In this example shall serves as an indicator for the application of this provision. It also indicates the rules according to which this section is valid.

Shall may be used to express prohibitions: “...such credit shall not be granted from the funds received or held for the purpose of executing a payment transaction;...” (Directive 2007/64/EC, 319-17).

The use of shall may also create ambiguity, especially in British legal writings:

“No order or regulations which, by virtue of section 18A, is or are to have effect for a limited period shall be made unless a draft of the order or regulations has been laid before, and approved by a resolution of, each House of Parliament”(Criminal Justice and Immigration Act, Part 4, p. 45)[8].

The predicate from this sentence, containing the modal auxiliary shall refers to an inanimate subject no order or regulations. This indicates that a rule is imposed an abstract thing (in this case order or regulation) and the agent of the action is not specified. So, in this example we have passive voice without an agent. This construction shall + BE + past participle is frequently used in both types on legal documents. The construction shall + short infinitive is also widely used especially in European legal texts. Critics also say that legal drafters should avoid using a negative subject with the affirmative form of shall. (No orders or regulations (...) shall be made).

Shall is a modal verb which expresses a legal obligation, but in most of the cases this verb occurs with non-human subjects. Anna Trosborg argues that “statements with non-human subjects typically refer to functions of the statutory instruments, they explain when a law is effectuated, how far an act extends, whom it affects, how a term is to be understood, etc., and such they serve as conditions to be considered by the citizens as well as the court.” (Trosborg, 106). In this cases the modal verb shall has a declarative function and here are some examples when the modal verb is used with inanimate subjects:

“An authorization shall only be granted to a legal person established in a Member State” (Directive 2007/64/EC, 25).

“A provision shall not be contained by virtue of subsection (1)(b) in a warrant under section 4A unless it satisfies the following two conditions” (Criminal Justice and Immigration Act, Part 6, p. 71)

In these texts I did not find any sentences where human subjects are specified.

In most of the instances shall is used in the passive voice with non human subject. Because of the fact that most of the passive constructions with shall are agentless, most occurrences of shall are unmotivated.

Verbal groups are characterized by a high number of non-finites. Among the finites the most frequently found group is modal auxiliary+ be +past participle, and in this construction the most used modal auxiliary is shall which expresses deontic modality. Crystal and Davy say that shall expresses “what is to be the obligatory consequence of a legal decision and not simply as a marker of the future sense, which is its normal function” (Crystal, Davy, 206-207). e.g. : “Such waste shall be subject to all provisions of Directive 75/442/EEC. It shall in particular be:

- destined for duly authorized facilities only, authorized according to Articles 10 and 11 of Directive 75/442/EEC,
- subject to all provisions of Articles 8, 12, 13 and 14 of Directive 75/442/EEC”( Case C 176/05).

In this example shall occurs in passive sentences. In legal language shall does not indicate the future, it indicates an obligation. Shall is also to be found in declarations. It is commonly used in legal language and therefore it has the function of indicating that the document in which it occurs is legal.

The verbs used with shall are selected from a small number of lexical sets, such as apply, be, preclude, exceed, act, vacate, etc.

The frequency of this modal and the avoidance of the modal auxiliary must shows in a way an improvement over the British style, but its use in excess also leads to ambiguities regarding its different meanings.

Another modal verb that is predominantly used in legal texts is the modal auxiliary may. As table 1 shows, may is the most frequently used modal verb in British Acts of Parliament. May expresses permission, but it has some other additional meanings.

The following three examples have been taken from the Criminal Justice and Immigration Act and show different instances when this modal auxiliary is used:

- (1) "...or with the requirements of any community order or any youth community order to which he may be subject..."
- (2) "The court may make a youth rehabilitation order in respect of the current offence instead of imposing a fine..."
- (3) "Rules under sub-paragraph (4)(a) may, in particular, make provision in relation to..."
- (4) "The Secretary of State may by order amend paragraph 2, 3 or 4 by substituting for any reference to an amount of money or a number of hours or days there specified a reference to such other amount or number as may be specified in the order."

In the third example reference is made to the inanimate subject rules, while in the first, second and fourth example references are made to human subjects. In the first sentence we have the pronoun he as a subject and in the second sentence the noun court. The most frequently used subject in combination with the modal may is the noun court. In the first sentence may indicates probability, possibility although this modal is not normally used to convey possibility or probability. This feature is characteristic for the common usage. In the fourth example may has the meaning of to grant a right or a power. But this sentence is a little bit ambiguous because the modal verb may can simply refer to the possibility that the Secretary of State might amend the paragraphs under certain circumstances.

The use of the negative form of may can be ambiguous. In spite of the fact that the positive form of this modal has a different meaning from must and shall, the negative form is the same. The negative form is used to express prohibition, something that is forbidden, and that is why this form should normally be avoided. Therefore may+not is used in the sense of limiting the rights or the powers of a provision as in the following example:

"The power conferred by subsection (1) may not be exercised in relation to any sentence or order if an appeal, or an application for leave to appeal, against that sentence or order has been determined" (Criminal Justice and Immigration Act, Part 3, p. 206)

In the example the negative form of may limits the power of this provision under certain circumstances. This means that the power under section 1 cannot be used in relation to any sentence if that appeal has already been determined.

The modal verb must is used to describe a requirement or a prohibition and in general English it expresses obligation. As table 1 shows, it is frequently used in British Acts of Parliament. The European drafters have tried to avoid using this modal auxiliary, perhaps because of the fact that shall is the most frequently used modal verb in the European directives. However, critics have argued that the use of shall and must at the same time leads to ambiguity because readers may not understand any more whether different meanings are intended.

Must + not expresses a prohibition, as in the following example:

"The Secretary of State must not release a person under subsection (2) unless the Secretary of State is satisfied that it is not necessary..." (Criminal Justice and Immigration Act, Part 2, p. 22).

Must also expresses an obligation:

"Where on a reference under subsection (1) relating to any person the Board recommends his immediate release on licence under this Chapter, the Secretary of State must give effect to the recommendation." (Criminal Justice and Immigration Act, Part 2, p. 22).

Here the verb must suggests that the Secretary of State has the obligation to give effect to the recommendation [9].

## CONCLUSIONS

To sum up the functions of the most frequently used modals, one can say that the modal shall is the most frequent auxiliary used in the European directives. It fulfils many functions from imposing an obligation to creating rights or defining words. May is frequently used in British statutes and expresses permission and authorization. Must is used to express obligation and prohibition in legal language and should not be used as an alternative to shall.

The language of the legislative documents is not only informative providing the reader with details and useful information about their rights and obligations, but it also specifies and mentions the authority which issues, orders or prohibits certain acts. This authoritative and permissive dimension is conveyed in legal English by the means of modal verbs.

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## IN-VITRO ASSESSMENT OF ANTICANCER POTENTIAL OF LAPATINIB AND BEE VENOM AGAINST BREAST (MCF-7) AND PROSTATE (PC-3) CANCER CELL LINES: IN-VITRO STUDY

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### ABSTRACT

Breast and prostate cancer are heterogeneous diseases and the leading cause of death worldwide. They are considered to be one of the most aggressive cancers due to failure of chemotherapy response. Thus, there is an urgent need of finding alternative therapies for breast and prostate cancer. In the present study, the anti-cancer properties and cytotoxicity of Lapatinib and bee venom on breast MCF-7 and prostate PC-3 cancer cell lines were evaluated using MTT assay and it was noticed that the cytotoxicity was concentration dependent recording IC<sub>50</sub> of 60 µg and 81 µg and 288 µM and 345 µM for MCF-7 and PC-3 respectively. Also, synergetic activity of both BV and Lap to the other recording a significant decreased IC<sub>50</sub> values in the order of 1.04 µg and 0.59 µg for BV and 178 µM and 234 µM for Lapatinib post MCF-7 ad PC-3 respectively. The cell cycle arrest profile and specific cellular apoptosis markers were monitored (MMP1, CDK2, HER2, and P53) in bee venom and Lapatinib IC<sub>50</sub> values pretreated MCF-7 and PC-3 cells using real time PCR and flow cytometric analysis. By analyzing the cell cycle arrest and related gene expression pattern, it was noticed that the main phase of cell cycle arrest was found to be G0/G1 in MCF-7 cell line. An S-phase arrest was also observed in bee venom pretreated breast MCF-7 cell line to a greater extent than that observed in cells only treated with Lapatinab. Up regulation of pro-apoptotic and down regulation of anti-apoptotic genes in bee venom pretreated cells were significantly enhanced as compared to cells treated with Lapatinab. In this study, we suggest that Lapatinib via its synergistic action with bee venom might be used as an enhancer of the anticancer properties of Lapatinib.

**Keywords:** Bee venom, Lapatinab, apoptosis, MCF-7 and PC-3 cell lines, Cell cycle, cytotoxicity, anticancer activity, MMP1, CDK7, HER2, P53.

### INTRODUCTION

Breast is the most common cancer among women while prostate is the most common among men. The American Cancer society estimated that for breast cancer 255,180 new breast cancer cases and 41,070 breast cancer deaths were expected to occur in the United States in 2017 (Siegel et al., 2016). Furthermore, according to the National Cancer Institute in 2016, approximately 12 percent of men will be diagnosed with prostate cancer. Moreover, several studies have reported that breast cancer in young women have more aggressive features, such as larger tumor size, poor differentiation, positive lymph nodes, high proliferation rates, higher prevalence of Human Epidermal Growth Factor Receptor 2 (HER2/neu) overexpression, and much more tumors of the basal-like histologic subtype (Walker et al., 1996 & Pollán., 2010) (Rycaj and Tang, 2015). On the other hand, Many studies conducted that men with prostate cancer may experience common problems such as BPH (benign prostatic hyperplasia), acute and chronic bacterial prostatitis and chronic prostatitis (Rycaj and Tang, 2015).

However, the most common types of cancer treatment include Chemotherapy, surgery, and radiation- therapy. There are two types of chemotherapy: The first type is cell cycle specific which affects cells only when they are dividing, on the other hand the second type is cell cycle non-specific which affects cells when they are at rest. According to Puliye et al. (2015), chemotherapy drugs mainly work through damaging the DNA or the RNA of the cells. However, these types of cancer treatment contain many side effects that have a psychological, physical, emotionally, and economic impact on the patient's life. Cancer patients typically experience "Break-Through" nausea, vomiting, hair loss, weight loss or gain, feeling constantly tired, mouth ulcers, chemo brain (problems with concentration or memory), hearing loss, fertility issues, and heart and lung problems as a result of the active pharmacology imposed by Intravenous Chemotherapy (Siegel et al., 2012).

Nonetheless, bee venom (BV) (api-toxin) is known to be one of the strongest natural substrates that are very useful in cancer treatments. Also it has been widely used in the treatment of some immune-related diseases, as well as in recent times in treatment of tumors. Several cancer cells, including renal, lung, liver, prostate, bladder, and mammary cancer cells as well as leukemia cells, can be targets of bee venom peptides such as melittin and phospholipase A2. The cell cytotoxic effects through the activation of PLA2 by melittin have been suggested to be the critical mechanism for the anti-cancer activity of BV. The induction of apoptotic cell death through several cancer cell death mechanisms, including the activation of caspase and matrix metalloproteinases, is important for the melittin-induced anti-cancer effects. The conjugation of cell lytic peptide (melittin) with hormone receptors and gene therapy carrying melittin can be useful as a novel targeted therapy for some types of cancer, such as prostate and breast cancer. This review summarizes the current knowledge regarding potential of bee venom and its compounds such as melittin to induce cytotoxic, antitumor, immunomodulatory, and apoptotic effects in different tumor cells in vivo or in vitro (Oršolić, 2011).

Furthermore, Lapatinib (INN) is used in the form of Lapatinib ditosylate (USAN) is an orally active drug for breast cancer and other solid tumors. It is a dual tyrosine kinase inhibitor which interrupts the HER2/neu (human EGFR type 2) and epidermal growth factor receptor (EGFR) pathways (Medina & Goodin., 2008). It is used in combination therapy for HER2-positive breast cancer. It is given with chemotherapy tablet called capecitabine, or in combination with hormonal therapy. It is used for the treatment of patients with advanced or metastatic breast cancer whose tumors overexpress HER2 (ErbB2). Over expression of HER2/neu can be responsible for certain types of high-risk breast cancer induction in women. Like Sorafenib, Lapatinib is a protein kinase inhibitor shown to decrease tumor-causing breast cancer stem cells by binding to the ATP-binding pocket of the EGFR/HER2 protein kinase domain, preventing self-phosphorylation and subsequent activation of the signal mechanism. It was recorded that bee venom, melittin and propolis showed clear anticancer potentials as they up/down regulate of P53, BAX pro-apoptotic genes and Bcl2 anti-apoptotic gene, respectively (Aydiner., 2016).

