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YIELD AND NUTRIENT OUTPUT AT DIFFERENT SOYBEAN SEED SOWING RATES

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УРОЖАЙНІСТЬ І ВИХІД ПОЖИВНИХ РЕЧОВИН ЗА РІЗНИХ НОРМ ВИСІВУ НАСІННЯ СОЇ

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Abstract
The article presents research results on the impact of different soybean seed sowing rates on yield and the output of nutritional components, including digestible protein units. It is shown that a sowing rate of 900,000 seeds per hectare resulted in the highest soybean grain yield and the greatest output of nutrients compared to sowing rates of 800,000 and 1,000,000 seeds per hectare.

Анотація
У статті наведені результати досліджень щодо впливу різних норм висіву насіння сої на урожайність і вихід кормових одиниць та перетравного протеїну. Показано, що за норми висіву 900 тис. шт./га спостерігався найвищий урожай зерна сої та найбільший вихід поживних речовин, порівняно із нормами висіву 800 і 1000 тис. шт./га.

Keywords: soybean, yield, feed units, digestible protein
Ключові слова: зерно сої, урожай, кормові одиниці, перетравний протеїн.

Завдяки різносторонньому використанню, соя належить до надзвичайно цінних культур. В її насінні міститься від 33 до 45% білку, від 20 до 25,7% олії і 25-27% вуглеводів. В золі дуже багато калію, фосфору, кальцію, в олії містяться вітаміни – В, С і Е. У насінні сої перетравного протеїну в 3,6 рази більше, ніж в зерні ячменю, та майже в 4 рази більше ніж в зерні кукурудзи. Крім того, насіння містить незамінні амінокислоти (лізин, метіонін, триптофан і ін.), які визначають повноцінність кормів.

Сою вирощують також па зелений корм і силос. 100 кг зеленої маси містять 21 кормову одиницю (3,5 кг протеїну), а 100 кг сіна – 51. Соєве сіно дуже поживне, воно містить близько 15,4% білку, 5,2% жиру, 38,6% вуглеводів, 7,2% золи і 22,3 % клітковини.

Як просапна бобова культура соя має велике агротехнічне значення в сівозміні. В світовому землеробстві соя одна з головних зернових, бобових і олійних культур. [5].

Норми висіву насіння сої та ширина міжрядь залежить від сорту та кліматичних умов зони вирощування. За достатнього сонячного освітлення міжряддя необхідно звужувати, оскільки на початку вегетації листки сої не можуть затінити поверхню ґрунту та перешкодити росту бур'янів [1].

Ширина міжрядь залежить також і від сортових особливостей сої та їх можливості до гілкування чи вилягання. Сорти які інтенсивно гілкуються ліпше ростуть при меншій густоті, тоді як стійкі до вилягання – при більшій [6].

Для середньоранніх сортів сої рекомендована площа живлення на 1 рослину становить 250 см^2, середньостиглих – 300 см^2, пізньостиглих – 370 см^2 [3].

У загущених посівах збільшується конкуренція за елементи живлення, тоді як у зріджених посівах зростає кількість бур'янів. Крім цього, рослини у зріджених посівах більш інтенсивно гілкуються але в бобових воно дещо обмежене, тому гілкуванням нереально цілком компенсувати недобір врожаю [2, 4].

Тому дослідження з визначення норм висіву насіння сої актуальні і сьогодні. Метою проведених досліджень було визначити урожайність зерна сої і вихід поживних речовин за різних норм висіву.

У дослідах використовували сорт сої Легенда. На контрольній ділянці висівали сою за норми висіву 800 тис. шт./га, на дослідних - за норми 900 тис. шт./га і 1000 тис. шт./га.

З даних таблиці 1 видно, що найвища урожайність зерна сої спостерігалася за норми висіву 900 тис. шт./га і становила 23,6 ц/га, що було вище за контрольна на 1,2 ц/га (5,4%). За норми висіву 1000 тис. шт./га урожайність становила 23,3 ц/га, що на 0,9 ц/га (4,0%) більше за контроль, проте на 0,3 ц/га (1,4%) менше за норму висіву 900 тис. шт./га.

Таблиця 1

Вплив норм висіву на врожайність зерна сої

Норма висіву, тис. шт./га	Урожай, ц/га	До контролю	
		ц/га	%
800 (к)	22,4	–	100,0
900	23,6	1,2	5,4
1000	23,3	0,9	4,0

Для визначення виходу кормових одиниць з 1 га посіву сої провели зоотехнічний аналіз корму. Визначили, що поживність 1 кг зерна сої за норми висіву 800 тис. шт./га становила 1,31 кормових одиниць, а за норм висіву 900 і 1000 тис. шт./га – 1,32.

З наведених у табл. 2 даних видно, що найбільший вихід кормових одиниць з 1 га площі посіву сої спостерігали за норми висіву 900 тис. шт./га, який становив 31,15 ц/га, що на 1,81 ц (6,2%) більше за контроль. За норми висіву 1000 тис. шт./га вихід кормових одиниць становив 30,76 ц/га, що на 1,42 ц (4,8%) більше за контроль, проте на 0,39 ц (1,4%) менше, порівняно із нормою висіву 900 тис. шт./га.

Найбільший вихід перетравного протеїну спостерігали за норми висіву 900 тис. шт./га, який становив 7,38 ц/га, що на 0,39 ц або 5,6% більше за контроль. За норми висіву 1000 тис. шт./га вихід перетравного протеїну становив 7,29 ц/га, що на 0,3 ц або 4,3% більше за контроль, проте на 0,09 ц або на 1,3% менше, порівняно із нормою висіву 900 тис. шт./га.

Таблиця 2

Вихід поживних речовин із зерна сої за різних норм висіву

Норма висіву, тис. шт./га	Врожайність ц/га	Вихід кормових одиниць, ц/га	Вихід перетравного протеїну, ц/га
800 (к)	22,4	29,34	6,99
900	23,6	31,15	7,38
1000	23,3	30,76	7,29

Отже, найвищу врожайність зерна сої, найбільший вихід кормових одиниць і перетравного протеїну з 1 га спостерігали за норми висіву 900 тис. шт./га.

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ECONOMIC SCIENCES

APPLICATION OF THE DEA METHOD TO ASSESS THE INTEGRATION EFFECT ON THE EXAMPLE OF THE EURASIAN ECONOMIC UNION

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ПРИМЕНЕНИЕ МЕТОДА DEA ДЛЯ ОЦЕНКИ ЭФФЕКТО ИНТЕГРАЦИИ НА ПРИМЕРЕ ЕВРАЗИЙСКОГО ЭКОНОМИЧЕСКОГО СОЮЗА

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Abstract
The article uses the Data Envelopment Analysis (DEA) to assess the participation of countries in the integration association of the EAEU was carried out and the effect of participation was calculated. The analysis of the indicators necessary for calculating the model, such as the share of member states in total foreign trade turnover, mutual investments in total investment, GDP by PPP per capita, current account balance of the balance of payments, GDP growth rate, inflation and public debt were made.

Аннотация
В статье с помощью метода оболочного анализа DEA проведена оценка участия стран в интеграционном объединении ЕАЭС и рассчитан эффект участия. Проведен анализ показателей необходимых для расчета модели, таких как доля государств-членов в общем внешнеторговом обороте, взаимные инвестиции в общем объеме инвестиций, ВВП по ППС на душу населения, сальдо счета текущих операций платежного баланса, темп роста ВВП, уровень инфляции и госдолг.

Keywords: integration association, the EAEU, DEA, efficiency assessment, sustainability of economic development, degree of integration, integration effects.

Ключевые слова: интеграционное объединение, ЕАЭС, DEA, оценка эффективности, устойчивость экономического развития, степень интеграции, эффекты интеграции.

Ввиду происходящих изменений на данной ступени развития мирового хозяйства первостепенным фактором повышения экономического благосостояния государства является экономическая интеграция стран с близкими социально-экономическими отношениями и общими экономическими интересами. В настоящее время стала отчетливо просматриваться тенденция роста региональной дифференциации по ряду экономических показателей, что актуализировало вопросы изучения эффективности Евразийского экономического союза в разрезе стран-членов. Для решения подобных задач существует множество подходов (обзор см. [1]), однако в данном исследовании применяется относительно новый, но уже получивший достаточно широкое распространение метод оболочного анализа - Data Envelopment Analysis (DEA).

В работе анализ проведен за период 2015-2021 гг., что позволяет проследить за перемещением границы эффективности во времени, и на основании направления этих перемещений определить, есть ли прогресс в углублении интеграции между странами. Объектами исследования (DMU[1]) выступают страны-участницы ЕАЭС: Беларусь, Россия, Казахстан, Армения и Кыргызстан. В отличие от работ, посвященных анализу эффективности единиц принятия решений методом DEA, в данном исследовании не используется принцип «затраты-выпуск». Это означает, что в качестве входных и выходных показателей используются не объемы затраченных ресурсов и выпускаемой продукции, а экономические показатели, которые характеризуют уровень экономического развития стран-членов и степень их интегрированности в союз.

Интеграция государств-участников в ЕАЭС оценена по взаимным инвестициям и внешней торговле. Для этого выходными параметрами анализа были выбраны следующие показатели: доля государств-членов в общем внешнеторговом обороте (%) и взаимные инвестиции в общем объеме инвестиций (млн. долл. США). В качестве входных показателей рассмотрены факторы, характеризующие устойчивость и уровень экономического развития стран-членов и непосредственно влияющие на интеграцию стран, т.е. на выходные параметры, такие как: ВВП по ППС на душу населения (долл. США); сальдо счета текущих операций платежного баланса (долл. США); темп роста ВВП (%); уровень инфляции (%) и государственный долг (% ВВП) (Рис. 1).

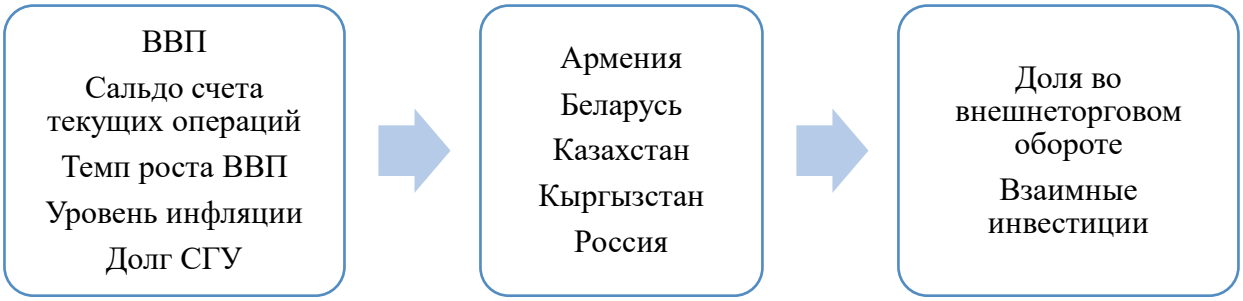

Рисунок 1 – DMU, входные и выходные показатели
Примечание – Источник: собственная разработка авторов

Для оценки эффективности интеграции использована ориентированная на выход BCC-модель[2]. Выбор ориентации модели обоснован целью исследования – максимизация выходных показателей (степени интеграции). Так как совокупность данных достаточно неоднородна и имеет большой разброс, целесообразным будет использование BCC-модели, которая содержит переменную отдачи от масштаба, что позволяет учесть все возможные варианты отдачи от масштаба (возрастающая, постоянная и убывающая).

Математическая постановка задачи линейного программирования следующая:

$$\theta^k = min \sum_{i=1}^{n} v_i x_i^k - u_0;$$

$$\sum_{j=1}^{m} u_j y_j^k - \sum_{i=1}^{n} v_i x_i^k + u_0 \leq 0;$$

$$\sum_{j=1}^{m} u_j y_j^k = 1;$$

$$v_i \geq 0, u_j \geq 0.$$

Статистический анализ входных и выходных параметров

В соответствии со статьей 4 Приложения № 14 к Договору о ЕАЭС в первую очередь следует оценить макроэкономические показатели, определяющие уровень и динамику экономического развития стран-членов: ВВП по ППС на душу населения (долл. США), темп роста ВВП (%) и сальдо счета текущих операций (% ВВП) (Рис. 2-3).

[1] Decision Making Unit

[2] BCC-модель (Banker, Charnes, Cooper) – переменная отдача от масштаба

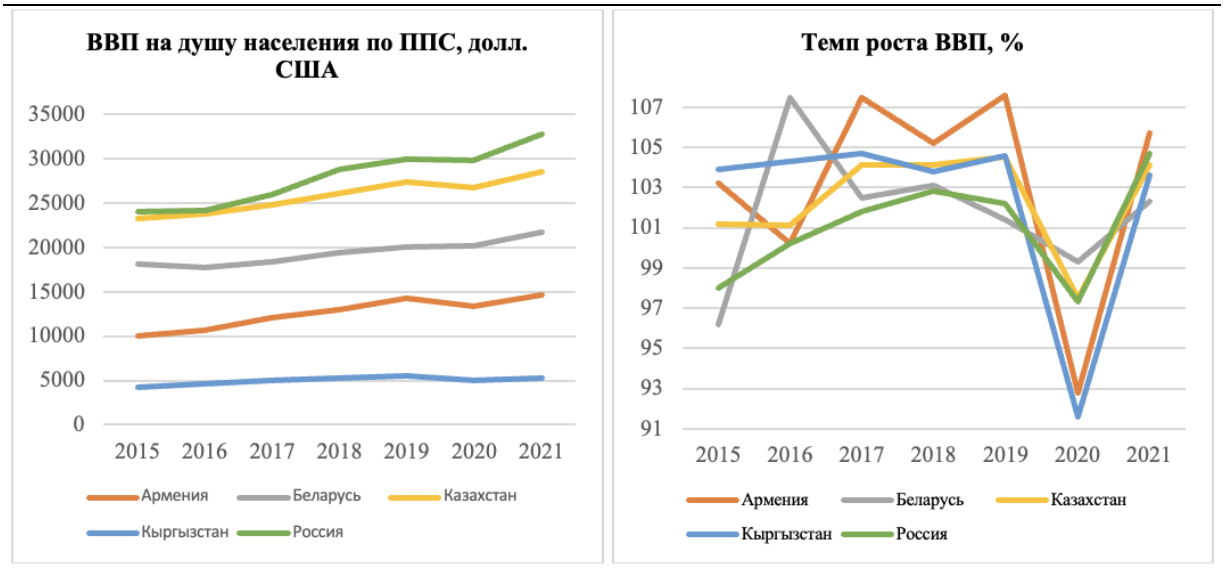

Рисунок 2 – ВВП по ППС на душу населения (долл. США), темп роста ВВП (%)
Примечание – Источник: собственная разработка авторов на основе [4]

На графике ВВП по ППС на душу населения можем видеть, как неуклонно возрастал показатель для всех до 2020 года, что связано с кризисом пандемийного периода. Уже в 2021 году можем наблюдать стремительный рост показателей, т.е. восстановление.

Анализируя график темпа роста ВВП, следует обратить внимание на то, как кризис 2020 года повлиял на все рассматриваемые страны, причем наибольший спад ВВП наблюдался у Кыргызстана и Армении, однако в 2021 г. видим возвращение показателя к уровню 2018-2019 гг. В целом из графиков можем сделать вывод об устойчивом развитии России, Казахстана и Беларуси.

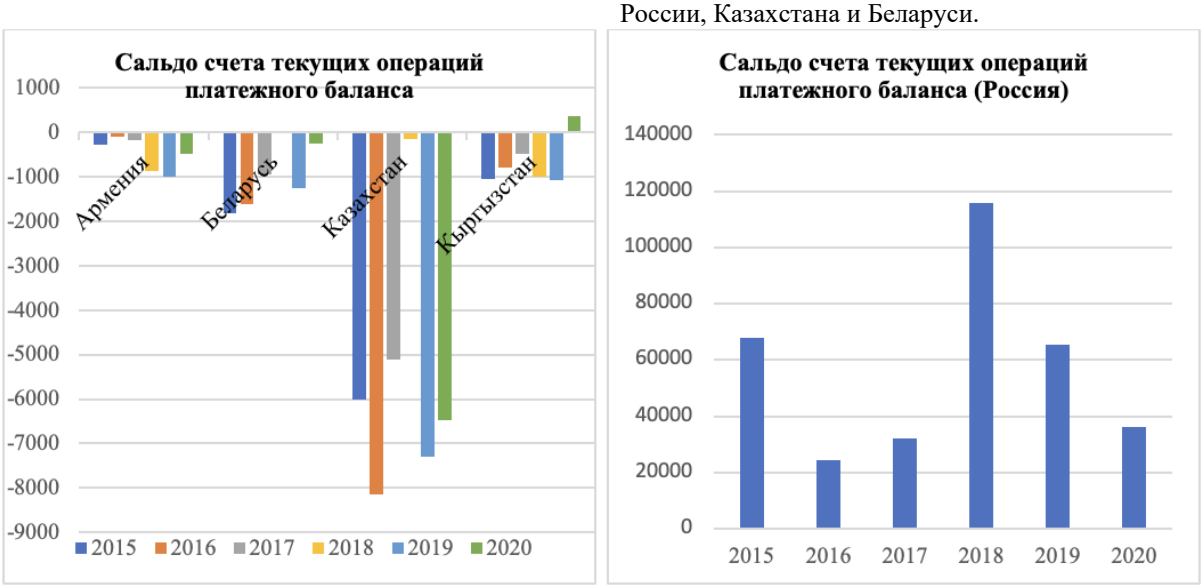

Рисунок 3 – Сальдо счета текущих операций (долл. США)
Примечание – Источник: собственная разработка автора на основе [4]

Из рисунка 3 видно, что для всех стран-участниц за исключением России характерно отрицательное сальдо счета текущих операций платежного баланса, причем наименьшее сальдо наблюдается в Казахстане. В России, начиная с 2018 года, наблюдается снижение сальдо. В Армении до 2019 года наблюдался рост сальдо, затем его резкое снижение и в 2020 году сальдо увеличилось, но на всем промежутке остается отрицательным. В Беларуси наблюдается положительное сальдо лишь в 2018 году (0,04%). В Кыргызстане произошел скачок сальдо в 2020 году до 4,5% ВВП. Россия характеризуется положительным сальдо счета текущих операций, однако он начинает снижаться с 2018 года.

Следующая группа входных параметров характеризует устойчивость экономического развития государств-членов ЕАЭС и включает в себя такие макроэкономические показатели, как уровень инфляции (%) и государственный долг (% ВВП).

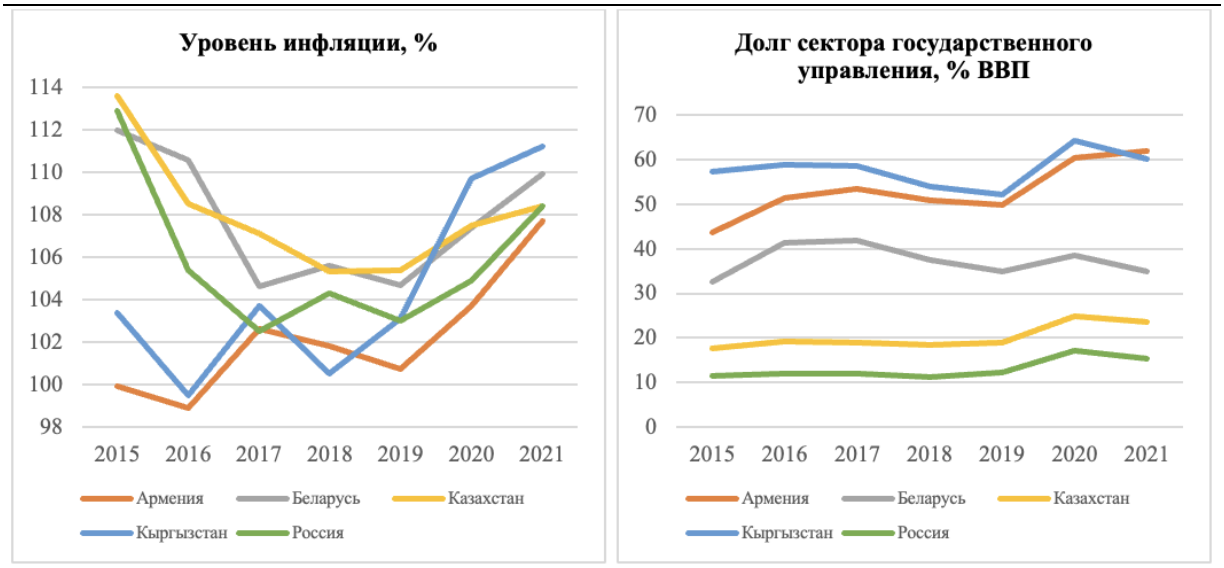

Рисунок 4 – Уровень инфляции (%), долг СГУ (% ВВП)
Примечание – Источник: собственная разработка авторов на основе [4]

Из графика уровня инфляции видно, что начиная с 2015 года во всех странах наблюдалось стремительное снижение инфляции; однако в 2016 году она снова начала расти в Армении и Кыргызстане, в 2017 г. – в России и Беларуси. Затем во всех странах она резко усилилась в 2019 г. и продолжает также расти. В 2021 г. наиболее высокий уровень инфляции характерен для Кыргызстана и Беларуси.

Анализируя госдолг можем отметить, что наименьший долг приходится на Россию и Казахстан, а также в 2020 году во всех странах ЕАЭС наблюдается скачок долга, основными причинами чего стали увеличение бюджетных дефицитов, снижение реального ВВП и ослабление национальных валют в результате негативного влияния последствий пандемии на экономики государств-членов. Да

Степень интеграции государств характеризуют следующие выходные показатели модели: доля во внешнеторговом обороте (%) и взаимные инвестиции (млн. долл. США) (рис. 5).

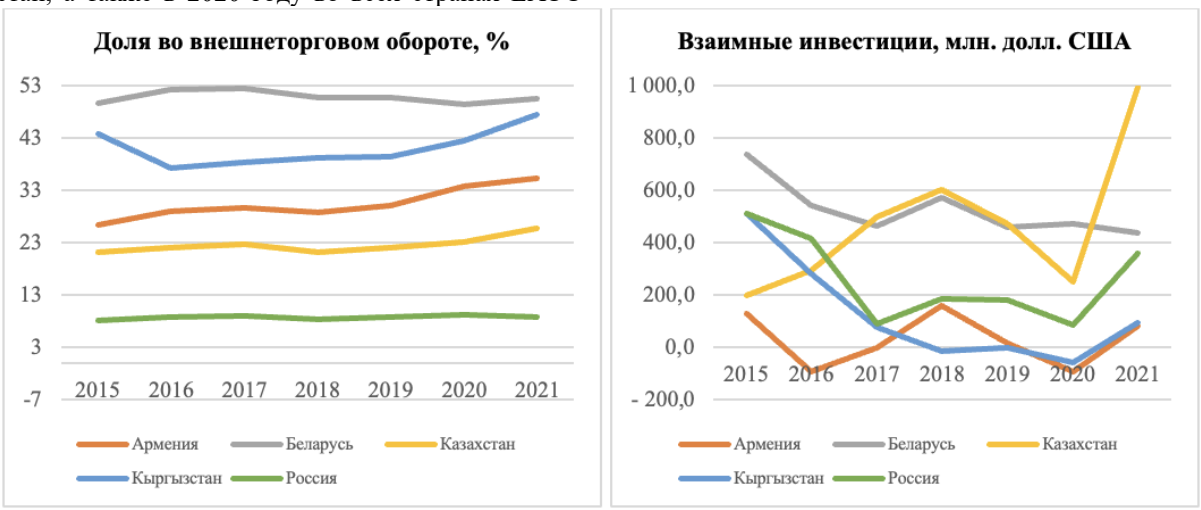

Рисунок 5 – Доля во внешнеторговом обороте (%), взаимные инвестиции (млн. долл. США)
Примечание – Источник: собственная разработка авторов на основе [4]

Исходя из вышеприведенного рисунка доля государств-членов во внешнеторговом обороте России является наименьшей и варьируется от 8 до 9%, наибольшая доля стран – во внешнеторговом обороте Республики Беларусь и Кыргызстана. Также следует отметить, что данный показатель растет для всех стран, что указывает на усиление интеграционных процессов стран-участниц.

Взаимные инвестиции стран в общем объеме инвестиций Беларуси снижаются на всем промежутке, исключением является 2018 г., в остальных странах начиная с 2020 г. взаимные инвестиции начали увеличиваться, в случае с Казахстаном – практически в 2 раза.

Следует указать, что макроэкономическая ситуация 2020-2021 гг. в мире (подробнее см. [6-7]) и ЕАЭС складывается под существенным влиянием неэкономических факторов: пандемии коронавирусной инфекции, меры по противодействию которой сопровождались значительными ограничениями экономической активности и передвижений

граждан, а также расширяющихся санкций со стороны США и их союзников против России и Беларуси; что в значительной степени сказалось на исследуемых показателях. Учитывая данный факт, можно заключить, что уровень развития экономик стран-участниц является приемлемый. Показатели интеграции также указывают на увеличивающуюся сплоченность государств.

Эмпирические результаты построения модели DEA

Целью построения модели DEA является нахождение таких значений переменных, при которых значение целевой функции (эффективность участия стран в интеграции) достигнет максимального значения (θ). Такая задача решена по одному разу для каждого объекта, причем для каждого объекта найдены наборы значений весовых коэффициентов, определяющих максимальную эффективность. Наивысшая эффективность преобразования входных параметров в выходные характеризуется значением $\theta = 1$. В таблице 1 приведены результаты проведенного анализа эффективности.

Таблица 1

Результаты исследования эффективности участия стран в ЕАЭС

DMU	2015	2016	2017	2018	2019	2020	2021
Армения	0,6119	0,6865	0,6543	1	0,6700	0,8021	0,7627
Беларусь	1	1	1	1	1	1	1
Казахстан	1	1	1	1	1	1	1
Кыргызстан	1	1	1	1	1	1	1
Россия	1	1	0,6064	0,6235	0,6015	0,4205	0,5571

Примечание – Источник: собственная разработка на основе расчетов Excel

Ввиду того, что были выбраны показатели, которые позволяют всесторонне изучить деятельность отдельных стран, были получены объективные оценки показателей их производственной эффективности. Из результатов анализа следует, что за все время существования ЕАЭС Беларусь, Казахстан и Кыргызстан эффективно участвуют в союзе и служат ориентирами для других стран. В свою очередь, Россия и Казахстан действуют не столь эффективно в рамках союза, причем у Армении значение показателя принимало единицу только в 2018 г, у Российской Федерации – 2015-2016 гг. Для более наглядного представления ситуации представим тенденции эффективности на рисунке 6.

Отметим, что волатильность значений коэффициента эффективности для Армении значительна и находится в интервале 60-80%. Для Российской Федерации значение коэффициента снижается, однако ввиду непростых обстоятельств для России, ее участие в союзе будет только увеличиваться.

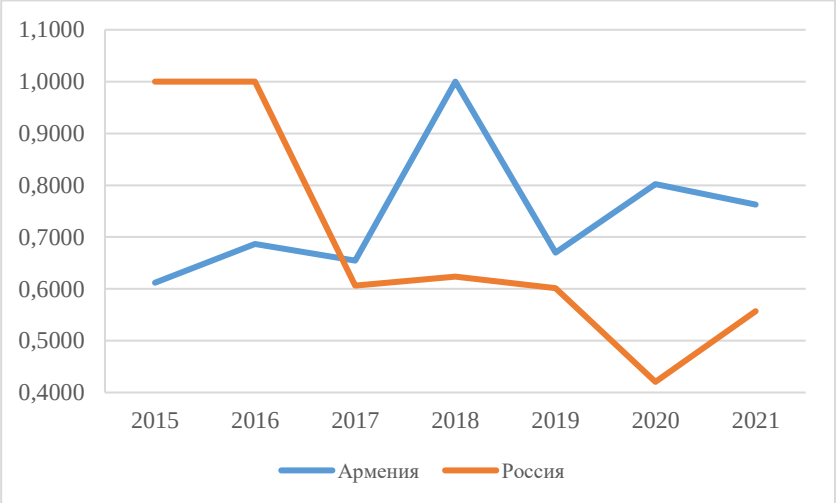

Рисунок 6 – Эффективность деятельности России и Армении в рамках ЕАЭС
Примечание – Источник: собственная разработка авторов

В заключение, можно сделать вывод, что интеграция более выгодна малым странам, которые, получая доступ на рынки сбыта экономически более развитых партнеров, получают также доступ и к новым технологиям, и к рынку капитала, также союз значительно усиливает его участников, особенно малых, в отношениях с сильными соседями [5].

Задача интеграции стоит в расширении положительных эффектов, соответственно, с точки зрения дальнейшей перспективы развития нужно сконцентрироваться на вопросах кооперации. Нужны большие интеграционные проекты и важным связывающим интеграционным проектом является именно цифровизация, поскольку это позволяет вовлекачься всем странам-участницам, чтобы

каждая из стран чувствовала свою вовлеченность в реализацию таких проектов. И соответственно каждая страна смогла бы получить от этого дополнительные преимущества.

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PROSPECTS FOR THE ECONOMIC DEVELOPMENT OF GEORGIA AND THE IMPORTANCE OF ENERGY AND TRANSPORT POTENTIALS

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Abstract

The South Caucasus region has the potential to become a major economic hub, but it faces a number of challenges, including: Lack of regional cooperation: The three countries in the region - Georgia, Azerbaijan, and Armenia - have a history of conflict and mistrust. This has hindered cooperation on economic issues, such as trade, transportation, and energy; Inefficient institutions: The institutions in the South Caucasus are often weak and inefficient. The region has a young and growing population, and it is located at a strategic crossroads between Europe and Asia. With the right policies, the South Caucasus can become a prosperous and stable region. The document discusses a number of specific initiatives that could help to promote economic growth in the South Caucasus. These include: Building a new transport corridor: The construction of a new transport corridor linking the South Caucasus with Europe and Asia would boost trade and investment; Developing the tourism industry: The South Caucasus is a beautiful and historic region with a lot to offer tourists.

Keywords: Energy sector, Transport sector, Economic development, Georgian Economy

Introduction

The future of the South Caucasus is impossible to imagine without the stability and prosperity of all three states in the region. (Anguridze et al., 2015). This requires a common vision of the region as a stable and functionally integrated region, where all three states closely cooperate to build balanced and mutually beneficial internal cooperation and act from a single coordinated position in foreign policy (Gupta, Sharma, 2021; (Sinha, Singh, 2021), based on pragmatic considerations. This automatically excludes confrontational approaches to working with major political players in world politics, as well as a deep understanding of geopolitics, the essential interests of major players, the identification of areas of competition, contradictions, and the lines of confrontation (Babajani and Shahhosseini, 2021).

The biggest problems in the South Caucasus arose when the three countries of the South Caucasus did not understand or made mistakes in assessing the geopolitical interests of the main players in world politics. This happened 100 years ago and again in the 1990s. The rivalry of the main players in world politics has an impact on current political events in the region. This influence was clearly manifested in the events of the region in recent years.

Our main idea is that the three states of the South Caucasus should act in a coordinated manner in political matters Bartosiewicz, Czinkota, 2016), based on the understanding that together they can achieve much greater results for their countries than if they acted separately and played on different sides. As for the economy, the South Caucasus should be seen as a single economic space, without any customs restrictions, with mutual agreements in place that allow goods and capital to move freely under agreed regimes, etc (Cai, Zhang, 2022). This would benefit not only the countries of the region, but also their neighbors and the wider region. Only in this way can we achieve peace in the region, where people can move freely, where there are guarantees that the region is not a threat, and where the three countries do not engage in zero-sum political games. The South Caucasus should become a profitable platform for negotiations, settlement of disputes and disagreements.

States can only achieve mutually beneficial cooperation and prosperity if they resolve the issue of mutual security guarantees (Dash, 2022; Gautam, 2022). For the countries of our region, the biggest political mistake would be to play dangerous political games with one of the sides in world politics, as this could lead to the loss of statehood for one or all three states of the South Caucasus.

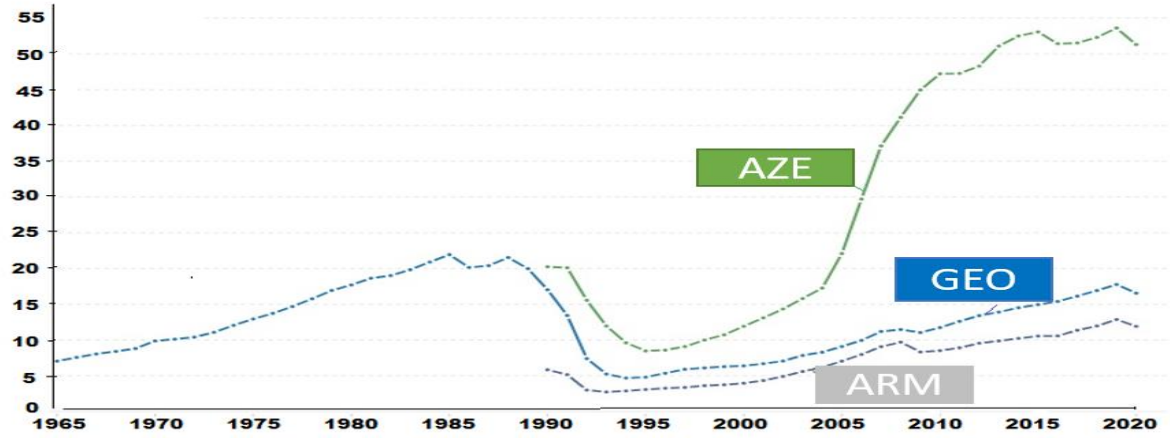
The purpose of this article is to acquaint readers with the special opportunities for the development of the Georgian economy and the role of the transport and energy system in this development, as well as the mutual relations between the states of the South Caucasus.

The implementation of the planned program can make a significant contribution to the increase in both the size and competitiveness of the Georgian economy in the medium term (Anguridze et al., 2015; Lashkhi, 2017; Sikharulidze, 2018). The idea is simple: Georgia can gain a qualitatively greater economic benefit by using its geopolitical position more efficiently. The scale of the ongoing projects goes far beyond the borders of one country and provides an excellent opportunity for neighboring countries (Chochia et al., 2018; 2020; Gamsakhurdia et al, 2017), especially Azerbaijan and Armenia. This is especially important for Armenia, which has been experiencing difficulties with transport links to the outside world for years. Recent events have allowed this country to expand its capabilities and connect to new transport networks, a process that has essentially already begun.

Energy and Transport Sector in Georgia

There is no doubt that deep economic integration, the exchange of opportunities and resources, will have a positive impact on the economies of these countries. A comparative analysis of the economies of these countries leads to this conclusion (see Figure 1. All data are expressed in constant 2015 prices, in US dollars). In Georgia, the maximum GDP level was reached in 1985

and amounted to 21.935 billion US dollars. By 1990, the GDP of Azerbaijan amounted to 20.239 billion US dollars, Georgia - 17.029 billion dollars, and Armenia - 5.84 billion dollars. The next four years saw the largest economic decline in Georgia - 363.1%; in Azerbaijan the decline was 238.9% (1995) and in Armenia 213.5% (1993). Since then, the economies of Georgia and Armenia have grown at very low rates, lagging behind those of Azerbaijan, which has grown strongly since 2004.