However, these side effects of chemotherapy resulting from the drug effects itself in addition to the drug administration in large amounts lead the scientists to think about a solutions in order to reduce these adverse effects. One of these solutions is the emerging or combining Lapatinab that aimed to overcome the problems stated above by using natural compounds such as bee venom, which may affect multiple targets with reduced side effects and which are effective against several cancer types such as breast cancer. However, natural compounds from various sources including plants, animals, and microorganisms offer a great opportunity for discovery of novel therapeutic candidates for the treatment of breast cancer. Accordingly, the aim of the present work is to Invitro evaluate the anticancer potential of Lapatinib as anticancer drug against breast cancer cell line (MCF-7), in addition to the evaluation of the enhancement potential of bee venom to the anticancer property of test drug and related gene profile.

#### Materials and methods

Breast Cancer of Human (MCF-7) cell line, Prostate Cancer of Human (PC-3) cell line, Bee venom, and Lapatinib were kindly supplied from cell culture unit and Helwan Animal House (VACSERA-Egypt), respectively.

#### Preparation of bee venom and Lapatinab

Bee venom was dissolved in RPMI 1640 medium as 2 mg / ml, and sterile filtrated using syring d\filter (Millipore – USA). Also, Lapatinib was dissolved in (DMSO) and prepared as 10 mM/ ml

#### Cytotoxicity (MTT assay)

Human Breast (MCF-7) and prostate (PC-3) cancer cells were propagated in 75 cm<sup>2</sup> cell culture flasks using RPMI-1640 medium (GIBCO-USA) supplemented with 10% (v/v) fetal bovine serum (GIBCO-USA) and incubated in 5% (v/v) CO<sub>2</sub> incubator at a temperature of 37°C. Confluent cells were detached using 0.25% (w/v) trypsin solution and 0.05% (v/v) ethylenediaminetetraacetic acid (GIBCO-USA) for 5 min. Cells were plated at a concentration of 2 x 10<sup>5</sup> cells/ml in 96-well cell culture plates and incubated at a temperature of 37°C for 24 hours to achieve confluence state. The medium was decanted and fresh medium containing various concentrations of bee venom and Lapatinib was added for cytotoxicity determination using colorimetric MTT reduction assay. Dead cells were washed out using phosphate-buffer saline (PBS), and 50 µl of MTT stock solution (0.5 mg/ml) were added to each well. After 4 h incubation period, the supernatants were discarded and the formazan precipitates were solubilized by addition of 50 µl per well of dimethyl sulfoxide (DMSO). Plates were incubated in the dark for 30 min at a temperature of 37°C, and absorbance was determined at a wavelength of 570 nm using microplate reader (ELX -800, Biotek- USA). The cell viability percentage was calculated using the following formula:

$$\text{Cell viability (\%)} = \frac{\text{OD of treated wells} \times 100}{\text{OD of control wells}}$$

#### Cell viability (%) = OD of treated wells x 100 / OD of control wells

The synergetic potentials of bee venom and Lapatinib was examined by evaluating the cytotoxic potential of bee venom and Lapatinib in MCF-7 and PC-3 cells pretreated with the safe concentration of each of them for 24 h. Morphological alterations of cells were analyzed using an inverted microscope (Nikon-Japan). The cell viability (%) was blotted against the tested bee venom and Lapatinib concentrations.

#### Statistical analysis

Statistical significance between treated and untreated cells was determined using one way ANOVA. Differences at P values less than 0.05 were considered significant. The IC<sub>50</sub> values of test bee venom and Lapatinib were determined using Masterplex-2010 software program.

#### Cell cycle analysis

MCF-7 and PC-3 cells pre-cultured in 25 cm<sup>2</sup> cell culture flasks were treated with an IC<sub>50</sub> of test venom dissolved in RPMI-1640 medium, for 24h. For cell cycle analyses, the cells were harvested and fixed gently with 70% (v/v) ethanol in PBS, maintained at a temperature of 4°C overnight and then re-suspended in PBS containing 40 µg/ml PI and 0.1 mg/ml RNase and 0.1% (v/v) Triton X-100 in a dark room. After 30 min at 37°C, the cells were analyzed using a flow-cytometer (Becton-Dickinson, San Jose, CA, USA) equipped with an argon ion laser at a wavelength of 488 nm. The cell cycle and sub-G1 group were determined and analyzed, as described previously.

#### mRNA Expression levels of cell apoptosis-related genes

Total RNA was extracted from control and treated MCF-7 and PC-3 cells using the GeneJET RNA Purification kit (Fermantus-UK) according to the manufacturer's protocol. The concentration and the integrity of RNA were assessed spectrophotometrically at 260/280 nm ratio and by gel electrophoresis, respectively. First-strand cDNA was synthesized with 1 µg of total RNA using a Quantitect Reverse Transcription kit (Qiagen, Germany) in accordance with the manufacturer's

instructions. These samples were subsequently frozen at a temperature of -80°C until use for determination of the expression levels of MMP1, CDK7, HER2, and P53 genes using real-time PCR. Quantitative real-time PCR was performed on a Rotor-Gene Q cycycler (Qiagen, Germany) using QuantiTect SYBR Green PCR kits (Qiagen, Germany) and forward and reverse primers for each gene. The nucleic acid sequences of the primers were as follows :human MMP-1 (F 5'-ctgcccacaactgccaatg-3' , R 5'-ctgtccctgaacagcccagctactta-3') & CDK7 CDK2 (Cyclin-dependent kinase 2) (F 5'-GCTAGCAGACTTTGGACTAGCCAG -3' , R 5'- AGCTCGGTACCACAGGGTCA -3') & P53 (F 5'-CCCCTCCTGGCCCCTGTCATCTTC -3', R 5'-GCAGCGCTCACAACTCCGTCAT-3'.) as well as anti-apoptotic gene HER2 (F 5'-ATCTGCCTGACATCCACG-3' , R 5'-GCAATCTGCATACACCAGTTC-3') compared to  $\beta$ -actin as a housekeeping gene (F 5'-TTCCTGGGCATGGAGTC-3' , R 5'- CAGGTCTTTGCGGATGTC-3'). Real-time PCR mixture consisted of 12.5  $\mu$ L 2x SYBR Green PCR Master Mix, 1  $\mu$ L of each primer (10 pmol/ $\mu$ L), 2  $\mu$ L cDNA, and 8.5  $\mu$ L RNase-free water in a total volume of 25  $\mu$ L. Amplification conditions and cycle counts were a temperature of 95° C for 15 min for the initial activation, followed by 40 cycles of denaturation at 94° C for 15 s, annealing at 60° C for 30 s, and elongation at 72° C for 30 s. Melting curves were performed after real-time PCR to demonstrate the specific amplification of single products of interest. A standard curve assay was performed to determine the amplification efficiency of the primers used. Relative fold changes in the expression of target genes (MMP1, CDK7, HER2, and P53) were accomplished using the comparative 2<sup>- $\Delta\Delta$ Ct</sup> method [22] with the  $\beta$ -actin gene as an internal control to normalize the level of target gene expression.  $\Delta\Delta$ CT is the difference between the mean  $\Delta$ CT (treatment group) and mean  $\Delta$ CT (control group), where  $\Delta$ CT is the difference between the mean CT gene of interest and the mean CT internal control gene in each sample. Logarithmic transformation was performed on fold change values before being statistically analyzed, using the fold change values of three replicates for each gene measured.

### Statistical analysis

All experiments were carried out in three independent tests. Data were expressed as the mean  $\pm$  standard deviation (SD) and analyzed using one-way analysis of variance (ANOVA). The results were considered statistically significant at probability < 0.05.

## RESULTS

### Cytotoxicity

The cytotoxic effect of test bee venom was assessed by recording the various morphological changes of cells. Induced cell toxicity was accompanied with morphological changes in the culture fields showing a polygonal shape with distinct boundaries and homogenous cellular contents. On the other hand, a number of morphological abnormalities of cells were observed 24 h post treatment with the bee venom. At the lowest concentrations, cells lost their characteristic appearance, became rounded and detached out of the culture surface, while other cells retained their normal morphological appearance. Increasing bee venom concentrations resulted in increased cellular irregularities and larger areas devoid of cells. At the highest concentrations, cells showed obvious deterioration and deformation with severe shrinkage and condensation of their cellular contents. The viability % of treated cells was concentration-dependent and the IC<sub>50</sub> values of Bee venom was 60 and 81  $\mu$ g/ml and 288  $\mu$ M and 345  $\mu$ M for mMCF7 and PC-3 post treatment with bee venom and Lapatinib respectively and the MCF-7 and PC-3 cells pretreatment with Lapatinib maximized the cytotoxic effect of bee venom significantly (P<0.05) recording 1.04 and 0.59  $\mu$ g for MCF7 and PC-3 and the IC<sub>50</sub> of Lapatinib was decreased significantly post cell pre-treatment with BV safe concentration recording 178  $\mu$ M and 243  $\mu$ M for MCF-7 and PC-3 respectively [Fig. 1-2].

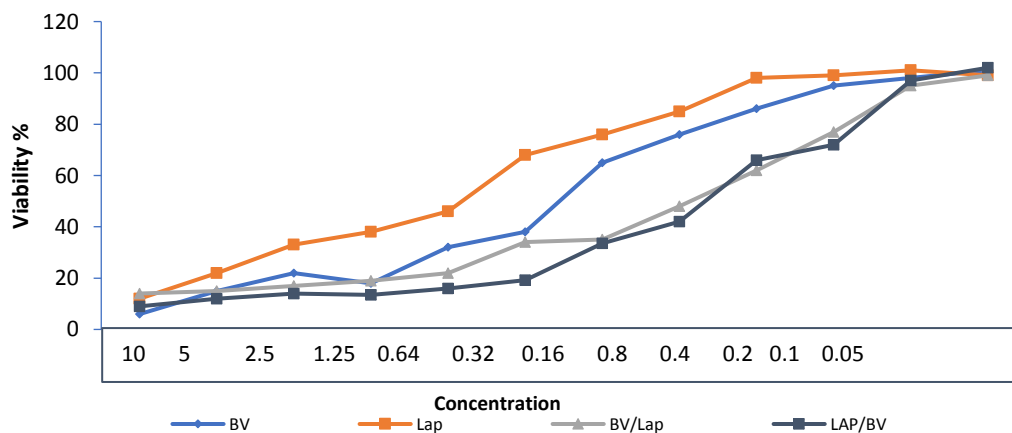


Fig.1: Evaluation of cell viability relative to Concentration.

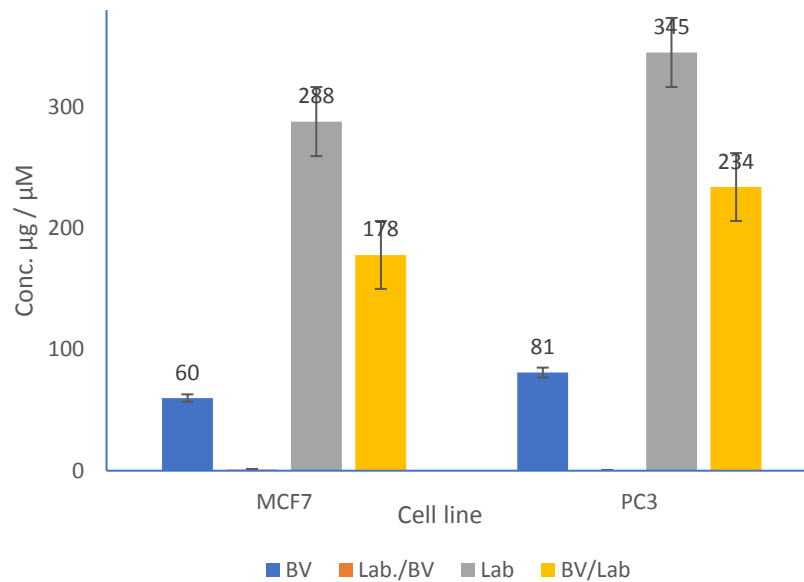


Fig.2: Evaluation of IC50 of sole bee venom and Lapatinib and their synergetic activity Cell cycle analysis

Toxicity of bee venom and Lapatinib was accompanied by cell cycle arrest in both MCF-7 and PC-3 cell lines. Cell cycle analyses have demonstrated that there was an accumulation of arrested cells in the G2/M phase in both cell lines either after cellular treatment with bee venom alone or in the case of Lapatinib pretreated cells. In addition, S phase arrest was found to be significantly higher in MCF-7 cells with 24.51% and 17.04% in the case of bee venom and Lapatinib pretreated cells as compared to untreated cells (24.37%). PC-3 cells exhibited an increase in the percentage of apoptotic cells as indicated by G0-G1 phase recording 56.66% and 57.66%, in addition to elevated G0-G1 phase that was observed in MCF-7 cells in the order of 55.33% and 53.56 post bee venom treatment and Lapatinib pretreatment, respectively, compared to control cells [Fig.4&5].