Picture. 1. GDP of Azerbaijan, Georgia and Armenia at constant 2015 prices in US dollars (Georgia data from 1965, and Azerbaijan and Armenia data from 1990).

Source: World Bank national accounts data.

Before the pandemic (2019), the GDP of Azerbaijan, Georgia, and Armenia was $53.613 billion, $17.758 billion, and $12.876 billion, respectively. In 2020, this figure was $51.307 billion, $16.557 billion, and $11.915 billion.

It is noteworthy that relations between the two states have been interrupted since the early 1990s. The range of relations between Georgia and Azerbaijan is mainly limited to the import of energy carriers, plastic products, furniture, and building materials. Georgia exports cement, locomotives (small), railway devices, chemical products, mineral waters, alcoholic beverages, and pharmaceutical products to Azerbaijan. There are few joint ventures, mutual investments, and trade and economic relations between the two countries (Charaia, Lashkhi, 2020a; 2020b; 2021). This situation hides a huge potential that will be revealed after the settlement of conflicts and the building of mutually beneficial and pragmatic relationships.

In the medium and especially long term, an active policy is imperative for the economic development of Georgia. This policy should aim to ensure stable economic growth by gradually changing the structure of exports and, in the long term, the structure of production. This can be achieved through the rational and productive development of available resources and the strengthening of the innovative component of the development of the economy. In the next decade, the gradual transfer of the Georgian economy to innovative rails is an urgent task.

There are sectors and industries in the Georgian economy that have the potential to be competitive in both domestic and international markets (Gamsakhurdia, Fetelava, 2023; Kvirkvaia et al., 2018; Zivzivadze et al., 2021). However, in order to realize these competitive advantages, an appropriate state policy and the development of market institutions and mechanisms are required. At this stage, the conditions that have developed in these competitive sectors do not yet contribute to the expansion of production, attracting foreign direct investment (FDI), and modernizing the production base. As a result, the efficiency of these sectors is low.

The main direction of the state structural policy should be to increase the competitiveness of the Georgian economy in order to achieve the following interrelated tasks:

1. Develop a private sector that is competitive in domestic and foreign markets. This will involve supporting and ensuring the success of Georgian companies in foreign markets and carrying out structural changes to increase the share of industries that produce (or will produce) products with a higher degree of processing, as well as the development of service industries.

2. Correct structural deformations that have accumulated over 30 years. This will involve developing new innovative sectors and gradually eliminating inefficient and unprofitable industries.

3. Transform low-performing institutions of the economy. These institutions are especially important for development and determine the direction of the process of transition to market principles. Examples of such institutions include commodity and financial markets, the structure of state ownership, and the system of state regulation. These institutions function inefficiently due to a poorly conceived modernization policy and errors in its implementation.

4. Accelerate the development and restructuring of the entire economic system and functioning markets in the process of economic transformation.

One of the main tasks of economic policy is to develop human capital by increasing the level of knowledge and intelligence. This task is especially im-

portant to the extent that the economy creates and develops a sector where knowledge is the most important and only factor that ensures development.

The main factors hindering the development of competitive production and the emergence of new innovative areas are:

- Insufficient availability of capital. This has been caused by an artificial reduction in the money supply for years. The monetization coefficient (M2 / GDP) did not exceed 0.22 for years. This allowed the monetary authorities to artificially keep the exchange rate of the national currency (Lari) at a very high level. For years, the exchange rate of the US dollar to the Lari was equal to 1.42. Then, for quite a long time, the exchange rate was kept at the level of 1.65 with slight fluctuations around this level. Only in 2014, due to the worsening external circumstances (the economic crisis in the EU, difficulties in Russia, and the war in Ukraine), was it impossible to keep the Lari from depreciating. As a result, the national currency devalued permanently by 32%. Naturally, all these years, the excessively high exchange rate of the national currency did not give incentives for the development of local production and its export orientation.
- Inadequate attraction of FDI. In 2017, FDI showed a sign of growth and amounted to USD 1.9808 billion, which is approximately 12.2% of GDP (USD 16,207.1 billion). However, a country like Georgia needs FDI at the level of 20-25% of GDP. In 2020 and 2021, the volume of FDI was minimal: 572 and 728 million US dollars, respectively.

The weak integration of the Georgian economy into the global economy is not only due to its weak competitiveness, but also to institutional factors, such as the underdeveloped export support infrastructure and the loss of incentives. In this context, the development of naturally existing powerful capabilities in the field of transport and energy is a critical task (Papava, 2014; Wang et al., 2018). Let us consider these possibilities and the ways and directions of their possible development.

1. The development of the transport system aims to achieve two main economic objectives: (1) the growth of the Georgian economy (maximization of income) and (2) the growth of the competitiveness of its economy. These goals can be achieved most efficiently if the transport system develops as the most important transport and logistics hub for a significant part of the Eurasian continent. We can evaluate the growth and development opportunities for the system itself, as well as determine the general parameters for the development of its components.

The transport system of Georgia has a huge potential for growth in export earnings, compared to other sectors of the real economy. This potential is comparable to the potential for innovative development of the Georgian economy.

Georgia's competitiveness is clearly identified in the following areas:

- The time of offer and movement
- The price/tariffs of transportation
- The quality/reliability of transportation
- The ease of administration

Revenue maximization (economic growth) is achieved by moving development towards:

- Georgia as a Hub/Logistics Center
- Priorities by transport types
- Import substitution
- Reserves for cost reduction by sectors

As a result, the full integration of the Georgian transport system into the Eurasian transport system is achieved; the employment of the population of the country is increased; and the environment and human life and health are protected.

To achieve these goals, one of the main projects is the Anaklia transport hub, which is a combination of five main types of transport: sea, air, road, rail, and pipeline. The place of the Georgian transport system is a regional multimodal transport hub, which is connected to regional and internal transport networks. The Anaklia Cargo-Transport Hub is located in the East of Europe, on the coast of the eastern part of the Black Sea in Georgia, in the Zugdidi and Khobi municipalities, in the area of the villages of Anaklia and Khorga, between the Inguri and Khobistskali rivers. The purpose of the node is to provide fast and safe transportation of goods and their services from the West, especially from Europe to the East (Caucasus, Central Asia, China, Korea, Iran, Afghanistan, Pakistan, India) and vice versa, as well as from the North (Russian Federation) to the South (Turkey, Middle East), and vice versa. The node is the basis and will play a major role in the TRACECA.

Comparing today's existing routes for transporting goods from the West to China through the Caucasian transport corridor, it is clear that this is the shortest route. This node also makes it possible to create two new routes: firstly, the Iran-India Caucasus Transport Corridor, and secondly, the Russia-Anaklia Cargo-Transport Hub_ Middle East. Naturally, the appearance in Georgia of such a transport hub, which automatically implies the participation of Azerbaijan, gives Armenia a powerful incentive to connect to it and be part of this largest hub, and the India-Iran Caucasian transport corridor, in all considerations, must pass through Armenia. Such interpenetration of transport systems and their integration into a more powerful international transport system should be of paramount importance for the three states of the South Caucasus.

Such integration into global transport networks also has a very large political burden: it helps to increase the security of countries connected to this system, the openness of the economy, and the efficient use of available potential resources. A reliable and well-established international transport system must function stably, which is possible only in conditions of political stability and predictability of the policy of the governments of the participating countries, in the direction of their continuity and fidelity to their obligations in the long term.

Such a powerful international transport system is of great significance and can attract the attention and interest of the major players in world politics. It can help to resolve the pressing problems that have been affecting Azerbaijan, Georgia, and Armenia for years. The integration of the transport resources of these states

has a broader context: the expansion and interpenetration of the economies of the three countries. This requires the simplification of customs and other regimes that impede the free movement of goods and capital, the harmonization of tariff and tax policies, and, in the long term, the movement towards a single economic space with harmonized legislation and a coordinated economic policy.

The transport hub will serve any type of cargo, including dry cargo, container cargo, Ro-Ro cargo (roll-on/roll-off shipments), rail ferry transportation, liquid cargo (oil and oil products, drinking water, liquefied natural gas (LNG), and others). Cargo transportation will be provided by sea, air, rail, road, and pipelines. The maximum water depth in the access to the sea channel and the internal water area of the port is 18.5 meters. It can receive and serve tankers with a tonnage (in carcass weight) of up to 125,000 tons and gas carriers with a volume of up to 220,000 cubic meters. The port has the ability to simultaneously receive 34 tankers. The port is multifunctional and will serve any type of cargo. Its estimated cargo turnover can be 100-120 million tons per year.

If Georgia is not careful and is too focused on its own interests, it may lose its own transport potential and face a reduction in transit traffic through its territory. The losses could be significant. Everything will depend on the implementation of transport corridors without Georgia's participation. Naturally, Georgia will benefit greatly from regional cooperation.

2. Development of energy. Georgia has a powerful energy potential for the development of its own economy. In 2022-2030, according to generation sources (HPPs and TPS), the dynamics of energy consumption shows that in meeting the demand for electricity, the share of HPPs in 2025 will decrease to 58.5%, and the share of TPS will increase to 41.5%. The strategic calculations of the energy development of Georgia set out the optimal structure of fuel and energy resources, taking into account the requirements of the energy, economic, hydrological, environmental, and socio-economic development of Georgia, taking into account the existing realities.

The energy policy of Georgia at this stage does not sufficiently take into account the interests of the country's economic and social development. An export orientation, rather than an emphasis on the use of produced electricity for the development of domestic production, is generally characteristic of developing countries with a low level of development, and not a country that aspires to strong development. Such a policy cannot be productive and is not characteristic of countries with a high level of development. This policy does not take into account the integration of the electricity supply of the South Caucasus states, which can lead to significant benefits and increase their efficiency, especially if the South Caucasus countries work in a single system connected by neighboring countries with high energy potential. With such a mode of operation, for the economic, energy, social, and cultural development of Georgia, it is much more profitable not to export electricity as a raw material and to generally emphasize export, but to develop small and medium-sized energy-intensive industries that will contribute to an increase in demand for renewable energy sources (RES), respectively, their development, the growth of employment of the population, and the promotion of cultural development. Specific initiatives for the development of RES are being considered within the framework of a unified state development strategy, which, for its part, is based on the principles of a market economy and transparency. Such a strategy corresponds to the interests of optimal and sustainable development of the country. Everything else will comply with the obligations under the unified energy system, and these obligations are not unilateral.

The real opportunities for Georgia's socio-economic development are functionally dependent on the generation of electricity and the thoughtful development of the country's existing energy resources. In the conceptual calculations of the country's energy development, strategic conditions are highlighted that contribute to the energy development of Georgia: existing energy capacities, hydropower resources, priority development of hydropower, the possibility of performing the function of an energy corridor in the region, the development of energy saving programs and ways to implement them.

We must look for the prospects for generating electricity in well-thought-out and economically evaluated decisions regarding the energy resources of the country. Based on these considerations, an assessment was made of the country's energy demand until 2025, inclusive (see the attached table). It is noteworthy that the hydropower industry will play a major role in electricity generation, and its development will be given special attention.

A natural question arises: where and how can Georgia, Azerbaijan, and Armenia cooperate in the energy sector? There are many areas of cooperation: first and foremost, the creation of a unified power supply system and the export of electricity to neighboring and nearby countries. This is a promising direction! At this stage, it is necessary to increase energy capacities in accordance with the requirements for the development of their own economies, with the expectation of medium-term prospects and the establishment of mutual interests in order to combine their own energy systems.

Diagram. 1.

Energy Demand 2022-2025

Year	Million Kvt.h.	HPP	Current TPS	% HPP	% TPS
2022	14312.3	10287.0	3051.9	71,9	21,3
2023	17400	10460	575	60	40
2024	18000	10660	575	59	41
2025	18575	10860	575	58.5	41.5

Source: Forecast balance of electricity (power). 1922.

Conclusion

In conclusion, Georgia has a number of opportunities to improve its economy, including:

- Developing its transport and energy systems to make it a regional hub for trade and commerce.
- Investing in human capital to create a more skilled workforce.
- Attracting foreign investment to boost economic growth.
- Resolving conflicts with its neighbors to improve regional stability.

If Georgia can successfully implement these reforms, it has the potential to become a prosperous and thriving nation. Here are some additional details about each of these opportunities:

- Transport and energy: Georgia is located at a strategic crossroads between Europe and Asia, and its transport and energy infrastructure could be used to facilitate trade and commerce between these two regions. For example, the country is currently building a new deep-sea port in Anaklia that could be used to ship goods to and from Europe and Asia. Additionally, Georgia has significant hydropower resources that could be used to generate electricity for export.
- Human capital: Georgia has a young and growing population, and if it can invest in education and training, it can create a more skilled workforce that will be attractive to businesses. For example, the government could provide scholarships for students to study in foreign universities, or create trainings for high-demand industries.
- Foreign investment: Foreign investment is essential for economic growth, and Georgia has a number of advantages that could attract foreign investors, including a stable political environment, a low-tax regime, and a skilled workforce. The government could also take steps to make it easier for foreign investors to do business in Georgia.
- Regional stability: Georgia is located in a volatile region, and if it can resolve conflicts with its neighbors, it will create a more stable environment for economic growth. For example, the country is currently negotiating a peace agreement with Russia over the status of the breakaway region of Abkhazia. If this agreement is successful, it could open up new opportunities for trade and investment between Georgia and Russia.

These are just some of the opportunities that Georgia has to improve its economy. If the government can successfully implement these reforms, it has the potential to become a prosperous and thriving nation.

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DIFFICULTIES IN ENTERING THE EU MARKET FOR AGRICULTURAL PRODUCTS

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Abstract

Diversification of exports and deepening of trade relations is a constant concern of any country. This issue becomes especially relevant if the preferential regime provides an opportunity for economic integration. The Association Agreement (AA) and the Deep and Comprehensive Free Trade Area (DCFTA) between Georgia and the European Union have offered the possibility of economic integration into the EU single market since 2014. Since export diversification is found in the agricultural sector in the top ten export goods both by commodity and geography, and the sector is monopolized or oligopolized according to the main export products, the article will focus on the difficulties of entering the EU market for agricultural products, and more precisely on the role and importance of small agrologistics centers. Based on the results of the research, the article presents conclusions about what should be the optimal agrologistics center for the reality of Georgia, which includes all links of the value chain of agricultural products production.

Keywords: Agricultural products, free trade, Deep and Comprehensive Free Trade Area (DCFTA), entry into the EU single market, tariff and non-tariff barriers, agro-logistics centers.

Introduction

Georgia is highly dependent on the Russian market from the traditional big markets, although the country is in the process of searching for alternative markets. This process is facilitated by the Association Agreement (AA) between Georgia and the European Union and its trade component - the Deep and Comprehensive Free Trade Area (DCFTA).

Due to the high political risks of the Russian market, it is vital for Georgia from an economic point of view to use the preferences of the deep and comprehensive free trade trade space with the European Union, which is the basis of economic integration with the European Union, however there are also free trade agreement between Georgia and some other global players (Wang et al. 2018; Lashkhi, Charaia 2020; 2021; Papava, Charaia, 2017). There is no alternative to the single market of the European Union due to its scale and the purchasing power of the population, its gross domestic product per capita is 42,450 US dollars as of 2021. It is the largest global player in terms of GDP and volume of investments. Nevertheless, exports to the European Union will account for 10-15% of the total exports of the country, according to the indicators of the last 3 years. Dependence on the Russian market is increasing, in 2021, compared to 2020, the export of Georgian products to Russia increased by 38% and reached 610 million US dollars. In the Russian market, ferroalloys took the first place in exports with 172 million US dollars. Wine has a high share of 55% in the export of agricultural products. The share of agriculture in GDP is 7% (Geostat, 2022).

The main categories of goods exported to the EU single market are raw materials, namely ore and copper concentrates, fertilizers, petroleum products and ethyl alcohol (Daghelishvili, 2016). Accordingly, these are the sectors that are mostly monopolized and oligopolized (Sikharulidze, Charaia, 2018). Nuts (HS 0802) and wine (HS 2204) are among the ten products exported from the agricultural sector to the EU single market, whose share in total exports is quite low. From the agricultural sector, non-tariff barriers have been overcome so far in these areas and a competitive product has been offered on the EU market, although the continuous supply of a uniform product remains a challenge.

In recent years, considerable financial and not only financial resources have been spent on the development of agriculture in Georgia, and some progress has been observed in terms of modernization of the field, increase in yield, and improvement of quality infrastructure, although there is still a long way to go to the desired goal including creation of the stable financial environment, with stable inflation and exchange rate parameters (Charaia, Papava, 2019; 2020; 2021; 2022). First of all, it is worth noting the non-compliance with EU standards and the faulty production chain, to which is added the issue of raising farmers' awareness, which the Ministry of Environment Protection and Agriculture has been working on for several years through various projects and programs (through agricultural information-advisory services and extension centers). However, a certain part of farmers prefers the traditionally established Russian market to try to enter the EU single market.

As a result of the implementation of the trade component of the Association Agreement (DCFTA) in 2014, it was expected that the trade in Georgian agricultural products in the EU would increase dramatically and thus the country's economy would receive significant benefits (Case, Ecorys, 2012). The Deep and Comprehensive Free Trade Agreement provides for exemp-

tion from customs duties on the import of goods originating in Georgia to the European Union. Despite the given preference, the export of goods of Georgian origin, including agricultural products, to EU countries did not increase as much as it was expected. The European Union market is particularly focused on the protection of consumer rights, the consumer is more demanding, which turned out to be an obstacle for Georgian agricultural products to enter the European market, because the local products were significantly inferior to the products placed on the European Union market, both in terms of quality indicators and production scale. That is why in the 2015-2020 and 2021-2027 strategies, special emphasis is placed on bringing the requirements and technical parameters of Georgian agricultural products closer to the requirements of the European Union market, the practical implementation of which is impossible without effective agrologistics centers.

Review of scientific literature

A key aspect for the development of the agricultural sector and the creation of a rural economy is the regulation of supply chain management and logistics lines in the agrarian sector. Systemic management solutions needed to solve the difficulties faced by agrologistics are offered by the "agribusiness value chain", where the model of functioning of an effective agrologistics system is as follows:

- Farmers should be encouraged by expanding support to associations, consortia, cooperatives and self-help groups, which will increase the effective use of resources;
- Means of marketing of agricultural products should be improved (Abashidze, 2016);
- Processing centers must become more efficient;
- effective and targeted agricultural policy development;
- A relevant storage system with efficient refrigeration facilities should be created;
- Transport should be widely developed, especially in rural areas;
- Financial system should be stable, including local currency exchange rate (Anguridze et al., 2015; Gamsakhurdia et al., 2017; Gamsakhurdia, Fetelava, 2023; Tsutskiridze, 2023);
- Professional education and professional orientation should play a significant role (Kvirkvaia et al., 2018; Zivzivadze et al., 2021);
- The shortage of electricity should be eliminated through non-traditional sources of electricity production, such as solar, wind, etc. and (Chandrasekaran, Raghuram, 2014).

In addition, the focus is on the role of government in agribusiness supply chain development. The World Bank's article "Agro-Logistics in Central America" (World Bank, 2012), describes the state of agro-logistics markets in the countries of Central America and the Caribbean.

A comparison of large and small farmers involved in livestock production in this region, specifically in beef production, shows the importance of economies of scale and a high level of infrastructure in rural areas for maximizing trade benefits, especially in case of fintech sector development (Charaia et al., 2021; Lashkhi, 2022; Lashkhi et al., 2022). As a result of the mentioned comparison, it can be seen that where the logistics infrastructure is in order, the farmer's costs per unit of production are much less, therefore the benefits obtained as a result of trade are greater. And the logistics infrastructure is more organized in the region where relatively large farmers gather.

In the classical sense, an agro-logistic center is a unit created for a certain geographical area, within which activities related to transportation, logistics and distribution of goods or raw materials are carried out by different operators on a commercial basis (Kiladze, 2017). Operators can be owners or tenants of buildings (warehouses, distribution centers, storage areas, offices, truck services, etc.). The logistics center should be provided with an information-consulting service. In order to facilitate the international intermodal movement of goods, it is desirable that the logistics center has access to land, rail, sea, inland water and air transport. To ensure synergy and commercial cooperation, it is important that the logistics center is managed by a single and neutral legal entity (preferably a public-private partnership). If we apply the existing classical definition to the agronomic field and consider agricultural products instead of goods, raw materials for planting, and agricultural machinery instead of equipment, or machines used in this field, then we will automatically be connected to the agrologistics center.

In the article "Agro-industrial supply chain management: concepts and applications" (Vorst, Silva, Trienekens, 2007) published by the Food and Agriculture Organization of the United Nations FAO, based on research by Wageningen University on the importance of agro-logistics centers in developing economies, the authors emphasize It is said that in the conditions of modern business and marketing in developing countries, where agriculture has a relatively large share in the economy, it is especially important to organize logistics lines.

Research methodology

In order to analyze the prospects of small agrologistics centers in the regions of Georgia, a mixed method of research was used, which includes both office and field research.

As part of the cabinet study, a review and analysis of the literature was performed. The discussion of Georgian literature mainly served to determine how much attention is focused on agrologistics in Georgia and what findings or researches have been conducted in this direction. And the review of foreign literature serves not only to discuss the current researches and achievements on a world scale, but also to adapt foreign examples and experiences to the Georgian reality.

As for the field research, it was conducted as a mixed research. Which means that both quantitative and qualitative research methods were used during the research. The goal of both of them was to present the perspectives of agrologistics centers in the reality of Georgia. However, the quantitative type of research, in

contrast to the qualitative one, was intended for a relatively wide audience and therefore reflects the perspectives of agrologistics centers from a different angle. Qualitative research included a small but targeted audience, which allowed us to see not only the perspectives, but also the pros and cons, as well as the impact of agrologistics centers on the agricultural sector.

The target audience for quantitative research, as mentioned, included a relatively broad target population, namely farmers, entrepreneurs and representatives of agricultural services. Based on the responses of the interested parties, it is possible to discuss how the society will receive agro-logistics centers and how positively it will be met. During the quantitative research, a questionnaire was drawn up and the target groups were interviewed through this questionnaire. A semi-structured questionnaire was developed, which included open and closed questions about the field of activity, region, export potential and agro-logistics centers. The questionnaire was sent electronically via Google Form. The survey was conducted in compliance with ethical norms. In total, 125 respondents took part in the research.

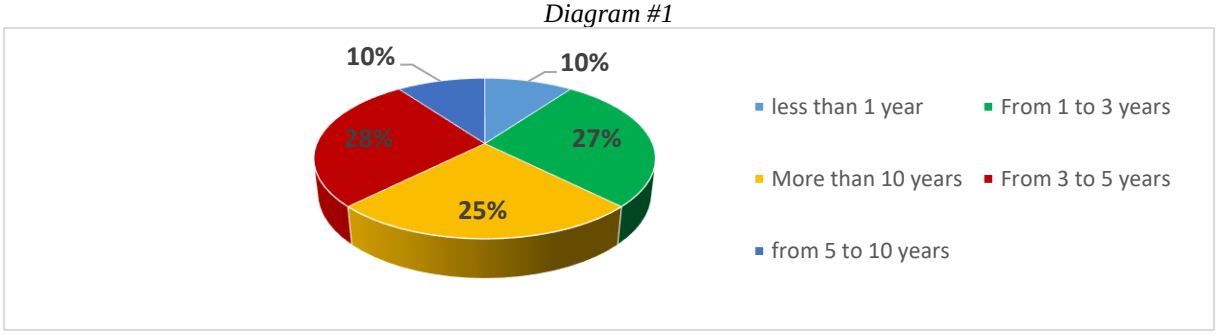
As for qualitative research, in this case in-depth interviews were conducted with specialists and experts in various fields. Interviews lasted 1.5 - 2 hours, recording and further analysis took place. The purpose of in-depth interviews is to present the positive aspects of agrologistics centers from different angles, to identify challenges, hindering factors and negative aspects. Acquaintance and analysis of opinions from different perspectives on the optimal agrologistics center model for the reality of Georgia.

Research results - quantitative research

Quantitative research, as mentioned above, included a survey of the community employed in agriculture through a questionnaire. The purpose of this was to understand the attitude of society towards agrologistic centers. The questionnaire consisted of ten closed questions. The first five questions are relatively informative and serve to understand the respondent's field of activity, region and similar issues. And the other five questions were aimed at understanding the attitude of the society directly to the agrologistics center. The first question served to understand in which field the respondent is employed. It was found that 70.3% of the interviewees were employed in primary production, 8.1-8.1% in agrotourism and processing of agricultural products, 10.8% in agricultural services, and the rest were distributed to other people, including representatives of non-governmental organizations.

From the second question, it is possible to understand which activity the interviewee is engaged in, livestock, poultry, production of their products, or growing of perennial or annual crops. It was found that the largest part of the research participants, 45.9%, produces annual crops, 32.4-32.4% pursues the cultivation of perennial crops in the production of livestock products, the activity of 13.5% is related to animal husbandry, and the least 5.4% is related to poultry farming. , and the rest was distributed in other directions. The fourth question concerns the duration of agriculture-related activities (see Figure 1).

Diagram #1



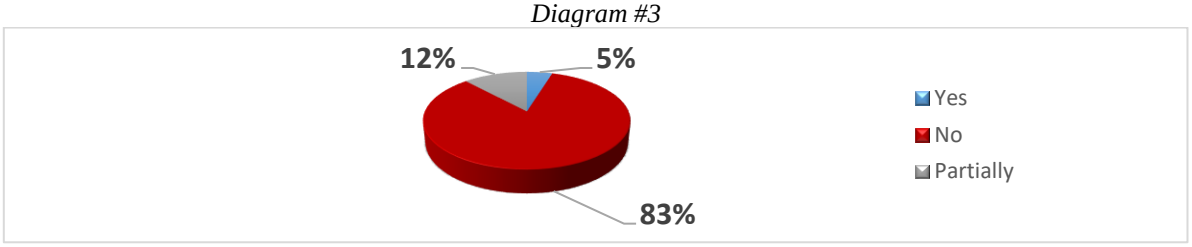
It was found that 27% of the respondents are engaged in the mentioned activity for a period of one to three years, 28% of the respondents consider a period of three to five years, and 10-10% are involved in the agricultural field for a period of five to ten years or less than one year.The next question concerns the respondents/farmers' interest in exporting (see Figure 2).

Diagram #2

It is especially noteworthy that 51% of the respondents do not intend to export, 24% cannot produce products of the appropriate quality or quantity, 17% intend to export in the near future, and 3% were exporters in the past, but now cannot export due to a number of reasons. As for the respondents who are currently engaged in the export of agricultural products, only 5% of the respondents were found to be such.

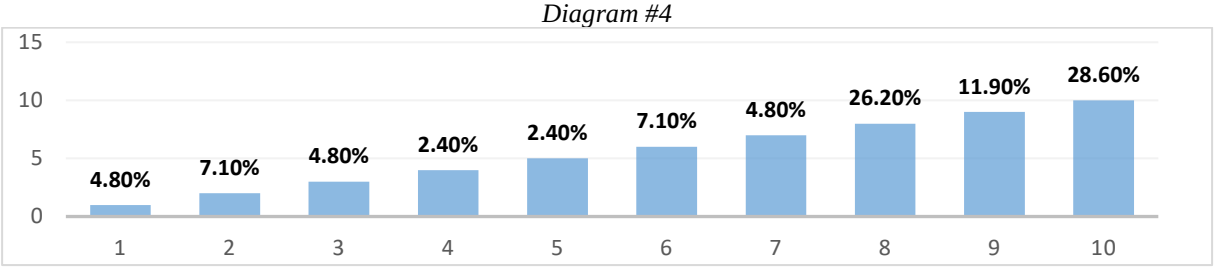
The following questions are devoted to understanding the public opinion regarding agrologistics centers. Specifically, the purpose of this question is to understand to what extent the interviewees agree with the idea that the creation of agro-logistics centers in the regions will contribute to the export of products (see diagram 3).

Diagram #3



As a result of the research, it is revealed that the absolute majority of respondents - 83% share the opinion that agro-logistics centers will promote export, 12% partially agree with this opinion, and only 5% of respondents disagree. At the next stage of the research, the respondents assessed the importance of agrologistics centers (see diagram 4).

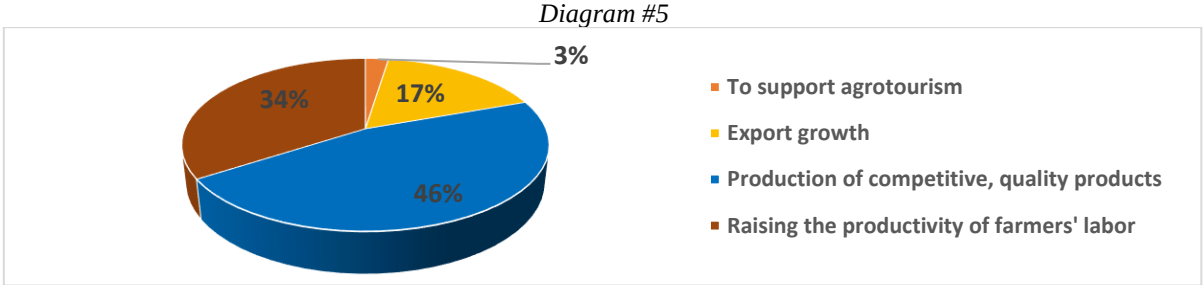
Diagram #4



As the results show, about 67% evaluate the usefulness of agrologistics centers with 8, 9 or 10 points. And below 8 points, 7 to 1 votes are almost evenly distributed, with a percentage of 2.4% to 7.1% for each.

According to the next question, the respondents had to express their opinion on what the creation of agrologistics centers will help the most: the growth of exports; raising the productivity of farmers' labor; production of competitive, quality products; if supporting agrotourism (diagram 5).

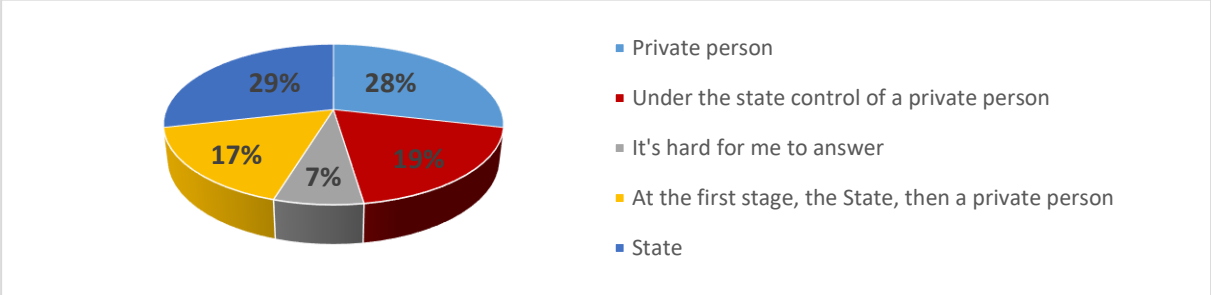
Diagram #5



According to the results, 46% of the respondents think that agrologistics centers will contribute to the production of quality and competitive products the most. 34% believe that these centers will increase the labor productivity of farmers; In the opinion of 17%, it will contribute to the growth of exports the most, while only 3% see the potential positive impact of agro-logistics centers on the support of agro-tourism.

It was interesting to understand what the public thinks about the issue of who should be under the authority of the agrologistics center: the state, a private person, or a hybrid model (see diagram 6).

Diagram #6



Regarding this question, the opinion of the respondents is diverse. In particular, 29% think that the agrologistics center should be under the authority of the state; 28% prefer a private person. 19% believe that it would be better for agrologistics centers to be under the management of a private person who will be under the strict control of the state. According to 16.7%, it would be better for the state to manage this at the first stage, and then for a private person to take over. 7.1% of respondents found it difficult to answer this question and have no vision regarding the management model of agrologistics centers.

Research results - qualitative research

In the qualitative research, in-depth interviews were conducted with 12 respondents and they expressed their own opinion regarding agro-logistics centers based on their field of activity. The results show that in some issues the opinions are contradictory, while in others they completely coincide.

To the first basic question, whether it is necessary to create agrologistics centers in the regions of Georgia, the answer of all of them is positive, although they are substantiated with different arguments by specialists in different fields. According to the DCFTA expert, agrologistics centers will be particularly beneficial for stable supply of products to the foreign market and will facilitate the sale of products on foreign markets. From the logistic point of view, by creating agro-logistic centers, the necessary quantity for logistic operations will be collected. Experts in the field of agronomy said that coordination of farmers will be facilitated and production will become more orderly after the creation of agrologistics centers, which implies that agrotechnical operations of maintenance and harvesting of agricultural crops in farms will be properly planned. From an agro-economic point of view, since the most problematic issue in the agricultural value chain is the regulation of logistics lines, economists believe that the solution to this is to create a model of agro-logistics centers that will have a systemic advantage and will play a key role in the regulation of the supply chain in the field of agriculture. It was also argued that the creation of agro-logistics centers will help to create a common integrated business-commercial base and to establish a logistics chain that will be focused on local and international markets. In addition, as the agro-engineer noted, the creation of similar centers will facilitate the introduction of high-tech operational systems in agriculture. As for the general public opinion on this issue, it absolutely coincides with the opinions of experts. The majority of respondents, 66.7%, evaluate the usefulness of agrologistics centers with 8, 9 and 10 points on a ten-point scale. In the end, emerging from the mentioned arguments, it can be said with certainty that the creation of agrologistics centers will be a positive event, both from an agronomic, economic, marketing and social point of view.

Regarding the negative sides of the agro-logistic centers, several opinions were actually expressed that were sharply different from each other. During one of the interviews, it was discussed that if there is one agrologistics center, there may be monopolization of both prices and services. In addition, the creation of agrologistics centers will make local products more competitive, and therefore, on the one hand, it will intensify the competition of importers, on the other hand, it will increase the consumer prices of agricultural products, which in turn is a positive event for farmers, but a negative event for consumers.

Answers obtained as a result of interviews about the structural units of the agrologistics center complement each other and finally allow the formation of a certain optimal model. However, it should be noted here that the expert in the field of logistics does not support the existence of such a structural unit in the agro-logistics center, which will be related to the services of agronomic measures. Also, from the logistical point of view, the fact of purchase and subsequent sale of products from farmers by similar centers was negatively evaluated. As for structural units, in addition to the following structural units: warehouse, packaging, transport park, technopark, laboratory, storage, special emphasis was placed on the presence of a three-mode refrigeration unit and a ring performing information and analytical functions, which represents the so-called

brain of the center and whose functions will be marketing , processing of economic, logistics operations planning and management measures at the tactical and strategic level.

The question of which products and which regions the agrologistics center can be targeted at did not cause a great difference of opinion. The answer for the most part was that it could be done in every region depending on the culture. That is, in a specific region, it should be focused on the culture that is most promising in the given region. There was also an opinion that, taking into account the modern foreign experience, it would be better to have agrologistic centers focused on one product or one type of products.

Opinions about who should be under the authority of the agrologistics center were divided into two with respective arguments. Those who agreed with the management of the agrologistics center by the private sector cited the fact that the risks of monopoly would be too high in the case of state management. And those who preferred the agrologistics center to be under the control of the state said that in this case the systematization and coordination of the agrologistics centers would have more prospects. As for the intermediate position, it meant public-private partnership. Based on the results of the research, it can be said that the mentioned form of governance will be the most optimal for the healthy functioning of agrologistics centers.

During the interviews, the challenges and hindering factors that might threaten the creation or operation of agrologistics centers were identified. During the interviews, almost all respondents mentioned the lack of qualified personnel, which is likely to be one of the main challenges for such centers. In addition, it was said that it would be difficult to raise funds, as well as to convince the private sector to invest in such centers (Charaia et al., 2020; 2022; Lashkhi, Charaia 2017). It will also be difficult to inform the public correctly depending on their mentality and awareness. There is also a risk that the production will not be able to reach the logistics center, that is, it may not be able to produce the required amount. That is why it is necessary for the agrologistics center to develop synchronously with agriculture.

Conclusion and recommendations

The main challenge for the entry of agricultural products into the European Union single market is to ensure continuous supply of homogeneous products. Especially for developing countries with weak economies, it is especially important to create units in the agricultural sector that carry the functions of supply chain management. As a result of the survey, it was shown how much the society is interested in such centers and how positive it is. Based on the interviews with specialists in different fields, it became clear how the agrologistics center can be reflected in different fields.

As for the quantitative research, the majority of entrepreneurs in Georgia pursue primary production, which is not very profitable. It also appeared that a large part of society does not even think about exporting products. Based on the research, 51% of the respondents categorically exclude export, and more than 24% cannot produce products of the required quality or quantity for export. Therefore, we can think that for about 75% of farmers, export is not even considered.

During the work on each part of the research, it was determined what form the agrologistics center should have in Georgia and what prerequisites it should meet. Finally, we can conclude that:

• For the development of Georgia's agriculture and the order of logistics lines in this sector, agro-logistics centers need to have a systematic form. These centers should be the link in agriculture through which strategic and tactical decisions will be made at the regional level.

• Logistics centers should provide farmers not only with logistics services (warehousing and transportation), but also with agronomic, marketing, economic and technical services.

• Logistics centers can be located in all regions. Depending on the region, it should be specialized only on one type of product or group of products.

• The logistics center may be given special importance in terms of creating stocks of strategic products at the state level.

• In order to convince farmers of the importance and benefits of agrologistics centers, it is necessary to conduct the right campaign and inform them correctly.

• Beneficiary of such centers should be voluntary for farmers. And in the case of cooperation, an appropriate contract must be signed between the agrologistics center and the farmer.

• The agro-logistic center should be able to provide services as well as purchase and then sell products from farmers, subject to certain conditions.

• Agrologistic centers need to establish contracts and relevant agreements with both export and local market representatives.

• In order to avoid monopolization and at the same time to preserve the system, it is necessary to create and manage an agrologistics center within the framework of public-private partnership, during which the rights and duties will be distributed between the state and the private sector.

• Existing storage farms can be used as a starting base for creating agrologistics centers.

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THE IMPACT OF GREEN MARKETING ON CONSUMERS' ATTITUDES IN THE CONSTRUCTION BUSINESS IN GEORGIA

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Abstract

Sustainable development, going green, green strategies, have become a natural part in our everyday life. There are a lot of businesses on the market, which play an important role in countries economic development and construction business is among them. It is a backbone business in Georgia, which is facing a lot of challenges beginning from the green strategies up to the national regulations and policies as well. Day by day as sustainability becomes more actual companies also started to build green buildings, with integrated energy efficiency systems, which gives customers to live in ecologically safe environment, save the money on the bills and invest money on a long-term period. The aim of the article is to explore the relationship between green marketing and consumer attitudes toward sustainable building practices, investigate the factors influencing consumer perceptions and preferences regarding green marketing initiatives in the construction industry and explore the impact of green marketing strategies on consumer purchase intentions and decision-making processes related to construction-related products and services and create the profile of potential consumer. The study uses quantitative research using questionnaires. In conclusion, it can be said, that green marketing is not the main and most important factor affecting purchase intentions of Georgian customers, but they pay attention to it and are ready to pay more for "green buildings."

Keywords: Green Marketing; Green buildings; Purchase intentions.

JEL classification: Q01 - Sustainable Development; L74 – Construction; L85 - Real Estate Services

Introduction

In the modern world, where taking care for the environment has become a very urgent issue the construction industry is in the center of special attention, because it can have a significant (positive and negative) impact on the environmental sustainability. As consumers become increasingly aware of environmental issues, their attitudes and preferences towards the use of sustainable practices in the construction business are changing, so nowadays the construction industry is experiencing a surge in the demand for eco-friendly building materials. This trend has given rise to "green marketing". Green marketing has emerged as a powerful strategy to influence consumer perceptions, choices and behaviors in the construction industry. This paper aims to examine the impact of green marketing on consumer attitudes in the construction business.

The construction industry is recognized as a significant source of environmental degradation, resource depletion and carbon emissions. In response to these challenges, there has been increased interest in sustainable construction practices that reduce the environmental footprint of construction industry. Green marketing, which includes a variety of strategies and communication techniques, seeks to promote the development of sustainable products, services and practices in the construction sector. Understanding the impact of green marketing on consumer attitudes is critical to promoting positive change and implementing sustainable construction practices. The main challenge for every successful company is to aim the strategy to the right target market and have an ability to follow their demands and satisfy them.

The central hypothesis of this study is that green marketing has a positive effect on the purchase intentions of Georgian consumers in the construction industry. To investigate this hypothesis, the following objectives were set:

- Exploring the relationship between green marketing and consumer attitudes toward sustainable building practices;
- Investigating the factors influencing consumer perceptions and preferences regarding green marketing initiatives in the construction industry;
- Exploring the impact of green marketing on consumer purchase intentions and decision-making processes related to construction-related products and services.
- Create the profile of potential customers.

Although there are studies on the impact of green marketing in various industries, the construction sector is relatively less studied in this regard in Georgia. Firstly, this paper examines factors that influence consumer attitudes toward green marketing initiatives, providing valuable insights for construction businesses seeking to develop effective marketing strategies. Secondly, by analyzing the relationship between green marketing and consumer purchase intentions, this study provides practical implications for marketers aiming to promote sustainable products and services in the construction industry and thirdly according the research the study creates the profile of potential customers, which are intended to buy real estate.

Additionally, identifying key factors and communication approaches that shape consumer attitudes will help construction businesses align their practices with

target market expectations. The research also has highlighted several target groups (e.g. by education; by income).

As social and environmental problems are becoming more and more actual it is essential for the construction companies to implement green marketing strategies and highlight the benefits of it, rising awareness in the context of sustainability and green construction.

Literature review

The study of green buildings and their marketing is not old. Interest towards it have increased in recent years. According to Zhao et al. (2015), green building represents a significant shift in the building industry. Green buildings reduce their negative environmental effects while improving occupant health and return on investment for investors and communities by incorporating life cycle considerations into their design and development, according to Robichaud and Anantatmula (2010). Agbajor and Mewomo (2022) present a synthesis of the scholarly investigation into green building research in South Africa. According to the study's findings, green building projects are experiencing uneven growth, as well as motivations, challenges and socioeconomic difficulties that nations face when attempting to do so. To maximize the growth of green building in the region, this study recommends adoption of finance plans, the use of cutting-edge technologies (Lashkhi, 2022; Lashkhi et al., 2022) and promotion of green and sustainable building curriculum in all institutions. According to Zuo and Zhao (2014), studies on green buildings can be divided into three main categories. The three areas include information about and definition of green buildings, describing of strategies and procedures for producing green buildings and outlining the advantages and disadvantages of green buildings quantitatively. Kinnunen et al (2022) found that increased marketing efforts and actions lead to better sustainability performance, as do greater eco-innovation capacities. In addition, the results indicate that a company with superior eco-innovation capabilities is more likely to have a high brand value.

It is believed, that people concerned with the environmental issues could be affected by green marketing campaign in the construction industry as well. There are a number of motivational values that consumers can use to purchase and demand green buildings, according to Joachim et al. (2015), such as conservation of natural resources, energy efficiency, water quality, maintenance costs and environmental impact, among others. All of these motives may result in environmental behavior and attitude due to the connection between values and how people interact with their environment. As Joshi et al. (2015) indicate, social references can positively impact consumers' propensity for making green purchases. It is appropriate to state that social references can positively impact the intention to purchase green buildings. According to the research made by Kirby and Delai (2016) the following nine variables were associated with the content of the selected articles: environmental attitude, purchase intention, physical attributes, social references, perceived behavior control, perceived identity, motivation values, price and demographics. Mansour and Radford examine Peattie's (2001) green purchasing perception matrix to gain a deeper understanding of how building occupants perceive green-labeled buildings. An analytical approach has been used to determine the influence factors of the Stimulus Organism Model and Schema Congruity concepts from consumer behavior studies. As a result, the authors suggest a sense of green buildings. In green buildings, tenants may be willing to tolerate a certain level of compromise, while building systems may actually be having a positive impact on the environment. Harmadi et al. (2023) aimed to investigate and analyze consumer satisfaction factors and how they affect consumer loyalty towards green products. According to their studies, both service quality and brand perception positively impact customer happiness. Weniger et al (2023) tried to determine how sustainability-related factors influence the purchasing decisions of private individuals as end users in German construction industry. Findings indicate that although customers are generally interested in sustainable building goods, they do not have a comprehensive understanding of the term. The environment often takes precedence over economics and social factors. Since private individuals rarely make purchasing decisions in the construction sector, it is the responsibility of the entire construction industry to create a system that allows consumers to easily and quickly access clear information about sustainable products. Saini (2013) investigates how green marketing affects consumer purchasing behavior, how businesses can gain a competitive edge by using it and what obstacles businesses may face in adopting green marketing practices. A research study conducted in Delhi's Rohini neighborhood demonstrates that businesses need to communicate with customers more in order to go green. Also, pricing and quality are more important than ,,environmental responsibility". Abashidze (2022) states that a user's behavior patterns can differ based on the type of platform the company uses. It is important for marketers to remember that a considerable portion of social media users use multiple social media platforms. Marketers have to differentiate their advertising tactics, commitment levels and objectives according to the different types of social media platforms.

Authors studying this topic use various research methods in their papers. Simpeh and Smallwood (2021) studied crucial factors influencing green building in the South African construction industry by looking at the concept of green building. A questionnaire survey was used to collect data from randomly selected construction industry professionals in South Africa using a quantitative approach. A descriptive (mean) and an inferential (one way analysis) analysis was used to analyze the data. According to the findings, green construction is hindered by a lack of incentives for promotion, a lack of cost data and a lack of information about the prospects and financial and economic advantages of green buildings. Correia et al. (2023) aim to determine whether consumers' attention to green marketing messages affects their likelihood of making green purchases. Additionally, the study examines how consumer behavior and preferences affect the amount of

attention consumers pay to green marketing communications, including gender, education and environmental attitudes. As part of the data analysis, descriptive analyses, parametric and nonparametric testing, linear correlation and regression analyses were used. Findings indicate that businesses' green marketing messages are well received by customers. Consumers' attention to green marketing communications was strongly correlated with their green purchase behaviors. The findings also support the notion that people with higher levels of education (Kvirkvaia et al., 2018), pro-environmental attitudes and females are more receptive to businesses' green marketing messages. Hassin, Surt, and Sears (2012) emphasize the importance of metrics in evaluating the impact of green marketing strategies, which should improve the potential for environmental and social outcomes.

Going green and being more sustainable is considered to be a good way for economic development as well. At the moment country experiences some serious economic problems. According to Daghelishvili (2016) in addition to poor access to capital, a lack of a wide range of commodities, difficulties obtaining materials, a lack of highly developed technology domains, insufficient infrastructure, etc., there are many other challenges in Georgia's economy. Going green in various industries of the country could be a good way to attract FDI and increase standards of consumers in the country. Barak et al. (2022) state that as a result of rising income inequality and non-renewable energy consumption per person, poverty is decreased by rising growth and renewable energy consumption per person. In light of the findings, authorities should develop an energy strategy that emphasizes the need for renewable energy and energy-efficient technology in an economy. Charaia (2014, 2020) state that although adhering to EU standards in a short amount of time will be expensive for both the Georgian government and the business, it will be extremely beneficial in the long run from a sustainable point of view.

Materials and methods

The research was conducted using materials provided by research papers and literature reviews as well as books of Georgian and foreign scientists. Furthermore, quantitative research (structured questionnaire was developed) method was used to obtain information about consumer attitudes towards green marketing in the construction industry.

The target segment of construction sector customers was selected for data collection. The sample was selected by random sampling. The sample represents a diverse range of demographic characteristics, including age, gender and education. 110 people took part in the survey, from which 104 answers were valid. These were randomly selected respondents, who had an intention to buy a house. This was the filter question and in case of answering it positively participants had ability to continue filling the rested questionary.

Data were collected using online surveys that were distributed through various platforms such as social media, online forums and email invitations. Participants were given clear instructions on how to complete the questionnaire. The confidentiality of the respondents is ensured.

The collected data was analyzed using quantitative techniques. Quantitative data from Likert scale questions were analyzed using descriptive statistics such as frequencies, crosstabulation, T test, means and standard deviations. Correlation analysis and regression analysis will be used to study the relationships between variables.

Ethical considerations are taken into account and informed consent is obtained from all participants and their identities are kept confidential.

Based on the literature review following variables were incorporated in research model: Ecologically clean environment, Marketing campaign, Quality, Recommendation, Healthier construction materials, Architecture, Price, Location, Interest rate, green building.

The dependent variable is purchasing intention, reflecting consumer's willingness to purchase a product (house) from construction company. Accordingly, regression formula was defined as follows:

$$\text{Purchase Intention} = \beta_0 + \beta_1(\text{Company trust}) + \beta_2(\text{Social environment}) + \beta_3(\text{Safe environment}) + \beta_4(\text{Ecologically clean environment}) + \beta_5(\text{Marketing campaign}) + \beta_6(\text{Quality}) + \beta_7(\text{Recommendation}) + \beta_8(\text{Healthier construction materials}) + \beta_9(\text{Architecture}) + \beta_{10}(\text{Price}) + \beta_{11}(\text{Location}) + \beta_{12}(\text{Interest rate}) + \beta_{13}(\text{Green building}) + \varepsilon$$

ε represents the error term or residual, which accounts for the unexplained variation in consumers' attitudes towards green marketing. It captures any factors not accounted for by the independent variables and the regression equation.

Results and discussions

The collected data was analyzed in MS Excel and SPSS. In the research took part 110 people (from which valid was 104 as they have answered the first filter question positively). The results are demonstrated below. As the Table 1.

Gender demonstrates in the research took part 104 people, from which 56.7% (59) were females and 43.3% (45) males.

Table 1.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	59	56.7	56.7	56.7
	Male	45	43.3	43.3	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

According to the

Table 2.

Age - 4.8% were 18 - 24 years; 19.2% – 25-34 years; 40.40% – 35-44 years; 26.9% - 45-54 years; 8.7% - 55+ years. It shows that most of the people who have recently bought the real estate, where from 35-44 years old, so they can be considered as target markets for real estate's sellers.

Table 2.

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	5	4.8	4.8	4.8
	25-34	20	19.2	19.2	24.0
	35-44	42	40.4	40.4	64.4
	45-54	28	26.9	26.9	91.3
	55+	9	8.7	8.7	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

As the Table 3.

Education demonstrates, people who have intention to buy a house are mostly holding masters' degree 60.60%, then comes bachelor's degree 26.9%, PhD 10.5% and secondary education 1.9%.

Table 3.

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor	28	26.9	26.9	26.9
	Master	63	60.6	60.6	87.5
	PhD	11	10.6	10.6	98.1
	Secondary ed.	2	1.9	1.9	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

As the Table 4.

Occupation shows, most of the participants 78.8% were working full time, 11.5% were self-employed, part time were working 6.7% and unemployed were 2.9%.

Table 4.

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full time	82	78.8	78.8	78.8
	Part time	7	6.7	6.7	85.6
	Self employed	12	11.5	11.5	97.1
	Unemployed	3	2.9	2.9	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

Table 5.

Number on family members

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	21	20.2	20.2	20.2
	2	35	33.7	33.7	53.8
	3	28	26.9	26.9	80.8
	4	10	9.6	9.6	90.4
	5 and more	3	2.9	2.9	93.3
	I live alone	7	6.7	6.7	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

The collected date showed that people who are motivated to buy real estate, are having two family members 33.7% (Table 5.

Number on family members), this is logical, because buying house is commonly actual when the family is growing.

Table 6.

Monthly Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 – 500	2	1.9	1.9	1.9
	501 – 1000	4	3.8	3.8	100.0
	1001 – 1500	15	14.4	14.4	16.3
	1501 – 2000	25	24.0	24.0	40.4
	2000 +	58	55.8	55.8	96.2
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

What about income 55.8% of the research participants were having more than 2000 Gel income and this can be explained be various factors. First of all the regulation about mortgage loans, which gives ability to get loan mostly people with average and high income. Table 7.

Monthly Income and Education (Crosstabulation) demonstrates people who are holding master's degree and PhD degree are having high income and this result makes us sure, that education is appreciated appropriately.

Table 7.

Monthly Income and Education (Crosstabulation)

		Education				Total
		Bachelor	Master	PhD	Secondary education	
Monthly Income	0 – 500	2	0	0	0	2
	501 – 1000	1	3	0	0	4
	1001 – 1500	5	8	1	1	15
	1501 – 2000	10	12	3	0	25
	2000 +	10	40	7	1	58
Total		28	63	11	2	104

Note. *Authors' according to the research*

Table 8.

Occupation and income (Crosstabulation)

		Monthly Income					Total
		0 – 500	1001 – 1500	1501 – 2000	2000 +	501 – 1000	
Occupation	Full time	0	10	15	56	1	82
	Part time	0	3	2	1	1	7
	Self employed	0	2	8	1	1	12
	Unemployed	2	0	0	0	1	3
Total		2	15	25	58	4	104

Note. *Authors' according to the research*

As the Table 8.

Occupation and income (Crosstabulation) show, average and high income (according to National Statistics office of Georgia, average salary in 1st Quarter is 1716.6 Gel), is having people who working full time and also those who are self-employed and this is realist, that on Georgian labor market in order to get average and high salary you have to work full time, or you can have your own business and be self-employed, which also gives ability of gaining average and high income.

The research participants were also asked questions about knowledge about green concept and the result showed, that 58.7% of them partially knew what does the green concept mean (see, Table 9.

Knowledge about green concept).

Table 9.

Knowledge about green concept

Do you know what does the green building concept mean?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	1.9	1.9	1.9
	Partially	61	58.7	58.7	60.6
	Yes	41	39.4	39.4	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

The study showed that 57.7% of participants are motivated to pay more if the building meets "green building" standard, besides the fact that they do not completely know what does it mean, but as various studies show, the word green itself have positive impact on people's decision-making process, they have feeling that they are making something good to the nature, planet and themselves (see, the Table 10.

Paying more if building meets "green building standards").

Table 10.

Paying more if building meets "green building standards"

How motivated are you to pay more if you know the building meets "green building" standards? (1) I am completely motivated; (2) I am motivated;(3) I don't know;(4) I am not motivated; (5) I am not motivated at all 5).					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	57.7	57.7	57.7
	2	35	33.7	33.7	91.3
	3	7	6.7	6.7	98.1
	5	2	1.9	1.9	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

Table 11.

Green strategies influence

Do green marketing strategies have influence on you? e.g. when it is focused on the ecological environment and its profitability? (1) High impact; (2) Average impact; (3) Don't know, no answer; (4) Little impact; (5) No impact					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	58	55.8	55.8	55.8
	2	37	35.6	35.6	91.3
	3	6	5.8	5.8	97.1
	4	2	1.9	1.9	99.0
	5	1	1.0	1.0	100.0
	Total	104	100.0	100.0	

Note. *Authors' according to the research*

In order to study the role of green marketing strategies participants were asked question about influence of green marketing strategies. It showed that it has high impact on them – high impact – 55.8% and average impact for 35.6% (see, Table 11.

Green strategies influence). In order to see if there in connection with education and building concept crosstabulation was done, which demonstrated, that participants who were holding master's degree know the idea of green building concept (26%) and 35% of them partially had information.

Table 12.

Education and green building concept meaning (Crosstabulation)

		Do you know what does the green building concept mean?			Total
		No	Partially	Yes	
Education	Bachelor	0	19	9	28
	Master	2	35	26	63
	PhD	0	6	5	11
	Secondary education	0	1	1	2
Total		2	61	41	104

Note. *Authors' according to the research*

Also as the aim of the research was to study the factors of decision-making process, 11 factors were highlight and points were distributed with this way ((1) Insignificant (2) Slightly important (3) Averagely important (4) Important (5) Very important):

– Company credibility: 1 point was given by 1%, 2 points by 1%, 3 points by 5.8%; 4 points by 27.9% and **5 points by 64.4%;**

– Social environment: 1 point was given by 1%, 2 points by 1%, **3 points by 51.9%;** 4 points by 36.5% and 5 points by 9.6%;

– Ecologically clean environment: 1 point was given by 1%, 2 points by 2.9 %, 3 points by 1%; 4 points by 21.2% and **5 points by 74.0%;**

– Safe environment: 1 point was given by 1%, 2 points by 1%, 3 points by 1%; 4 points by 5.8% and 5 points by **91.3%;**

– Marketing campaign: 1 point was given by 1.9%, 2 points by 37.5%, **3 points by 46.2**%; 4 points by 10.6% and 5 points by 3.8%;

– Quality: 1 point was given by 1%, 2 points by 1%, 4 points by 3.8% and **5 points by 94.2%;**

– Price: 1 point was given by 1%, 2 points by 1.9%, 3 points by 2.9%; **4 points by 59.6 %** and 5 points by 34.6%;

– Healthy building (e.g. energy efficient blocks): 1 point was given by 1%, 2 points by 1%, 3 points by 6.7%; **4 points by 48.1%** and 5 points by 43.3%;

– Building architecture: 1 point was given by 1%, 2 points by 1.9%, **3 points by 51.9%;** 4 points by 26% and 5 points by 19.2%;

– Advice/recommendation of a competent person: 1 point was given by 1%, 2 points by 2.9%, 3 points by 27.9%; 4 points by 32.7% and **5 points by 35.6%;**

– Location: 1 point was given by 1%, 2 points by 1%, 3 points by 1.9%; 4 points by 19.2% and **5 points by 76.9%;**

– Banking conditions: 1 point was given by 1.9%, 2 points by 4.8%, **3 points by 61.5%;** 4 points by 11.5% and 5 points by 20.2%.

In order to see if income influences on the factors the data was studied separately in two groups: one is having income more than 1501 GEL (average and more) and another is having income from 0 to 1500 GEL, as it showed (see, the Table 13.

Points distribution between two groups, divided by income) people with different income have different priorities in decision-making process.

Table 13.

Points distribution between two groups, divided by income

Group with income 1501 GEL and more	Points	Group with income 0-1500 GEL	Points
Quality	4.89	Safe environment	4.76
Safe environment	4.86	Quality	4.67
Location	4.70	Location	4.67
Ecologically clean environment	4.64	Company credibility	4.57
Company credibility	4.54	Ecologically clean environment	4.48
Healthy building	4.32	Price	4.24
Price	4.25	Healthy building	4.14
Advice/recommendation	3.99	Advice/recommendation	4.00
Building architecture	3.61	Building architecture	3.57
Social environment	3.53	Bank/loan conditions	3.57
Bank/loan conditions	3.43	Social environment	3.43
Marketing campaign	2.77	Marketing campaign	3.05
* (Scale from 1 to 5 - (1) Insignificant (2) Slightly important (3) Averagely important (4) Important (5) Very important)			

Note. *Authors' according to the research*

Also data was analyzed with education level too in regards of factors. The results showed, that people with different educational level have different priorities (see, Diagram 1. Factors influencing decision making process, according to education). The diagram shows, that if a person, has high income, is less interesting in banking loan conditions, but is interesting in location and competent people recommendation. Also to the price factor people with low income is more important. Also, here can be mentioned company credibility, what is more important for the people with PhD and master's degree.

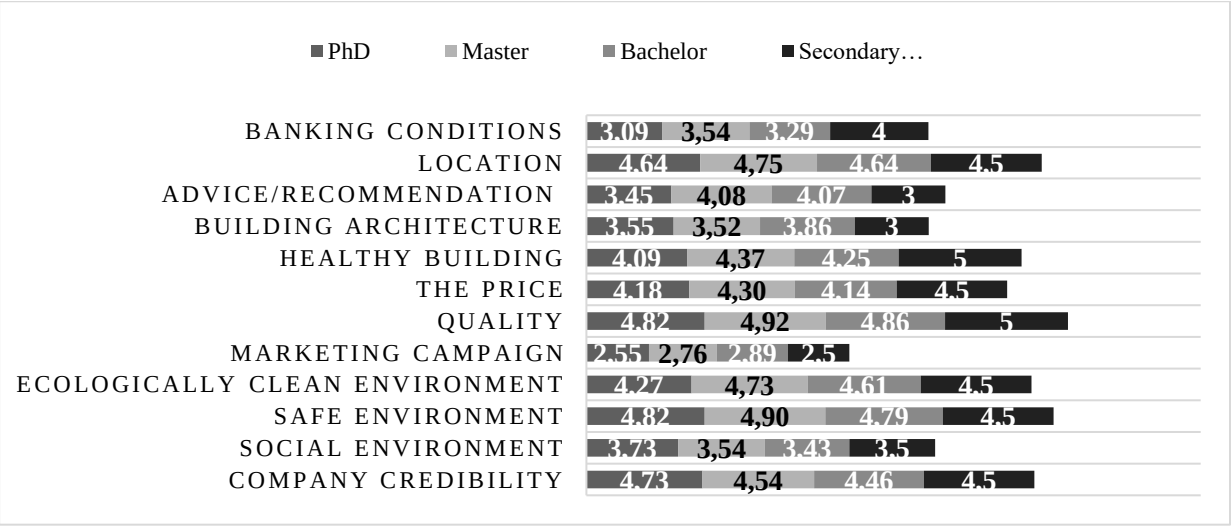

Diagram 1. Factors influencing decision making process, according to education (Scale from 1 to 5 - (1) Insignificant (2) Slightly important (3) Averagely important (4) Important (5) Very important)

Note. Authors' according to the research

Also to study if education differs people's decision-making factors from each other, each group was analyzed separately (See,

Table 14. Factors priority according to education)

Table 14.

Factors priority according to education

Factors Priority	**PhD**	**Factors Priority**	**Master**
Safe environment	4.82	Quality	4.92
Quality	4.82	Safe environment	4.90
Company credibility	4.73	Location	4.75
Location	4.64	Ecologically clean environment	4.73
Ecologically clean environment	4.27	Company credibility	4.54
Price	4.18	Healthy building	4.37
Healthy building	4.09	The price	4.30
Social environment	3.73	Advice/recommendation	4.08
Building architecture	3.55	Social environment	3.54
Advice/recommendation	3.45	Bank/loan conditions	3.54
Bank/loan conditions	3.09	Building architecture	3.52
Marketing campaign	2.55	Marketing campaign	2.76
Factors Priority	**Bachelor**	**Factors Priority**	**Secondary Education**
Quality	4.86	Quality	5
Safe environment	4.79	Healthy building	5
Location	4.64	Company credibility	4.5
Ecologically clean environment	4.61	Safe environment	4.5
Company credibility	4.46	Ecologically clean environment	4.5
Healthy building	4.25	The price	4.5
The price	4.14	Location	4.5
Advice/recommendation	4.07	Bank/loan conditions	4
Building architecture	3.86	Social environment	3.5
Social environment	3.43	Building architecture	3
Bank/loan conditions	3.29	Advice/recommendation	3
Marketing campaign	2.89	Marketing campaign	2.5
**(scale from 1 to 5 - (1) Insignificant (2) Slightly important (3) Averagely important (4) Important (5) Very important)*			

Note. *Authors' according to the research*

Regression analysis was made in MS Excel. After testing variables on auto-correlation following variables were taken out from the model: Safe environment, ecologically clean environment and Quality. Adjusted R^2 of the model is 0.4 that is acceptable

Table 15.

Regression analysis results

Regression Statistics								
Multiple R	0.676101							
R Square	0.457112							
Adjusted R Square	0.398737							
Standard Error	0.599312							
Observations	104							
ANOVA								
	df	*SS*	*MS*	*F*	*gnificance F*			
Regression	10	28.1256	2.81256	7.830617	5.35E-09			
Residual	93	33.40325	0.359175					
Total	103	61.52885						
	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	0.961651	0.547285	1.75713	0.082187	-0.12515	2.048451	-0.12515	2.048451
x1	0.045069	0.104765	0.430189	0.668054	-0.16297	0.253111	-0.16297	0.253111
x2	-0.03771	0.115523	-0.32639	0.74486	-0.26711	0.191701	-0.26711	0.191701
x5	0.136514	0.084278	1.619815	0.108658	-0.03084	0.303873	-0.03084	0.303873
x7	0.026325	0.119503	0.220285	0.826132	-0.21099	0.263635	-0.21099	0.263635
x8	-0.00012	0.102908	-0.0012	0.999046	-0.20448	0.204232	-0.20448	0.204232
x9	0.239179	0.090592	2.64017	0.009718	0.059281	0.419077	0.059281	0.419077
x10	-0.29825	0.083192	-3.58502	0.000539	-0.46345	-0.13304	-0.46345	-0.13304
x11	-0.12549	0.114323	-1.09764	0.275195	-0.35251	0.101537	-0.35251	0.101537
x12	0.069995	0.081968	0.853932	0.395337	-0.09278	0.232767	-0.09278	0.232767
x13	0.466533	0.080933	5.764415	1.06E-07	0.305815	0.62725	0.305815	0.62725

β_1(Company trust); β_2(Social environment); β_3(Safe environment); β_4(Ecologically clean environment); β_5(Marketing campaign); β_6(Quality); β_7(Recommendation); β_8(Healthier construction materials; β_9(Architecture; β_{10}(Price); β_{11}(Location; β_{12}(Interest rate); β_{13}(Green building)

Note. *Authors' according to the research*

As it can be seen from the table two variables: Architecture and Price are statistically significant at 0.01 level. Results show that there is positive correlation between Architecture of the building and purchase intention, meaning that the better is satisfaction with architecture higher the intention for buying the property and it has positive effect on consumers decision making process. As for the second variable, results show that there is strong negative correlation between Price of the property and purchase intention, meaning that higher the price, lower the purchase intention and this is close to the realty, as people are looking for price affordable real estates, but as they are motivated to buy flats in high quality buildings and are also motivated to pay more for "green buildings", rising price on properties is s sensitive case and needs clear communication with target segments, that will make sure customers, that high price is caused by specific factors, what is deeply related with consumers well-being.

On behalf of the carried research we can demonstrate the profile of potential consumer and it looks so:

Table 16.

The profile of potential consumer

Gender	Male/female
Age:	35-44
Education	Master's degree
Occupation	Working Full time
Number of family members	2
Willing to pay more for green building	Yes
Factors	1. Safe environment 2. Quality 3. Company credibility 4. Location 5. Ecologically clean environment 6. Price 7. Healthy building 8. Social environment 9. Building architecture 10. Advice/recommendation 11. Bank/loan conditions 12. Marketing campaign

Note. *Authors' according to the research*

As the results show, for the consumers living in a safe environment is crucially important, then comes quality and this is very close to current challenges, because while purchasing something and especially real estate, investing money in good quality buildings is very important, then comes company's credibility which creates trust and is related with company image. Marketing campaigns are also highly appreciated, but as we are facing greenwashing problems, sometimes people prefer to rely more on competent person/expert recommendation rather than marketing campaign, so customers check and analyze everything after attracting their attention with marketing campaigns and their choice is not depended only marketing activities.

Conclusions

The hypothesis of the study stating that green marketing has a positive effect on the purchase intentions of Georgian consumers in the construction industry was supported partly in the given study, as green marketing strategies have influence on consumers, but when marketing as a factor was given in the decision-making factor list, it appeared not to be so important as e.g. quality. One main reason for this could be lack of awareness about green buildings and sustainability and less interest towards these topics among Georgian customer and another fact can be greenwashing, where consumers do not trust marketing campaigns. Also, study showed price as an important factor influencing purchase intention that is quite logical especially for developing country like Georgia. Architecture of the building seems to be important factor affecting decision of Georgian customers in the construction sector that is logical as well since there are huge variety of styles nowadays that are used in construction industry in Georgia.

As more than half of the respondents did not know what does the concept of green building mean, that's why marketing campaigns may not be so affective. Here we can see, that before campaigns raising awareness, spreading information about green building concepts and highlight its importance is essentially important.

If the companies want to implement green marketing in their businesses, they must first ensure their products genuinely offer environmental benefits. Misleading claims can lead to "greenwashing", which can damage a brand's reputation. Clear and reliable communication about the environmental benefits of the products is paramount.

To sum up, as environmental and ecological concerns continue to influence consumer and business choices and behavior, the future of green marketing is bright and promising. Businesses that can effectively promote their eco-friendly and healthy buildings stand to gain not just increased sales, but also a positive brand image, trust and customer loyalty.

In conclusion, green marketing represents an exciting and challenging opportunity for businesses in the construction industry. On behalf of green marketing strategies, businesses can cater to the growing demand for sustainable products and contribute to a greener future.

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Appendix

Filter Question: Do you have an intention to buy a house?

- Yes
- No

1. Gender:
Male
Female
2. Age
18-24
25-34
35-44
45-54
55+
3. Education
Secondary education
Bachelor
Master
PhD
4. Occupation
Full time
Part time
Self employed
Unemployed
5. Number of family members
I live alone
1
2
3
4
5 and more
6. Monthly income
0 – 500
501 – 1000
1001 – 1500
1501 – 2000
2000 +
7. Do you know what does the green building concept mean?
Yes
No
Partially
8. In the decision-making process, how did you prioritize the following factors?

(1) Insignificant (2) Slightly important (3) Averagely important (4) Important (5) Very important

Company credibility
Social environment
Safe environment
Ecologically clean environment
Marketing campaign
Quality
Advice/recommendation of a competent person
Healthy building (e.g. energy efficient blocks)
Building architecture
The price
Location
Bank/loan conditions (e.g. loans rate).

9. How motivated are you to pay more if you know the building meets "green building" standards? ((1) I am completely motivated; (2) I am motivated;(3) I don't know;(4) I am not motivated; (5) I am not motivated at all 5).

10. Do green marketing strategies have influence on you? e.g. when it is focused on the ecological environment and its profitability?