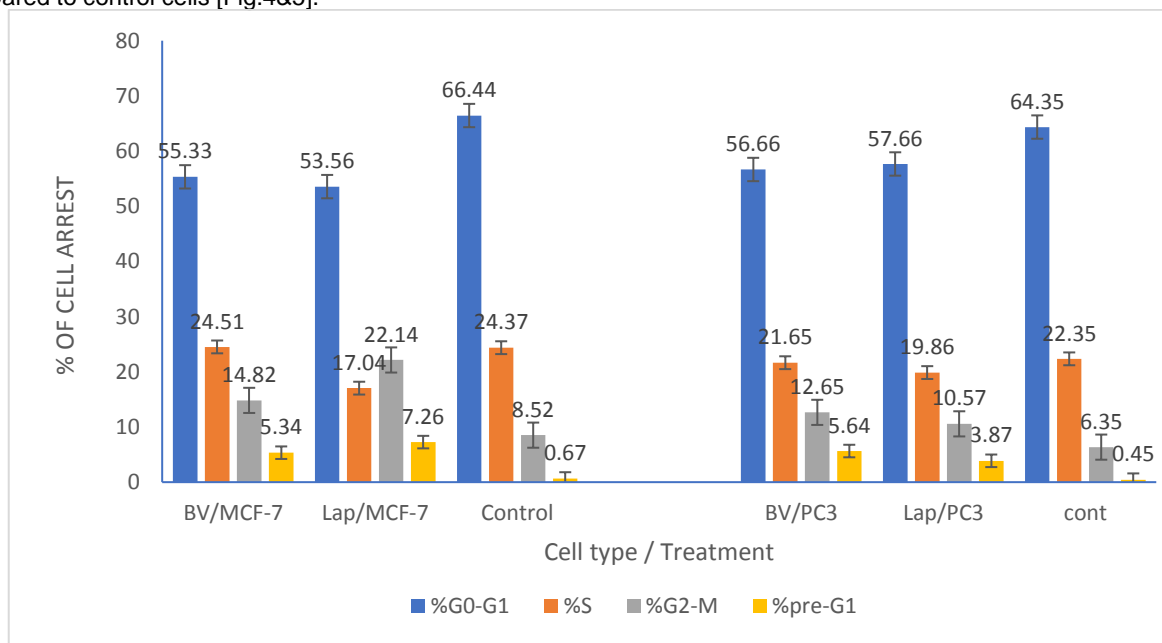
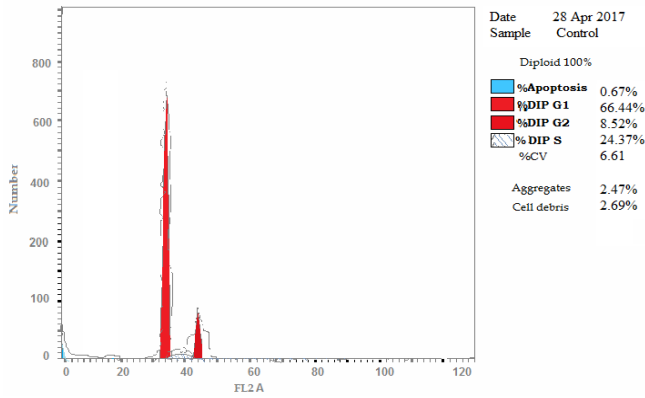
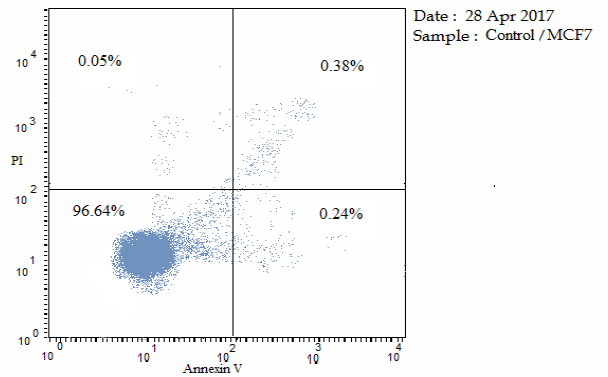


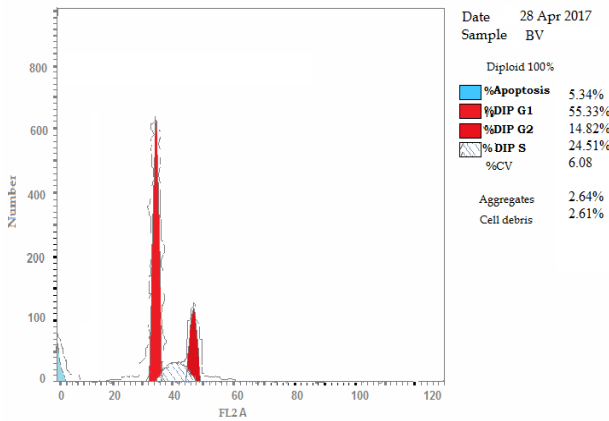
Figure 3: the arrest % at each of the cell cycle phases of MCF-7 and PC-3 cell lines after treatment with bee venom and lapatinib in comparison to control.



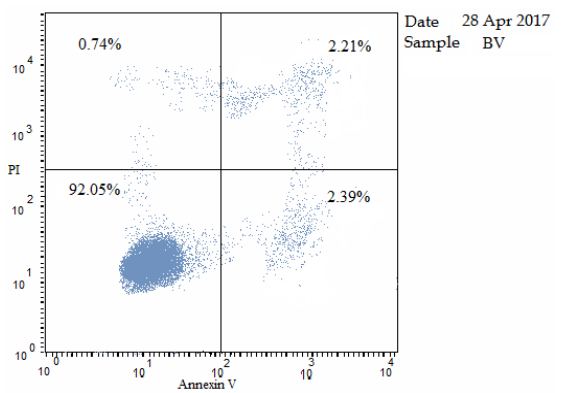
A (1): Control sample MCF-7



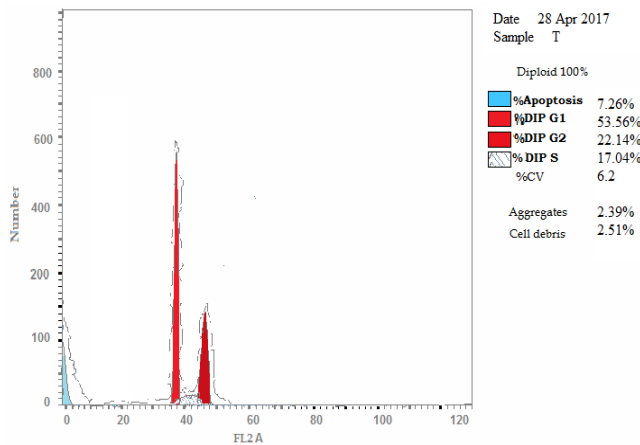
A (2): Control sample MCF-7



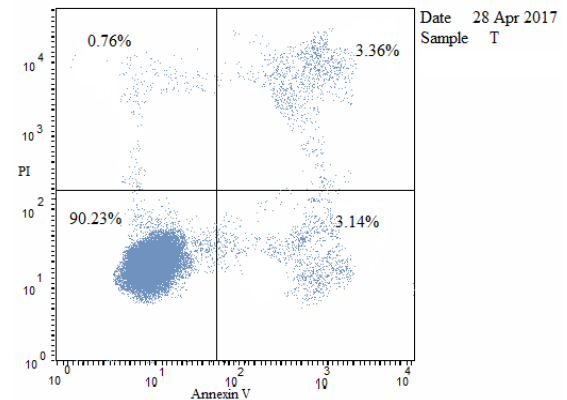
B (1): MCF-7 with Bee venom



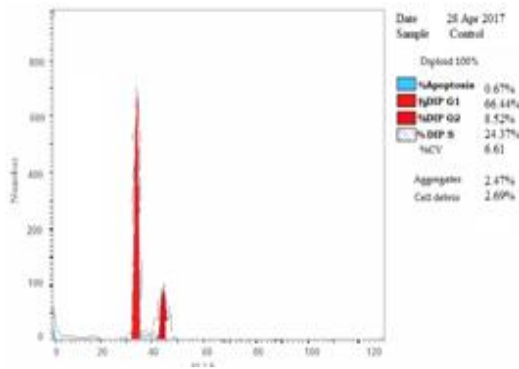
B (2) MCF-7 with Bee venom



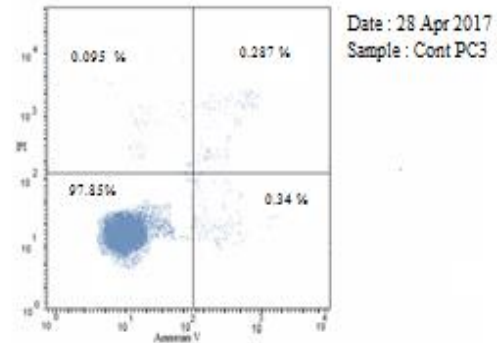
C (1): MCF-7 with Lapatinib



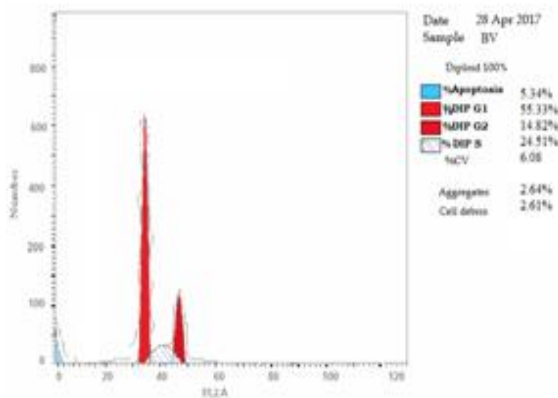
C (2): MCF-7 with Lapatinib



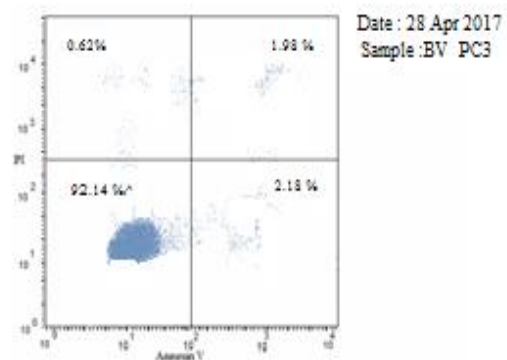
A (1): Control sample PC-3



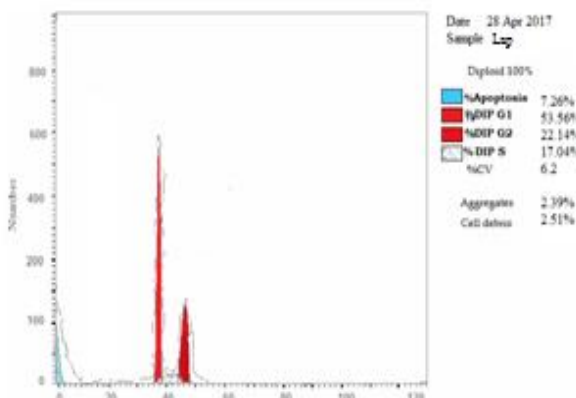
A (2): Control sample PC-3



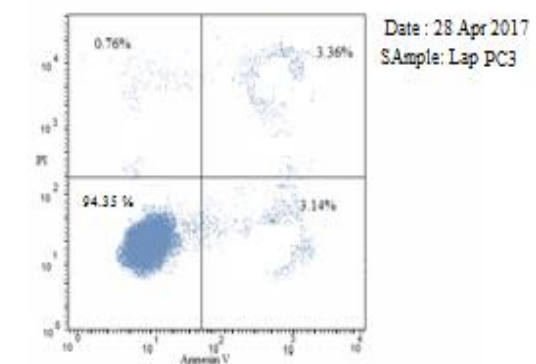
B (1): PC-3 with Bee venom



B (2): PC-3 with Bee venom



C (1): PC-3 with Lapatinib



C (2): PC-3 with Lapatinib

Figure 4: Cell cycle analysis of MCF-7 (B 1,2) and (C 1,2) cell line after treatment with lapatinib and bee venom in comparison to control A (1,2) samples, detected by flow cytometry.

**mRNA expression levels of apoptosis-related genes.**

Data reported that pretreatment of MCF-7 and PC-3 cancer cells with Lapatinab potentiates the apoptotic activity of bee venom. The level of expression of pro-apoptotic genes (MMP1, HER2, CDK2, and P53) was clearly up-regulated, while the expression level of anti-apoptotic genes was down-regulated ( $P < 0.05$ ) indicating its potential efficacy in directing cancer cells towards programmed death [Fig.5-6].

### GENE EXPRESSION RT-PCR

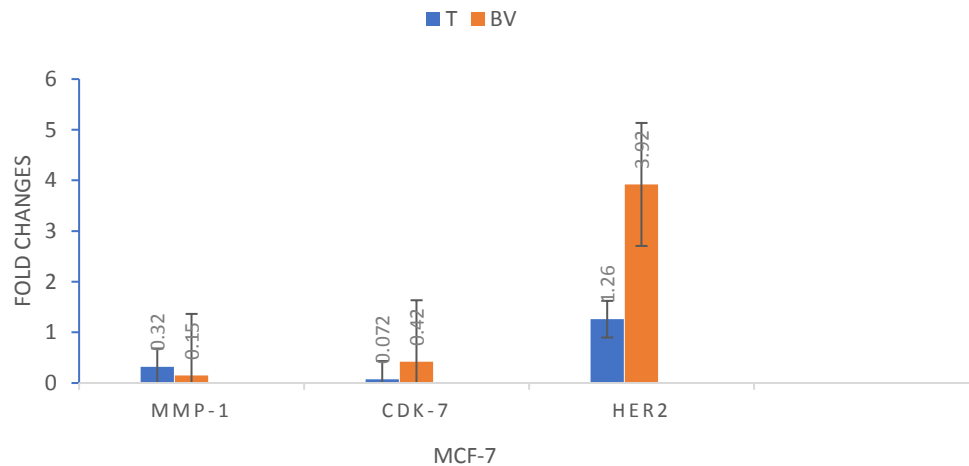


Figure 5: Gene expression level of MMP1, CDK2, and HER2 in Breast (MCF-7) cancer cells after the treatment with bee venom and lapatinib, using real time PCR.

### GENE EXPRESSION RT-PCR

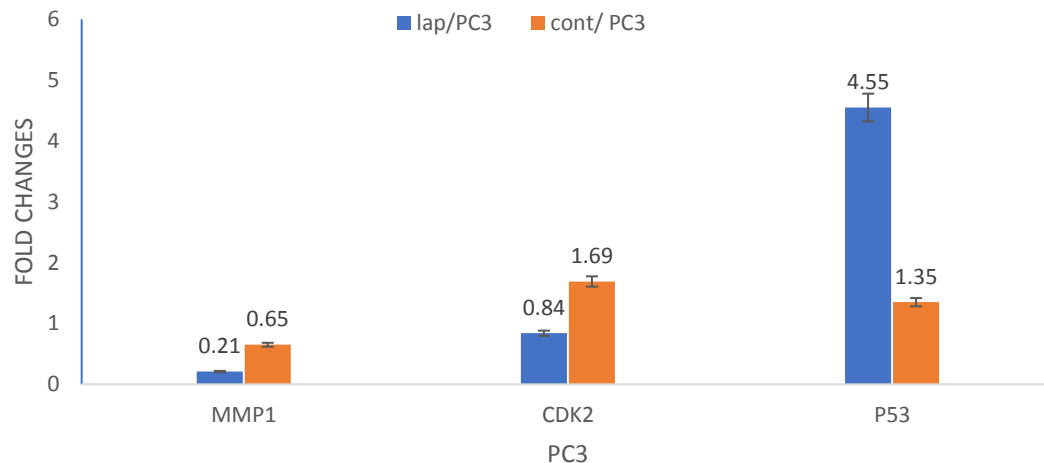


Figure 6: Gene expression level of MMP1, CDK2, and P53 in Prostate (PC-3) cancer cells after the treatment with bee venom and lapatinib, using real time PCR.

### DISCUSSION

Combined chemotherapy is known to be one of the most effective treatments for numerous types of cancer, especially when it is combined with a natural compounds that are believed to have multiple specific targets with minimal acceptable side-effects. Moreover, it decreases the likelihood of resistant cancer cells to develop. In the same way combination of anticancer drug with proteinacious products or fractions enhance the anticancer activity as conducted by (Ayman., M *et al.*, 2017) recording that pre-treatment of PC-3 cells with BCG / DDP derived protein enhanced the toxicity and anticancer potential of cerastes cerastes venom of about 150 fold and in turn proapoptotic genes.

In addition, the cell cycle profiles obtained during this research stating that bee venom has an anti-proliferative and cytotoxic effect on prostate cancer cells are found to be similar to the published work of **Park et al., (2010)** in which bee venom was tested on several human prostate cancer cell lines including LNCaP, DU145, and PC-3. The results obtained suggested that bee venom inhibited the tumor growth and the activity of NF- $\kappa$ B accompanied with apoptotic cell death. Therefore, bee venom mediated the induction of apoptotic cell death as well as increased the expression levels of P53 (pro-apoptotic) and decreased levels of MMP-1 and CDK7 (anti-apoptotic).

Although, another study conducted by **Jo et al., (2012)** and **Burke et al., (2001)** bee venom was tested for anti-cancer effects and its ability to inhibit the cell growth through the enhancement of death receptor that expressed in the human ovarian cancer cells, SKOV3, and PA-1 post treatment with (1–5  $\mu$ g/ml) of bee venom, the expression of death receptor DR3 and DR6 was increased in both cancer cells, nonetheless the expression of DR4 was increased in PA-1 cells only. Furthermore the expression of DR downstream pro-apoptotic proteins that include caspase-3, 8, and Bax was concurrently increased, however, it inhibited the expression of Bcl-2 in SKOV3 and PA-1 cells and the phosphorylation of JAK2 and STAT3. The expression of cleaved caspase-3 has been increased in SKOV3, on the other hand the expression of cleaved caspase-8 has been increased in PA-1 cells. Furthermore, deletion of DR3, DR4, and DR6 with small interfering RNA has significantly reversed bee venom induced cell growth inhibitory effect in addition to down regulation of STAT3 by bee venom in SKOV3 and PA-1 ovarian and breast cancer cells. However, the results showed that bee venom induced apoptotic cell death in ovarian and breast cancer cells through the enhancement of DR3, DR4, and DR6 expression, and also through the inhibition of STAT3 pathway. These results illustrates the importance of bee venom in the induction of apoptotic pathways in breast cancer, and thus making it the perfect candidate for our study.

Moreover, in the present study the cell viability evaluation exhibited that the combination of Lapatinib with bee venom (natural compound) overcomes the drug resistance and inhibits migration of HER2 positive breast cancer cells by interrupting signaling from the epidermal growth factor receptors, EGFR and HER2/neu. Conversely, at the same time it's capable of increasing the probability of Lapatinib-resistant cell selection. These results obey with the work done by **Kaczyńska et al., (2016)** which aims to confirm whether the combinations of Lapatinib with isothiocyanates (natural compound) would apply stronger cytotoxic effect than therapy targeting the receptor only. Upon the investigation of the combination of Lapatinib with any of isothiocyanates significantly decreased cell viability and inhibited migration of populations consisting of different amounts of drug-sensitive and drug-resistant cells. In case of population entirely composed of Lapatinib-resistant cells the most effective was combination of Lapatinib with natural compound which decreased cell viability and motility, phosphorylation of Akt, S6 and VEGF level more efficiently than each agent alone. In the present study the combination of the bee venom with lapatinib increased the cytotoxic effect on the cancer cells, where the cell viability test showed significant decrease as the dose concentrations increases.

Furthermore, According to a study conducted by **Drigla et al., (2016)** to evaluate the synergistic effect induced by propolis and bee venom on luminal (MCF-7) and TNBC (Hs578T) cell lines. Two breast cancer cell lines: MCF-7(luminal subtype) and Hs578T (TNBC subtype) were treated in a combination. The results indicated that both cell lines exhibited similar sensitivity to the aqueous extract of propolis at a dilution of 0.072–0.09 mg/ml. Also it concerning IC<sub>50</sub> for bee venom on MCF-7 cells was 1 mg/ml, 20 times higher than 0.05 mg/ml in Hs578T cells. By combining the aqueous extract of propolis with bee venom, the synergistic effects were obtained at a higher concentration, which was 5 and 2 times stronger than the two treatments alone. These results can hypothesize that the combination of honeybee propolis and bee venom might be involved in signaling pathways that could overcome cells resistance to therapy. However, these results are matched with the present study despite the use of different cell lines that considered different gene pattern and different combinations.

In the studies conducted by **Drigla et al., (2016)** and **Kaczyńska et al., (2016)**, showed an agreement to our results that suggest that the effect of both bee venom and Lapatinib is concentration, cell type and time dependent. And that both bee venom and Lapatinib have almost the same effects *in vitro*. Furthermore, they showed an elevation in the expression of the pro-apoptotic genes P53 while a down regulation in the anti-apoptotic gene MMP-1 and CDK-7 was noticed in PC-3 cell line. On the other hand, they showed up regulation of MMP-1 and down regulation of CDK-7 and HER2 in MCF-7 cell line as well as a noteworthy cell cycle arrest at G2/M was observed post treatment with bee venom and Lapatinib in both cell lines.

## CONCLUSION

Novel therapeutic strategies for cancer are one of the most important current concerns. Natural compound mixtures that are believed to have multiple specific targets with minimal side-effects are now of interest to many researchers. Therefore, the present work could conclude that Both bee venom and Lapatinib are cytotoxic in a concentration and cell type dependent, evaluation of cytotoxicity post pretreatment of MCF-7 cells with bee venom and Lapatinib separately enhanced the cytotoxicity of both than the single use of treatment in a significant way. Also, the use of both bee venom and Lapatinib showed a common cell arrest during the G2-M phase and the little arrest was clear in the S phase in case of cell treatment with Bee venom. In the same time, there was a clear up regulation of target genes those responsible for the suppression of cancer metastases and growth namely MMP1, CDk 7, and HER-2. Thus, it is recommended to test the Lapatinib on a wide range of cancer cell lines, in addition *In vivo* application of Lapatinib and the evaluation the synergetic potential of different factions from different types of venoms on the anticancer potential.



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## BORROWED GREEK AND LATIN WORDS

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### ABSTRACT

During the transmission into the other language the borrowed words undergo to grammatical and semantical changes, sometimes with losing their originality. Due to some political events and to expansion of trading relationships the borrowed words take place of unalterative words. Most number of Greek and Latin words you can see in the different science spheres and names of sports also in medicine and political terminology.

**Keywords:** borrowed, derived, an important influence, lexical and conceptual, technical and scientific terms, expressions, Greek and Latin roots.

### INTRODUCTION

How many words derived from Greek have you used today?

Antique, idol, dialogue, geography, grammar, architect, economy, encyclopedia, telephone, microscope... all these common English words have something in common: they're derived from Greek. To this list, we could add thousands more words, some common and others less so. Clearly, the Greek language has had an important influence on the English language. Let's take a closer look. Greek is one of the oldest Indo-European languages and is usually divided into Ancient Greek (often thought of as a dead language) and Modern Greek. Modern Greek is derived from Koine, a common dialect of Ancient Greek that was understood throughout the Greek-speaking world at that time. In the 19th century, Modern Greek became the official language of the Kingdom of Greece. According to Peter T. Daniels, the Ancient Greeks were the first to use a 'true' alphabet, that is, one representing both vowels and consonants. Indeed, the word 'alphabet' is formed of the first two letters of the Greek alphabet, 'alpha' and 'beta'.

The Oxford Companion to the English Language states that the 'influence of classical Greek on English has been largely indirect, through Latin and French, and largely lexical and conceptual...'

According to one estimate, more than 150,000 words of English are derived from Greek words. These include technical and scientific terms but also more common words like those above.

Words that starts with 'ph-' are usually of Greek origin, for example: philosophy, physical, photo, phrase, philanthropy.

Many English words are formed of parts of words (morphemes) that originate from the Greek language, including the following examples:

phobia (fear of), as in arachnophobia – the fear of spiders  
 micro (small), as in microscopic – so small it's hard to see  
 demos (people) as in democracy – government by the people

A great example of the influence of the Greek language are the two speeches written in English but actually consisting of only Greek words (with the exception of articles and prepositions) by the former Prime Minister Prof. Xenophon Zolotas, who was also an economist. [1]

English expressions derived from Ancient Greek culture Greek mythology has been very influential in Western culture, particularly its art and literature. Unsurprisingly, some common expressions in English derive from these ancient myths and beliefs.

To have an 'Achilles heel' means to have a weakness or vulnerable point. Achilles was a Greek hero and central character in Homer's epic poem, The Iliad. He was only vulnerable at his heel. Example sentence: I'm trying to eat more healthily, but chocolate is my Achilles heel.