(1) High impact; (2) Average impact; (3) Don't know, no answer; (4) Little impact; (5) No impact

MEDICAL SCIENCES

CHALLENGES LEADING TO DELAYS IN ESTABLISHING THE DIAGNOSIS OF EXTRANODAL AGGRESSIVE NON-HODGKIN LYMPHOMA

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Abstract

What is not yet known on the issue addressed in the submitted Manuscript

Despite the development of new methods of diagnosis and treatment with antineoplastic agents, the results of aggressive NHL treatment remain modest, with frequent relapses and primary refractory forms.

Research hypothesis

It was carried out a qualitative, analytical study, with a narrative synthesis of the literature, as well as studying the group of patients included in the study to detect the challenges that lead to the delay in establishing the diagnosis of aggressive extranodal NHL.

The novelty added by manuscript to the already published scientific literature

Conducting a broad literature synthesis to demonstrate the importance of continuing research in the field of extranodal aggressive NHL, which remains a current problem of contemporary hemato-oncology and public health.

Introduction: Non-Hodgkin's lymphomas form a group of malignant tumors, which develop from extramedullary hematopoietic cells. They are one of the most common forms of hemoblastosis. Diseases can develop in people of any age. The morbidity of NHL increases with age reaching the highest level in people over 50 years of age.

The aim of the study was to identify the causes that lead to difficulties in establishing the diagnosis of aggressive extranodal non-Hodgkin's lymphoma.

Material and methods:

It was carried out a qualitative, analytical study. The article assumed both the research of the specialized literature and the processing of the information within the research group in order to present the most conclusive data related to the current problems in establishing the diagnosis of aggressive extranodal NHL.

Results:

Aggressive extranodal NHL remains a major problem, with a clear increase in the annual number of cases globally. This trend is observed in several countries of the world, thus morbidity increases by 3% annually in women and by 4% in men. Worldwide, aggressive NHL continues to predominantly affect the working population. Although patients with primary extranodal NHL tend to present to the medical specialist at a lower stage than those with primary nodal disease, the number of those presenting at advanced stages continues to remain high.

Conclusions:

Although the diagnosis of NHL does not involve great impediments, patients are often detected in the late stages of the disease either because of late referral to a doctor or because of incorrect diagnosis by primary care physicians. Despite the development of new methods of diagnosis and treatment, extranodal aggressive NHL continues to be a current problem of clinical medicine and public health, requiring increased managerial and financial efforts.

Keywords: aggressive non-Hodgkin’s lymphomas, extranodal, morbidity, diagnosis

Introduction

Non-Hodgkin's lymphomas (NHL) represent a heterogeneous group of malignant tumors of B-, T- and,

rarely, NK-cell origin that can primarily affect any organ and tissue containing lymphoid cells [1]. Currently, NHL are considered as the most common group of malignant hemopathies, so they rank 7th in terms of morbidity from malignant tumors and 6th in terms of cancer mortality [2]. Worldwide, there is a clear increase in the incidence of NHL by approximately 80% more than at the beginning of the 70s [3]. Annually, 287,000 new cases of NHL are diagnosed worldwide[4]. The incidence of NHL varies significantly by geographic region, these differences may be related to demographics, environmental differences and other factors such as lifestyle, health behaviors and healthcare systems[5]. A higher incidence is found in the male gender, especially in Israel (17.6 cases per 100 thousand), in white Americans (14.5 per 100 thousand), in Australia (15.3 per 100,000), Canada (13.7 per 100 thousand) and Portugal (13.3 per 100 thousand)[6]. The similar geographical peculiarity was also observed in the female sex, with a higher incidence recorded in the population of Israel (13.0 per 100,000), white Americans (10.4 per 100 thousand), in Canada (10.0 per 100 thousand), Australia (12.3 per 100 thousand) and lower – in Middle Africa (2.8 per 100 thousand), South Africa (1.6 per 100 thousand), Vietnam (3.5 per 100 thousand), India (3.6 per 100 thousand)[7]. The NHL morbidity index in the Republic of Moldova is 4.1 per 100,000 population[8].

The aim of the study was to identify the causes that lead to difficulties in establishing the diagnosis of aggressive extranodal non-Hodgkin's lymphoma.

Material and methods:

It was carried out a qualitative, analytical study. The article assumed both the research of the specialized literature and the processing of the information within the research group in order to present the most conclusive data related to the current problems in establishing the diagnosis of aggressive extranodal NHL.

The article synthesized and systematized various primary studies, dedicated to the epidemiological and diagnostic aspects of aggressive extranodal non-Hodgkin lymphomas. The accumulation of information for this research was carried out by analyzing data from specialized international bibliographic sources and official statistics on the respective malignant myeloproliferative neoplasm. To achieve the formulated aim, scientific medical publications were searched over GoogleSearch, PubMed, Z-Library, NCIB, Medscape, Hinari Database, by keywords: "Non Hodgkin lymphoma", "aggressive", "extranodal", "mortality ", “survival”, “incidence”, “prevalence”, “diagnosis”. More than 50 bibliographic reference sources were studied, to carry out a qualitative research. At the same time, research was carried out in the group of 99 patients from the Oncological Institute of the Republic of Moldova. The obtained data were compared with those from the specialized literature and with other studies conducted in other countries.

Results and Discussion:

Aggressive extranodal NHL remains a major current problem, with a clear increase in the annual number of cases globally. The evolution and survival rate largely depend on the type and type of lymphoma, the stage of the disease, the presence of signs of intoxication, the age of the patient at the time of the diagnosis, concomitant pathologies. Although patients with primary extranodal NHL tend to present themselves to the specialist in a lower stage than those with primary lymph node disease, the number of those who are addressed in the advanced stages continues to remain high. At the moment, contemporary diagnostic methods allow the exact stabilization of the diagnosis and subsequently the initiation of treatment according to the type of lymphoma.

NHL develops and disseminates at different rates, being divided according to histopathological and clinical-evolutionary characteristics into indolent and aggressive [9]. Aggressive lymphomas are a heterogeneous group of malignant tumors that reflect clinical, biological and pathological diversity[16]. They refer to those subtypes that grow rapidly (proliferative index KI-67 > 40%) and would often be lethal within months without appropriate therapy [10]. According to data from the American Society of Hematology in 2015, aggressive lymphoma constituted approximately 60% of all NHL cases in the United States [11].

There are different types and subtypes of aggressive NHL. To be able to apply an effective treatment, it is essential to establish the type and subtype of lymphoma. Sometimes, more than 1 type of lymphoma can be detected in the same patient[22]. Initially, it will be established in which cell type the pathology started[19]. B-cell lymphoma is the most common, about 90% of people in Western countries are diagnosed with B-cell lymphoma. T-cell lymphomas account for about 10%, and are more common in Asian countries. While NK cell lymphoma affects less than 1% of people who suffer from this disease[23].

The most common subtype of aggressive NHL that develops from B cells type is diffuse large B-cell lymphoma (DLBCL)[25]. 30% of NHL in the United States is of the DLBCL type, it tends to develop extranodally in about 40% [24]. Also from B cells, mantle cell lymphoma develops, affecting from 5 to 7% of people with lymphoma. It usually develops in people over the age of 60 and is much more common in men than women, usually involving the bone marrow in the process[3].

Primary mediastinal large B-cell lymphoma is an aggressive form of DLBCL, often complicated by superior vena cava syndrome. This subtype of lymphoma is most commonly found in women between the ages of 30 and 40, and about 2.5% of people with NHL have this subtype[2].

Another subtype of lymphoma that develops from T and NK cells is peripheral T-cell lymphoma, not otherwise specified NOS. This is an aggressive form of lymphoma that is often advanced when doctors detect it[26]. It mostly affects people over the age of 60 and accounts for about 6% of all lymphomas in the United States and Europe. Another subtype of aggressive lymphoma is anaplastic lymphoma. This aggressive form of lymphoma accounts for approximately 2% of

all lymphomas and approximately 10% of all childhood lymphomas[30].

In our clinic, the most frequent type of aggressive lymphoma turned out to be lymphoblastic in 55.5%, followed by diffuse large B-cell lymphoma - 33.3%, T-cell lymphoma was diagnosed in 7.07%, and the others types of lymphoma (NOS lymphoma, grade IIIB follicular, from the mantle zone, plasmablastic) each of them constituting less than 1% [figure. 1].

Tumor originating in extranodal tissue is termed primary extranodal lymphoma (ENL), while hematogenous spread of disease from lymph nodes to extranodal tissue is secondary extranodal lymphoma[12]. The incidence of ENL is continuously increasing in recent years, there are numerous factors that "favor" this increase: HIV infection, the increasing use of immunosuppressive therapy and indole viral infection [27]. Following the study realised in the Department of Hematology in the Republic of Moldova, it was found that the gastrointestinal tract (TGI) is more frequently affected - 37.35%, of its anatomical segments, the most frequently involved in the process is the stomach (32.3%). The 2nd place among the extranodal locations is occupied by the Waldeyer lymphatic ring - 24.24%, of the formations of the ring, the involvement of the nasopharynx was most often observed - 13.13%, followed by the damage to the palatine tonsils - 10.1%. Soft tissues as primary damage by NHL were observed in 7.07%, followed by skin and bone tissue each returning 6.06%, CNS - 4.4%, and the other locations (lacrimal gland, mammary gland, liver , kidneys, testicle, parotid gland, etc.) constitute on average less than 1% each [figure. 2].

The only method to confirm the diagnosis of NHL remains the excisional biopsy of the focus with subsequent morphological, immunohistochemical, flow-cytometry, FISH examination for the histological determination of the lymphoma subtype.

However, the most frequent causes of the late establishment of the diagnosis are the late referral of the patient to the doctor, being observed in 58% of cases in our study, as well as the confusion of the diagnosis by other doctors in 23% of cases, often treating the disease as an inflammatory/reactive process , and redirecting the patient to a hematologist after several treatment attempts with anti-inflammatory preparations/antibiotic therapy 16%, which ultimately leads to an increase in the number of patients detected in stages III-IV [figure. 3].

Worldwide, NHL caused 6.8 million DALYs (disability-adjusted life-years) in 2016 [21]. Despite the development of new antineoplastic agents, the results of aggressive NHL treatment remain modest, with frequent relapses and primary refractory forms[17]. Patient survival differs depending on the stage of pathology at the time of diagnosis, the type and subtype of lymphoma, the presence of signs of intoxication, age, concomitant pathologies[28]. According to a study realised in the UK between 2004 and 2016, 60 out of 100 DLBCL patients survive 5 years or more after diagnosis, while 55 out of 100 Burkitt lymphoma patients survive about 5 years and only 35 out of 100 patients with T-cell lymphoma survive up to 5 years after diagnosis[29].

The increase in morbidity and disability in the working population, the considerable rate of late diagnosis of NHL and the modest results of the treatment of aggressive histopathological types [19, 20] remain a current problem of clinical medicine and public health, requiring increased managerial and financial efforts.

Conclusions:

1. NHL occupies the first place in the structure of morbidity through malignant hemopathies, the incidence of which shows a continuous increase in recent years.
2. Worldwide, there is an increase in aggressive NHL morbidity rates in the able-bodied population, as well as an increase in the degree of disability.
3. Although the diagnosis of NHL does not involve great impediments, patients are often detected in the late stages of the disease either because of late referral to a doctor or because of incorrect diagnosis by primary care physicians.
4. Despite the development of new methods of diagnosis and treatment, aggressive extranodal NHL continues to constitute a current problem of clinical medicine and public health, requiring increased managerial and financial efforts.

Declaration of conflicting interests

The author declares that he is not in conflict of financial or non-financial interests for the data and information presented in the manuscript.

Figure 1 - Prevalence of aggressive NHL in the Hematology Department of the Oncology Institute

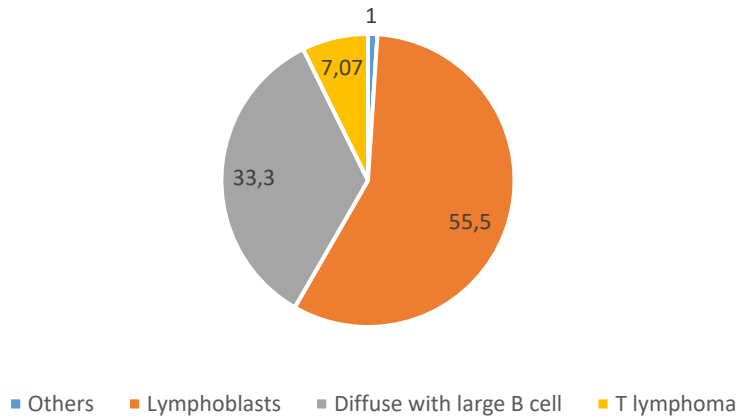


Figure 2 - Extranodal lesions of aggressive NHL

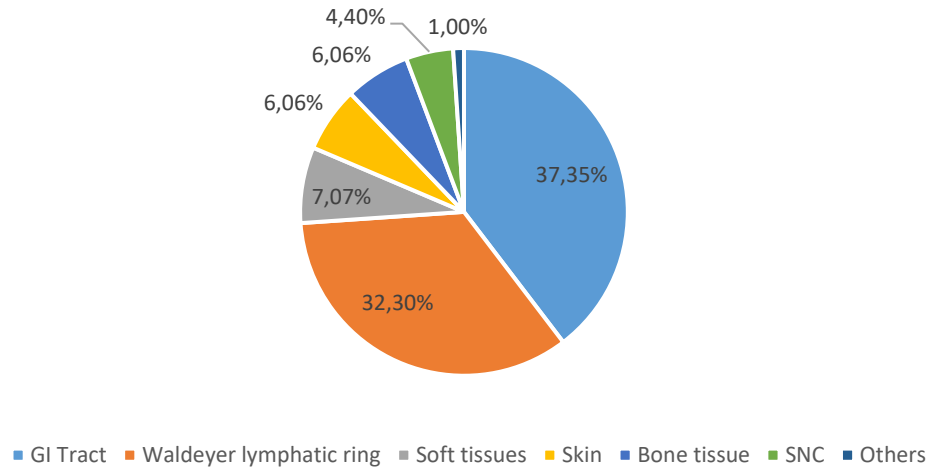
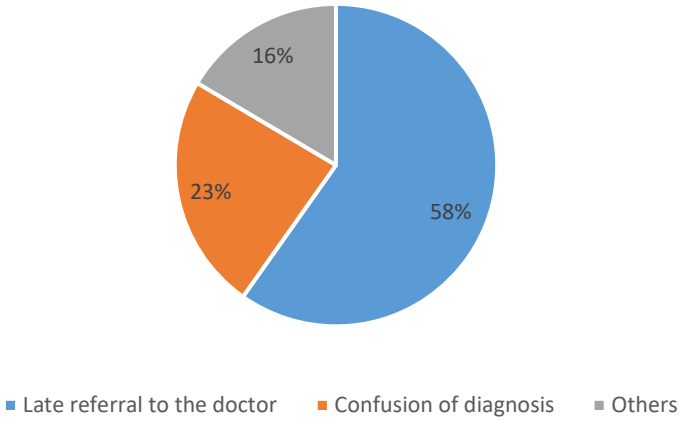


Figure 3 - Causes of delay in diagnosis



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PEDAGOGICAL SCIENCES

GOALS FOR ENLARGING ESP VOCABULARY

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Abstract

Students are becoming more and more interested in learning ESP. They have become aware of the importance of learning more professional language. Needs and goals for wanting to enlarge ESP vocabulary differ from one student to another.

Thus, a study was conducted with engineering students to find the reasons that mostly urge students to be active learners and to always show the good will to assimilate the new ESP terms at best.

It's surprising to come at the conclusion that students do not only learn ESP because they are obliged to as it is one of their school subjects, for the sake of the learning process, to get the credits or to get a good grade at the end of the course, but they have a clear vision of what will help them be successful in their field of study, i.e. the ability to communicate effectively in their own field of study.

Keywords: goals, ESP, profession, field of study, vocabulary

Literature Review

English Foreign Language learners should be motivated to learn independently and be in control of their own learning (e.g., Rivers & Golonka, 2009; Little, 2009; Tran & Duong, 2018; Tran & Vo, 2019).

Ghazal (2017) pointed out that the extent to and the way in which vocabulary learning strategies are presented can facilitate learners' understanding of various activities and language aspects. The findings of some studies (e.g., Cameron, 2001; Catalan, 2003) have indicated that vocabulary learning strategies can help learners to assimilate the new terms better and remember them for a long period of time.

According to Brahja (2013), students feel that when learning ESP in class they have the opportunity to master the four skills because of the various activities done, and in so doing students will have the more chances to attain the long-term memory of the new words.

Robinson (1991) has emphasized that ESP is usually goal-oriented, and it contains "specialist language and content". Two kinds of ESP were listed by him: - English for Occupational Purposes (EOP) and English for Academic Purposes (EAP). Various academic disciplines fall under EAP, such as Business (henceforth referred to EAP-B), Science and Technology, Medicine, and the Law. Likewise, EOP can be subdivided: English for Professional Purposes (EPP) and English for Vocational Purposes. Under EPP comes English for Business Purposes (EBP). Dudley-Evans and John (1998) suggest a further subdivision of EBP: English for General Business Purposes (EGBP) and English for Specific Business Purposes (ESBP).

Nunan (1992) advocated that we need methodologies which are psychologically and psycho-linguistically motivating and which do not violate what we already know about language development.

Material and method

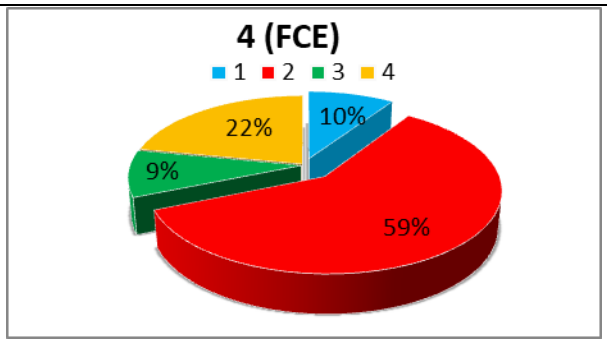
Students have different goals which may be internal or external. Internal goals are considered the ones that come as a result of their interests, passion, aspects they are good at. When we discuss about external goals, we keep in mind what's good to focus to so as to be successful in their future profession.

To know more specifically what goals push and urge students to learn ESP terms, a survey was conducted to first year students studying at the Faculty of Civil Engineering in four fields of study, (civil engineering, geodetic engineering, hydro-technical engineering and environmental engineering) Polytechnic University of Tirana. A great number of students took part in the survey (268 students) and were very helpful in collecting data needed.

This study intends to investigate the goals that urge students enlarge ESP vocabulary.

The purpose of this study was to highlight:

- the ability to solve engineering/social problems
- the ability to communicate effectively in the field of study
- knowledge of contemporary issues
- understanding of professional issues



Graph 1. *Results for research. What do you want to attain when enlarging ESP vocabulary? a) an ability to solve engineering/social problems b) an ability to communicate effectively in your own field of study c) a knowledge of contemporary issues d) an understanding of professional issues*

Results and discussion

From the collected data it's observed that 59% of students studying at the Faculty of Civil Engineering want to attain an ability to communicate effectively in their own field of study. More than half of the surveyed students think of future prospects. It's very important to them to be successful and to reach on top, by not only having the proper degree and required education, but also by knowing how to effectively communicate with other specialists, engineers, in their own field of study, being them Albanian or English speaking people. As Harding points out, (2007) the purpose for learning the language when dealing with ESP, is of a great importance and relates directly to what the learner needs to do in their vocation or job.

By improving the skill to communicate effectively with other people, makes students feel more self-confident, have more self-esteem and share knowledge about their profession.

That's why the next chosen alternative is learning ESP terms so as to get an understanding of professional issues (22%). Attacking issues is a must for engineer students. As it's widely known, engineers really need to be good at critical thinking, because they face lots of challenges in their work. Most of the time they have to consider a plan B, so as to be more productive in their daily performance.

Hand in hand with the above mentioned alternative is an ability to solve engineering/social problems (10%). Sometimes they draw hypotheses which at the end may turn out wrong. Students need to know how to redefine problems, draw the best solution and come up with new and creative ideas that facilitate people's lives.

The least chosen alternative was to attain knowledge of contemporary issues (9%). This shows that students learn the language first of all to help them be successful in their own field of study.

They come across contemporary issues in their daily activities by using the internet, by reading and by watching documentaries. So when it comes to memorizing the terms, students find communication with other students helpful and indispensible.

Conclusions

- ESP is not new for students anymore.
- They have clear ideas of what they want to achieve and coming at the conclusion that they know that to be successful in their profession, they really need to enlarge ESP terms more, makes the whole teaching and the learning process flow smoothly.
- Feedback is part of the activities when students have clear goals and aims.
- Students are considered as active actors in the lesson, and it's made clear to them that practice makes perfect.
- In ESP classes, students use their creativity, imagination, and knowledge so as to accomplish given tasks correctly.
- Students like authentic materials that will help them to practice language that they will use in the near future with other professionals.

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HISTORICAL DEVELOPMENT OF TEACHING FOREIGN LANGUAGE IN AZERBAIJAN

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Abstract

The article deals with the history of learning foreign languages in Azerbaijan and covers the periods starting from the 8th century till the modern time. It touches on historical developments related to teaching foreign languages, and what is more, strategies utilized in different periods.

Additionally, the article also shows how historical, social, and religious situations impacted and shaped the approach to foreign language learning in Azerbaijan because the occupations Azerbaijan underwent determined the official language in the country, and forced people to learn those languages. The colonizers' languages and culture of teaching language played an important role in this process.

Keywords: strategy, foreign languages, history, teaching, methodology

Foreign language teaching is one of the most widespread and constantly changing areas, and it is impossible to imagine our modern globalized world without it. Currently, all countries and people are connected to each other in some way. This brings out the need to learn foreign languages and also causes interest in people and exploring other cultures. Thus, aforementioned makes people start searching for the answer to this question: "How can I learn a language quickly and effectively?" This prompts teachers to find answers to that question, too and as a result new teaching methodologies and strategies emerge. Although there are similar trends in foreign language teaching around the world, in fact, the history, economy, social situation and culture of each country affect this process and create certain differences. In this article, we will explore the history of language teaching in Azerbaijan starting from 8th century.

In the 8th century, Azerbaijan was invaded by Arab troops and became part of the Arab caliphate. For 8 centuries, Azerbaijan was under the influence of Islam religion and culture. Thus, Arabic became the language of science and communication among vast Muslim countries including Azerbaijan. Azerbaijanis gradually adopted the Arabic language along with the religion of the Arabs and used it in scientific, religious and literary works for a long time.

As a result of the reforms made by the tenth Umayyad Caliph Abdulmalik Hisham (685-705), during this period correspondence and records in government offices were only in Arabic, and the Azerbaijani officials working in government offices had to learn this language as well. During those years mosques weren't used for only prayer, they were also centers of learning. Kuran, religious sciences and the Arabic language were taught at mosques.

When we reached the twelfth century, the language of literature in Azerbaijan became Persian because it was a lingua franca in that period. Thus, Azerbaijani scholars used Arabic in a high way along with the Persian language.

With the spread of Islam among large masses throughout the country, madrasahs (schools) located in large mosques began to operate in the cities of Azerbaijan. The Arabic and Persian languages, logic, religious dogmatics, fiqh (Islamic law), mathematics, calligraphy, history, and literature were taught in these madrasahs. Greek philosophy, astrology, logic, oratory, geometry, medicine, alchemy and the like were also taught in large madrasahs, similar to modern universities. Of course, there were no professional teachers, the ones who taught here were mostly theologians and clerics, and they were called mudarris (professors), and their assistants "muid" (assistant). The main method of teaching was rote learning, corporal punishment for children was acceptable.

In general, students of these schools were taught to read and write in Arabic, understand Arabic religious texts, and easily memorize the Holy Kuran. At least three years were devoted to Arabic grammar in madrasahs, and it was taught very deeply. There were also books regarding Arabic linguistics. In this way, students were brought to the level of being able to express themselves by freely answering questions in Arabic.

Education in madrasahs was based on the so-called deductive method. The fundamental of this method is adherence to scientists who have written works on certain topics and expressed their opinions on several issues. This method of education was carried out in the form of memorization, repetition, comprehension, discussion, and note-taking. Memorization was the basis of educational methodology.

According to G. Makdisi (1970), memorization was based on reciting a large amount of material, and interpreting and repeating it. Though memorization skill was very important in the medieval education system, comprehension and discussion were just as important as memorization. In fact, both comprehension and discussion seemed to support the notion of rote learning. Another tool used in educational methodology is taking notes. This tool, called a notebook, filled with knowledge and played the role of a helper in the restoration of a kind of "memory that became a storehouse of knowledge".

Arabic and Persian were two main languages till the occupation of Azerbaijan by Tsarist Russia. The occupation of Azerbaijan by Tsarist Russia in 1813 had a huge impact and a radical change on the economic, political and cultural life of Azerbaijanis because they were forced to integrate into Russian culture. In the 19th century, Tsarist Russia including the Caucasus area was already a single administrative territory and had a school administration based on a single law. Tsarist

Russia didn't have a strong education system, mostly military and private schools. Peter, I made some reforms due to the need for educated Russians. They established a network of primary school education in Tsarist Russia.

Developments regarding education in Tsarist Russia impacted Azerbaijan, too. A new district school was opened in Shusha in 1830. With the opening of the Shusha school, the foundation of European-style secular education was laid in Azerbaijan. In 1832, another district school was opened in Baku, and education at the school was in Russian, and Azerbaijani was taught as an additional subject. In 1849, a new type of educational institution - the Muslim school - was established in Baku, despite the name, it wasn't a traditional school and differed from the traditional religious madrasas.

Additionally, since the 1780s, a seminary system had been adopted in the Tsarist Russia. Based on that model, in the Caucasus, the Transcaucasian Teachers Seminary which specialized in teaching was founded in Gori, Georgia for the Caucasus people. Those who were interested in working teachers at regional primary schools attended the seminary. The school had a Tatar (Russians called Azerbaijanis and other Turkic-speaking people Tatar) section which was established in 1879 thanks to Mirza Fatali Akhundovs, an Azerbaijani writer, and activist. The Tatar department was attended only by Muslims and instructions were given for only primary schools in the Russian language.

From 1843 to 1917, public education in the Caucasus was managed by a single body - the Caucasian Education District, and all the rules defining the activities of the Caucasian peoples, including the various educational institutions in the region, were prepared by that body. Russian emperor Tsar Nicholas II wanted Russian to be prioritized over other native languages.

Ben Eklof (1991) describes schools of that period and mentions that the pedagogical system was child-centered and a large amount of homework caused cheating by students. Teachers gave many home tasks to students, as a result, learners had to copy-paste or ask help from parents to finish the tasks. The same strategies were also applied in Azerbaijan but with elements from the traditional way of teaching. Even now, many teachers are using the same strategy despite instructions from the Ministry of Science and Education, and consequence is again the same. The final outcome of this strategy is cheating by learners.

According to the census of 1897, only 21% of the population was literate in imperial Russia, and this number was especially low in the territories occupied by Tsarist Russia including Azerbaijan because it was a privilege for mostly affluent families to send their children to school.

The Russia Empire collapsed in 1917 after the revolution, and Azerbaijan gained its independence between the years 1918-1920. Baku State University, one of the main universities of Azerbaijan in modern times, was established in that period but it didn't last long. During this period, foreign teachers were invited to conduct lessons at the Baku State University. Probably teaching approaches and strategies were a little bit different in their classes but mostly it was the same with the Tsarist period because making radical changes over 2 years was impossible. Just the curricula were changed and nationalized, and new textbooks and teaching materials were designed.

The Soviet troops occupied Azerbaijan again in 1920 and the Soviet system was established. During the Soviet time, Soviet authorities decided to abolish the use of the Arabic alphabet in the native languages of people in the Central Asia including the Caucasus. Thus, Russian language instruction intensified in the 1920s and became a compulsory learning language in 1938. Most universities required non-Russians to pass an admission examination in the Russian language and literature, so the incentive for learning Russian grew gradually. The teaching of the Russian language was of greater interest, and there were Russian-oriented schools. At the same time, during the Soviet period, the official languages in Azerbaijan were Azerbaijani and Russian. Therefore, the opportunities to use the Russian language and the interest in learning it were greater; also, one of the requirements for working in high-ranking positions was to know the Russian language fluently.

But this does not mean that the English language was neglected. The higher educational institutions of Azerbaijan started teaching foreign languages in the 1920s. In the 1930s and 1950s, English, French, and German were taught in the schools of the Soviet republics, as well as in Azerbaijan. In 1960, as the USSR tried to strengthen its foreign ties with other countries, foreign language teaching began to be of great importance. Thus, the Council of Ministers of the Soviet government signed a decree "on Improving Foreign Language" in Soviet Republics.

The main strategy used in the Soviet era was based on rote memorization, the classic method which is called "Grammar-translation" was applied in the teaching process in which, emphasis was placed on grammar and vocabulary, and there was a limited number of teaching aids because they were strictly controlled and monitored. The textbooks designed by local teachers didn't cover the skills of writing, reading, speaking, and listening. Even the section on listening was omitted in most of the textbooks because of the lack of classrooms equipped with the necessary facilities to implement listening activities. In the meantime, the activities given in the textbooks were mixed, not categorized and systematic. The use of materials outside the book was not allowed.

During classes, students should memorize vocabulary and grammar rules, read and translate texts, and answer questions based on the text. Speaking activities were mostly based on retelling texts, reciting poems and answering questions based on the text. The classroom culture in Soviet-era Azerbaijan also had defining characteristics. The teaching was strict and authoritative, and teachers were treated with great respect (Counts, 1961). Classes were teacher-centered; students should respect teachers and follow their classroom rules.

Implementation of innovative approaches, critical thinking, and students' autonomy in classes were out of the question. Grammatical accuracy was highly valued and every error made by the students was corrected and even criticized by the teacher, consequently, all these resulted in the discouragement and demotivation of students to speak English in classes.

English was not taught as a means of communication because it was not needed. It was taught by the local teachers who had never communicated with native speakers in English. Though the means of instruction was English, most teachers never used English during the teaching process. In a closed system like the Soviet, there was no need to communicate in English or other foreign languages, since people were not allowed to leave the country, they had no opportunity to speak English with foreigners and improve their level of language. It is for this reason that there was a lack of motivation among the learners and all this hindered the quality teaching of the language. As a result, many people could not speak English even though they had studied English for a long time during their school years.

In 1991, the Soviet system collapsed and Azerbaijan gained its independence. During the period of independence, many reforms were made in the education system. In the Soviet era, they started learning a foreign language from the 5th grade, since the period of independence it started to be taught in the 1st grade.

During the years of independence, many restrictions that were applied in Soviet time were removed. Course books have been further improved and they are updated and standardized now. Although the teaching materials are still designed by local teachers, modern examples are used as formats and models. All foreign language books are designed to teach 4 skills and classrooms to improve listening skills have been put into use in schools and universities.

The Ministry of Science and Education of Azerbaijan switched to the curriculum method in schools. The standardized curriculum is prepared by the Ministry of Science and Education and sent to schools. The curriculum methodology has the characteristics of the communicative method and aims to teach students English as a means of communication.

Despite all these reforms, there are still problems and challenges in foreign language teaching. It is difficult to change the approach of teachers who were educated and got used to the methodologies of the Soviet era. Regular training is arranged for them to teach the new methodologies and approaches to foreign language teaching and the requirements of the state but most of those teachers do not want to lose their dominance in the classroom by changing the teacher-centered approach to the student-centered approach. It means there is still a part of teachers who apply the "Grammar-translation" method but the new generation of teachers is more inclined to use a communicative method with strategies such as project-based learning, student-centered learning, apply innovations in the classrooms and approach lessons with critical thinking.

The teaching of foreign languages in universities is not regulated by the Ministry of Education but by the universities themselves. Universities are interested in raising the quality of foreign language teaching, and foreign language teachers are free to design their own curricula and choose methods and teaching aids to utilize in classes. This gives them opportunities to make more changes and innovations and it is for this reason that the level of teaching foreign languages is higher in universities than in schools.

Regardless of all this, it will take some time to remove the Soviet-era ideologies from education, and there is a lot of work to be done in this way to move closer to West and Western education models.

Conclusion

Unlike other beings, humans have the ability to learn foreign languages, and this process started from early periods. People living in the close geographical area had to interact with others for different purposes such as trade, collecting information, etc. Thus, learning a second language was a necessity arising from the environment and different conditions. In that case, it was a natural phenomenon. Maybe not planned, and systematically but was enough to learn because the purpose was communication.

Harmer (1991) said: "Despite intense research efforts dedicated to finding out how people learn a foreign language, we still do not know for sure how the process occurs". As Harmer stated, effective teaching of foreign languages is still a mystery and needs further discussions and investigations. However, we can say for sure that if it is taught as a means of communication, activities, and methods used for that purpose will achieve their target to a certain extent because each human being has an ability to learn language not depending on their intelligence.

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PROSPECTS OF SOCIAL NETWORKS IN ONLINE TEACHING ENGLISH AS A FOREIGN LANGUAGE AT A HIGHER EDUCATION ESTABLISHMENT

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Abstract

Today it is easy to have the Internet connection everywhere: in different educational and social settings, coffee shops, public transport, shops, classrooms etc. This article attempts to investigate the usage of the Internet and computer technologies, especially social networks which are applied in students' everyday lives, in the process of teaching English as a foreign language, as at present to go with the times it is impossible for a teacher to neglect the interests and requirements of the students. It shows new opportunities for a teacher at English classes: modern platforms and web sites, social networks, blogs help not only share the information, make a lesson mobile-friendly, but motivate students in studying a foreign language. The article also shows the problem of the obsessive use of computer technologies which does not provide human-to-human contact, which may limit teacher's opportunities for communicative activities which are extremely necessary while studying a foreign language. The combination of IT and traditional modes are the elements of blended learning which is underlined to be the most effective method in teaching English as a foreign language. The information helps us to determine several characteristics for a successful foreign language teacher which among others (communicative, sociolinguistic, sociocultural and pragmatic) include methodical competence. That prove the urge necessity if using IT in general and blended and online learning in particular in the work of English as a foreign language teacher.

Keywords: Internet resources, online learning, online teaching, social networks, Facebook, higher education establishment, English as a foreign language teaching (EFL teaching), communication, competences.

Today a social network is an interactive multi-component and multi-user website that works as an automated community-based hub to allow stay in touch with other participants. The latter may have similar interests, enrich the space with diverse content independently and to check thee material of other users [4].

It is obvious that in the second part of the 21st century they are the social networks which have rooted in our everyday lives. There have appeared new opportunities to apply them not only for entertaining purposes but for education, work or business as well. In addition to implementing a specific chance of getting the information directly from the mass media source, social networks help practise one's communicative skills while conversing with the speakers of other culture. It improves both the language to study and its linguistic aspects, and deepen the knowledge of the traditions, customs and history – the culture that is extremely significant while forming a foreign communicative competence.