The 'Midas touch' is another common expression deriving from Greek mythology. Describing a near-magical ability to succeed at anything one undertakes, the expression originates from a story of King Midas, who is remembered for his ability to turn everything he touched into gold. Example sentence: My brother's business is so successfully, he really has the Midas touch!

An idiom which has its roots in Greek antiquity is 'crocodile tears'. The phrase is thought to come from the popular ancient belief that crocodiles weep while eating their victims. In fact, crocodiles do lubricate their eyes via their tear ducts, usually when their eyes start to dry out after being out of the water for a long time. Nevertheless, the behavior is also thought to occur when crocodiles feed. It's used in English to describe expressions of sorrow that are insincere. Example sentence: The president shed crocodile tears while allowing the war to go on.

Sometimes the language borrows a word from a donor language to fill the gap in the recipient vocabulary. In older times when the Saxons borrowed Latin words for denoting butter, cheese, plum or beet, they did it simply because Saxon vocabulary lacked the words for these new for them notions. For the same reasons potato or tomato were adopted from Spanish as these vegetables were brought to England by Spaniards.

But there are also some words that were borrowed for other reasons they supplied a new shadow of meaning or a different coloring though it represents the same concept. This type of borrowing widens the group of synonyms and presents the expressive resources of the vocabulary. So Latin cordial was added to native friendly, admire to like, French desire to wish, admire to love.

The historical events, political circumstances provoked the process of borrowings, as twonation established closer contacts not only on political or social stages but on lingual stages as well. i.e.: loan words transferred into another language via

invasions, conquest or trade and international cultural relations during the peaceful period. While migrating from one language into another they try to assimilate with the recipient language by adjusting themselves to the new requirements and norms. They undergo several changes, that loses their foreign origin and acquires native nature and become unrecognizable without taking their etymology into account. It may even seem unbelievable that cat, dinner, cup, take are not English. Some others though well assimilated with English, still bear differentiating features: sky, skill, skin as Scandinavian element or police and regime with the stress on the last syllable.

Loan words are adjusted in the three main areas of the new language system: phonetic, grammatical and semantic.

The sample of phonetic adaptation is well demonstrated by comparing Norman borrowings to comparatively later Parisian ones. Some Norman loan words have completely adapted to the phonetic system of English. As table, plate, courage, chivalry, bear no phonetic traces of their French origin. Though some earlier loans of the 15th century still convey their French pronunciation like regime, valise, matinee, café, ballet. In these cases we can doubt that phonetic adaptation is not complete. Grammatical adaptation is presented by a complete change of the former paradigm of the borrowed word. If it is a noun, therefore it is certain to adopt a new system of declension; if it is a verb, it will be conjugated according to the existed rules of the recipient language. Even today, the process is not completed. e.g: Russian coat пальто borrowed from French early in the 19th century has not yet acquired the Russian system of declension. The same can be said about such English words that were borrowed as early as the Renaissance, but their grammatical form of their plural forms still remains as in the donor language. Datum- pl. data, criterion- pl. criteria, phenomenon - pl. phenomena and form an exceptional paradigm of forming plural in English. Semantic adaptation is presented by the adjustment to the system of meanings of the vocabulary. In some cases a word was "blindly" borrowed with no reasons, as there was no gap in the recipient vocabulary nor in the group of synonyms that it could fill. Some of these "accidental" borrowings were rejected and soon forgotten. But some of these words managed to survive and managed to establish itself through the process of semantic adaptation. E.g.: large is a loan from French in the meaning of wide. It was not actually wanted as there was English adjective wide and as it did not convey any additional shade in meaning it could have been led to rejection. It survived in English by semantic adjustment and entered another synonymic group Greek and Latin Loan Words in English Language (Tendencies of Evolution) with the meaning of large in size and is successfully completing the idea of big, both in usage frequency and meanings.

It is a common case that a word is borrowed by several languages and not by one. Such words prove that they convey significant concepts in the field of communication. Still most of them are of Latin or Greek origin. [2]

Thus most names of sciences are international: philosophy, mathematics, physics, biology, chemistry, lexicology, linguistics. Numerous art terms: tragedy, comedy, artist, music, theatre, prima donna. Sport terms: football, tennis, golf. Political terms float from one language to another: politics, policy, revolution, democracy, anti-militarism. The twentieth century technological terms are considered as international borrowings: atomic, radio, television. Here we have to mention that English son, German Sohn and Russian сын are not borrowed words, but they represent the Indo-European group of the same etymological root and not borrowings.

Etymological doublets are originating from the same etymological source, but differing in phonemic shape and meaning.

They entered the vocabulary from different sources. Such pairs are represented by native and borrowed words: Shrew-n. E. and screw-n.Sc. Or both words from different languages:

And channel- Fr; captain-L. and chieftain-Fr. Some others were borrowed from one and the same language but in different periods: travel-Norm. Fr. and travail-Par.Fr. cavalry-Norm. Fr. and chivalry-Par.Fr. In some cases, a doublet may also be presented by a shortened word and the one from which it was derived: history-story, fantasy-fancy, defense-fence, shadow-shade.

Along the doublets, there are etymological triplets: hospital l(L)-hostel (Norm. Fr.) – hotel (Par.Fr.)

Another group of borrowed words is a group of translation-loans. They are not taken into the vocabulary of another language more or less in the same phonemic shape in which they have been functioning in their own language, but underwent the process of translation. Obviously these kinds of words are compounds and were translated separately. Among the learned words and terminology foreign element dominates over the native. [3]

## CONCLUSION

All in the English Language has an enormous number of loan-words – no matter what method we use to count them. Many English words are based on Greek and Latin roots. A great deal of the terminology of science and medicine, and indeed much of the vocabulary of all disciplines and branches of learning, has its origins in Greek and Latin.

These ancient root words are dependable and unchanging and serve as the key to understanding not only the vocabulary of English but many of the modern European Languages as well. An understanding of the core meaning of each root can provide a tool for unlocking the meaning of thousands of Greek and Latin-based words in many languages.

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## SOIL-EROSION RESEARCH ON THE DETERMINATION OF THE DEGREE OF POTENTIAL HAZARDS OF MINING-BROWN STEPPED SOILS OF THE HUB-KHACHMAS ZONE OF AZERBAIJAN

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### ABSTRACT

On plots of fields under crops under crops, the signs on which it is possible to determine the degree of erosion of soils are the inside covering and plant heights. With the enthusiasm of the steepness of the slopes, the possibility of using cultivated crops as indicators of soil erosion decreases. The degree of soil washout period of natural forage lands can be assessed on the basis of the dependence of the existing between the plant stand and the degree of soil erosion. Strongly eroded soil of slope meadows can be recognized by ecological care regimes of habitats of vegetation.

**Key words:** eroded, humus, medium-washed, bioclimatic, dense ground-cenoses, steppe

### INTRODUCTION

In the context of Azerbaijan the process of erosion has become a large development, calling for a washout, erosion and deflation, etc. types of unwanted consequences of destroying the aggregate properties of soils. It is expressed most clearly in the soils, cultivated in rainfed conditions in the example object. The aim of achieving completeness solvable problems of land management, erosion or potentially dangerous erosion should be deeply know every plot of land in the region, its features that can influence the choice of crops in the territory of the rajonirujemoj, the method of irrigation or private receptions machinery. Therefore, it is possible only as a result of deep surveys the territory. We should also recognize that the stronger are affected by erosion of the soil, the more they differ from their nesmytyh analogues on chemical, granulometric composition and physico-chemical properties, water, air and thermal regimes of biogenic and other indicators, the totality of which affect their fertility and erosion resistance.

#### The moves and discuss the results of the study

As a result, undertaken under the direction of Prof. B.g. Aliyev [] research jointly with experts of the Polish Institute of technology revealed that soil erosion is reduced humus content. However, the margin when 0-50 cm layer in nesmytyh mining and ostepenjonnyh Brown soils is 168 t/ha, in a very slabosmytyh-156t/HA, slobosmytyh-135 t/ha, srednesmytyh-108 t/ha, sil'nosmytyh-65 t/ha, and in very sil'nosmytyh-32 t/ha. In eroded soils not only decreases the total humus content, but also decreases the contents of mobile forms of humic acids. According to the author, these changes are the stronger, the more are affected by erosion of the soil. It is believed that the decrease of humic acids leads to lower fertility, conservation of soil resistance to deterioration. This same decline, in General, proportional to the reduction of nitrogen in the soil. Shortage of available forms of nitrogen is one of the important reasons for the decline of fertility of eroded soils. Regularity also reveals decreasing  $r_{20}$  in srednesmytyh soils by 30% and sil'nosmytyh-more 50%. Reduction of organic phosphates and phosphorus forms insoluble increase leads to deterioration of phosphorus nutrition of plants. In eroded soils are often reduced content of potassium. Thus, its agrochemical characterization of soil washed away are substantially different from nesmytyh. Hence arises the need for differentiated fertilization in soil with varying degrees of erosion.[ 1,2,3]

Results of laboratory studies found that eroded soils differ significantly from nejerodirovannyh on physical properties. In the eroded soils decreases the content of vodoprochnyh structural aggregates. And so, if in the upper horizon of Gorno-nesmytyh Brown ostepenjonnyh soil vodoprochnyh content of the aggregates is 52% very slabosmytyh-48%, slabosmytyh-42%, srednesmytyh-30%, sil'nosmytyh 18%, and in very sil'nosmytyh-8%. The number of units of less than 0, 25 mm increments (see table. 1.)

Table. 1. Diagnostic indicators of varying degrees of erosion the mountain-ostepenjonnyh Brown soils

The degree of erosion and its designation	Power horizons a + b	Gross margin, t/ha			Vodoprochnye aggregates more than 1 mm	Yield kg/ha
		humus	nitrogen	phosphorus		
Not eroded	75	168	10.5	6.4	52	28.5
Very little eroded	70	156	8.8	5.8	48	26.2
Weakly eroded	60	135	7.6	5.0	42	22.3
Moderately eroded	45	108	5.6	3.2	30	15.8
Heavily eroded	30	65	3.8	2.3	18	9.8
Very heavily eroded	Less than 15	32	1.9	1.2	8	6.4

Nejerodirovannye soils are distinguished from eroded visible differentiation of soil profile and greater capacity. Wel

allocated arable and 2 layers. In the past appears gray-Brown shade effect of alluvion horizon. Subsurface layer is visibly detectable seal and meet the selection of carbonates. Structure of silt-clotted, and Virgin soil-clotted well expressed. The degree of erosion for each soil type is set, depending on which part of the soil profile washed away or deformed horizon from which topsoil is emerging, what is the average percentage yield compared to harvest on nejerodirovannyh soils, and the steepness of slope in degrees. The degree of erosion of soil also depends on the shape of the slope, its length and exposure, the correctness of management, anti-erosion of sustainability, which includes a variety of mechanical, chemical and physical properties. Therefore, on the slopes of the same slope soils can be one, but different subtype of erosion.

The average harvest is a very important indicator in determining the degree of erosion.

In the field soil fertility was determined visually by morphological hallmark of a soil profile and as plants on this site. From the data table 1. It can be seen that as the degree of erosion decreased the power of the horizon a + b and reserve of humus within certain limits.

It should be noted that the supply of humus (in tones) is calculated taking into account the nitrogen and phosphorus. In addition, data on crops as listed in the classification of eroded soils, somewhat understated. Our nursery (2008-2010) studies have shown that the harvest of winter wheat at very little eroded mountain-Brown soils in the rolling average is reduced to 10% for medium-up to 25% of eroded, and the sil'nojerodirovannyh-up to 75% compared to crops on soils which nejerodirovannyh and approved the results of long-term researches of experts of Institute for land reclamation and grassland of the NDP. To achieve this goal, the potential dangers of jerozijnoj mapping based on local characteristics of soils, we adopted the following grouped by degree of soil erosion.

Jerodirovannost' land, which is set depending on the steepness and slope exposure, the depth of local bases, erosion degree of erosion, the nature of the underlying rocks, belonging to one or other agricultural lands.

Graduation steepness of slopes for arable land were taken as follows: 0-1; 1-3; 3-5; 5-8; 8-12 and more than 12. Other land: 0-1; 1-3; 3-5; 5-8; 8-12; 121-20; 20-30; 30-45 and more. On the slopes following graduation be taken exposure: North, Northeast, Northwest, East, West, South West, South East and the South. Where depth graduation local bases were taken following erosion: 0-20; 20-50; 50-100; 100-150; 150-200; 200-300 300-400; 400-500; 500-600; 600-800; 800-1000 m and more. According to the degree of erosion of different categories of eroded land kept as soil one degree of erosion and their complexes.