With the time of developing social networks, there have appeared their subgroups as educational social networks. Thus, it is Facebook which is certainly considered to be one of the most popular tools for learning and self-development. As of May 1st, 2023, it comprised 2.98 billion active users every month [2] that is equal to 37.2% of all the people on Earth today. In Ukraine the total number of Facebook users was 13.7 million (the beginning of 2023) to compare with Instagram users of 11.6 million. Since, the figures are lower by 2 and 4 million correspondingly to collect with the same period of 2022 [5]. It is reasoned in the opportunity for teachers of both secondary schools and higher education establishments to organize the educational courses for students, as well as providing a private corporate network for co-workers and students on the Facebook platform.

It is outlined that those who study English are especially interested in using the tools of the Internet to study by reason of saving time and financial expenses on travelling to a language school or a tutor, providing the learning process be adopted in a comfortable atmosphere and an appropriate time.

We state, the formation of socially active position of a higher education applicant is realized while both participating in a social life of a community and in every moment of his personal life and studying. It is also explained by the principals of the applied relationships and the communication character.

During the English lesson an applicant forms and provides his active thinking process, focus on solving speech and thought-provoking tasks, desire for logical organization and systematization, for searching general principals. Understanding the essence of the student's performed actions is more important than the specific details acquisition. Thus, the forms of work in class which reflect the trend, may appear the most attractive and productive for a student [1].

Proceeding from the above facts, at present it is the Internet in general and social network specifically, which have become an important part of students every day lives, a natural communicative environment. Thus, it is important to learn a didactic and methodological potential of social networks for its perfect implementation in an English lesson.

Today the Internet applies several specific linguistic social networks, e. g., Italiki, GoSpeaky, Mylanguageexchange, etc. To register on the site, one indicates the language / languages he wishes to learn, the

language / languages one speaks and the language / languages he may help the participant to study. So, the user masters a foreign language while cooperating with the other user-native-speaker of this definite language.

As Facebook, Instagram, Twitter, My Space, Italiki, a participant may find an interlocutor according to the definite criteria. The disclosure may be prolonged within online video chats. This live communication promotes student to see a rapid clear result that accordingly motivates him studying.

Here we determine a list of linguistic and didactic benefits when use social networks during an English lesson at a higher education establishment:

- the opportunity to be in touch with many people including a native speaker;
- a multimedia tool – implementation of audio, video and text material in English in the same environment (the same resource) [3].
- a ready communicative program including a ready thoroughly designed interface;
- the opportunity for an immediate exchange of urgent information and a moment feedback with a student;
- a high level of cooperation which help interfere in an educational process at minimum going beyond the lesson time limit;
- the development of self-wok skills;
- the opportunity to be an active participant of an educational process;
- the sense of freedom and comfort, a space for studying English, ready for a mistake; these facts provide the communication conditions to be maximum close to a real life, promoting the formation of the skills and abilities to implement the English language as a basic communicative tool in a poly cultural online community.

Though the use of the Internet in general and social networks specifically brings more benefits for educating students, simultaneously, it comes with a number of disadvantages.

A user is obvious to post the material personally in social networks. Today, when within the development of the Internet search services including Google, Yahoo, a practically any piece of information is free available; since, it makes difficult and sometimes impossible to determine the author and the origin of the data. Unfortunately, there are no guarantees of reliability and relevance of the information posted in social networks. This fact proves the necessity to organize the list of recommendations for the materials selection and application to be applied on social networks.

Another aspect for a teacher to take into account while using social network for online English as a foreign language teaching, is a quality of the material adopted. It is impossible to neglect a careful information selection owing to avoid fake data, news and facts described on a lesson. To perform a thorough material, a teacher is to work on as many Internet sources as possible. It will definitely help him feel confident and easy to respond any students' questions and remarks.

To conclude, we focus on a didactical purpose of a teacher's activity on an English as a foreign language lesson which lies in organizing the atmosphere of less formal and natural communication and the forms of work which certainly may provide more activity and independence; out of class – in continuity of an educating process and an immediate feedback between a teacher and students while learning the language. Since, the modern ICT and Internet resources, including social networks firstly, are of a high didactic value and prospects. Their implementation on a lesson at a higher education establishment provides all the opportunities of modern tools, methodologies, applications and devices which may easily capture students' attention, bring diversity on a lesson and thus, motivate them to learn English.

The social networks may become a significant instrument for the students to be involved in foreign language communities and online groups which unite them while solving an educational task, provide a self-analysis and self-study being supported by the peers.

We consider it is impossible to rely only on computer assisted language learning technologies only while teaching English as a foreign language. Educating has to supplement it with in-person classroom-style training on as-needed basis that proves of the emerge use of blended and online learning in EFL teaching. Thus, the study proves more research needs to be conducted, examining different modern modes, methods and forms in teaching English, including fully online and blended learning environments.

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PHILOLOGICAL SCIENCES

CONSTRUCTION OF A TEXT ASSOCIATIVE SEMANTIC FIELD AS A MEANS OF REVEALING EMOTIONAL AND EVALUATIVE OVERTONES IN LITERARY DISCOURSE (BASED ON THE ANALYSIS OF V. NABOKOV'S SHORT STORY "TERROR")

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Abstract

The article focuses on discovering emotional and evaluative overtones in Vladimir Nabokov's short story "Terror." Based on a thorough examination of the story and meticulous analysis of dictionary and thesaurus definitions of the notions conveying emotions in it, the author constructs a text associative semantic field (TASF) with the nucleus represented by the lexeme "terror" and the periphery with its synonyms and associations. Such an approach to researching an artwork's overall emotional tone constitutes the paper's novelty. The study has demonstrated that many words belonging to the field appear to be involved in diverse linguistic devices that are dispersed throughout the story and create a more sophisticated layer of meaning and subcontext that allows for a more profound understanding of the character's emotional state and detection of hidden emotional and evaluative overtones. Specifically, apart from the leading emotion of terror and its synonyms from the fear cluster, multiple emotional and evaluative overtones have been discovered, including terror-disgust, terror-rage, terror-surprise, and terror-grief. Overall, the comprehensive linguistic investigation has proven the complexity and depth of human emotions, the unique character of their verbal representation, and the multi-layered nature of the short story where they are so skillfully concealed.

Keywords: semantic field, text associative field, emotion, emotional and evaluative overtone, literary discourse, short story, Nabokov.

This is more than quick recoverable terror,
And we, watching the hanging waiting darkness,
Counting the moments of the coming storm,
Find it not easy now to stand erect.
G. Allen

Being one of the leading and promising areas of linguistics in the past several decades, the systematic study of language and speech has led to the emergence of a considerable body of works dedicated to the theory of semantic fields. First put forward by German and Swiss linguists (Ipsen, Porzig, Trier), it has been further developed by Ullmann, Geckeler, Weisgerber, Pokrovsky, Admoni, Bondarko, Gak, and Shchur. Overall, the idea of the field approach lies in the belief that the vocabulary of any language is an integrated system of lexemes interrelated in the sense that "the value of a word can only be determined by defining it in relation to the value of neighbouring and contrasting words" and that the meaning exists only in the field (Trier, 1934, p. 428). Generally, *a semantic field* is defined as a lexical set of semantically related items or a hierarchical structure consisting of multiple lexical units. As a rule, a semantic field has *a nucleus* that is presented by a hyperseme that expresses the most general meaning, *a center* that is comprised of lexical units that share the meaning with the nucleus, and *a periphery* that includes lexical units that have a more distant, potential, or probable meaning in regard to the nucleus.

As a way of reflecting a particular part of reality in the human mind, a semantic field constitutes the plane of content, whereas the plane of expression can be embodied by various subtypes of the semantic field, including phrase-semantic, functional-semantic, morpho-semantic, and lexico-semantic. Many papers are dedicated to the latter, defined as a set of particular words that belong to the same part of speech and share the meaning component. However, when the semantic structure of individual words is taken into account, it becomes evident that they belong to different lexical sets, where some are clearly defined "narrow notions," and others are unclear "broad notions" strongly impacted by personal connotations (Katz, 1972, p. 450). In other words, the underlying definition strictly determines the meaning of the words belonging to the first group. In contrast, the meaning of the words from the second group is "implicitly defined by the semantic and syntactic rules governing their use in speech acts" and varies based on individual interpretations of speech acts that include the respective word (Fonagy, 2001, p. 9). The fact that natural languages are "intrinsically incapable of precise characterization" (Zadeh, 1978, p. 4) makes some notions fuzzy, which, in turn, leads to the lexico-semantic fields these notions belong to being also fuzzy and diffused (Zhgun, 2022). Therefore, constructing solely lexico-semantic fields of notions does not always suffice to understand their whole meaning. This is especially true regarding inherently ambiguous notions that express emotions.

As a subjective reaction to the inner or outer stimuli based on individual appraisal, emotions prove to be a highly complex phenomenon of the human psyche that demands careful investigation. What makes emotions difficult to cognize is that they are perceived

somewhat differently by different people and, as a result, are diversely represented in the language. On the one hand, dictionaries provide practical definitions and typical examples of the usage of words representing emotions. On the other hand, they short-circuit the procedure of how speakers and writers perceive and apply these words in real life. Much evidence to prove that the ways people evaluate situations and react to them emotionally and verbally differ can be found in literary discourse – a complex communicative phenomenon that manifests itself in the form of a literary text created by the author to impact the reader. In turn, a literary text is a sophisticated system of images, meanings, and ideas that must be deciphered, understood, and interpreted in the process of perception (Chirkova, 2018, p. 98). Being the work of art and imagination of a particular author, a literary text also reflects his / her worldview, values, experience, spiritual seeking, and certainly emotions. It is usually easy to decode an emotion in the text even when it is not expressed but described or implied. However, it is quite another matter when the author conveys mixed emotions belonging to the same or different emotional clusters by resorting to diverse literary devices and techniques. In this regard, the reader must decode not only emotions but hidden emotional and evaluative overtones – concealed, inherent components of the semantic structure of words revealed within specific contextual determinants (Zhgun, 2023). In other words, covert emotional and evaluative overtones become determinable with considerable contextual expansion and the author's perception of the emotional state expressed and / or implied in the artwork – with constructing a text associative semantic field.

In this article, *a text associative semantic field* (TASF) is defined as a system of the author's verbal associations with a particular phenomenon that includes key and hint words as well as markers of associates that unitedly create an overall atmosphere of the literary work and that can be discovered by a scrupulous analysis of the text in which they are scattered. The procedure of the construction of the associative semantic field of the chosen text entails the selection of the words that represent frequent reactions and associations of the author with a specific phenomenon (in our case, it is the emotional state of the main characters), their systematization, generalization of the data obtained, and determination of their influence on understanding of the essence of the text and the author's worldview. Therefore, constructing a TASF can help trace how words extend their meaning and determine the author's subjective attitude towards this notion, which emphasizes the uniqueness of his style and the richness of his mental lexicon that entails general knowledge of the notion, multi-faceted associations, and the cultural background. Let us now refer to the emotion of fear overall and its linguistic representation in Vladimir Nabokov's short story "Terror" in particular.

In philosophy, different and sometimes contradictory viewpoints exist on the phenomenon of fear. In The Nicomachean Ethics, Aristotle (2003, p. 67) defines *fear* as an expectation of evil, stating that all people are afraid of different evils, including disgrace, poverty, sickness, loss, and friendlessness. The most fearful thing of all, however, is death, because "it is the end, and it is assumed that for the dead there is no good or evil anymore" (ibid). Nevertheless, Aristotle underlines that what is dreadful is not the same for everyone, and although all people are concerned with the same fearful things, they have different attitudes towards them. In other words, everyone's appraisal of the objects of fear differs in the magnitude and intensity of fear they evoke and the reactions that follow it. The Stoics attribute the reason to the fact that people appraise things differently to individual judgment. In particular, in his moral letter to Paulinus On the Shortness of Life, Seneca (2007, pp. 158–159) writes that there will never be a shortage of reasons for anxieties, "whether born of happiness or misery." Although people are troubled by "alarms of different kinds," their most immense terror is that someday life will end (ibid). In his essay On Fear, Montaigne (1994, pp. 14–15) confidently asserts that "it is fear that I am most afraid of. In harshness, it surpasses all other mischances." The philosopher goes further in his speculations on fear and claims that it is "even more importunate and unbearable than death, for it seizes, freezes, and strangles the heart, drives people, unable to withstand its stabbing pains, to perform in its own service" (ibid). Interestingly enough, Montaigne classifies fear as a case of rapture or madness that drives people out of their minds and "ravishes our judgment from its proper seat" (ibid, p. 13). In other words, the Renaissance humanist sees fear in correlation with delirium and underscores its complex nature and the ability to produce different shades. A similar idea can be found in the works of an existential thinker, Kierkegaard (2005), who distinguishes between a regular fear based on comprehension (*Furcht*) and an inexplicable fear-sadness or fear-terror (*Angst*).

Fear has also been widely investigated in psychology, where it is defined as an emotion that emerges in situations of threat to one's biological or social existence and is targeted at the source of real or imaginary danger (Petrovsky & Yaroshevsky, 1990). Depending on the source of danger, the emotion can be differentiated in the following way: in real danger, a person experiences fear; in mysterious danger – horror; and in the combination of both – dread. Terror is felt when diverse dangerous causes are present simultaneously (Osipov, 1923). The latter is of the highest intensity, which leads to the widening of the eyes, a feeling of breathlessness, voicelessness, muscle shivering, a change in a heartbeat, unstable attention, a motionless body, "frozen thoughts," and inhibition or complete stop of the functioning of associative processes (ibid, p. 66).

Based on the cause, fear can also be classified into four major groups: 1) fear associated with a specific cause, condition, or situation; 2) fear associated with no particular reason, also known as *diffuse fear*; 3) fear of a mystical force that surpasses human imagination, or fear of God; and 4) existential fear, or fear of death (Gudkov, 1999). The latter is often accompanied by a wide range of symptoms, including panic attacks and depersonalization / derealization disorder, which refers to dissociation and a sense of alienation concerning

one's self and environment (Gatus et al., 2022). The experience is often compared to the feeling of "being in a bubble or separated from the world by an invisible barrier such as a pane of glass, a fog, or a veil" and a sense of detachment and estrangement from one's thinking, body, and world (Sierra & David, 2011, p. 99). Seemingly, terror is mainly a psychological phenomenon that exploits the human mind, turns one against himself, and implants disturbing thoughts of its horrifying implications. In response to such unbearable pressure of the emotion, the human mind begins to apply specific defense mechanisms to prevent the overload, including *displacement* (changing or displacing the original target of the impulse to another target), *repression* (unconsciously repressing feelings, memories or thoughts from the consciousness), *suppression* (the conscious effort to avoid certain feelings and thoughts), and *rationalization* (creating excuses and explanations to events or actions in rational terms) (Baumeister et al., 1998).

As a primary universal emotion, fear with all its shades and symptoms finds multiple manifestations at all levels of language, including interjections (*Oh my God! Holy Cow! Jeez! What the hell! Yikes!*), direct nomination (*fear, anxiety, trepidation, fright, scare, twinge, alarm*), description (*his heart leaped into his throat, she trembled inside, his legs became wobbly, his stomach clenched*), tropes and figures of speech (*fear spiked, terror sealed her throat, fear made my blood run cold, it struck terror in my heart, they were on pins and needles, I was quaking in my boots*). The semantic primitives for fear entail "bad, do, happen, know" (Wierzbicka, 1972, pp. 59–63). To put it another way, the semantic field of the notion of fear comprises a variety of forms expressing the belief that something terrible is about to happen shortly. Therefore, it is unsurprising that it is so broad. The reference to several dictionaries (Merriam-Webster, Cambridge, Collins, Oxford) and thesauri (Roget's Thesaurus, Visual Thesaurus, English Dictionary of Emotional Phrases) allows for determining the semantic field of the notion with a nucleus *fear*, the center that contains its close synonyms (*dread, alarm, apprehension, phobia, creeps, pang, agitation, intimidation, nervousness, trepidation, startle, scare, concern, anxiety, spook, fright, worry, panic, horror, being afraid, chill*, and *terror*), and the periphery that includes near-synonyms and associates (*calamity, agony, torment, misery, distress, unease, astonishment, cravenness, cowardice, perturbation, hesitation, timidity, shock, doubt*, and *dismay*). Visually, it is presented in Figure 1.

Fig. 1. Lexico-semantic field of the notion "fear"

The figure demonstrates that fear can be expressed by multiple synonyms, thus possessing different degrees of intensity. The list of synonyms presented can be further extended based on the study of more resources.

The analysis of dictionary definitions of the notions from the fear cluster also allows for the construction of a gradual cluster, where the notion of fear is taken as a starting point due to being the most neutral and having the most considerable number of properties and similarities with other group members and is defined as an unpleasant often strong emotion caused by anticipation or awareness of danger; anxious concern (Zhgun, 2022). Unlike fear, *dread* is defined as great fear, especially in the face of impending evil; extreme uneasiness; *horror* – as painful fear or dread; intense aversion or repugnance; and *terror* – a state of intense fear; sharp, overmastering fear. The gradual cluster is presented in Figure 2.

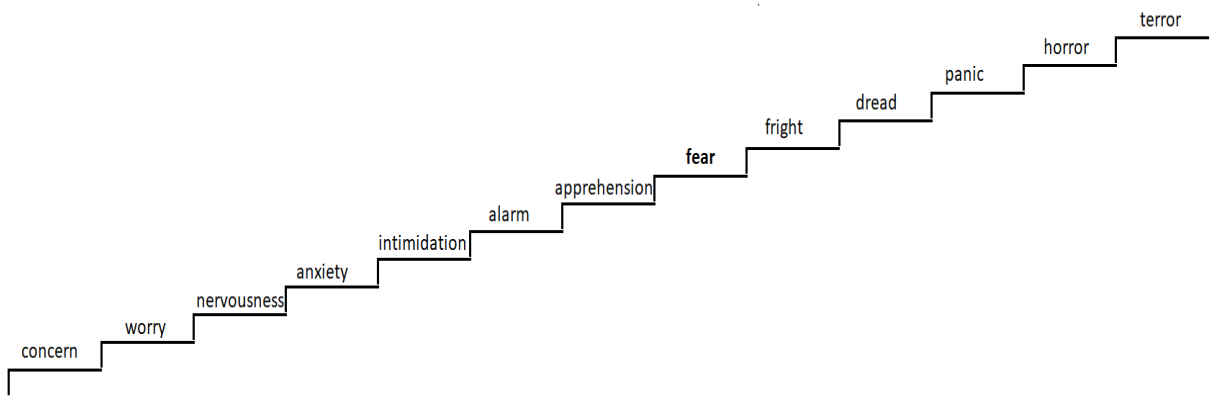

Fig. 2. Gradual cluster of the emotion "fear"

The figure shows that terror is the most intense emotion from the fear cluster. More of its definitions are provided below:

- a state of **intense** or **overwhelming** fear (Merriam-Webster Dictionary),

- **extreme** fear in the presence of **danger** or **evil** (Collins Dictionary),

- more violent that feeling spooked, more immediate than dread, less connected to gore and disgust than horror, an emotion that is felt in the presence of an **elusive, unseen menace** and leaves one rigid, rooted to the spot (Smith, 2015, p. 259).

As seen from the definitions, terror implies the feeling of alienation and extreme invisible and inexplicable suspense that the emotion evokes. Also, it is often felt in sudden, uncontrollable situations of danger. Such fierce nature of terror is also supported by the Word Associations Network (URL), where the word *terror* includes the following associations: 1) nouns: shriek, agony, dismay, remorse, scourge, repression, trembling, purge, despair, nightmare, suspense, shudder, bloodshed, brutality, torture, atrocity, 2) adjectives: stricken, paralyzed, superstitious, sheer, ghastly, stark, speechless, frantic, hideous, quivering, awful, mortal, inexplicable, haunting, helpless, utter, creeping, crouching, 3) verbs: to scream, to unleash, to shrink, to flee, to tremble, to utter, to mingle, to faint, to menace, to beset, to overwhelm, to inflict, to shudder, and 4) adverbs: madly, wildly, ghostly.

Fear overall, and terror in particular, has often been the focus of attention and speculation by many authors. As a result, a broad scope of examples of linguistic representation of fear and its synonyms can be found in literature:

(1) *She was so **afraid** of seeing him that her **stomach was in knots** and she thought she was going to be sick* (Kundera, 2000, p. 146).

(2) *Lenina suddenly felt all the sensations normally experienced at the beginning of a Violent Passion Surrogate treatment – a sense of **dreadful** emptiness, a **breathless apprehension**, a nausea. Her **heart seemed to stop beating*** (Huxley, 200, p. 174).

(3) *He had been standing by the lift for three hours. He was **on his fifth cigarette**, and his **mind was skittering*** (Barnes, 2016, p. 3).

(4) *It was a rhythmic, quick, blunt sound, and Cincinnatus, **all his nerves a-flutter**, heard in it an invitation* (Nabokov, 2001, p. 54).

(5) *One of the watchers forgot himself, began to applaud, and suddenly backed away, **eyes cloudy with terror*** (King, 2017, p. 49).

The specifics of the emotional state have been particularly skillfully conveyed in Vladimir Nabokov's short story "Terror" (Nabokov, 2008). Published in 1927, the story is a quick read about death, life, relationships, and one's place in the world. It follows the narrative of a very self-reflexive poet who undergoes several panic attacks and a pathological feeling of depersonalization, when he does not recognize himself in the mirror (*[...] the harder I found it to make the face in the mirror merge with that "I" whose identity I failed to grasp*; *I had grown disacquainted with myself*; *I now stood considering my own reflection in the glass and failing to recognize it as mine*; *that fleeting sensation of estrangedness*; *those unblinking alien eyes*) and derealization, when he does not register his girl's identity (*[...] somehow, for a split second, my mind did not register her identity in the dusty sun of the station*; *I am terrified by there being another person in the room with me*) and does not recognize the world around him, but perceives it as it is, unfiltered through habitual categorization, with its nakedness and meaninglessness (*I saw the actual essence of all things*; *[…] and that world was devoid of sense*), which is caused by his exhaustion and lack of sleep (*I would get up from my chair feeling chilly and utterly spent*; *I slept badly for three nights in a row*; *I had a lot of things to take care of, and I smoked a lot*; *Insomnia had left me with an exceptionally receptive void within my mind*; *Well – on that terrible day when, devastated by a sleepless night*). All of this induces a sense of supreme terror of death and a feeling of insanity (*I would abruptly remember that I was mortal*; *the sudden pang of death's foretaste*; *the helpless fear of existing*), which the poet tries to displace by putting out the light, deliberately whistling or humming, bringing back his childhood memories, maintaining rigid self-control, and even finding temporary salvation in grief.

With his inherent imaginative mastery, Nabokov details the emotional state and thoughts of the main

character and creates a credible atmosphere of horrifying pangs of fear he experiences. Being a brilliant virtuoso of language, the author uses diverse literary devices and figures of speech to convey the existential fear that grips the main character with the severity of a heart attack. Together, they facilitate the unity of the story. Let us provide some examples.

The first group includes excerpts that convey different overtones of the emotion of fear through direct nomination:

(6) *In point of fact, once or twice, late at night, I peered so lengthily at my reflection that a* ***creepy*** *feeling came over me and I put out the light in a hurry* (p. 173).

(7) *[…] in the dark, from the cheapest seats, in one's private theater where warm live thoughts about dear earthly trifles have* ***panicked****, there comes a shriek […]* (p. 174).

(8) *All at once, for no reason at all, I become* ***terrified*** *of her presence. This is far more* ***terrifying*** *than the fact that somehow, for a split second, my mind did not register her identity in the dusty sun of the station* (p. 174).

(9) *I laughed and began talking to her, but then felt that she had clutched my wrist and was silently* ***worrying*** *my wrist* (p. 175).

(10) *She shook her head, chiding herself with a deprecatory smile for her childish* ***fright*** *– but then burst into tears and asked to be taken home* (p. 175).

(11) *When getting ready for bed in my hotel room, I would deliberately whistle or hum but would start like a* ***fearful*** *child at the slightest noise behind me, such as the flop of my jacket slipping from the chairback to the floor* (p. 176).

(12) *I understood the* ***horror*** *of a human face* (p. 177).

(13) *Just as a man who is having a heart attack on a sidewalk does not give a hoot for the passerby, the sun, the beauty of an ancient cathedral, and has only one* ***concern****: to breathe, so I too had only one desire: not to go mad* (p. 177).

Apart from nomination, Nabokov pays close attention to the intensity of the poet's emotions, their depth, strength, unrestraint, and novelty (*supreme* (*special, odd*) terror, *acute unrelieved* anguish, *helpless* fear of existing). In addition, there is an abundance of metaphoric inventiveness as well as many illustrations of personifications of the narrator's emotional state:

(14) ***Overwhelmed with terror****, I sought support in some basic idea, some better brick than the Cartesian one, with the help of which to begin the reconstruction of the simple, natural, habitual world* (p. 177).

(15) *It was in the foreign city I reached next day that I was to have my* ***encounter with supreme terror*** (p. 176).

(16) *In this darkness everything at once began to move,* ***a shiver of panic*** *began to rise and resolved itself in feminine cries […]* (p. 175).

(17) *[…] with the* ***black thunder of panic*** *growing – until suddenly the lights come on again, and the performance of the play is blandly resumed* (p. 174).

The last example is of particular interest. The emotion of fear is expressed by its synonym – panic. The notion is located a few steps higher on the gradual cluster due to its higher intensity:

- a **sudden uncontrollable** fear or anxiety, often causing **wildly unthinking** behavior (Oxford English Dictionary),

- a sudden overwhelming fear, with or without cause, that produces **hysterical** or **irrational** behavior, and that often **spreads quickly** through a group of persons (Collins Dictionary).

The emotional state is conveyed metaphorically – *the black thunder of panic* – where *thunder* is defined as the **sudden** loud noise that comes from the sky during the storm (Cambridge Dictionary). The definitions show that the emotional state is associated with a natural phenomenon based on its unexpectedness and uncontrollability. In addition, the adjective *dark* emphasizes the negative impacts of panic as it causes one to lose rationality and clear thinking.

A broad palette of compositional techniques to convey the emotional state of terror is also applied in the short story, including inversion and repetition:

(18) *In vain* ***did I try*** *to master my terror* (p. 177).

(19) *While I traveled back, while I sat at her bedside, it never occurred to me to analyze the meaning of being and nonbeing, and no longer* ***was I terrified*** *by those thoughts* (p. 178).

(20) ***I am terrified*** *by there being another person in the room with me;* ***I am terrified*** *by the very notion of another person* (p. 174).

The author also resorts to the convergence method or the simultaneous usage of two or more linguistic devices. Let us analyze one particular example that perfectly delivers the main character's emotional state.

(21) *Thus would my soul* ***choke*** *for a moment while,* ***lying supine, eyes wide open****, I tried with* ***all my might*** *to* ***conquer fear****, rationalize death, come to terms with it on a day-by-day basis, without appealing to any creed or philosophy* (p. 174).

In this case, the emotional state of already ingrowing fear is linguistically represented by several means, including direct nomination (*fear*) and description (*lying supine, eyes wide open*), which shows the negative influence of fear on the poet, i.e., its ability to stop him from falling asleep. Also, the uncontrollable nature of fear is conveyed by the metaphor *to conquer* and the phrase *with all my might*. Fear is also implied in the phrase *Thus would my soul choke*, where the verb *to choke* is used metaphorically, implying that fear stops the main character from breathing by strangling him. In other words, the analysis of the excerpt demonstrates that convergence allows for more expressivity, creating a more vivid image of the emotion of fear.

Quite often, the emotional state of fear and its synonyms is solely implied in the story:

(22) *I saw that she was* ***pale*** *and that her* ***teeth were clenched****. I* ***helped her to get out of the lodge*** (p. 175).

(23) *[…] even though you realize that* ***the frost of this mysterious anesthesia*** *will presently wear off* (p. 173).

Both examples show the paralyzing effects of extreme fear: in example (22), it makes the woman mo-

tionless by preventing her from getting out of the theater by herself, whereas in example (23), it is conveyed by metaphors of *frost* and *anesthesia* that imply the condition of feeling frozen and numb accordingly.

Being quite obsessed with reaching for the most precise word for the emotional state, the author, however, is sometimes incapable of (or deliberately trying to avoid) verbalizing the character's feelings in order to create a more true-to-life atmosphere:

(24) *Supreme terror, special terror – I am* ***groping for the exact term but my store of ready-made words****, which in vain I keep trying on,* ***does not contain even the one that will fit*** (p. 174).

(25) *Once only – and here again* ***I feel what a clumsy instrument human speech is*** (p. 174).

Notably, the excerpts show the narrator's failed attempt to find suitable words to express his terror. The unique character of the emotion that is unnamed and has never been experienced either by him or others is implied in the metaphor *my store of ready-made words* which conveys the absence of suitable words. In addition, the verb *to grope* (to feel about **blindly** or **uncertainty** in search) adds more to the description of the narrator's despair to verbalize his emotional experience. The condition is known as *alexithymia*, or the inability or difficulty to express emotions verbally, an emotional overwhelm. Frequently, authors resort to the linguistic representation of alexithymia when they want to underline the intensity of the emotion, create a pragmatic effect, or leave space for the reader's imagination (Zhgun, 2020). The latter is significant because "it is our imagination and our sympathy which communicates our emotion" and "the resource of conveying our emotion to each other does not depend upon the wealth of words only" (Markino, 1913, p. 480). Indeed, the idea does not imply a complete ignorance or disparagement of the beauty of rhetoric and words, especially in literature.

Apart from diverse linguistic devices used to express and imply the emotional state of terror of the main character, the story has many hidden ideas that expose more importance and detail through closer reading and rereading that Nabokov himself insisted on so often. More specifically, there is a clear parallel between associating the narrator's overall state with darkness on the one hand and the lightness of a happy being on the other, or his perplexity of the mind on the one hand and clarity and transparency of thinking that can come to his rescue on the other. Linguistically, such parallels are expressed by several associates of the author and are scattered throughout the whole story that can be revealed with the investigation of the general context. To illustrate, it is evident from the analysis of the short story that the poet's bouts of extreme fear mainly occur at night or in dark places. Thus, the emotion is implied in terms of opaqueness and is conveyed by associates such as *night, shade, in the dark, in the darkness, in the darkish vestibule, blind,* or *black*. Contrarily, the purity and emotional maturity of the poet's girlfriend that he admired and subconsciously strived for (*It was exactly that gentle simplicity of hers that protected me: to her, everything in the world had a kind of everyday clarity, and it would even seem to me that she knew what awaited us after death, so that there was no reason for us to discuss the topic*) is implied in the idea of lightness and transparency (*glow with warmth, the lights, tawny sunlight, a strand of fair hair, gleam touchingly, pale-gold decorations, bright eyes, inflamed little eye of the sun, sunlight flooded her room, a kind of everyday clarity, the looking glass, a mirror, glazed vault, one ear, translucently pink)*. It is essential to note that the dichotomy of dark and light permeates many of Nabokov's works, where death and the unknown is associated with darkness (*And common sense tells us that our existence is but a brief crack of light between two eternities of darkness).* In contrast, the victory of mind and reflexive consciousness over the fear of death and time pressure is associated with light (*Judging by the strong sunlight that, when I think of that revelation, immediately invades my memory with lobed sun flecks through overlapping patterns of greenery*) (Nabokov, 2000, p. 5). In that respect, Bitsilli (1970, p. 117) believes that many of Nabokov's works are characterized by "a revival of allegorical art." Regarding the images of darkness and lightness, one can notice the reference to Gnosis, which is based on a belief in the dualism of divine (light, pneumatic) and demiurgical (dark, hylic) (Ginza, p. 14, as cited in Davydov, 1982). Created by the Demiurge, man's soul is trapped in his body and has to live in constant fear of death in the "dead house" in the state of "an unconscious dormant monad" (Davydov, 1982, p. 110). However, there is a possibility of salvation, but only to "the chosen" ones, who have a divine spark in them or who "are enlightened in their spiritual part by a ray from the divine light" (ibid, p. 123). In other words, the gnostic dualism of dark and light is fulfilled in the oppositions expressed and implied in the short story, where the poet is constantly living in fear and in the dark of the unknown that imbues his existence (*I would emerge from the trance of my task at the exact moment* ***when the night had reached the summit*** *and was teetering on the crest*;), unlike his girlfriend who exists in the light and transparency and is permeated with such light substance (e.g. *one ear,* ***translucently*** *pink, is half concealed by a strand of* ***fair*** *hair).* In addition, the antagonistic nature of the poet's darkness and the girl's lightness is implied in his recollections and a dream about her. The latter he, in fact, found "so unpleasant, so hideous" *(but good God! How I loved her unassuming prettiness, gaiety, friendliness, the* ***birdlike flutterings of her soul****; The first night I saw my girl in dream:* ***sunlight flooded her room****, and she sat on the bed wearing only a* ***lacy*** *nightgown, and laughed, and laughed, could not stop laughing*).

Apart from the allegoric motifs, the story contains a few meaningful symbols. To illustrate, when describing the girl's appearance, Nabokov resorts to his beloved symbol of a butterfly *([…] from which I helped her to extricate her slender* ***silk-clad*** *legs – and I thought of those delicate* ***moths*** *that hatch from bulky shaggy cocoons*) and a pearl (*[…] and the small* ***pearls*** *around her neck gleam touchingly; With her bare elbow she almost knocked down from the plush parapet her little* ***nacreous*** *opera glasses*). In the dictionary of symbols, a butterfly with its life cycle is an emblem of

immortality that provides an analogy of life (the crawling caterpillar), death (the chrysalis) and rebirth or resurrection (the butterfly fluttering free); it also represents soul and transient joy as well as the ability to adjust to life and strive for the beauty (Tresidder, 2005, p. 80). In turn, a pearl is considered an allegoric symbol of heaven and pure soul, spiritual maturity, innocence, femininity, and light (ibid, p. 376). In other words, both symbols are applied to the girl and imply her lightness and innocence. Another predominantly positive symbol is the mirror, which typically means enlightenment, self-knowledge, sincerity, and purity (Tresidder, 2005, p. 318). Yet, the poet cannot recognize himself in the mirror and "merge" his face with his identity, so he rushes to get away from it and switch off the light. Since the mirror never lies, it is possible to assume that the poet is afraid of the truth and denies his true nature. In this regard, he refers to the idea of doppelgangers (*[…] so that there were two of me standing before her: I myself, whom she did not see, and my double, who was invisible to me*), which also implies a split in his personality and his separateness from the world. The latter he acutely experiences during his pangs of terror (*My line of communication with the world snapped, I was on my own and the world was on its own*). The inability to recognize himself in the mirror might also imply his failure to adequately reflect the whole reality, which often symbolizes "moral blindness" and "creative impotence" (Krasheninnikov, 2014, p. 86). Indeed, under a careful investigation of the story, it becomes clear that the poet is going through an artistic crisis – he cannot sleep well, exhausts himself with work effortlessly looking for inspiration, feels "utterly spent," and often cannot find the right words to express himself. As a result, he feels emotional burnout and constant anxiety. All this underlines the poet's incapacity to fight his inner darkness.