Also take into account the nature of the underlying rocks and their density. For each of the selected groups and categories of eroded land have been given recommendations on their use and application of counter-erosion activities. As the above selection basis relied eroded land are soil maps that reflect all the contours of eroded soils and farmland. While used and supporting special cards steepness, exposure, slopes and depth of local bases of erosion.[2,6]

In recent years there has been significant growth in the areas of eroded soils that required for thorough research and allocation of eroded land, which was not previously considered. Consequently, the question arises of the diagnostic study of indicators for measuring the degree of erosion of soil. Sometimes use indicators that determine risk of erosion. For example, in some cases, assessment of erosion of arable soil set based on the data distribution of arable land on the slope. Of course, the steeper slopes, so all things being equal on them increases the degree of soil erosion. However, these are not always equal terms, so the soil more steep slopes may be less inclined than are affected by erosion (table 2.) as can be seen from the table, in the north-eastern part of the Greater Caucasus arable land on terrain conditions are more favourable than the South-East or South of the Greater Caucasus. Therefore, the soil cover is relatively less erodirovannyj. This is largely due to the relatively higher conservation soil stability, favourable rainfall and pochvozashhitnoj role of vegetation.

**Table 2.** Distribution of arable land on the steepness of the slopes and soil erosion administrative areas of the north-eastern part of the Greater Caucasus

Control areas	Total area HA	The steepness of the slopes			Eroded from the entire arable land	
		Cooler 1 <sup>0</sup> ,HA/%	Including steeper		total hectares/percent	Including a strong and very badly-eroded HA/%
			5 <sup>0</sup> ,HA/%	8 <sup>0</sup> HA,/%		
Cuba	20402	1502873.7	1038550.9	2898 14.2	13465 66.0	2845 13.9
Kusar	31586	2348574.4	1914760.6	46.2514.6	22066 69.9	4333 13.7
Davaci	19421	1541879.3	1169560.2	3420 17.6	14829 76.4	3127 16.1
Siyazan	10767	9708 90.2	714263.3	2138 19.9	8708 80.9	1942 18.0
Khachmaz branch	39624	1422535.9	327 0.8	-	11890 30.0	538 1.4
<b>Total</b>	<b>121800</b>	<b>7786463.9</b>	<b>4866940.0</b>	<b>1308110.7</b>	<b>70958 58.0</b>	<b>12785 10.5</b>

Soil erosion studies in Azerbaijan showed that factor exposure slopes more often affects distribution of eroded soils than the steepness of slopes.

So when surveyed in the forest zone of Gorno-Brown soil stepped on one of the areas with a slope of<sup>0</sup> 15-20 on the southern slope of the sil'nojerodirovannye soil, were found on the slopes of the Northern exposure with a slope of 15-20<sup>0</sup> -weakly eroded. It was found a great influence on the distribution of soil exposure. So on the slopes of the Northern exposure when slopes 8-12<sup>0</sup> Gorno-Brown stepped soils wash is 19.2 m/ha, while similar conditions southern exposure reaches soil washout 45.8 m/ha. If on the slopes of the southern exposure medium and sil'nojerodirovannye soils occupy 41.2% of the area, on the slopes of Northern exposure in similar circumstances-just 9.8%.

Square units of each category and groups of eroded land have been calculated, taking into account the genetic soil types. As a result, became possible be explication of eroded land of Azerbaijan. In explicating contains data on the number of each type of eroded soils varying degrees of erosion on slopes or another surface, consisting of various agricultural land. Further synthesis of erosion of land is to bring them into the Republican maps, where, with the aim of zoning activities rise shows the dependence of the soil cover. To highlight eroded territories the following gradation of the basis for the allocation of eroded land. Based on the data mapping of eroded soils, as well as the cameral works compiled map of soil erosion of the Azerbaijan Republic with the following application:[8]

1. Area lack of erosion:

-do not subject to erosion under forests;

-not prone to soil erosion, natural senekosom and occupied marsh vegetation;

-soil, confined to such lands, as deposits, gardens.

2. area subject to erosion:

Depending on the amount of soil with varying degrees of destruction of genetic horizons lands are divided into five

groups:

1. **very little eroded land**, where slabosmytye a difference constitute no more than 10% and sil'nosmytye soils are not available.

2. **Weakly eroded land**, where the total area of eroded differences is 25%. Area slabosmytyh -20% srednesmytyh soil-not more than 5%, and sil'nosmytye soils are not available.

3. **Middling soil eroded**. Only up to 50% of eroded soils. Square of contours with medium soils jerodirovannymi reaches 30%, slightly eroded-to 15% and sil'nojerodirovannyh-up to 5% and very sil'nojerodirovannye is 10%.

4. **Heavily eroded soils**. Jerodirovannost' soils is about 75% of the total area. Of these, sil'nojerodirovannye-40%, srednejerodirovannye-to 25%, and very sil'nojerodirovannye-10%.

5. **Highly sil'nojerodirovannye soils**. Eroded area accounted for more than 75%. Very sil'nojerodirovannye-bolee50%, medium, sil'nojerodirovannye-more than 25%.

Given our experience, we fully share the views of F.s. Kozmenko, g.a. Presnyakova, S.s., Sobolev K. Alekperova, m.n. Zaslavsky that coloring the top layer of soil can be taken as the rate of erosion.

**In not washed -colour dark brown**, humus content-5%, nitrogen-0.30%, fosfora\_0, 22% capacity acquisitions-35mjekv per 100 g soil, structural units vodoprochnost'-mm over 1 km with 52%.

**Very poorly washed away**. Horizon **and** washed not more than 20%, the color of the soil a little different from nesmytyh (**dark brown**). Humus content in the upper horizon is 4.6%, nitrogen-0.28%, phosphorus-0.19% absorption capacity-mjekv 32.5 per 100 g soil, the number of vodoprochnyh units over 1 mm 48%. Yields below 10% than that of nesmytyh.

**Poorly washed away**. Horizon **and** from 20 to 50% washed soil color **Brown**, humus content-4%, nitrogen-0.24%, phosphorus-0.16%, absorption capacity-CIECA 28.8 per 100 g soil, amount of vodoprochnyh units-48%. Yields below (from 10 up to 25%) than nesmytyh soils.

**Medium washed away**. Horizon **and** washed away completely. soil color is **light brown**, humus content-2.8%-0.18% nitrogen, phosphorus-0.10% absorption capacity-23, 8mkjev to 100 g of soil, vodoprochnye units-30% yields below from 25-50% than that of nesmytyh.

**Heavily washed away**. Wash off the horizon **in**<sub>1</sub>, the color of the soil **-zhel'tovatyj with brownish tinge**. The content of humus-1.2%-0.08% nitrogen, phosphorus-0.05%, absorption capacity is 14.5 to 100 g of soil CIECA, vodoprochnyh units-18%, yield-from 50 to 75% (table 4.3).

**Very heavily washed away**. Rinse off completely the soil layer on the surface of exposed, loose and hard woods.

General provisions for the classification of eroded soils are the following: selection of diagnostic indicators to determine degrees of erosion of soil, suitable quantity allocated to degrees of erosion soil standards to ascertain their degree of erosion.-Brown soil erosion degree stepped is invited to determine to reduce genetic horizons and reduce the content of humus in the horizons of **a + b**. very weak jerodirovannym it is recommended to classify the soil in which compared to non-eroded observed reduction of the horizon **and** up to 20% and 10% to humus to loosely jerodirovannym respectively 10-25% to srednejerodirovannym%, 25-50-sil'nojerodirovannym-50-75%. these gradation offered, taking into account the variation in the humus content in soil and nesmytyh laboratory error definitions. Determination of the degree of erosion of soils based on quantitative change in humus content in the surface layer of soil-is an accurate and objective method that can be used in exposed soil mapping of mining-Brown soil and stepped close to him on the genesis of soils.

Natural hayfields and pastures, is constantly covered with vegetation, considered the most effective form of conservation lands. However, due to the deprivation of the protective cover on the slopes increased run-off of soil, which contributes to erosive process.

**Table 3.** The degree of soil erosion

The degree of erosion	Genetic horizons Smytost', %	Reducing the stock of humus, %	The condition of crops
Very little eroded	(A) up to 20	< 10	Good
Weakly eroded	(A) 20-50	10-25	Slightly below average
Moderately eroded	(A) fully	25-50	Average
Heavily eroded	In about 50	50-75	Izrezhennoe
Very heavily eroded	In fully	> 75	Very bad

In their geographical distribution of erosion on pasture appear in a certain area of subordination, which is confined to certain areas and bioklimaticheskim is a product of the evolution of the bio-climatic Wednesday.

Depending on the degree of development of erosive process, the nature of vegetation and soil generic breeds, each selected type of erosion is divided into subtypes and variants.

Grouping of eroded soils of the Republic covers the main natural-landscape zones, taking into account the landscape and climatic conditions of each zone.

Highland climate differs harsh long protracted winter snow and frost. Summers are short and cool. The average annual temperature does not exceed 3.2 -4.1<sup>0</sup>, and the coldest month (January) range from -4.6 -7.9<sup>0</sup> c, the temperature of the warmest month (July) is low, ranging from 12.9 -13.7<sup>0</sup>c; the sum of temperatures above 10<sup>0</sup> very low and average does not exceed 800-600. Duration of the frost-free period 1-2 months, vegetation period lasts 90-120 days. Average number of approximately 610-1210 mm, moisture ratio 1.52 -1.22, total solar radiation (annual) changes within 144-156 kcal/cm<sup>2</sup>. For the climatic indicators of the whole territory of the Highlands refers to wet (MD < 0.45) and cold (ΣT > 800) climatic type.

Floristic composition of the vegetation is extremely heterogeneous and varies with altitude. In the most elevated part of the vegetation canopy cover not provided-groups skal'noosypej (lichens, algae, etc.) For the Alpine meadows are typical plotnodernovye meadows with zlakovooskovymi components. Subalpine meadows are presented cenozami cereals, grasses, thickets of rhododendron, and in relatively dry parts of the Meadow-steppe communities. The main soil types are: mountain-meadow, mountain-forest-meadow and mountain-meadow-steppe. Agricultural production is weak, the zone largely occupied by wealthy summer pastures and mowed lands and are the basis for the development of transhumance (sheep) and fodder production.

Alpine and subalpine meadows, the main area which is occupied by pastures, soil erosion is the factor, which is closely linked areas. Stripped of protective vegetation, soil sloping land can't absorb the snow and rain water. This leads to an obsession with surface runoff which enhances ripple rivers. As a result of violations of the hydrological regime of the territory, which is due mainly to the removal of forest and grassy vegetation, knocking in the rivers of the mountain areas often seen very strong fluctuations in the volume of river flow. A large loss of water runoff regime of rivers worsens as snow, and especially power snegodozhdevogo. This, in its turn, reduces irrigation capacity of rivers on the territory of the foothill Plains, necessitates the use of large irrigation and reclamation work.[5]

Erosive processes that resulted from the degradation of the vegetation of pasture, contributing to a sharp drop in the productivity of pastures. Therefore, soil erosion and deterioration in the quality of grass-processes are closely linked. A well-developed natural grass cover markedly increases the resistance of soils and erosion of the leachate may run off. Development processes of erosion affects not only the quantitative indicators of pasture plants, but also leads to a restructuring of phytocoenosis. From the total area of 2402.3 hectares of mountain pastures over 1985, 8 thousand hectares or 82.7% are prone to erosion. Pastures depending on subband and exposure of the slope wash soil varies ot50 to 125 m<sup>3</sup>/ha. From these studies derives great economical importance is the study of pasture erosion in mountainous areas and the development of techniques to prevent and fight against it. When developing differential measures for the improvement and rational use of pastures, there is always a need for classification and grouping of grazing land for their quality status. It should be noted, however, that classification pasture erosion has now developed enough. Moreover, even the phenomenon of erosion on pasture do not found a definite place in the common grouping of erosive processes, although the nature of the manifestations of pasture erosion is very much different from other types or categories of erosion.

On the classification of eroded soils of mountain pastures known works of some author: V.A. Meeting, (1958), D.j. Mihjljova (1959), Sw Kerimhanova (1972). In these works gives grouping soils grazing on a degree as they are destroyed. In the forms of accelerated erosion caused by human activities, have a lot in common. However, according to and from the reasons caused the manifestation of erosion, these forms have their own characteristics. The character manifestation of soil erosion of mountain pastures pretty sharply differs from erosion on cultivated hillsides. Erosion processes on the pastures start to develop normally, since damage to the turf.[6,5 7]

Mountain pasture soil destruction process has no similarities with the formation of gullies and potholes. The length of the pits not always exceeds their width, and availability under lower-powered soil layer waterproof dense rocks brings not on no growth pits deep. Further growth in the size of erosion pits usually occurs through the broken walls, sliding down the slope of sod places preserved woven roots and reminiscent of education in the second stage of its development. Raised

near each other erosive pits are often steep walls and expands, incorporate among themselves, forming patches or streaks of eroded soil. As the further destruction of the soil occurs more or less gradual alignment of bugorchatogo through the shedding of microrelief, and under the influence of склонового runoff. This specificity of the appearance of erosion on mountain pastures requires, firstly, providing pasture erosion in independent or category subtype, secondly, development of appropriate soil classification according to their level of erosion. Based on long-term observations, taking into account the peculiarities of the destructive processes of soils under the influence of the unrestrained grazing of livestock, it is proposed that the draft classification pasture erosion on erosion degree (table 4). This includes the sequence of dernennogo deformation process layer.

**Table 4.** Classification of pasture erosion on hillsides

Stage	The degree of	Indicators
Vybitost' (tropinchatost')	Very weak	<b>The total area of paths:</b> < 10% of the account area
	Weak	10-25%
	Average	25-50%
	Strong	50-75%
	Very strong	75%

Research indicates the possibility of using cultural vegetation cropland and grass native grasslands in order to clarify the erosive soil survey data.

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## TRANSLATION ACROSS CULTURES: THE BALLADS OF KUKUTIS BY M. MARTINAITIS IN ENGLISH

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### ABSTRACT

One of the greatest challenges for the translator is the rendering of culture-specific items - traditionally regarded as a potential source of untranslatability. Many scholars have discussed this issue and different approaches have been described within the discipline of Translation Studies. Even though a lot of publications have appeared recently on the topic few investigate texts that are catalysts for revolution and identity preservation that deserve much attention.

Therefore, the paper aims to examine key cultural elements most strongly fixed in The "Ballads of Kukutis" by Marcelijus Martinaitis that served as a catalyst for revolution and were chanted, sung and performed everywhere during the mass political rallies of the late 1980s and early '90s in Lithuania. The authors employ models for translation quality assessment within the framework of three translation strategies distinguished by Eirlys E. Deivies and attempt to reveal whether it is possible to maintain the original SL text meaning in the TL. For the aim to be achieved the authors discuss norms, translatability and a cultural approach to translation; analyse the correlation between translation and pragmatics; review key cultural texts in translation; analyse the chosen cases and calculate the frequency of translation strategies used.

It is a theoretical and empirical research, with emphasis on the cross-cultural aspects of translation. Methods of research used in this study are: translation quality assessment,

**Keywords:** CSI, key cultural texts, mythological character, folk speech, translatability.

### INTRODUCTION

In every literate culture, as K. Malmkjaer suggests (2013), "texts of various types and genres and in various forms (textual, audiovisual and visual) play central roles in presenting and representing the culture to itself and in defining its cultural others (people, places, and customs)." (Prof. Kirsten Malmkjaer coordinated a project "Key Cultural Texts in Translation" and hosted two scientific conferences within the framework of the same project funded by Arts and Humanities Research Council (AHRC) in UK. More information at <http://www.fb06.uni-mainz.de/est/54.php>) Such texts can be of many different genres, but paradigm cases tend to be religious, political, literary, historical and journalistic. German linguist and translation scholar H. Vermeer (1996) maintains that the translator needs to be an intercultural expert and therefore, "translating means comparing cultures." Hence, a lot of translation strategies can be applied in order to maintain the original meaning of a source language text.

Moreover, in translation there are entities strongly bound with a SL culture and might be unknown to TL audience. Mona Baker names such entities as "culture-specific concepts" (1992: 21). They can be defined as elements of the text that are connected to a SL culture and which might be unknown to TL audience. The problems of translating CSI may include proper nouns, expressions, idioms, institutions and, also, objects which are indicated in a SL text but are non-existent in a TL text.

Thus, many translation theorists deal with the definition of culture first. Mildred Larson maintains that culture is "a complex of beliefs, attitudes, values, and rules which a group of people share" (1984: 431). P. Newmark defines culture as "the way of life and its manifestations that are peculiar to a community that uses a particular language as its means of expression" (1998: 94).

Moreover, for years translations were considered as derivatives, copies, and translators as mechanical devices replacing linguistic codes (equivalents) from one language into another, and the translator's autonomy was always questioned (and is still being questioned) by those who thought of him/her 'as a monkey, with no choice save to make the same grimaces as his master' (Leppihalme, 1997: 19).

The Ballads of Kukutis by Martcelijus Martinaitis is loaded with key cultural elements characteristic to Lithuanian literature and history of rebellion against Soviet regime.

A Lithuanian poet, essayist and translator M. Martinaitis (1936-2013), author of fifteen collections of poetry and five collections of essays, was born in western Lithuania. After an education disrupted by first Soviet then Nazi occupation, he graduated from Vilnius University and worked as a journalist, editor and university tutor until he retired in 2002. In 1998 he received the Lithuanian National Award in Literature, the highest honour bestowed upon a Lithuanian writer. During the period of national rebirth in Lithuania Martinaitis was an important and vocal member of "Sajudis", the grassroots political organization. A modern outlook on folklore, paradox and the grotesque is typical of Martinaitis' poetry. His most popular collection *The Ballads of Kukutis*, published in 1986, is a black comedy that attempts to describe the internal and external conflict between the mindset and outward reactions of an ancient pagan farmer suddenly having found himself within the de-humanizing bureaucratic structures of post-war Soviet occupied Lithuania.

Books of M. Martinaitis have been published in English, Swedish, Norwegian, French, Polish, Russian, Latvian, Estonian and Ukrainian languages.

The character of Kukutis, in fact, is depicted as innocent, rather naïve and odd person with no actual limits or boundaries as Martinaitis used the style of fairy-tales to write the ballads. Therefore, Kukutis can be said to be a mythological person presented to Lithuanian culture. Kukutis is a combination of other characters from fairy-tales such as fools, fraudsters, idiots, etc. The character might be interpreted as a third brother who in folklore is seen as a combination of wisdom and foolishness.

Therefore, the deliberate vagueness helped the ballads to pass the censorship of Soviet Russia and to be published in Soviet Lithuania. Contrary to that, Lithuanian people did understand the hidden meaning and the ballads were reconstructed in the forms of songs, plays or chants.

### **Norms, translatability and cultural approach to translation**

During a long history of translation, such notions as norms, translatability and cultural approach to translation have played an important role in achieving a high quality of translation. Even though much research has been done, translation studies are not one solid discipline with definite and central concepts or a set of formulas which would be a key to solve the problems faced by a translator. Different opinions of how the text should be translated exist along with the history of translation and each opinion contains a specific angle, terminology and method which depends on the translator's choice.

The concept that has changed greatly over the time and is playing a major part in translation studies is the notion of norms. Renate Bartsch, Groningen-Amsterdam scholar of semantics, defines norms as "the social reality of correctness notions [...] in this way correctness concepts which are physic entities have a social reality" (1987: 4). Thus, according to Bartsch, different cultures have different understanding for what is an appropriate behaviour to be shared by the members of community. Norms develop through time as the process of different historical events and socialization. Norms are crucial to any concept of language as they are directly related to language (cf. Bartsch 1987: 6).

Moreover, both Gideon Toury (a professor of poetics, comparative and translation studies at Tel Aviv University) and Theo Hermans (a Dutch and Comparative Literature professor at University College London) have contributed to the field of translation and the research of norms significantly. According to G. Toury, there is a noticeable correlation between translation and norms. The function of translation, as G. Toury claims, is "to being able to play a social role, i.e., to fulfil a function allotted by a community [...] in a way which is deemed appropriate in its own terms of reference" (1995: 53). G. Toury adds that the acquisition of norms determines the suitable translation and is essential for the translator to produce a high quality of translation within a cultural environment. Th. Hermans, likewise supports the idea that norms are inseparable from translation since "norms bear on the interaction between people, more especially on the degree of coordination required for [...] coexistence with others in groups" and translation does "involve transactions between several parties" (2012: 1).

Since there is a significant relationship between norms and language, later it was realized that norms are one of the things that cause a gap between source language (SL) and target language (TL) texts. Thus, a Scottish linguist and phonetician Ian Catford has drawn a conclusion that there are things in language that cannot be fully translated, that is, there is an inevitable loss of meaning (cf. Catford 1965: 93). Therefore, terms of translatability and untranslatability were coined as they are directly related to man's understanding about the world and its loss in language and translation.

Furthermore, I. Catford distinguishes two kinds of untranslatability: linguistic and cultural (cf. 1965: 93). Cases of linguistic untranslatability occur when there is no lexical or syntactical replacement in the TL. Meanwhile, the cases of cultural untranslatability are related to the absence in TL of situational events from SL.

Thus, translation should be treated through a theoretical and methodological shift of the cultural approach that, to rely upon a British-Austrian translator Mary Snell-Hornby, "implicitly embraces all kinds of translation" (Snell-Hornby 1990: 84). The study of the cultural approach was first recognized in the early nineties and is associated with the works of such scholars as André Lefevere, Susan Bassnett, and, later, with Lawrence Venuti. André Lefevere and Susan Bassnett claim that for them translation is contextual. Therefore, neither the source, nor the target cultures can be judged in accordance to universal standards (cf. Lefevere, Bassnett 1990: 3). In addition, culture brings a significant contribution to translation, thus, a translator does have a power to manipulate the TL text through his own ideology and his sense of the world (cf. Lefevere, Bassnett 1990: 88). Lefevere and Bassnett propose the idea that a translation is not only a text accepted in a target language culture, rather, it is a new cultural construction.

Ultimately, Bassnett indicates translation as "navigating on a sea of words between languages and cultures" (2000: 106). It seems that norms and translatability are directly related to cultural approach to translation and there is a correlation between the three.

### **Translation and Pragmatics**

Each community has its own understanding of the world. Therefore, while receiving a SL text, each translator has to retextualize it according to TL norms and conventions for the TL audience to fully understand the original meaning (cf. Karoubi 2005). To achieve it, a translator himself has to be familiar with both SL and TL cultures. What is more, a translator has to be conversant with an extra-linguistic knowledge of a SL text as a communicative event. Thus, there is a strong correlation between pragmatics and translation.

Considering the term *pragmatics*, there is no solid definition of what it is. Still, Stephen Levinson, known for his studies of the connection between culture, language and cognition, describes it as a relationship between structure and extra linguistic context (cf. Levinson 1983: 8). According to him, "by specifying a level of meaning that is context dependent, pragmatics concentrates on how linguistics expressions are encoded by their context" (ibid. 1983: 8), that is, pragmatics is

not what words might mean but what speaker wants them to mean. Consequently, it has more to do with the analysis of what people mean by saying an utterance rather than what sentences mean by themselves.

What is more, whilst analysing a contextual meaning of an utterance, the real meaning can be discovered. During the analysis, a translator is informed about contextual meaning, thus becoming familiar with both SL and TL cultural context. As a result, translation scholar James F. Ehrman claims, only then a translator can achieve a corresponding effect from his target audience (Ehrman 2010: 167).

Thus, pragmatics allows to relate contextual information with linguistic structure. Since translation basically is concerned with capturing the most meaningful items of SL text and converting it into a TL text, a meaningful equivalence between two discourses is more likely to be.

While considering a pragmatic approach towards translation, it is worth noticing that it consists of three parts: the interpreting of an original SL text, the reconstruction of a TL text and revision (cf. Gile 1995: 181). All three parts take place between two different cultures and, in order to avoid ambiguity, the analysis of discourse should be considered before translating a SL text.

#### **Native and Non-native Translators**

Lawrence Venuti claims that to achieve a high quality of translation only a native speaker of TL is in position to accomplish this task (2000: 6). Moreover, "it seems inevitable that transparency would become the authoritative discourse for translating, whether the foreign text was literary or scientific/technical" (Venuti 2000: 6). Peter Newmark believes that a reader of TL should learn how to translate only in his native language since it is the only way one can translate naturally and with full effectiveness. Thus, only a native speaker can produce a high quality translation in terms of fluency because a translation of a non-native speaker will be, according to P. Newmark, "unnatural and non-native", full of "unacceptable or improbable collocations" (1988: 180).

However, Nike Kocijančič Pokorn insists that "the advantage of fluency in the target language that native speakers of the TL have is often counter-balanced by an insufficient knowledge of the source language and culture which means that translations by native speakers of English are not automatically superior" (2000: 79). Though a translation is traditionally seen as a mother-tongue text, even L. Venuti himself questions the need of transparent and fluent translation and whether it is true that translation should not reveal "the linguistic and cultural difference of foreign texts" (Venuti, 1997: 41). Still, despite his openness about the true nature of translation, Venuti never denies that translator's TL should also be his mother-tongue language and thus he accepts the superiority of TL translator.