The study of the allegorical motifs and symbols adds more to the understanding of the poet's state and demonstrates that the story is much more than a simple description of his existential fear of death or insanity. It is sort of Nabokov's way of exposing the poet's mediocrity and belonging to the mundane world of things rather than to the heavenly world of imagination. Also, the short story exemplifies a double victory of darkness over light. The first victory is implied in the death of a pure and light girl, as opposed to the unbearable life of a paranoid and dark poet. The second victory is more of an existential character and implies the triumph of the poet's fears over his soul, which can be confirmed in the concluding lines of the story.

The abovementioned analysis of linguistic means conveying the emotional state of terror together with a thorough inspection of the author's symbolic associations through communicative signals present in the short story allows for constructing the text associative semantic field of the notion of terror represented in the short story. The nucleus is verbalized by the lexeme *terror* and its derivatives (*terrifying, terrified, terrible*), the center includes its synonyms (*fear / fearful, horror, a creepy feeling, panic / to panic, concern, to worry, fright / frightening), and the periphery contains author's associates with the emotion (unpleasant / hideous / nauseated, madhouse / lunatics / to go mad / delirium / insanity, dark / darkish / darkness / in the dark / shade / black / night, mortal / death, odd / alien / estrangedness, mysterious, absurd / absurdity, chilly / frost, anesthesia, aimless, tortured, doomed, to scream / cries / shrilly / a shriek, tempest, anguish / pain, astonishment, grief*). Visually, the field is presented in Figure 3.

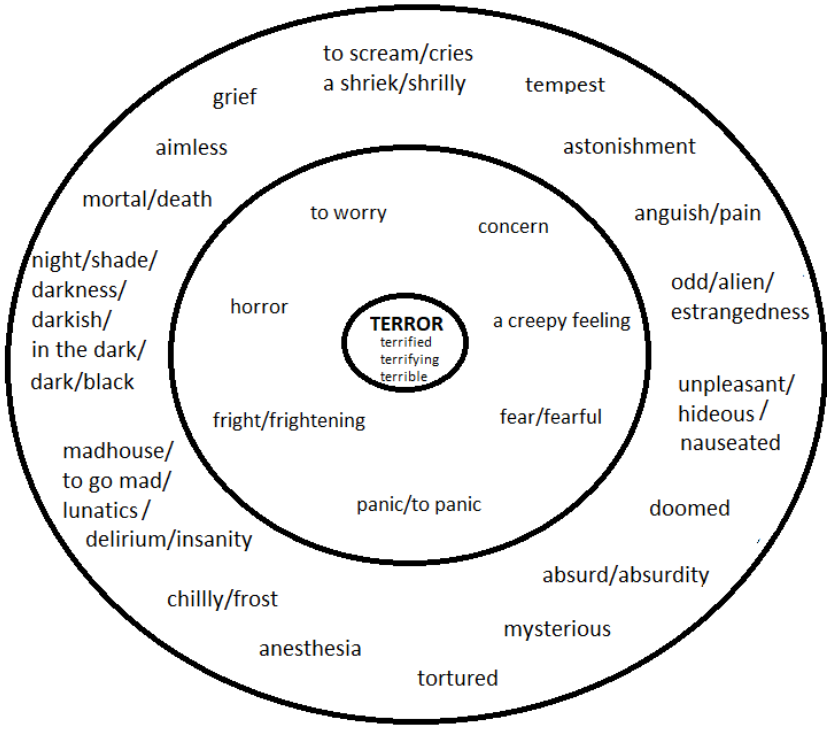

Fig. 3. Text associative semantic field of the notion "terror"

As seen from Figure 3, the periphery constitutes the most voluminous part of the field. The most frequently associated with the emotion of terror are madness, darkness, death, and screams that convey different ways of causation and representation of the emotion. The text associative semantic field reflects the author's unique worldview and idioglossary that helps reveal more shades of the emotion under study as well as new emotional and evaluative overtones, including panic terror, terror-disgust, terror-rage, terror-surprise, and terror-grief, which emerge in the result of the analysis of the relation between the nucleus and close and distant peripheries of the field. In turn, the context analysis adds more clarity to the interpretation of the overtones. For instance, being fed up with pangs of terror, the poet also feels disgusted at his incapacity to overcome it (terror-disgust) and enraged at the absurdity of the causes of his terror (terror-rage). In addition, the perplexity before the mirror and the morning astonishment at the terror of questioning reality imply that the character often experiences two emotions simultaneously (terror-surprise). Finally, together with feeling consciously or subconsciously terrified of the recurrence of fear attacks, the poet feels extreme grief after losing his girl (terror-grief).

Thus, the construction of the text associative semantic field of the notion of terror in Nabokov's eponymous short story has shown that it can actualize the semes that are not reflected in dictionaries and thesauri but present in the author's consciousness and help reveal the implied emotional and evaluative overtones of the emotion. In addition, a detailed linguistic analysis has provided conclusive evidence that there exists a rich repertoire of means conveying a refined collection of fears verbally that demonstrates a high degree of the individualization of the writer's world perception. The perspectives of the research might include the study of other genres of literary discourse. Also, in analyzing Nabokov as a bilingual author, there is a promising field of comparing and contrasting the content of the text associative semantic fields based on the analysis of his artwork both in Russian and English.

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COGNITIVE BENEFITS OF GROWING UP IN A BILINGUAL FAMILY

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Abstract
Children who grow up in a bilingual home are faster at distracting and perceiving visual changes than adults who learn a second language later. This research supports the idea that growing up in a bilingual home can provide unexpected cognitive benefits later in life. In this respect, the subject is quite current.

Keywords: Bilingual family, cognitive benefits, language teaching

"Bilingualism" means the ability to communicate in two different languages. Children who grow up in an environment where two different languages are spoken from the moment they are born can acquire both languages naturally. In some cases, there are children who grow up in a family environment where three or four different languages are spoken. Such situations are defined as "multilingualism" [1, p.111-112].

"Monolingualism", on the other hand, refers to the ability of children who grow up in environments where only one language is spoken, to communicate in that language.

Some researchers argue that acquiring different languages at the same time slows down the child's language development and lags their communication skills. However, researchers who oppose this view argue that brain development is very important, especially in the first three years, and that language acquisition is easier for the child in this period.

A two-year-old child has more synaptic connections in his brain than an adult. These synaptic connections in the brain are lost when not used. For this reason, it is emphasized that it is more advantageous to teach two different languages to the child in the early period. Language acquisition begins before the child is born [2, p.14-15].

The most important step in language acquisition is the development of "understanding". Generally, babies' understanding is 6 months ahead of their speech. Therefore, the baby can be exposed to two different languages at 6 months of age or even from birth. Many children acquire both languages naturally.

Growing up in a bilingual family is also very beneficial for children. More information about this will be given in the next chapters.

Difference between "acquiring a language" and "learning a language"?

Language is acquired spontaneously, thanks to a natural ability in humans. Every child acquires his own language by hearing and imitating what he hears. In other words, there is no conscious and systematic learning-teaching situation. Learning a language requires a person's volitional effort. Learning is a process and requires active effort. Foreign language "teaching" in schools is now reduced to pre-school period.

Foreign words taught to children in kindergarten are doomed to be forgotten if they are not used in other environments. However, "language acquisition" continues all the time. Parents need to know the difference between these two situations and have a clear understanding of what they can expect from their children. Of course, trying to teach a second language to children aged 3-6 is not the same thing as a child's natural growth in two different language environments [2, p.13].

Studies have shown that children aged 4-6 progress more slowly than children aged 7-9 in learning a second language. The reason for this is that children aged 4-6 cannot master their mother tongue, the social environment to share what they have learned is limited, and their literacy skills are not developed.

Many children forget or confuse the words they learned in kindergarten after a certain period of time. In addition, children of this age can often be taught one- or two-word expressions.

This does not meet the communication needs of the child. Children who grow up in environments where two different languages are spoken continue to hear and use both languages actively. Therefore, the languages they acquire are more permanent.

Advantages and disadvantages of acquiring two languages simultaneously in the family

Acquiring two different languages in natural environments provides many advantages. Two different languages develop two different ways of thinking, the child uses the social advantages of knowing different cultures. If the child acquires both languages by hearing from native speakers, they can speak these languages without an accent. This will only happen if the child has the opportunity to hear and speak both languages equally.

For example, if we think of a child born and raised in the United States, at home his parents will use their mother tongue, Azerbaijani, and at school he will speak English with teachers and friends. If this situation is continuous and if he learns and uses literacy in both languages, he will be able to speak and communicate in both languages without an accent.

On the other hand, if, over time, the dominant language at home instead of Azerbaijani starts to be English, and the child who spends most of the time at school will tend to use this language in the home environment, the child's dominant language will be English and the level of proficiency in Azerbaijani will decrease [3, p.148].

This may turn into a disadvantage in the future. There may be communication difficulties between the child and the parent or other relatives who have learned

English later and do not have a good command of this language.

When second language acquisition begins after the age of three, the child may struggle between the two languages for a while and there may be a slowdown in the development of the first language. However, after a certain period of time, the child can adapt to the situation. The fact that the acquisition of a second language coincides with the primary school period can also create a disadvantage in the academic life of the child.

Things to consider in order to accelerate the language development of bilingual children in the family

Families who have to acquire two different languages or who want to teach their children two different languages simultaneously should use both languages equally from the moment the child is born. One of the methods that can be applied in this regard; While talking to their children, one of the spouses speaks in one language and the other in the other language and to be determined in this regard. Generally, parents are advised to speak in the language they can express themselves most easily and clearly.

Another method is to use a single language in the home environment. The child acquires the second language in the school environment. Bilingual children often tend to use both languages together. For example, since the child who says, “Mom bought me a yellow skirt” is trying to express himself in some way, in such situations parents should show that they understand the child and rephrase the same sentence or phrase in their own language to be the correct model.

Language can be developed when there is a need to use it. Therefore, the child should be given the opportunity to use both languages. Different people and different environments should be provided to speak that language. It will be beneficial for the child to hear both languages from different genders and different age groups (young, child, old).

Parents should take care to create such differences. Playing games that involve role-playing, such as being a housewife or doctor, make a great contribution to the child's language development when played with parents [4, p.98]. At the same time, it is a more effective way for parents to talk about the work they are doing at the moment, as it allows children to use their eyesight and hearing at the same time. Parents who want to accelerate their children's language development can also apply the method of expressing the child's sentence with different words.

For example, when the child says "this tree is big", the parent says "yes, it's a big pine tree" as well as teaching the child new words. Reading fairy tales and telling stories support them to learn new word and sentence structures.

Songs in which the same word or phrase is repeated, active games will make language acquisition fun. Of course, it is very important that these activities mentioned above are carried out equally in both languages. However, each parent should only perform these activities in the language they speak best so as not to confuse the child.

The personality structure of the child also determines the speed of language acquisition. Curious, sociable, inquisitive and communicative children make rapid progress in both languages. Children who are shy, afraid of making mistakes, and have less motivation to communicate progress more slowly.

An important point that parents should not forget; It is that the child has the opportunity to hear and speak more, he will have more command in the language he has learned to read and write, and he will be less active in the language that is less used. Therefore, if a 5-year-old child who can use both languages fluently learns to read and write in only one language, he will be more effective in that language and he will forget the language he does not use in time.

Conclusion

As a result, if the child is not bilingual, that is, if the mother tongue of his parents is the same as the language used in the society, we are talking about "language teaching" here, not "language acquisition".

Different researchers have different opinions on the age at which to start learning a second language. Some argue that teaching a second language before the child fully acquires his or her mother tongue retards the acquisition of the mother tongue. The main point here is:

If a child aged 3-6 can clearly express their wishes, feelings and thoughts and ask questions in their mother tongue, trying to teach a second language will not have a negative effect.

However, as mentioned before, when the children aged 3-6 who were taught a second language in their family were compared with the children who were taught a second language in the family between the ages of 8-12, it was seen that the older group learned faster and had less forgetting in the learned language.

This research indicates that teaching a second language in the family during the preschool period does not provide a great advantage. When the adulthood period was compared with the ages of 8-12, it was seen that the success in language learning decreased as the age progressed. Therefore, the most suitable ages for teaching a second language in the family coincide with the primary school years.

This study and other similar studies have also shown that information learned during school years is quickly forgotten if not used in adulthood. In the preschool period, when it comes to children who have trouble using their mother tongue, it is not recommended to give second language education as it may cause more problems for the child.

On the other hand, second language teaching does not have a negative effect on children who have the ability to express themselves by using their mother tongue very comfortably.

In fact, many studies have shown that teaching a second language to a child who has acquired his mother tongue in normal processes facilitates the child's mastery of the second language in a bilingual family and improves his ability to think in both languages.

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PHYSICAL SCIENCES

ELECTRICAL BREAKDOWN IN WATER

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Abstract
The process of formation of anodic electrical breakdown in the crystal structure of ice and liquid water is considered within the framework of the mechanism of generation of free charge carriers through interatomic Auger transitions in the valence band of the dielectric.

Keywords: mechanism of electrical breakdown in water, electrical strength of water

Introduction

Electrical breakdown in the form of a corona discharge is widely used for water disinfection [1]. The impulse electrical strength of liquid dielectrics turns out to be higher compared to solid ones. The construct with needle electrodes at the interface between the media ensures the introduction of a discharge into a solid dielectric. This effect allows the use of water in electric pulse technology for the destruction of rocks, concrete, and building materials [2-4]. The high dielectric permittivity and high pulse electrical strength of water (~ 0.5 MV/cm) make it possible to use water insulation in the forming line of pulsed high-current accelerators of charged particles in the megavolt range, which is an integrating RC circuit at the output of the pulse voltage generator. Water has another quality necessary for such systems - the ability to quickly restore electrical strength after a breakdown [5, 6].

The properties of electrical breakdown of ice and water are characteristic of solid and liquid dielectrics [7, 8]. According to work [6], the development of a discharge in water in a uniform field occurs from the positive electrode (anode breakdown). Optical imaging of the leader stage of breakdown showed that in an inhomogeneous electric field strength with ~10^5 V/cm, the average velocity of the positive leader (~$5 \cdot 10^6$ cm/s) significantly exceeded the average velocity of the negative leader (~$I0^5$ cm/s). As the leader moved deeper into the gap, his speed increased [6]. At a higher average field strength of ~10^6 V/cm with a point-plane electrode configuration, the velocity of the positive leader reached ~10^7 cm/s [9]. Measurements of the pre-breakdown conduction current using a bridge circuit with a positive polarity of the point electrode showed a current strength of ~ 0.3 A [10]. The electrical strength of ice (~0.3 MV/cm) is comparable to the strength of dielectrics such as PMMA (~0.37 MV/cm), PP (~0.4 MV/cm), glass (0.4 MV/cm) [2, 7].

The prospect of using water as insulation in electric pulse technologies and high-current accelerators of charged particles suggests the need for further study of the mechanism of electrical breakdown in water.

Previously, it was shown that anodic electrical breakdown in alkali halide crystals [11-18], quartz [19], semiconductor CdS [20], solid [21, 22] and liquid [23] organic substances with long chains of atoms is satisfactory is described by the mechanism of interatomic cascade Auger transitions. The appearance, movement and orientation of the electrical breakdown channel is determined taking into account data on the crystal chemical and energy structure of the substance.

In this work, the process of formation of an anodic channel of electrical breakdown in ice and liquid water is discussed within the framework of the mechanism of generation of free charge carriers through interatomic Auger transitions in the valence band of the dielectric.

Crystallographic and electronic structure of ice and water

Experimental and theoretical studies of the atomic and electronic structure of an isolated H_2O molecule, solid and liquid phases of water are quite numerous (for instance, [23-31]).

The structural features of hexagonal ice I_h have been studied quite well using X-ray diffraction and electron and neutron diffraction methods [23]. Calculation models of ordinary ice follow the Bernal-Fowler rules: each oxygen atom is at the center of a tetrahedron with four other oxygen atoms at its vertices, spaced 2.7 Å apart. Along all four nearest O-O directions there is an H atom, two of them form an O-H hydroxyl bond, the other two form an O···H hydrogen bond with the central O atom. Each water molecule is connected by hydrogen bonds to its four nearest neighbors: it gives off two hydrogen bonds and accepts two hydrogen bonds. This arrangement of molecules in a lattice produces significant intermolecular attraction. The lattice consists of layers perpendicular to the ***c*** axis of the crystal and containing hexagonal rings of water molecules. There are also hexagonal rings formed by three molecules in one layer and three molecules from the next layer (Fig. 1) [23-27].

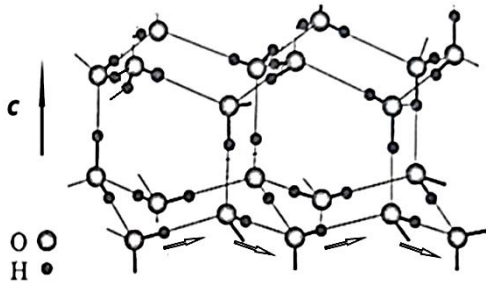

Fig. 1. System of intermolecular bonds in the hexagonal structure of ice [27]. The arrows show the movement of the breakdown channel

The sizes of water molecules in ice I_h differ slightly from the sizes of isolated molecules. For ice, the O-H distance is 1.01 Å (for an isolated water molecule 0.96 Å), and the H-O-H bond angle is probably slightly larger than the bond angle in an isolated molecule of 104.5 degrees [24].

The arrangement of protons is not easy to achieve experimentally, since spectroscopy methods mainly characterize the positions of oxygen atoms. The distribution of protons in the environment of the O atom must obey the Bernal-Fowler rules. However, there are many ways to distribute hydrogen atoms to realize such a global order. Variations in the O-H order in tetragonal coordination create dozens of ice phases [24, 25].

The authors of [24, 25], note that different ice structures are almost indistinguishable from the point of view of energy and local bond structure.

The energy eigenvalues of an isolated H_2O molecule arise as a result of interactions between the O 2s, O 2p and H 1s states of the atoms. The electronic structure of ice and water is constructed using water clusters [28, 29] or the solid state [30] using quantum chemical methods and Monte Carlo calculations. In the accepted notation [28-31], the eigenstates of a water molecule include 2a1 (O 2s with some H 1s character), $1b_2$ and $3a_1$ (O 2p hybridized with H 1s), $1b_1$ (non-bonding O 2p), and the lower unoccupied $4a_1$ (O 2s, 2p and H 1s) and $2b_2$ (O 2p and H 1s). States. $2a_1$, $1b_2$ and $3a_1$ belong to binding states, while $4a_1$ and $2b_2$ have anti-binding features (Fig. 2, a).

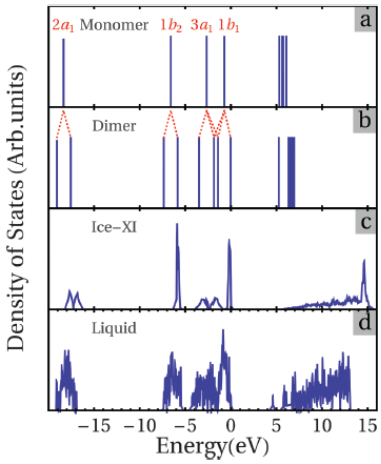

Fig. 2. Calculations of the intrinsic energies of isolated H_2O and its dimer, the density of states of the ice phase and water, simulated at 300 K [30]

For the dimer H_2O and Ice-XI the distortion of molecules and interactions between molecules cause splitting of the $1b_2$ states (about 1.5 eV) and further hybridization between the $3a_1$ and $1b_1$ states (Fig. 2, b, c). This gives a decrease in the new $3a_1$ states and an upward shift in the new $1b_1$, together with the creation of two new hybrid states (bonding $3a_1/1b_1$ and anti-bonding $(3a_1/1b_1)$* state) with two peaks around -3.2 eV and -1.6 eV, respectively. O 2p states dominate here, mixed with some H 1s character. The $1b_2$ band at -6 eV and the $1b_1$ band at the top of the valence band (set at 0 eV) show atomic orbital behavior with very small band widths. The lowest level $2a_1$ belongs to O 2s states hybridized with H 1s orbitals, with two peaks around -17.7 eV and -16.8 eV, respectively. The lower unoccupied $4a_1$ states also experience a decrease in energy due to further hybridization [30].

The split in the energies of the monomer orbitals during the formation of a dimer reflects the feature that each water molecule plays the role of a proton donor or acceptor. H - bonding involves mixing of $3a_1$ and $1b_1$ orbitals. This causes the $3a_1$ and $1b_1$ bands to expand during condensation [28, 29].

In the research [30], for Ice-XI the density of states (DOS) of the lower part of the conduction band (from about 5.6 to about +14.5 eV) is formed by O 2p/3s states mixed with some H 1s character. These states in the lower part of the conduction band show significant

dispersion of more than 5 eV. The peak occurs at approximately 14.5 eV with a predominance of O 2p–H 1s states (anti-bonding, $4a_1$). The energy gap between the occupied and unoccupied states was 5.55 eV (Fig. 2, c, d).

According to calculations [30], the electronic structure of water at a temperature of 300 K is similar to the Ice-XI phase (Fig. 2, c, d). The DOS curves of water at 300 K are more dispersed; there are tails in localized states near the bottom of the conduction band. Opinion of the authors of [30], the obtained electronic structures and energy gaps for the ice and liquid water phases are in good agreement with the available experimental data.

Experimental studies of the band gap Wg of ice and water involve estimating the ionization potential obtained from measuring the photoelectron emission and electron affinity of water W_0 via inverse photoemission.

An analysis of the Wg values of ice and liquid water at ambient temperature, taking into account reliable recent experimental data, was made in [31]. The authors assume the ionization potential of liquid water to be ~10.0 eV. Electron affinity is estimated as W_0= -1.0 eV. The Wg value is ~9.0 eV. The hexagonal phase of ice is stable at ambient temperature and pressure and has been the subject of numerous experimental and theoretical studies. At a temperature of 77 K, the ionization potential is assumed to be ~10.3 eV, W_0 = -0.9 eV, which gives Wg = 9.4 eV.

Probably, a slight increase in the electron affinity of liquid water compared to W_0 ice is associated with the formation of defects or regions where free hydrogen atoms can interact with delocalized electrons [28, 29].

Obviously, there is no long-range ordering in liquid water. However, at short-range the structure of water is topologically the same as those of ice, but with flexible bond-lengths and angles of H_2O tetragons [30].

It can be concluded, that the electronic structures of the various phases of ice and liquid water are similar in shape and are in good agreement with the available experimental data.

Model of the electrical breakdown channel in water

The energy band diagram in the area of contact between the metal electrode and water in a strong electric field is shown in Fig. 3. The energy levels of the states of O and H atoms are given in accordance with the data from [30].

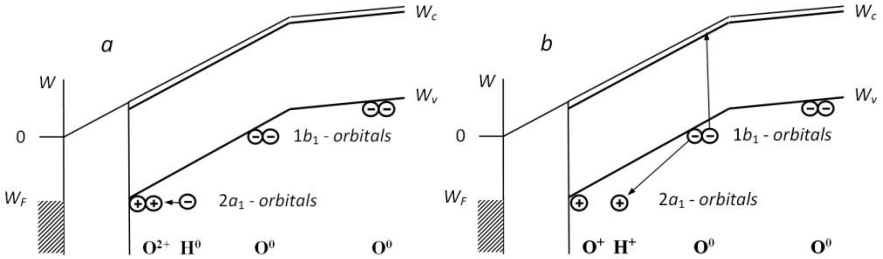

Fig. 3. Scheme of resonant (a) and Auger (b) transitions in water in a strong electric field. Wc, Wv, W_F - energy levels of the conduction band bottom, crystal valence band ceiling and the Fermi metal, respectively

According to [13-15], the beginning of the formation of a breakdown channel is determined by processes at the metal–insulator interface. At an average field strength in the sample of ~10^6 V/cm, the actual field strength near the microtips of the electrode can be more than ~10^8 V/cm [14]. In the near-electrode region of the dielectric, due to the tunneling transition of electrons into the metal, O^{2+} ions with two holes are formed in the $1b_1$ orbitals. For this, the required voltage *U* shall be such that the edge of the valence band of the dielectric will rise to the Fermi level of the metal. It is most likely that a neighboring hydrogen atom participates in the process of hole recombination through resonant electron transfer from the $3a_1$ level of hydrogen to the $1b_1$ level of oxygen. The process is realized with an energy increase in the $3a_1$ level by ~ 3 eV (Fig. 3, a). The decay of a hole into H^+ occurs as a result of the interatomic Auger transition of an electron from the $1b_1$ orbital of a neighboring O atom and the subsequent generation of an Auger electron into the conduction band (Fig. 3, b).

The transition of an Auger electron to the conduction band occurs provided that the minimum energy gap between the $3a_1$ orbitals of H^+ atoms and the $1b_1$ orbitals of O in the electric field is not less than the band gap of the dielectric. Issues related to estimating the electric field strength on the surface of the breakdown channel front are considered in [14, 15]. In alkali halides, the necessary band bends for Auger transitions are provided by the electric field of the space charge, which includes a layer of doubly and layers of singly charged halogen ions. The front of the breakdown channel coincides with the boundary of the space charge.

A single cycle of movement of the front of the fire can be divided into three successive stages. At the first stage, when the critical local electric field strength of 10^8 V/cm is reached, a resonant transition of the electron from H to the O^{2+} atom occurs in a time τ_r ~10^{-16} s and the channel moves to the interatomic distance (Fig. 3, a). The second stage is associated with the recombination of a hole on H^+ due to the interatomic Auger transition of an electron from a neighboring oxygen atom during a time τ_A ~10^{-16} s and the generation of an Auger electron into the conduction band of the dielectric. The channel moves one more interatomic distance (Fig. 3, b). The negative charge of electrons reduces the charge field of holes and, accordingly, the bending of bands near the boundary of the charge zone. The third stage is associated with the extraction of electrons by an external electric field from the space charge region, and the achievement of a critical field strength for the next cycle. Cycle time Δt can be represented as

$$\Delta t = \tau_r + \tau_A + \tau_1, \quad (1)$$

where τ_1 - time to reach the critical field strength.

The structure of the breakdown channel is formed by a set of single Auger transition channels (Fig. 1), passing in one direction, and includes a positive space charge and a conducting channel of complex phase composition with electron-hole plasma.

The channel front moves from the positive electrode into the sample. The channel diameter is probably determined by the size of the area within which a layer of O^{2+} ions is formed in the near-surface region of the dielectric, and its size is proportional to the external voltage. This pattern was observed previously for KCl and KBr crystals, in which the diameter of the breakdown channel increased linearly with voltage in the range of 100−300 kV [8].

Conclusion

There is no long-range order in liquid water, but at short distances the crystallochemical structure of water is topologically the same as that of ice. The electronic structures of various phases of ice and liquid water are similar in shape and are in good agreement with the available experimental data. A model is proposed for the generation of free charge carriers in samples of crystalline ice and liquid water through interatomic Auger transitions in the valence band of the dielectric. The model satisfactorily interprets the anodic nature of the breakdown, high speeds of the breakdown channel of 10^7 cm/s, and prebreakdown current density ~ 10^4 A/cm^2.

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SOCIAL SCIENCIES

GENERAL ISSUES ON THE PURIFICATION AND ENRICHMENT OF THE ALBANIAN LANGUAGE

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Abstract
The aim of this paper is to highlight some historical and linguistic issues, which have influenced the purification and development of the Albanian language over the years. In the entirety of our social and cultural life, language development occupies a special place. This development is related to the establishment of norms in the entire system and subsystems of the literary language. Many researchers have made a valuable contribution, where with their studies in linguistics they have raised, enriched, sound foundations in the field of the Albanian language. In order to address the problems of the Albanian language, the historical, social and linguistic factors must be taken into account, in such a way that the phenomena that have occurred and the various problems can be understood as clearly as possible. The methodology used is the research methodology used by Albanian and foreign scholars.

Keywords: Albanian language, general lexicon, terminological lexicon

Introduction

E. Çabej[3] wrote that "...language reflects a nationality, it is the clearest reflection of a nationality and its culture. The degree of richness and purity of the language is an indicator of the level of this culture...". Encouraged by these principles, authors such as Gjon Buzuku, Pjetër Bogdani, Pjetër Budi, Fran Bardhi have begun the work to purify and enrich the Albanian language, and in their writings we can find words[4] like *derëtar, dëftues, grykësia, gjuhëtar, këshilltar, pushim rrëfim* etj,; following it later, with their studies and contribution Xhuvani, Çabej, Demiraj, Kostallari etc.

The main purpose[5] of the renaissance humanist was laying the foundations of the literary language, giving their contribution to the purification and enrichment of the Albanian language. E. Lafe write[6]: "…the request of the renaissance humanist for the purity of the language had a clear political content: we must remove from our language the foreign words that have taken the place of the beautiful Albanian words, …". The renaissance humanist have used two ways to enrich and purify the language: 1) taking words from the popular discourse, raising them to a meaningful level, such as subject, stream, etc.; 2) formation of new words or neologisms[7] like: *fletore, mësim, padije, shënim, shumicë thelloj, fushatë, jetëdhënës, ligjdhënës, ndërgjegje, pikë, theks, zanore, dëgjim, dritare, hapësirë, papunësi, lindje, perëndim, jugperëndim, veriperëndim, mesditë, kryeministër, qeverita, shumës, rrokje, i shquar, i pashquar* etj. With the contribution of the renaissance humanist, the Albanian language took on the features and functions of a national literary language for the first time.

Results and discussion

After the declaration of independence, other linguists also followed this path, having a proper fund and direction for the enrichment and purification of the Albanian language. As mentioned, the Komisia Letrare e Shkodres (Literary Commission of Shkodra) and the Educational Congress of Lushnje, have played a significant role, which with the decisions taken encouraged the continuation of the work according to the principles of the renaissance. Many studies have been conducted in this direction.

Following the beforementioned principles, the studies of Xhuvani, Çabeji, etc. played an important role in Albanian linguistics. Xhuvani devoted himself to the task of purifying the language from foreign words and enriching it with words from Albanian itself and wrote

He also followed two paths for the purification and enrichment of the language [8]: 1) the use of the right words that the people speak in the spoken language; 2) the study of the language of our old writers. Even Çabej has made a direct contribution to the development of the language, giving special importance to its purification and enrichment. With the same principles, he also looked for the Albanian word taken from the spoken

[3] **Çabej E.**, Për pastërtinë e gjuhës shqipe, Mësuesi 28 mars 1979
[4] **Çabej E.**, Për pastërin ë e gjuhës shqipe, Gjuha Jonë I, 1981 pp 38
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[7] **Çabej E.,** Për pastërtinë e gjuhës shqipe, Gjuha Jonë I, 1981 pp 39
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language [9]. Like Xhuvani, he also does not support excessive purism as he thinks that [10] "…one of the main principles in replacing foreign words will be made with prudence. It should not be taken to extremes…. We should not proceed as in some languages where even international words and terms have been tried to necessarily replace them with elements of the country…".

In the post-Liberation period, the process of purification and enrichment was given a special place in studies and research work on the development of the language. We mention here the platform for the further purification and enrichment of the Albanian language[11] according to the Decision of the Council of Ministers [12] no 82 date. 7.4.1979 where it was proposed:

1. The creation of a permanent commission under the Council of Ministers for the organization of work for the further purification and enrichment of the Albanian literary language.

2. The commission has the following main tasks:

- To organize and direct the work for the purification and enrichment of our native language in all fields and to ensure that the results of research and studies in these fields are recognized by the general public and put into practice.

- To coordinate and control the work for the pronunciation and further unification of the technical-scientific terminology and for its implementation by all.

- To take care of the full implementation of the norm of the literary language in accordance with the tasks set by the decision of the Council of Ministers No. 50. Date 8.3.1974

- The Commission should design the platform that will serve as a basis for this action and a long-term work plan.

3. The Academy of Sciences, ministries and other research-scientific institutions, the University of Tirana and all the schools of our country should include the performance of the tasks that arise in this field in their annual plans and charge the most capable people for this. and more prepared.

4. In order to deal with the issues of cleaning and enriching the Albanian language, create the journal"Our Language" (Gjuha Jone), an organ of the Academy of Sciences.

Pursuant to the decisions of the Council of Ministers no. 50 dated 8.3.1974 and no. 82 dated 7.4.1974, the permanent Commission for the organization of work for the further purification and enrichment of the Albanian literary language, which was created by the Council of Ministers, has taken a number of measures to organize and direct the work for spelling and for the purification and enrichment of our native language in all fields, as well as to recognize and implement the results of studies in these fields.

Under the influence of the economic-social and cultural-linguistic development, through a systematic and organized work, the process of cleaning and enriching the language has continued at a significant rate, gaining great skills and opportunities for expression. According to M.Domi[13], the problems of language culture for further enrichment are addressed in several issues:

- everyone's acquisition and full application of literary language norms in all links of the language system

- the persistent and systematic fight against errors and violations of the norms and features of the Albanian language in general

- closely following the linguistic dynamics and attentive observation of its processes, occasional revision, based on the study, of the codification of the literary language, to complement and adapt it to the development of the language

- continuous enrichment of the literary language

- speeding up the processing of technical-scientific and political-social terminology

- preserving the originality and individuality of our language, cleaning it from unnecessary foreign elements

- raising the general language culture, in the first place with the continuous improvement of the teaching work of the school and with the powerful activity of mass information measures.

When we deal with the issue of the process for the purity of the language, we consider both the general lexicon and the terminological lexicon. Some criteria for language enrichment according to the beforementioned platform are[14] :

- The main way of enriching the lexicon is the formation of new words with worfd of the language itself and according to the production systems of the word-forming system of Albanian or with the way of pronouncing the component parts of foreign words, for example domosdoshmëri, krijimtari, mbishtresë, rastësi, dukuri, vetjak, vetëvendosje, përkim, parimor, etc.

- Another source of enrichment of the literary language is the wider use of words and phrases from the people's mouths, for example particle, grimcë, birëse, kah, pështjellë, gërryerje, mjedis, ngopje, endacak, tatëpjetë, etc.

- To enrich the lexicon of the literary language, words created in previous eras and which for various reasons have not come into use or have remained on the periphery of the language can be used, e.g. *trimëroj (inkurajoj), nismë, nismëtar, ngrehinë* etj.

[9] **Leka F.** Prof Eqerem Cabej për pastërtinë e gjuhës shqipe dhe për pasurimin e leksikut dhe të terminologjisë, Studime Filologjike, 3, 1988, pp 87 - 92

[10] **Çabej E**., Për pastërtinë e gjuhës shqipe, Gjuha Jonë I, 1981, pp 44

[11] From the activity of the permanent commission for the organization of work for the further purification and enrichment of the Albanian literary language, journal Our Language I, 1981, pp. 13 - 17

[12] Idem pp 11-12

[13] **Domi M**. Probleme të sotme të gjuhës letrare dhe detyra të kulturës së gjuhës, Gjuha Jonë I, 1981, pp 28

[14] Some criteria for enriching the Albanian language and cleaning it from unnecessary foreign words, journal (Gjuha Jone) Our Language I, 19881, pp. 18 - 25

Some criteria for the purification of the language:

- The different layers of borrowed elements of the Albanian lexicon will be distinguished and the same attitude towards them will not be maintained

- The issue of replacing words of foreign origin that have entered the Albanian language for centuries and that are known and used by the entire people will not be raised.

- The issue of replacing international words or internationalisms, such as revolucion, kushtetutë, komunizëm, planet, satelit, raketë, oqean, atom, etc., will not be discussed. Words that are used

only in Romance languages (Italian, French, etc.) will not be called internationalisms. Efforts will be made to replace these words with Albanian words.

Some sources and main ways to clean up our language and phraseology:

- The richness of our words and phraseology will be widely used.

- New words will be created from Albanian's own dough. This includes neologisms, colloquial words.

- The work that was done for the pronunciation of foreign words during the renaissance and in the period of independence will be re-evaluated, in order to put into use the words that are well created and that respond to the needs of cleaning and enriching the language.

In this regard, the Albanian language has reached a high level of development. The unification of the language, the enrichment of the vocabulary with new formations through word-forming tools have influenced the development and the values that this language takes. Researcher V. Memisha emphasizes that "this development appears first, in the enrichment of the lexicon and it is a two-way process: horizontal enrichment, as enrichment of the lexical structure with new words and phraseological units; vertical (semantic) enrichment, as enrichment of the semantic structure with new meanings.*"*[15].

This researcher claims that "Horizontal enrichment, in lexicology, is seen as enrichment of the lexical structure of the language, as a numerical addition of words. The main feature of this development of the lexicon nowadays is the tendency for symmetry and systematicity, this in all layers or paradigmatic groups. In the written discourse especially, but also in the spoken one, they are rapidly being put into use with thousands of new units. One direction of the enrichment of the Albanian lexicon is the introduction into wide use of phraseology related to the material and spiritual world of our people, but also to the cultural and scientific world of fields developed in the international arena. Lexicography also helps. Academician J. Thomai, published in 1999 the phraseological dictionary of the Albanian language, with about 12,000 units[16].

Conclusions

Today's literary language had its beginnings in the second half of the 19th century. The development of the Albanian language in the 19th century took off from the movement of the renaissance humanist, where a good part of them tried to write in pure Albanian. They began to purify and enrich it with words from the Albanian words themselves, drafting texts in various fields of scientific knowledge, literary works, other writings of a political-patriotic character. Under these conditions, some words of the popular language were given new meanings or new word strings were created that were missing from the Albanian vocabulary.

In the creation of new words, they were mainly based on the formation of linguistic calques where they used the tools of the Albanian language such as suffixes, prefixes, composites.

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SOCIOLOGICAL ANALYSIS OF CAUSES AND CONSEQUENCES EMIGRATION IN ARMENIA

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Abstract

The article presents a sociological overview of the reasons for emigration in Armenia, assessing the various factors influencing the decision of citizens to leave their homeland. The article analyzes general emigration trends emanating from historical roots, as well as specific factors associated with modern Armenian reality. The article covers the issue of emigration in Armenia while highlighting the research done on this issue by well-known sociologists. It also looks at the country's current emigration issue.

Keywords: emigration, political emigration, economic emigration.

Introduction

Armenia has always piqued curiosity among both its citizens and the global community due to its rich history and cultural heritage. But in recent years, emigration has sharply increased as more Armenians leave their country in search of better employment prospects, better educational possibilities, or political stability.

Between 740,000 and 1,300,000 people departed Armenia between 1988 and 2005. The economic downturn that engulfed the 1990s was a major factor in the emigration of 125,000 refugees and internally displaced people. Furthermore, as a result of many natural and man-made disasters, including the 1988 Spitak earthquake, 192,000 Armenians were internally displaced.

Emigration from Armenia has had a profound impact on the country's economic, political, and socio-cultural dynamics. This article aims to analyze different aspects of emigration from Armenia. It begins with an overview of the types of emigration and its historical roots. Subsequently, it delves into sociological research conducted on this subject.

The paper also discusses Armenia's current emigration issue, outlining patterns and offering statistical information. It also examines the societal, political, and economic issues that drive Armenians to emigrate. Finally, a full assessment of the effects of immigration on the nation's economy and demographics is made. Finally, we will evaluate the measures and programs taken by the Armenian government and local organizations to mitigate emigration trends. Analyzing emigration in Armenia is important for understanding the challenges the country faces and developing strategies

1. Emigration in general

1.1. Types of emigration: Overview of the main types of emigration

The study of emigration necessitates classifying it into various forms based on the factors that cause people to leave their own country. The three main categories of emigration - economic, political, and educational, will be covered in this section of the essay.

Economic emigration:

One of the most common types of migration is economic emigration. People decide to emigrate in search of better living and employment prospects. This kind of emigration can be caused by a number of circumstances.

High unemployment: Firstly, high unemployment rates in certain countries push citizens to seek employment abroad, where job opportunities are more abundant.

Low income: Additionally, individuals may decide to emigrate if the income in their home country is insufficient to maintain a decent standard of living or meet their basic needs. They hope to find better-paying jobs in other countries.

Economic crises: Economic crises, inflation and financial difficulties can encourage people to seek stability and opportunity abroad.

Political emigration:

Political emigration involves the flight of citizens due to political instability, persecution or human rights violations in their home country. The main reasons for political emigration may be:

- Political Persecution: Citizens may face harassment, threats, or violence from government or political organizations.
- Dictatorship and authoritarianism: The desire to live in a country with democratic institutions can encourage citizens to leave authoritarian regimes.
- Political Refugees: People may become political refugees when their life or freedom is threatened due to political conflicts or wars.

Educational emigration:

Individuals who go abroad for education, study or scientific research are referred to as educational "emigration".

- This type of emigration could be caused by any of the following factors: The ability to emigrate provides citizens with better access to higher education, which they may not have in their home country.
- Scientific Research: Scientists and researchers may emigrate to collaborate with international scientific organizations or to access advanced research laboratories and libraries.
- Emigration for educational or study purposes also fosters cultural exchange and a variety of knowledge across different regions.

The study of emigration provides insight into the motives of individuals who migrate and offers suggestions on how to develop policies that cater to their preferences.Rephrase • Below, we will examine the most common types of emigration in Armenia and the factors that influence their decision to do so.

1.2. Historical roots

The emigration pattern in Armenia is heavily influenced by historical events. The Armenian

Genocide in 1915 and the Soviet era, which saw Armenia become part of the USSR, were both significant periods for emigration from Armenia.

Armenian Genocide of 1915:

Armenians were subjected to the Armenianic Genocide, which was carried out during World War I and led by the Ottoman Empire in modern Turkey. Millions of Armenian casualties followed, as well as many people fleeing violence and persecution. The impact of this historical event on Armenians' consciousness was profound and played a crucial role in the significant exodus from their homeland.

- The disappearance of cultural centers and historical areas during the genocide resulted in a large number of Armenians seeking refuge abroad.
- Following the Genocide, an Armenian diaspora was formed worldwide, and emigrants played a crucial role in shaping the Armenianoust Armenianic culture/community outside Armenia.

Soviet period:

In 1920, Armenia joined the USSR and became a union republic. During Soviet rule, changes occurred that also affected emigration from Armenia.

- The industrialization and collectivization of agriculture during the Soviet era brought about changes in Armenian society and economic structure. • Some people decided to leave in search of better opportunities. • At different times of Soviet power, repression and mass deportation occurred, which may cause individuals who were breaking political or ideological rules to leave their homeland.
- The Soviet Union allowed Armenian citizens to work and reside in other areas of the USSR, which facilitated population movements.
- Emigration from Armenia has been shaped by these historical events, and their impact is still felt in the country today.Rephrase • The subsequent sections of the article will examine the factors that are prompting Armenian emigration and their impact on the country and its diaspora.

These historical occurrences significantly influenced the development of the emigration trend from Armenia and still have an impact on the country's current emigration status today. In the parts that follow, we'll examine the reasons behind Armenian emigration right now as well as the effects it has on both the nation and the diaspora.

1.3. Sociologists and Research:

The study of the phenomenon of emigration and its sociological aspects has become the object of interest of many researchers. The reasons, processes, and effects of emigration have been extensively studied by a number of renowned sociologists. Among them are Ravenstein Emigration and Douglas Massey, whose theories and studies have significantly influenced the area of emigration sociology.

Ravenstein Emigration:

Emigration American sociologist and demographer Ravenstein is well known for his contributions to the study of immigration and emigration in the country. His writings, such as Emigration and Cultural Change, emphasize the significance of sociocultural elements in the emigration and immigrant integration processes.

- Acculturation and Assimilation: The idea of acculturation and assimilation was created by Ravenstein, and it describes how immigrants adjust to a new culture and assimilate into the receiving society. He emphasized that this process is reciprocal and can affect both immigrants and the society into which they arrive.
- Emigration and sociocultural change: Ravenstein also examined how emigration affects sociocultural change in both the sending and destination countries. He paid attention to the interaction of cultures and the transformation of identity in the context of emigration.

Douglas Massey:

American sociologist and demographer Douglas Massey made important contributions to the research on immigration and emigration as well. His thoughts and research primarily analyze long-term trends in migratory dynamics and their societal ramifications.

- World Systems Theory: Massey developed world systems theory, which explains migration as a consequence of global economic and political changes. He examined how world systems influence migration and shape inequalities in the world.
- Demography and Migration: Massey has also studied the relationship between migration and demography, examining how migration impacts population trends and demographic shifts in both sending and receiving nations.

Together, the works of Ravenstein and Massey illustrate the complexity of emigration processes and contribute to the development of a theoretical framework for comprehending these phenomena. Additionally, their research aids in the creation of doable strategies for controlling and regulating immigration and emigration in the contemporary world.

2. Emigration in Armenia

2.1.. Current situation.

The current emigration situation in Armenia reflects various factors, influencing the decision of citizens to leave their homeland. To understand the current situation, we will analyze statistical data and identify the main trends.

Statistical data:

Let's start by examining the data presented by official sources and international organizations:

1. Total number of emigrants: 000A0ccording to reports, Armenians are emigrating in increasing numbers. Since Armenia's independence in 1991, a sizeable portion of the population has left the country. According to current estimates, there are more Armenians living abroad than there are in Armenia itself.
2. Main migration routes: Armenians primarily migrate to Russia, the United States, France, Germany, and other nations where there is a sizable Armenian diaspora. Russia remains one of the largest attractive labor markets for Armenian citizens due to historical ties and close geographic proximity.

3. Reasons for Migration: Economic concerns, such as low earnings, high unemployment, and a lack of employment possibilities, frequently influence emigration from Armenia. The decision to immigrate may also be influenced by political and sociological factors.

Trends:

Modern trends in Armenian emigration include the following:

1. **Youth emigration:**One noticeable trend is the emigration of young people, including university graduates. The lack of prospects in Armenia and the desire to get education or work experience abroad encourage young people to migrate.
2. **Family emigration:** Some families choose to leave their country of origin in order to better their quality of life and give their children a brighter future.
3. **Diaspora influence:** The Armenian diaspora continues to be crucial in helping emigrants and giving them chances to adapt in new societies.
4. **Emigration management:** To control emigration and promote Armenians' return to their country of origin, the government of Armenia is creating policies and initiatives.

An examination of Armenia's present emigration scenario reveals the necessity of developing both domestic and international policies and initiatives to support the Armenian diaspora. We will examine the causes of emigration and its societal repercussions in Armenia in greater detail in the parts that follow.

2.2. Reasons for emigration:

The reasons prompting Armenian citizens to emigrate are diverse and related to economic, political and sociocultural aspects. To understand the motivation of emigrants from Armenia, let’s consider these factors in more detail:

Economic forces:

1. **Low income:**One of the main economic motives for emigration is insufficiently high wages and the low standard of living in Armenia. People who are struggling financially can decide to look for employment abroad, where the opportunities may be more lucrative.
2. **Unemployment:** Armenia has a high unemployment rate, making it difficult for many people to find employment and support their families. Emigration can be a way to escape unemployment.
3. **Economic prospects:**Lack of economic prospects and business opportunities may cause entrepreneurs and entrepreneurial - spirited citizens to consider emigration as a way to develop their businesses.

Political factors:

1. **Political instability:**Periodic political crises and instability in Armenia can create uncertainty and anxiety among citizens. Some people might choose to leave the nation in order to avoid political hazards.
2. **Corruption and ineffective government:** Corruption and ineffective administration can limit citizens' chances and even make them feel powerless in the face of the state.

Sociocultural factors:

1. **Education and career:** Some Armenians may emigrate for better education or career development in more developed countries.
2. **Family connections:** Family separation can be a motivation for emigration, with part of the family leaving to support loved ones abroad.
3. Cultural considerations: Deciding to emigrate can also be influenced by cultural factors, such as a desire to live in a more accepting or globalized culture.

It should be noted that these factors can interact and have a joint impact on the decision of Armenian citizens to emigrate. In addition, many Armenian emigrants have mixed motives that include both economic and sociocultural or political aspects. Understanding these motivations is an important part of developing policies and programs to manage emigration and ensure sustainable development in a country.

2.3. Consequences for the country:

Emigration from Armenia has a significant impact on the country, leaving its mark on the economic and demographic levels. Let's look at the key implications for Armenia:

Economic consequences:

1. **Labor outflow:**Emigration leads to an outflow of labor, including highly qualified specialists. Due to potential staffing shortages, this can have a detrimental effect on the nation's economic progress.
2. **Sending money transfers:**Many Armenian emigrants send money to their families in Armenia. These transfers, or remittances, are crucial to a nation's economy and can make up a sizeable amount of GDP.
3. **Loss of intellectual capital:**The emigration of scientists, specialists and innovators can lead to a loss of intellectual capital and research potential, which can slow down innovative growth and the development of science and technology in the country.
4. **Decrease in domestic consumer demand:**A decline in population and purchasing power may reduce domestic consumer demand, which could impact local markets and businesses.

Demographic implications:

1. **Population decline:**Emigration leads to a decrease in the population of Armenia. This may have an impact on the demographic structure of the country and cause demographic challenges such as an aging population.
2. **Family divisions:**Emigration can lead to family separation, with some family members remaining in Armenia while others move abroad. This can influence family structure and sociocultural aspects of life.
3. **Change in ethnic structure:**In some cases, emigration can affect the ethnic structure of a country, as some ethnic groups may be more inclined to emigrate.
4. **The level of education:**Emigration can affect the level of education in a country, as some young people may decide to go abroad for education and not return after completing their studies.

Overall, emigration has a complex impact on Armenia, mixing economic and demographic consequences. It is important for the country to develop strat-

egies and policies that can manage these impacts, including facilitating the return of emigrants, attracting investment and developing the economy, and supporting families remaining in Armenia.

2.4. Fight against emigration:

Armenia faces the challenge of maintaining its population and mitigating emigration trends. In response to these challenges, the Armenian government and local organizations are taking a number of measures and programs:

1. Economic measures:

- Job creation: The Government of Armenia is actively working to create

new jobs and development of the business environment. This includes supporting start-ups, investing in infrastructure and facilitating business procedures.

- Support for SMEs: Measures aimed at supporting SMEs can create jobs and increase economic opportunities for citizens, which may reduce their motivation to emigrate.

2. Educational programs:

- Educational development: Investments in the education system, including higher education levels, can make Armenia more attractive to young people seeking quality education.
- Exchange Programs: Exchange programs and scholarships abroad can provide youth with the opportunity to gain international experience and education without leaving the country.

3. Social programs:

- Social support: The government provides various types of social support, including child subsidies and financial assistance for low-income families.
- Return programs: Some programs facilitate the return of Armenian emigrants by providing benefits and assistance in returning and adapting to the country.

4. Measures to strengthen ties with the diaspora:

- Cooperation with the Armenian diaspora: The government actively cooperates with the Armenian diaspora, including on issues of investment and support for projects in Armenia.
- Hosting cultural events: Organizing cultural events and festivals can help strengthen ties with the Armenian diaspora and stimulate interest in their home country.

It should be noted that the effectiveness of these measures and programs may vary, and the fight against emigration requires a comprehensive and long-term approach. It is important to take into account the changing circumstances and needs of citizens in order to develop effective strategies to mitigate emigration trends and strengthen the development of Armenia.

Conclusion

Emigration in Armenia is a complex social and economic phenomenon that has a profound impact on the country. Having considered various aspects of emigration, the following conclusions can be drawn:

1. **Multifaceted reasons:**Emigration from Armenia is due to many factors, including economic, political and sociocultural aspects. Low incomes, high unemployment, political instability and the desire to get a better education are all motives that encourage citizens to emigrate.

2. **Complex consequences:**Emigration has a variety of impacts on Armenia. Population decline, labor outmigration and loss of intellectual capital pose significant challenges. However, remittances from Armenian emigrants, support from the diaspora, and educational opportunities abroad can provide benefits.

3. **Fight against emigration:**The Armenian government and local organizations are taking measures and programs to mitigate emigration trends. These measures include job creation, support for small and medium-sized businesses, education development and social programs. Strengthening ties with the Armenian diaspora is also important.

4. **The need for sustainable development:**To successfully combat emigration and ensure sustainable development of Armenia, a long-term vision and an integrated approach are needed. Effective measures must take into account the changing circumstances and needs of citizens.

Overall, emigration remains an important topic for Armenia, and solving this problem requires joint efforts on the part of the state, local organizations and citizens. With the right strategy and implementation of measures, emigration trends can be mitigated and conditions for the prosperity and development of the country can be created.

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4. "Migration, Homeland, and Identity in a Global Age" - Book by Daphne Career and Dennis J. Failsa, who explores issues of migration and identity in the context of globalization, can help to understand the sociocultural aspects of emigration.

5. "The Armenian Diaspora: Issues in Scholarship and Research" - This book, edited by Richard G. Hovannisian, provides an overview of studies and articles related to the Armenian diaspora and migration.

6. "Migration and its Impact on the Labor Market: A Case of Armenia" - An economic analysis of migration in Armenia can be found in this book written by Harutyun Aggevia-Karamyan.

7. "Migration and Diaspora in Modern Asia" - This book, edited by Irene Cull and Melanie Smith, provides a broad overview of migration and diaspora in Asia that may be useful for the context of emigration in Armenia.

8. Migration Perspectives in Eastern Europe and Central Asia - 2006

INTERNAL ENVIRONMENTAL ANALYSIS IN HEALTH INSTITUTIONS

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Abstract

Health institutions operate in a sector where uncertainty and change are extremely intense. In addition, health institutions are in fierce competition with other rival health institutions. In fact, the fierce competition between these health institutions today is referred to as hyper-competition. Health institutions can only survive and emerge successful from this fierce competition by developing evidence-based and implementable strategies. The first requirement for developing evidence-based and implementable strategies is to be able to carry out the proper internal environment analysis. In this study, we examine the functional sub-systems used in internal environment evaluation and important functional sub-system factors. Furthermore, we discuss approaches to the functional sub-system groups that form the basis of internal environment analysis in health institutions with the current examples.

Keywords: Internal Environment Analysis, Internal Environmental Approaches, Internal Environmental Analysis in Health Institutions

Introduction

Health institutions operate in a dynamic and changing environment. The shifts in needs and expectations of society, the increase in service costs, the expansion of cost-saving measures by insurance institutions such as Social Security Institution (SSI), and the intensification of competition in the healthcare sector have increased the need for strategic management in hospitals and other health institutions.

Internal environment analysis in health institutions is about identifying the institution's strengths and weaknesses through unveiling and evaluating the institutional data and information and making comparisons with other health institutions in the sector. Comparison with the rival institutions based on comprehensive internal environment analysis can help determine the institution's position compared to other health institutions and detect which activities the institution should improve, which activities it should start, and which activities it should stop to improve the institution's performance and be more competitive.

Internal environment consists of factors that are within the control of the institution and that directly impact its operations and performance. More importantly, internal factors help institutions to both defend themselves against threats and take advantage of opportunities arising from the external environment. These factors include management skills, human resources, financial resources, marketing capabilities, clinical systems, organizational structure, physical resources, corporate culture, and information systems.

Purpose of the study

The purpose of the study is to contribute to the literature on the internal environment analysis in health institutions. Furthermore, we aim to elaborate on the importance of specifying the functional sub-systems and their interrelationships in carrying out internal environmental analysis in health institutions. For this purpose, we examine the important factors that make up the sub-systems used in the internal environmental evaluation.

A thorough internal environmental analysis requires a comprehensive discussion of how the main factors of sub-systems are classified. Therefore, we provide an extensive assessment of approaches employed in grouping the factors of sub-systems. We focus on practical approaches such as the analyses of resources, capabilities, institutional functions, and performance by providing comprehensive examples.

Methodology

In accordance with the purpose of the study, we conduct a detailed and systematic review of the related literature on internal environment analysis in health institutions. We provide a general assessment of the main findings of the literature regarding internal environment analysis techniques that are thought to be usable by health institutions. In addition, we try to enrich theoretical discussions with recent practical examples.

Internal environment analysis: conceptual framework

Health institution managers do not develop strategies based solely on information about external factors. As shown in Figure 1, managers also utilize information about the internal environment of the health institution in the process of developing strategies and making decisions. Unlike the external environment, the internal environment of health institutions contains institutional characteristics (human resources, finance, technology, goods and services supplied, and organizational structure) that are under the control of managers.

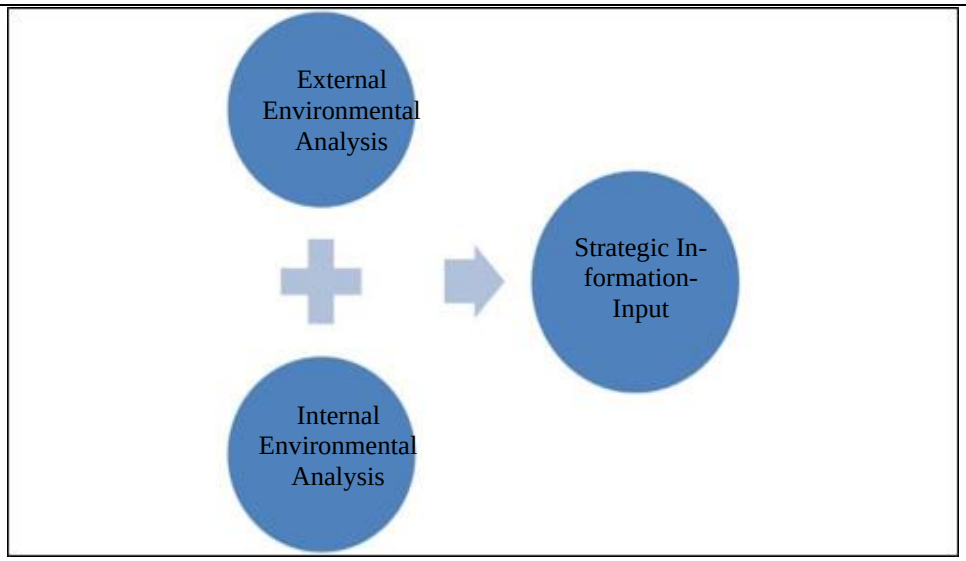


Figure 1. Environmental Analysis and Strategic Information-Input

The main purpose of internal environment analysis is to identify the strengths and weaknesses of the health institution. The strengths of a health institution are the institutional characteristics that make it different from its competitors, give it an advantage in competition, and enable it to achieve its goals.

The identification of the strengths and weaknesses of the health institution and their assessment in terms of the opportunities and threats created by the external environment constitute one of the critical stages of strategic management. By using tools (such as SWOT analysis) that enable the simultaneous analysis of the threats and opportunities created by the environment with the strengths and weaknesses of the institution, managers can develop more realistic/implementable strategies. The identification of the strengths and weaknesses of the business also guides managers about whether the strategies are implementable. Yet, it must be emphasized that certain tools, resources, skills, and abilities are required for the implementation of each strategy (Forgang, 2004:7). The motives and objectives of internal environment analysis can be listed as follows (Campbell, Stonehouse, Houston, 2002:31-32):

- Reviewing the current resources of the institution,
- Determining the fundamental and general skills that need to be developed or used,
- Evaluating the organizational and design form of value-creating activities,
- Identifying institutional weaknesses that will make it more difficult to implement strategies in the future,
- Assessing the performance of services (quantity and quality of services provided, cost, profit margin, etc.),
- Measuring the financial performance of the institution and comparing it with competitors,
- Determining potential areas for investment, and
- Assessing the suitability of the selected strategies.

When developing strategy in health institutions, the most important thing to consider is the feasibility of the strategies.[17] Strategies that are not applicable will only reflect general intentions and expectations and will not provide guidance on how to achieve the desired results. To develop feasible strategies, it is a must to consider the resources that the health institution possesses. It is not possible to implement a strategy developed without considering the current or potential resources of the institution (Evans, et al. 2003:273). For instance, a hospital may aim to provide pediatric cardiology services as a part of a diversification strategy. However, if the hospital building is inadequate, there is no pediatric cardiologist in the hospital, or it is difficult to employ a specialist due to lack of resources, this diversification strategy will not be possible to implement.

Whyte and Blair (1995) propose that in order to easily perform an internal environment analysis, a health institution should be split up into ten functional sub-systems, and these sub-systems should be analyzed first individually and then in relation to each other based on their interactions. Table 1 summarizes the sub-systems proposed by Whyte and Blair (1995) and the factors that should be considered during the analysis process.

[17] Evans, et al. (2003:270) argue that four criteria must be considered in the development and evaluation of a strategic choice. These criteria are: (i) *suitability*, the ease with which the strategy helps achieve the goals, (ii) *feasibility*, applicability of the strategy with the current resources, (iii) *acceptability*, appropriateness of the strategy for the strategic groups such as the board of directors and shareholders, and (iv) *competitive advantage*, that is, the strategy should serve to raise the competitiveness of the institution and position it better than its competitors.

Table 1.

Sub-Systems used in the Assessment of Internal Environment

Sub-Systems	**Factors Considered in the Analysis Process**
Management	Number of management levels, management skills, delegation of authority, and centralization.
Human Resources	Number and quality of personnel, personnel recruitment options, personnel productivity, and personnel turnover.
Finance	Adequacy of financial resources, financial performance indicators, and deviations from budget.
Marketing	Attributes of current patients (insurance, severity of the dease, demographics), patient referral sources, utilization rates, and service delivery channels.
Clinical Systems	Amount and quality of services provided, medical technology used, and implementation of new treatment methods.
Institutional Structure	Rules and procedures in the relationships among institutional departments and programs.
Institutional Culture	Value systems, behavioral expectations, and characteristics.
Physical Resources	Adequacy of the buildings and physical expansion opportunities.
Information Systems	Effectiveness of clinical, administrative, and financial information systems.
Leadership	Leadership styles of top, middle, and lower level managers.

As depicted in Figure 2, the analyses of the subsystems given in Table 1 can be classified into four groups:

- Analysis of resources,
- Analysis of capabilities,
- Analysis of organizational functions, and
- Performance analysis.

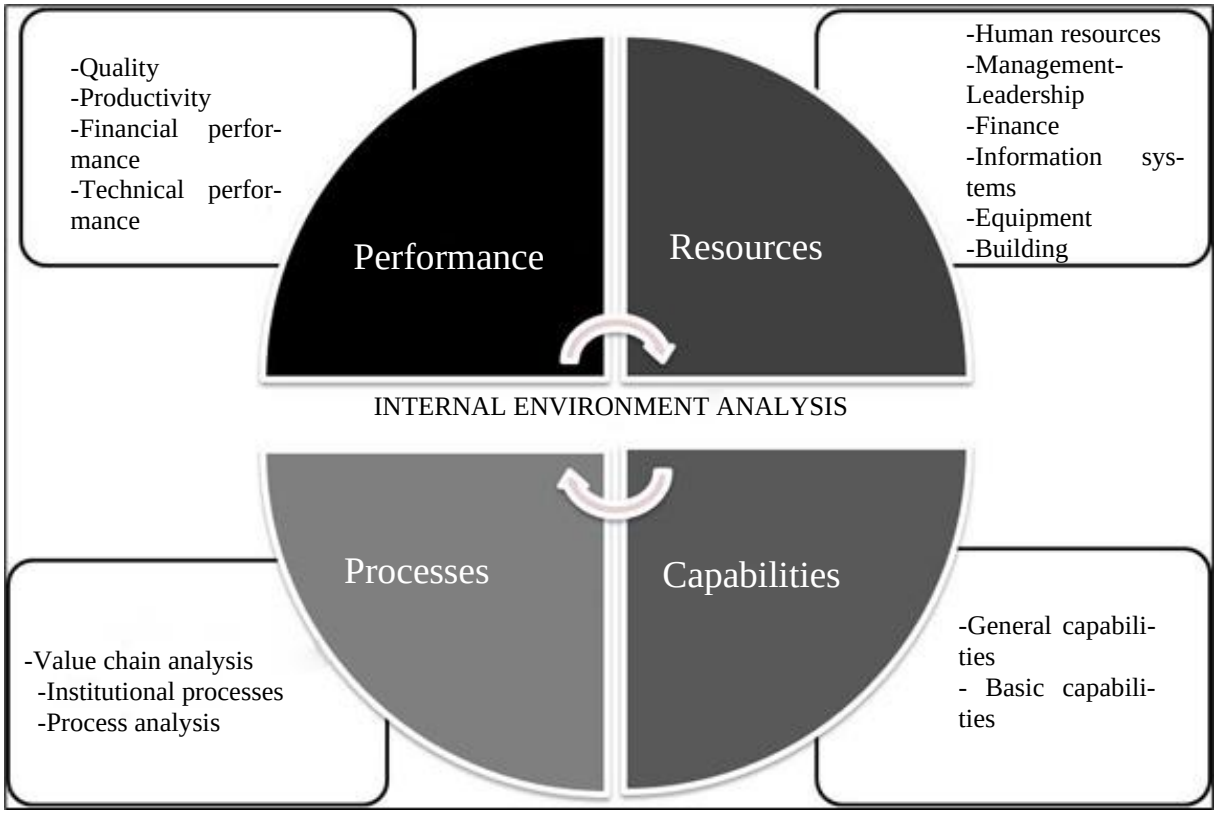


Figure 2. Sub-System Groups

Resource analysis: resource based strategy approach

One of the approaches in connection with strategic management is the resource-based strategy approach. The resource-based strategic approach focuses on the resources and capabilities of the health institution during the strategic development process. While the focus of the environmental (market-oriented) approach is the environmental conditions, the starting point of the resource-based approach is the institutional resources. In other words, the market-oriented strategic approach is an outside-in strategy, while the resource-based approach is an inside-out strategy. On the other hand, both

the market-oriented and resource-based strategic approaches aim to achieve competitive advantage. The market-oriented strategic approach targets to achieve competitive advantage by shielding against environmental threats and taking advantage of environmental opportunities, while the resource-based approach, as shown in Figure 3, assumes that the health institution can achieve competitive advantage through its own resources and capabilities, that is, through its strengths (Barney, 1991).

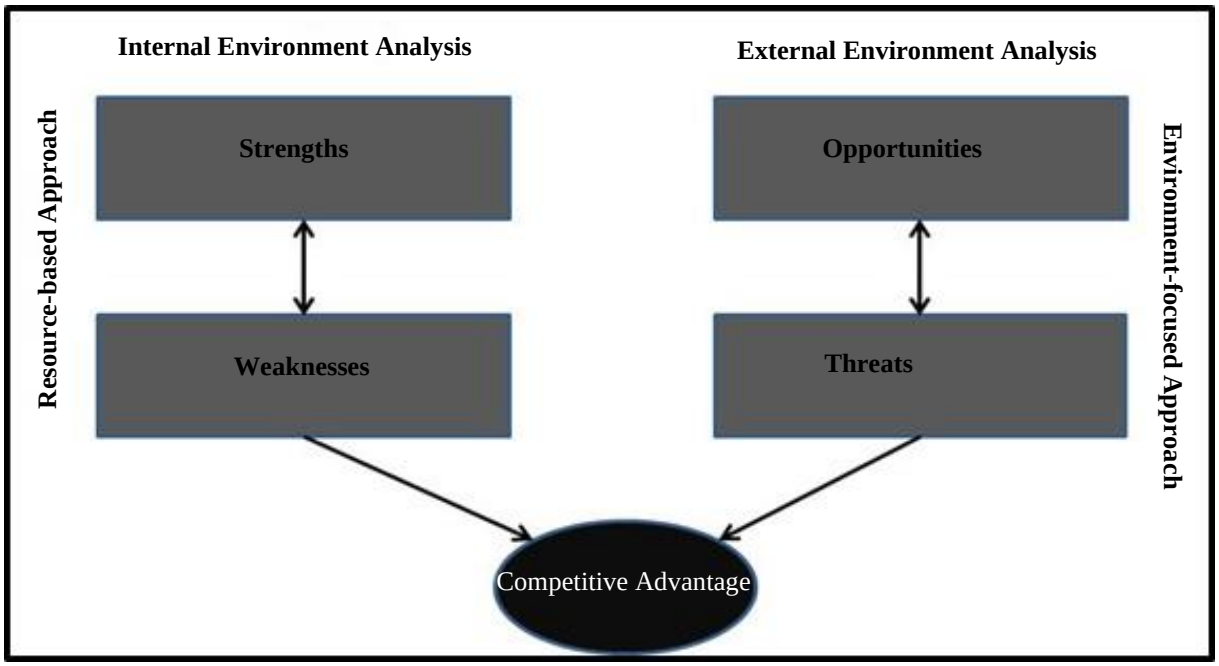


Figure 3. Market-oriented and Resource-based Strategic Approaches

Source: Adapted from Barney (1991) and Luke, et al. (2004:32).

Institutional resources are assets that a health institution owns and can control their uses (Pegels, Rogers, 1986:36). The assets of an institution (asset portfolio) consist of tangible resources (such as buildings, equipment, and financial resources) and human resources (institutional personnel), and intangible resources (such as patents and copyrights) and capabilities (such as corporate culture, core competencies, general competencies, and institutional prestige and recognition) (Wheelen, Hunger, 2012:137; Fahy, Smithee, 1999).

According to the resource-based strategy approach, for a firm to gain a competitive advantage and improve its economic performance (e.g., its profit), its resources and capabilities must have four key attributes, abbreviated as VRIO (Barney, Clark, 2007:57-69).

- **Valuableness**: In order for a resource or capability to be considered valuable, it must contribute to the implementation of strategies aiming to improve the productivity and performance of the health institution. In other words, for resources and capabilities to be valuable, they must ensure that the health institution is protected against environmental threats and benefits from environmental opportunities. For example, the Başkent University Hospital is considered one of the best organ transplant centers in the world. Two of its most important resources and capabilities establishing this competitive advantage in organ transplant services are undoubtedly its transplantation team and their experience.