A further point can be made by Peter Bretthauer (2000: 148) who maintains that people seeking for a translation are not in need for polished translation, rather they are concerned about accurate communication from SL to TL texts. For this reason, non-native translation might meet these requirements since it provides "adequate translation which satisfies lower stylistic requirements."

Therefore, it can be stated that if a translator fulfils the requirements provided by a TL reader, his TL may not coincide with his mother-tongue language. However, his attitude towards culture-specific items might be questionable since the meaning in translation could be lost.

#### **Key cultural texts in translation: Cultural preservation**

The founder of the European Society for Translation Prof. Kirsten Malmkjær makes an observation that "people growing up in different cultures and different languages may have more or less radically different world views" (2005: 43). People from diverse societies may have different values and contrasting opinion or point of view when referring to the same subject.

Moreover, speaking about translation, as there is a leading ideology in translation studies that TL's appropriateness is a major criteria for a good translation, the translator is required to adapt a TL text both linguistically and culturally. This allows the translator to employ cultural adaptation, or, in the words of translation theorist John Milton to direct information towards the culture of the consumer and make adjustments according to the general tastes of consumers of that culture" (Milton 2008: 164). Within the application of cultural adaptation, both the message of SL text and the culture of TL can be preserved in the final text guaranteeing a rather high quality of translation.

Moreover, discussing translation problems, Christina Schäffner and Uwe Wieserman (2001: 24) claim that these problems are objective and "they must not be confused with subjective difficulties a translator may have due to deficient translation competence." Meanwhile Nord speaks about four types of translation problems "*pragmatic, intercultural, interlingual* (or linguistic), and *text-specific*" (1991: 24).

In addition, Ritva Leppihalme (2000: 247) states that "interest in intercultural translation problems arise from recognition that culture-bound concepts [...] can be more problematic for the translator than semantic or syntactic difficulties of a text." However, in another study Leppihalme adds that some translation scholars attribute culture-bound translation problems to intralinguistic and pragmatic that involve "idioms, puns, wordplay" (Leppihalme 1997: 2).

Meanwhile explaining translation problems of culture-specific references, Maria Tymoczko says that unfamiliar cultural information usually "does not simply reside in lexical item, but is a more diffuse presence in a source text" (2002: 26); for instance, translators may come across with a myth or custom which are not expressed explicitly. Then, the translator's task, as the author notes, is to present such implicit information "either through explicit inclusion in the translation or through paratextual<sup>1</sup> devices" (2002: 26) though the best solution, according to many scholars, would be to employ several translation strategies at the same time.

As it was mentioned before, Davies claims that addition occurs when a translator “decide[s] to keep the original item but supplement[s] the text with whatever information is judged necessary” (2003, 78). According to her, there are two types of addition: a) the one that appears inside the text and b) the one that is visible outside the text. In the first case, additional text is inserted into a text directly, however, in the second case additional information comes in the form of footnotes, glosses or introductions. In the case of *The Ballads of Kukutis*, both English and Lithuanian cultures have differences between the systems of background knowledge that SL and TL readers possess, therefore, in the translation by Laima Srugonis (Laima Srugonis is a translator, prose writer and essayist. She was born 11 February 1966 in Teaneck, New Jersey, USA. She studied at Lithuanian Gymnasium in Lampertheim (Germany). In 1990 she finished her studies of English, German languages and art at Rutgers University (USA). Then she got her Master’s degree at Columbia University. More information available at <http://www.rasytojai.lt/en/writers/159-en/writers/present/s/1171-srugonis-laima-v.>), the gap between the cultures is filled with the both cases of addition.

It is worth mentioning that L. Srugonis had an opportunity to communicate with M. Martinaitis while translating *The Ballads of Kukutis*. Further on, though born in America and later raised in Germany by an emigrant family, she was always pushed towards Lithuanian culture by her relatives due to the expectance of coming back to their homeland. Therefore, from the very childhood she was interested in Lithuanian culture and later on – in the rebirth of Lithuania. Translation was her way of resisting the Soviet regime, and later she became a professional translator (cf. Srugonis 2006). For these reasons the fulfilment of the cultural gaps between Lithuanian and American cultures using the method of addition was a slightly easier task for Laima Srugonis to achieve.

At the very beginning of the translation, the case of addition is visible through the introduction to the text:

TL: [...] *During the period of national rebirth in Lithuania Martinaitis was an important and vocal member of ‘Sajudis’, the grassroots political organization. [...] His most popular collection The Ballads of Kukutis, published in 1986, is a black comedy that attempts to describe the internal and external conflict between the mindset and outward reactions of an ancient pagan farmer suddenly having found himself within the de-humanizing bureaucratic structures of post-war Soviet occupied Lithuania [...]* (Srugonis 47)

Previously it was indicated that context allows a TL reader to understand SL text better. In this case, a TL reader is presented with additional information in the form of introduction in order to understand historical context of the time when the ballads were written. Western cultures, especially English-speaking countries, are not aware of the tragedy and censorship of Eastern countries brought by Soviet Union. Therefore, the introduction presented outside the translation provides a TL reader with information about the structure and regime of post-war Lithuania and gives an opportunity to a TL reader to understand the importance of the ballads to SL, that is, Lithuanian, culture.

Addition also provides TL reader with information that is not necessarily significant in meaning, that is, sometimes it is of secondary importance. The following case illustrates the point:

(1) SL: [...] *o ties varpine*

*šeštadieninė talka  
stojo užversti šulinį.*

TL: [...] *while in front of the bell tower  
the Saturday volunteer brigade  
starts to knock over the well.*

Later on, it is followed by a similar example:

(2) SL: *Šeštadieninė talka*

*kol nuverčia tvartus vienoj aikštės pusėj,  
iš kitos*

*Kukutis vėl sapnuoja Žuveliškes [...].  
TL: As soon as the Saturday volunteer help knock down  
the pigsties on one side of the square  
Kukutis dreams up Zuveliskes again [...].*

Apparently, there is no accurate equivalence in the English language for the Lithuanian term *talka*. Therefore, the translator decides to employ addition by describing what the term means, thus, introducing the concept to TL reader. The term *talka* means the help received from the part or the whole of a village (*Modern Lithuanian Dictionary* - a universal one-volume explanatory normative work of standard language at [http://www.sena.lt/lietuviu-kalba/-dabartines\\_lietuviu\\_kalbos\\_zodynas\\_\\_modern\\_lithuanian\\_dictionary](http://www.sena.lt/lietuviu-kalba/-dabartines_lietuviu_kalbos_zodynas__modern_lithuanian_dictionary). Translation by L. U. and Ž.A.). The translator domesticates the term by adapting it to TL culture and explaining it to TL audience. The term itself is not translated, instead, the explanation of the process is used inside of the translation without assistance of glosses or footnotes.

Further on, the application of addition in the previous case is rather similar to the one which is found later:

(3) SL: *Mano paprašyti vaikai*

*[...] įrašė*

*[...] lapų kritimą į Ratnyčelę* (Martinaitis 90).

TL: *I asked some children*

*to record on tape*

*[...] the falling of leaves into Ratnycele stream* (Srugonis 48).

In the example above, the translator has decided to include a specific word indicating the proper name in order to inform a TL reader of what he is dealing with. A non-native speaker is not aware of what *Ratnycele* is which is a river that flows in Lithuania near Druskininkai. However, Sruoginis adds the additional word “stream” in order to explain what it is since it is not apparent from the text, thus, giving a context to a TL reader clarifying the described situation. Again, the added information about *Ratnycele* is provided inside the translation. Therefore, the case above demonstrates that the strategy of addition was used successfully in order to convey the meaning.

The Ballads of Kukutis contains numerous examples of proper names that have a significant meaning to SL reader and that are preserved in a TL text too. To employ Davies’ formulation, preservation appears either when “a translator may simply decide to maintain the source text term in the translation” or when “the actual words are not preserved, but where a cultural reference receives a literal translation, with no further explanation” (Davies 2003, 72). In the case of *The Ballads of Kukutis* both types of preservation are used:

- (4) SL: *Mano paprašyti vaikai  
 baltai kepuraitei į magnetinę juostą  
 įrašė  
 Baisogalą,  
 Romą,  
 Vilniaus priemiesčius [...] (Martinaitis 90).*  
 TL: *I asked some children  
 to record on tape  
 Baisogala,  
 Roma,  
 the suburbs of Vilnius [...]* (Sruoginis 48).

The example demonstrates that in certain cases preservation occurs and there is no loss of meaning as in the translation of *Vilnius*. Since it is the capital of Lithuania, it should be known even to a foreign reader. What is more, it does not have any etymological meaning that can be interpreted or understood differently, therefore, there is no additional information to be attributed to the translation of the phrase.

However, the preservation of *Baisogala* does not compensate the loss of proper name’s etymological meaning. *Baisogala* is the composition of two words, that is, “baisus” and “galas” which refer to English equivalents “awful” and “end”. While preserving the translated item mentioned in the example, the connotative meaning was not retained, though it is not of primary importance, therefore, the meaning of the text is not lost. In both translated proper names the cases of first type of preservation appeared when a translator maintains the term from the SL text.

In addition, not only the cases of proper names should be taken into consideration. Analyse the following example, please:

- (5) SL: *O ko daugiau man reikia:  
 Gavau du sieksniu pievos (Martinaitis 22).*  
 TL: *[...] they gave me an apartment  
 [...] seven feet of meadow–  
 and what more do I need (Sruoginis 56).*

Though in example (5) term *sieksnis* is a measure that equals six feet it has different values in each country. In this case, the translator domesticated the term at the same time preserving the folkloristic (More information about Folkloristic Translation can be found in an article by Ibrahim Muhawi” published in Theo Herman (ed.) *Translating Others*, vol. II (2006), Routledge 2014 pp. 365–79) nature of the ballads. “Seven feet of meadow” was added in order to create a fairy-tale like sound to preserve the tone of SL text.

Ultimately, addition and preservation were applied in the translation of *The Ballads of Kukutis*. Frequency of the translation strategies applied in the analysed translation is illustrated in the following chart:

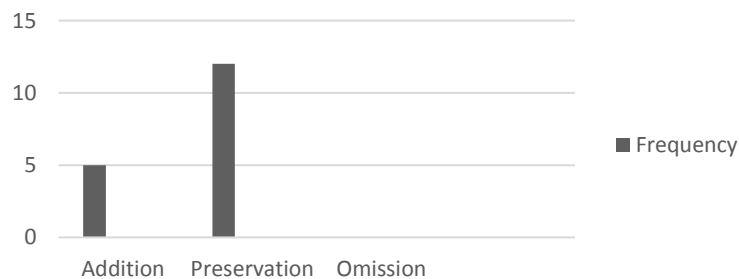


Figure 1 The frequency of translation strategies applied in the translation

Source: created by the authors of the research

The figure illustrates that preservation was the prevailing strategy which reveals that the translator of the ballads tended to retain culture-specific items. Addition was used more commonly among the translation of proper names, especially rendering the names of places, thus preserving the atmosphere of the Lithuanian culture.

## CONCLUSIONS

Words which exist in one language but not in another, concepts which are not equivalent in different cultures, idiomatic expressions and/or differences among languages in grammatical and syntactical structures are issues which call for very specific decisions. The translator has to understand the cultural-ritual context in which the ST is produced, and only then should attempt translation, minimising the loss of cultural meaning.

Descriptive hypotheses (such as statements about universals or laws) can have explanatory force, but almost all causal influences are filtered through the individual translator's mind, through particular decisions made by the translator at a given time.

In the case of the translation of *The Ballads of Kukutis* no cases of omission could be found. Even though the form of the original text is sometimes broken the SL content is preserved without losing any essential information in the TL text.

The analysis of culture-specific items revealed that in the majority of cases the translator used addition and preservation.

Ultimately, as the translator collaborated with the author of the ballads during the whole process of translation it signals that, when dealing with Key Cultural Texts in translation and striving to minimise the loss in meaning while translating Culture specific items, models of translation projects when either a team of native and non-native translators or the translator and the author of the work under translation collaborate are the most successful ones.

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**Shaklo Miralimova**

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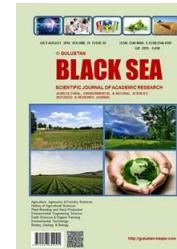
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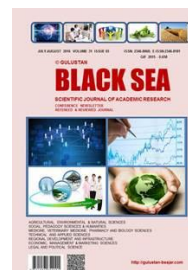
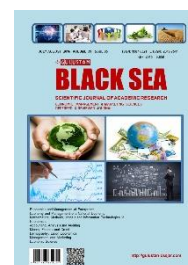
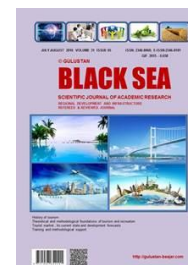
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