- **Rarity:** For a resource to provide a competitive advantage, the resource must be scarce, that is, rare. Resources that can be easily accessed or used by all institutions cannot provide a competitive advantage. We can clarify the matter by focusing on organ transplant services. The number of surgeons with high experience in organ transplantation in Turkey is low. Due to the low number of surgeons with experience in transplantation, hospitals with experienced surgeons will naturally have a greater competitive advantage over their rivals. On the other hand, to provide services in the field of organ transplantation, not only an experienced medical team, but also facilities with outstanding technological equipment such as tissue typing laboratories are required. However, the use of advanced technologies also requires an immense amount of investment (financial resources). Therefore, advanced technological opportunities are also considered rare/scarce resources because not every health institution can use them.

- **Inimitability:** If the resources of a health institution cannot easily be imitated, these resources provide the institution with a competitive advantage. For instance, a hospital may have a very high level of experience in organ transplants. This experience is acquired over a long period of time, that is, a hospital that has been providing organ transplantation services for many years can accumulate required knowledge and practical

skill. Knowledge and practical skill are the types of resources that cannot be imitated. Similarly, a health institution's abstract existence, the corporate culture, also develops over a long period of time, starting from the establishment stage, and this culture cannot be imitated by other institutions. The location of a health institution can also be considered as an institutional resource. A hospital may be built in a central, easily accessible, and densely populated area. Competitors may not be able to find a similar location or may have to pay a very high land price. In this case, the location will also provide the healthcare institution with an important competitive advantage.

- **Organization:** Possessing the resources listed above is not enough for a health institution to gain competitive advantage. To secure a competitive advantage, valuable, scarce, and hard-to-imitate resources must also be mobilized to take advantage of environmental opportunities and protect against environmental threats. However, mobilizing resources requires the existence of certain institutional and administrative processes, that is, a well-established organizational arrangement. Valuable resources and capabilities can be used in service delivery processes through institutional and administrative processes such as official communication systems, administrative control systems, pricing policies, and inventory management.

Figure 4 describes the relationship between resources (VRIO) and sustainable competitive advantage. Sustainable competitive advantage can be defined as a health institution's ability to maintain an advantageous position over its competitors in the long run. A health institution can achieve sustainable competitive advantage by outperforming its competitors. That is, not just creating an advantage to begin with, but making this gain permanent is referred to as sustainable competitive advantage.

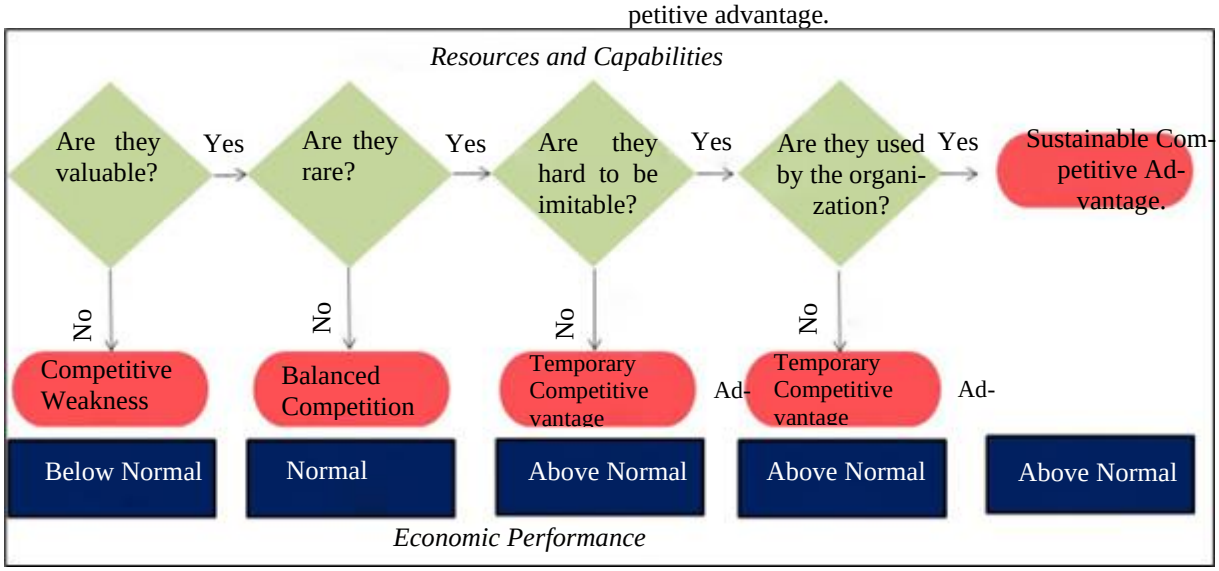


Figure 4. The Relationship between VRIO and Competitive Advantage

Source: Adapted from Barney and Clark, 2007:70.

VRIO analysis is a framework used to evaluate the resources and capabilities of an institution to determine whether they are valuable, rare, inimitable, and organized. In the context of VIRO analyses, we need ask the following questions to find out if the health institution's resources create sustainable competitive advantage:

- **The valuableness question:** Does the health institution's resources and capabilities enable it to protect against environmental threats and capitalize on opportunities?
- **The rarity question:** Are the resources controlled by rival firms?
- **The inimitability question:** Do other health institutions have to incur high costs to acquire or develop these resources and capabilities?
- **The organization question:** Does the health institution's organizational structure and processes ensure the effective use of these resources and capabilities?

By examining the responses given to each of these questions, we can make inferences about the effects of resources on competitive advantage and the economic performance of the institution. For instance, if an institution's resources do not help it to take advantage of environmental opportunities, its competitive power will decrease. The decrease in competitive power will also negatively affect the institution's revenue and profitability. If a health institution's resources are valuable but not rare, it will not be able to gain a competitive advantage but will also not fall behind its competitors. Therefore, valuable but not rare resources reflect the strength side of the health institution. On the other hand, even though a health institution possesses valuable, rare, and not easily imitable resources, it may not be able to use them efficiently. In this case, the institution can have a temporary competitive advantage, but this advantage may not be long-lasting. Hence, for a health institution to achieve a sustainable competitive

advantage, it must not only have valuable, rare, and inimitable resources, but also be able to use them productively.

Competence analysıs: the core competencıes

The term "core competence" was first used by Prahalad and Hamel (1990). Core competence refers to a common learning process in the coordination of different production capabilities and integration of various technological enhancements. A core competence is a set of knowledge, skills, and experiences that are necessary to achieve a competitive advantage in a particular area. The quality of service provided by a health institution, the possession of qualified health personnel, or the use of advanced technologies should not be considered as a core competency. On the other hand, as compared to rivals, a heightened specialization of a hospital in organ transplants can be considered as a core competence. Core competencies can take various forms. For instance, a hospital's development and implementation of a new treatment method, providing medical services to patients arriving at the emergency room within 5 minutes, offering patient-centered services by all staff, employing qualified doctors, high staff personnel, high institutional prestige in the community are all different forms of core competencies. Simply put, core competency should be seen as the cohesive harmonization of institution-specific experiences, institution-specific services, institution-specific business forms (routines, procedures), institution-specific managerial resources (managerial experience, knowledge, and skills) and institutional culture.

Characteristics of Core Competencies

There are five basic characteristics of core competencies (Prahalad and Hamel, 1990; White, 2004: 247) [18]:

- **Benefit Creation:** Resources and activities that raise the level of perceived benefit for patients using the services provided form the core competency of the health institution. For example, a dialysis center can offer tablet computers, newspapers, and novels to patients to make them more comfortable, or organize social activities not posing health risks to patients to have them spend good time. Thus, dialysis patients will feel more benefit from the service they receive.
- **Inimitability:** Every institution has its own service delivery model, organizational structure, rules, procedures, values, history, and culture. Because the core competencies are created through the structure, procedures, values, culture, and past experiences of the institution, it is very difficult for other institutions to imitate core them.

- **Market Expansion:** Core competencies increase the value and benefit of the services provided by the institution. A high level of value and benefit in turn attracts patients from different regions. Thus, the health institution will have the opportunity to expand its market share.

- **Durability:** Core competencies of a health institution should be long lasting. Short-term core competencies may provide temporary competitive advantage for the institution, but they do not contribute to the institution's sustainable competitive advantage.

- **Non-Replicability:** The effects or outcomes created by core competencies should not be replicable. Non-replicability and non-substitutability of core competencies are different concepts. Non-replicability of the core competencies is enough, outcomes obtained using these competencies (e.g., technical quality or customer satisfaction) must also be non-replicable.

Core Capabilities and Strategy

Health institutions must have basic or distinctive capabilities to gain a competitive advantage. Basic or distinctive capabilities are institution specific strengths that allow the institution to differentiate its services from those offered by rivals (Hill and Jones, 2010:74-76). The basic capabilities of health institutions refer to the resources the institution has and its ability to use these resources productively. First consider the presence of resources. The existence of a neurosurgeon is a must for all hospitals offering brain tumors treatment services because brain surgery operations cannot be performed without a neurosurgeon. Technological resources (e.g., operating room equipment) are also required for brain surgery. These resources are the minimum required resources for all hospitals offering these services. However, although possessing resources is a must, it is not sufficient to generate basic capabilities. Some resources may be specific to health institutions. For instance, a hospital may have a highly experienced specialist and gamma knife technology in the brain surgery department. Not all hospitals have qualified specialists and high- cost gamma knife technology. Resources owned by only one or a few health institutions are called "unique resources". Unique resources are resources that give a health institution a competitive advantage and cannot easily be obtained by competitors (Johnson, et al., Whittington, 2008:121). Therefore, unique resources can be seen as the basic or distinctive resources of a health institution.

A health institution's competencies refer to the processes and activities that enable it to effectively coordinate and utilize its resources. Capabilities are not pertinent to the resources per se, but rather they are about how the resources are used. Most hospitals have certain operational rules, procedures (such as patient admission procedure), and control systems. These rules, procedures, or systems define the minimum conditions required to provide service and shape the capabilities of the institution (Hill and Jones, 2010:101). Regardless of which specific hospital we go to, we are first

[18] The first three characteristics were determined by Prahalad and Hamel (1990).

greeted and guided by public relations personnel. Obtaining informed consent before surgery is also a common practice for all hospitals[19]. The activities and procedures that a health institution carries out to provide service are considered as "minimum or general capabilities". On the other hand, some capabilities are specific to the institution. For example, obtaining informed consent from the patient before the surgery is a basic procedure, while providing "professional psychological support" to comfort the patient before the surgery may be an institution specific service. In short, an institution specific capability is a resource or practice that a health institution can use in a different and more efficient way from its competitors. The differences in capabilities among institutions are the underlying cause of performance variability with similar resources.

As described in Figure 5, the development of core/distinguishing capabilities requires both the availability of institution specific resources and their efficient and productive utilization (Hill and Jones, 2010:100; Ljungquist, 2007). Core capabilities are the skills to run the institution or manage a process differently from rival institutions.

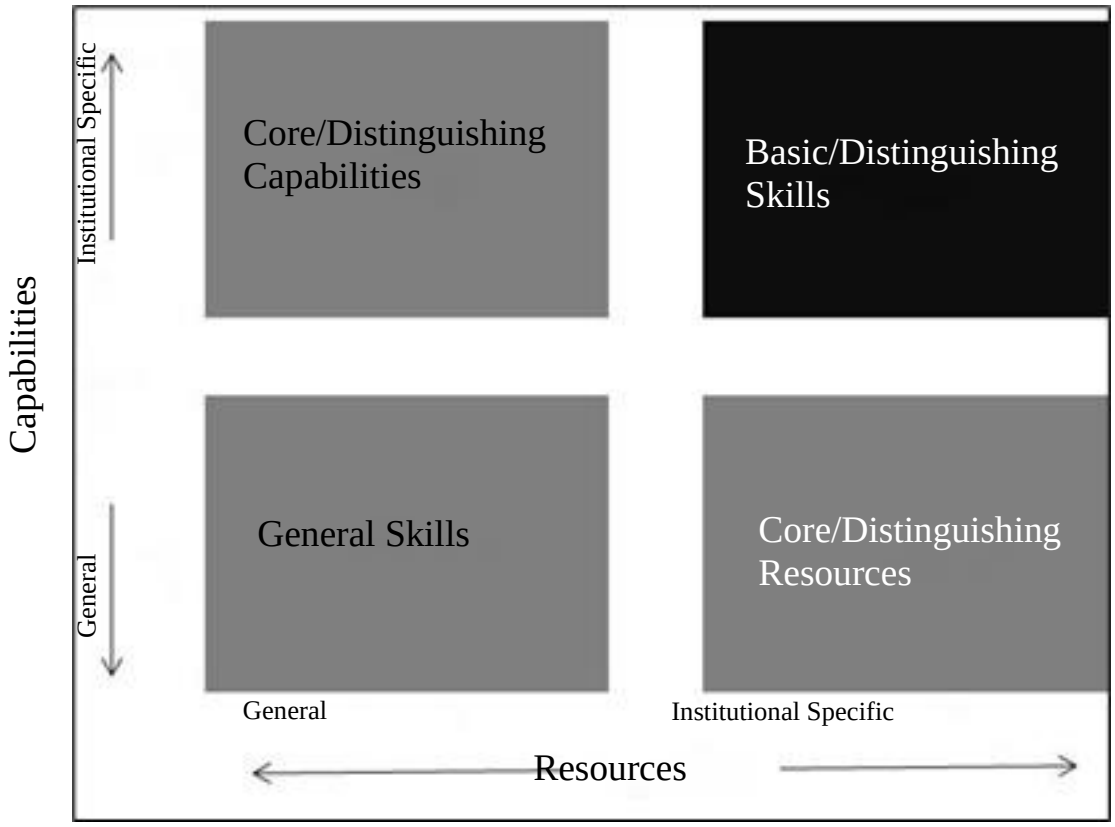


Figure 5. Institutional Resources, Capabilities, and Skills

Source: Hill and Jones, 2010:108-109.

The relationship between strategy and core competencies is depicted in Figure 6. Core competencies contribute to the development of the health institution's strategies. To develop realistic, feasible, and achievable strategies, first of all, the institution must thoroughly assess its competencies. It is because the core competencies draw the limits of what the health institution can do/achieve. For instance, a hospital manager may consider offering free chronic health screenings to individuals in elderly care homes or nursing homes in their area as part of a market penetration strategy. However, if the hospital does not have sufficient resources (e.g., medical-health personnel and mobile laboratory equipment), providing the health screening service will not be possible. Moreover, even if sufficient resources are available, if capabilities are lacking (e.g., absence of a concrete plan, program, and job description for the health screening personnel), the screening activity cannot be carried out. On the other hand, strategies can also be developed to create and enhance the necessary resources and capabilities to create core competencies. For example, the screening program can be planned and programmed by collaborating with a public health specialist or epidemiologist.

[19] Informed consent is the process for obtaining patients' consent prior to the treatment about their health statuses and procedures, such as the diagnosis made, the type of treatment and its success rate, the duration of the treatment, who will perform the operation, where, when and how will the operation be performed, the risks and side effects of the treatment, alternative treatment methods, and the potential outcome if the treatment is not performed.

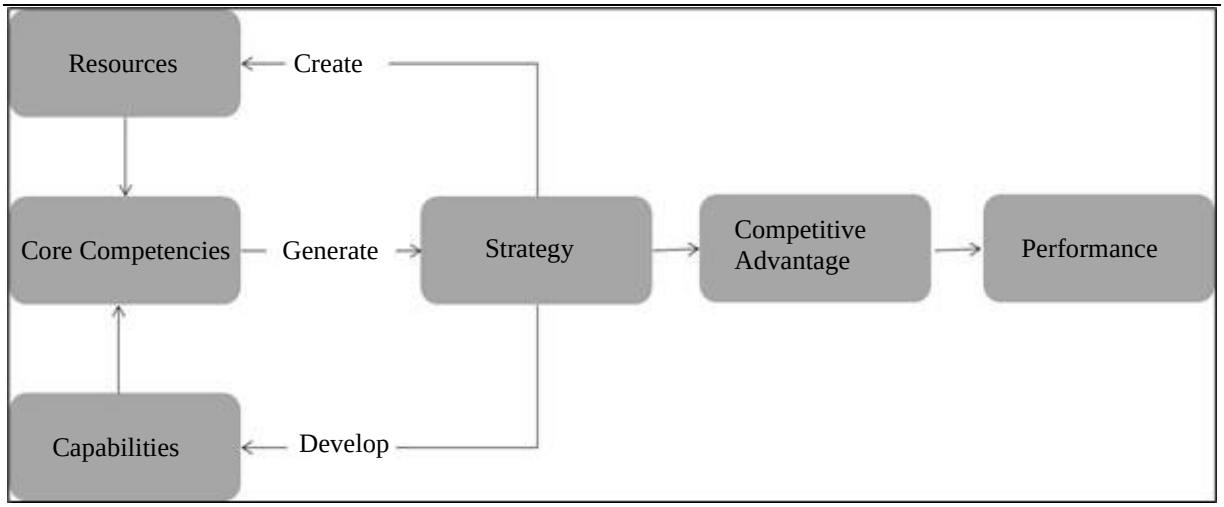


Figure 6. Strategy and Core Competencies

As shown in Figure 6, there is not a one-way linear relationship between core competencies and strategy, but rather there is a two-way relationship (Hill and Jones, 2010:102). Core competencies form the foundation for the development of strategies. According to Prahalad and Hamel, an institution's core competencies are like a window opened to future opportunities (Prahalad and Hamel, 1990). Therefore, institutions should take their core competencies into account to better position themselves in the market and achieve a competitive advantage. On the other hand, strategies also contribute to the generation of resources that set the ground for the emergence or strengthening of core competencies, and the development of capabilities.

Tasks of Managers

For the development of core competencies, managers must fulfill five basic tasks (Prahalad and Hamel, 1990):

i. Health institution managers should clearly and thoroughly define their core competencies and ensure all personnel understand them. The managers should also assess the institution's core competencies through a basic competency test. Basic competency test is conducted by answering questions on the three characteristics of core competencies discussed above (Gallon, et al., 1995):

- Does this competency generate more value and benefit for patients?
- Does this competency increase the number of potential patients, that is, does it expand the service area?
- Can this competency be easily copied?

Examples of sub-questions containing the details of these general questions are given Table 2.

Table 2.

Main and Sub-Questions on the Characteristics of Core Competencies

Main Questions	**Sub-Questions**
Does this competency generate value for patients?	• Are the services provided using this competency important for the institution? • Are the services provided using this competency consistent with the institution's goals? • Are the services provided using this competency cost efficient? • Do the services provided using this competency meet the patients' needs?
Does this competency expand the service area?	• Are the services provided using this competency different-unique products in the market? • Are the services provided using this competency innovative? • Do the services provided using this competency make the institution stand out from the competitors in the eyes of patients?
Does this competency create competitive advantage?	• Do the services provided using this competency enable the institution to provide services to different regions? • Is this competency used commonly within the institution?

Source: Adapted from Ljungquist, 2007.

ii. Healthcare facility managers should develop a plan (agenda) for acquiring core competencies and prepare a roadmap that demonstrates how existing and new competencies can strengthen the institution's position in the current or new market. Moreover, managers must identify areas (services) where current competencies are insufficient and areas (services) where new competencies are required.

iii. The history of the institution is a crucial factor in acquiring core competencies. It is because the institutions develop their core competencies over time using their own unique methods (Barney, 1986). This period can cover a span of five to ten years. Therefore, managers should focus and consistently strive to develop core competencies without losing motivation.

iv. Healthcare facility managers should ensure that core competencies are spread throughout all departments in a continuous but flexible manner.

v. Managers must constantly protect and defend core competencies. Over time, the importance given to core competencies may decrease due to reasons such as lost interest or implementation of cost-saving measures. Protecting and sustaining core competencies should be seen as the most important part of the chosen strategy.

Analysıs of ınstıtutıonal functıons: value chaın

According to the value chain model developed by Porter (1985), an institution must create value to gain a competitive advantage. In general, value is defined as the amount of money that a customer (patient) is willing to pay for the perceived benefit of a product (service). The value that a product (service) provides to a firm (an institution) is defined as the difference between the revenue generated by the product (service) and the total monetary value of the inputs used to produce it (Porter, 1985:38). According to Porter, the sequence of activities that extends from the procurement of inputs to the delivery of products to users and after-sales services is classified as the value chain.

Porter and Teisberg (2006:3-5) point out that while competition is expected to lead to improvements in "quality" and lower "costs," these results have not occurred in the health sector. Therefore, they conceptualize the competition in the health sector as "zero-sum competition". Zero-sum competition results from health institutions competing in incorrect levels and on incorrect domains. Competition between institutions leads to decreased quality, increased costs, unused capacity, and higher management costs, which do not benefit the competing institutions, patients, or insurance companies. Porter and Teisberg (2006:4) suggest that competition between health institutions should be "positive, that is, competition should be based on "value created and enhanced for patients", rather than based on short-term cost reduction. The value for patients arises as an end product of the entire medical care process (including examination, laboratory tests, invasive procedures, etc.). The only thing that truly matters to patients is not the type and level of services received (outputs), but the extent to which the care or treatment process improves their health. Of course, it is also necessary to achieve positive outcomes at as low a cost as possible. Hence, we can define value as obtaining the best outcomes for patients with minimum cost. Value-based strategies enable both improvement of service quality and reduction of service costs.

Health institutions that provide services that create value for patients will have the opportunity to attract more patients. Moreover, value-based competition will not only be beneficial for patients, but also for insurance companies. The main reason for failure of the cost control strategy by Social Security Institution (SSI) in Turkey in the form of price limits is the focus mainly on outputs rather than effects of the payment system. That is, the surge in health expenditures despite all cost-saving measures is attributable to the adoption of reimbursement plans that focus on output instead of value creation. Hospitals and other health institutions are forced to reduce the number of services provided to patients due to the increasing strictness of price restrictions. Under these conditions, it becomes more difficult for patients to receive desired treatments and benefits. Hence, if the insurance institutions work on a value creation-based payment plan rather than a fee-for-service or per case payment model, it will be more beneficial for the patients (Porter and Teisberg, 2006: 62-63).

Value and Outcome

The concept of value is pertinent to the final output and cost of the service provided. According to Porter and Lee, the primary task of managers is to increase the value of the services provided to patients, i.e., to try to achieve the desired output with minimum cost. To do this, managers must abandon the supply driven service delivery system and switch to a patient-centered service delivery system organized in line with patients' needs (Porter and Lee, 2013).

As value is defined as obtaining the desired output (desired improvement in the patients' health statuses) with minimum cost. We can algebraically formulate the value as follows:

Value = Output/Total Cost

The services offered, regardless of their extent and variety, will not have any value if they do not provide the desired results for patients (ultimate output=0). Although ultimate output is often interchangeably used with service quality, in essence, they are different concepts. Ultimate output is a general concept that includes quality. Ultimate output refers to the improvement in the health status of the patient, rather than the extent and variety of services offered. For example, "patients' satisfaction with the services received" is not the ultimate output; "the patients' level of satisfaction with their health statuses" is the ultimate output (Porter, 2010). Moreover, providing more service to the patient

does not necessarily mean that the ultimate output will be satisfactory. Therefore, managers should focus on ultimate output rather than the quantity of the service. Prominent scholars of the discipline emphasize that the service delivery processes, and development and improvement of these processes are institutional tactics, and that they cannot replace ultimate outputs (Porter and Guth, 2012:27; Porter, 2010).

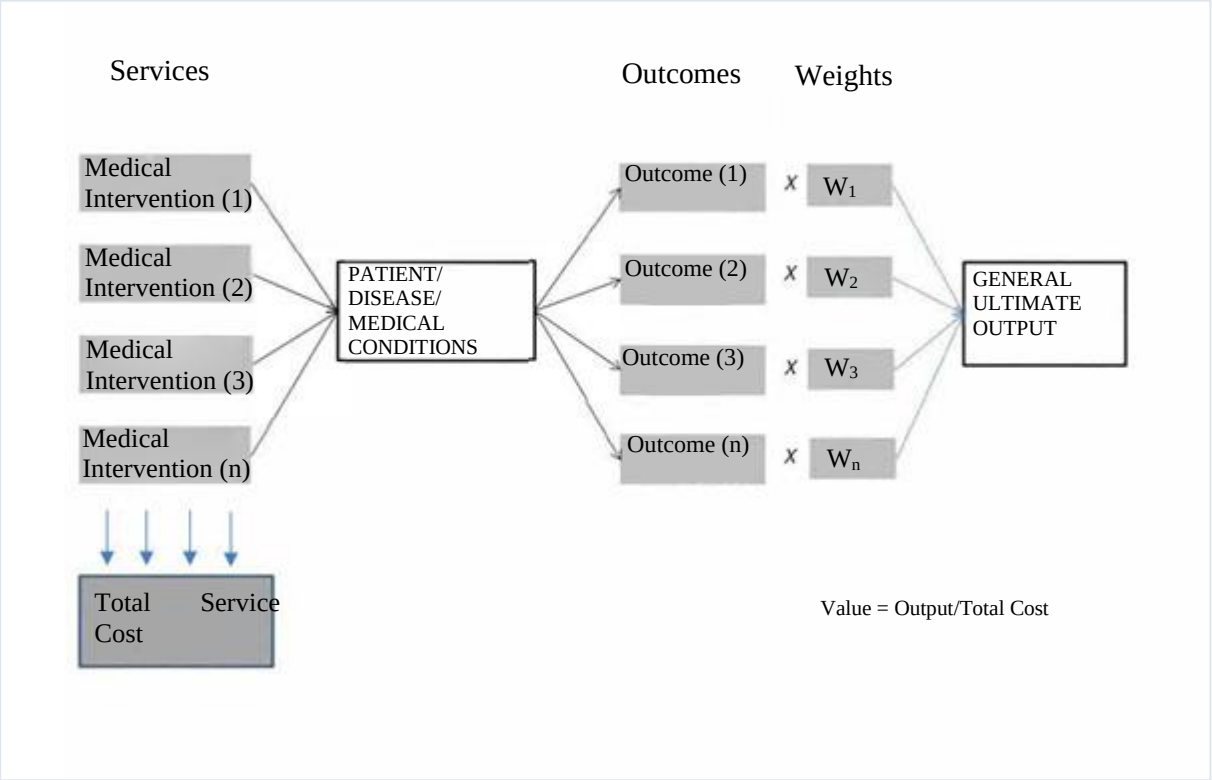


Figure 7. General Ultimate Output

The ultimate output includes all stages of the medical care process and reflects the improvement in the patient's health status. Patients are not concerned with the services or interventions provided to them, but rather with the overall outcomes of the care process (if they recovered totally, if their health statuses improved) (Porter and Guth, 2012:28). However, there is no single ultimate output reflecting a patient's health status. As it can be seen from Figure7, there are multiple, multi-dimensional outcomes for each medical intervention in case of each disease. The overall ultimate output is the combination of outcomes from the entire care process. To be precise, each service or intervention has its own outcome, and thus, each outcome has a different weight on the overall ultimate output. Hence, the overall ultimate output can be calculated as a weighted sum of the outcomes of the entire medical care process:

$$Overall\ Ultimate\ Output = \sum_{i=1}^{n} O_i W_i,$$

where O_i is the ith outcome, and W_i is the weight of ith outcome.

Examples of service or intervention outcomes include survival, gaining functional health status, and sustainability of treatment. When each stage of the medical care process produces the desired outcome, true benefit is created for the patient. As portrayed in Figure 8, Porter views ultimate output in health institutions in a three-tiered hierarchy.

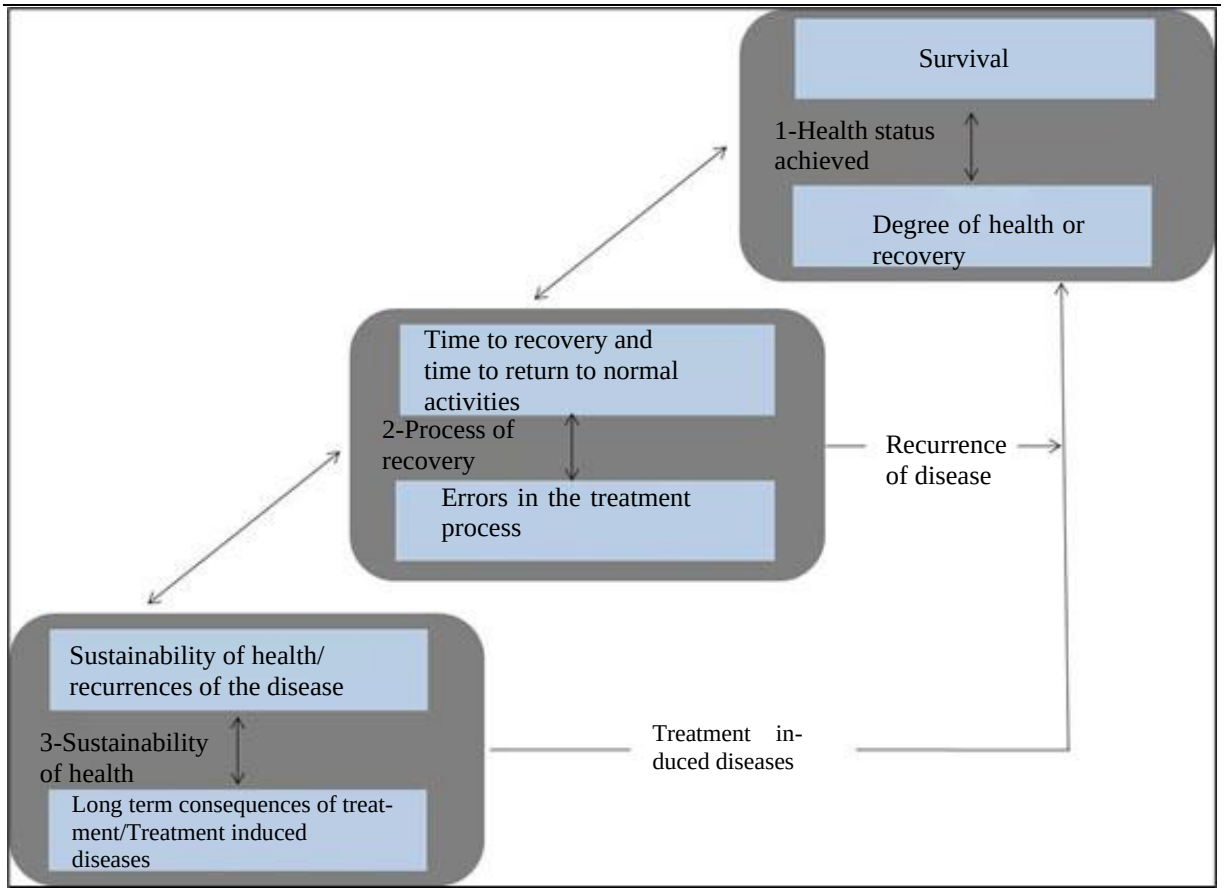


Figure 8. The Three-Tiered Hierarchy of Ultimate Output in Health Institutions

Based on the three-tiered hierarchy of ultimate output depicted in Figure 8, we provide examples of outcome measures related to two diseases and health conditions in Table 3.

Table 3.

Examples of Outcome Measures

Breast Cancer	**Dimensions**	**Primary Acute Knee Osteoarthritis Requiring Prosthesis**
Survival rate (1 year, 3 years, 5 years, over 5 years)	**Survival**	Mortality rate (Hospitalized patients)
	↕	
-Time to recovery -Functional state -Breast cancer prevention -Results of breast cancer prevention surgery	**Degree of health or recovery**	-Degree of functional state -Degree of pain -Degree of physical activity ability -Readiness to return to work
	↕	
Time to recovery	**Time to recovery and time to return to normal activities**	-Treatment period -Time to return to normal activities
	↕	
-Hospital infection -Nausea or vomiting -Febrile neutropenia -Restriction of mobility -Depression	**Lack of benefit from care or treatment process** (Diagnostic errors, ineffective treatment, treatment-related discomfort, complications, side effects)	-Pain -Length of stay -Infection -Pulmonary embolism -Deep vein thrombosis -Myocardial infarction -Urgent revision delirium

	↕	
-Recurrent cancer -Consequences of recurrent cancer -Sustainability of functional state	**Sustainability of health or prevention and recurrences**	-Sustainability of functional state - Ability to live independently - Need for revision or reoperation
	↕	
-Incidence of second primary cancer -Brachial plexopathy -Premature osteoporosis	**Long term consequences of treatment** (Treatment induced Diseases)	-Loss of mobility due to inadequate rehabilitation -Complex fracture risk -Susceptibility to infection -Knee stiffness due to an unknown complication -Regional pain syndrome

Value and Cost

The second dimension (component) of value in healthcare is the service costs. Reducing service costs lead to an increase in value, but care must be taken when reducing costs. Attempting to reduce costs without considering the outcomes of an intervention or service is a dangerous approach and can lead to unintended consequences (e.g., patient injury or death), as well as impede effective service delivery. Moreover, reduction in costs in a manner that poses danger to patients is not real cost savings but results in "illusory cost savings" (Porter and Guth, 2012:27). On the other hand, reducing service costs does not imply a decrease in the cost of each service provided to the patient. On the contrary, while it may seem like an upsurge in costs, increase in some services can lead to a reduction in total treatment costs by generating achievements such as early intervention, reduced medical errors, minimized complications, and prevention of disease recurrence. Hence, managers should focus on the total cost of medical care in their cost measurement or calculations, rather than on individual services provided.

Value creatıon chaın

The value chain, developed by Porter (1985), is a model that outlines how value is generated. A health institution provides a wide variety of independent activities with a common goal. Examining the patients, providing diagnosis services, treatment of hospitalized patients, discharging treated patients, and monitoring the health status of the patients after discharge (follow-up exams) are typical examples of services a hospital produces and delivers. In addition to these typical services, a health institution performs administrative activities such as food provision, maintenance and repair, patient acceptance, procurement, and material provision. All these activities are referred to as the value chain. For a health institution to create more value than its competitors, it must consider all of its institutional activities in an integrated manner. The value chain model allows for a systematic analysis of the resources and activities of a health institution. The main purpose of the value chain analysis is to determine how to increase the value of services, that is, how to ensure the best outcomes in patient's health status at the lowest cost level. Increasing value enhances the competitiveness of the institution (Porter, 1985:33). The value chain model requires assessing and, if necessary, re-organization of the institutional activities to form a value chain. Every health institution has its own unique value chain. The value chains of institutions vary according to the history of the institution, the strategy chosen, and the way the strategy is implemented. The differences in value chain standards of institutions themselves in their competitive advantage potentials (Porter, 1985:36).

Health institutions are systems that convert inputs into outputs. Institutions are not just a random collection of personnel, machines, and materials. In order to be able to offer services that customers are willing to pay for, an institution must organize its personnel and other resources around systematically formed "activities". According to Porter, each activity carried out in an institution should be seen as independent but interrelated production practices. The basic purpose of the value chain model is (i) to determine how and to how much each activity adds value to the services provided by the institution, and (ii) to estimate the cost of the activity. In deciding how to organize and coordinate activities, managers must take the value created by the activities and the costs incurred into account (Porter, 1985:39). By improving the organization of and coordination of activities, both the value of the services can be increased and the cost of the services can be reduced. In short, according to the value chain model, an institution's competitive advantage depends on how effectively it carries out its activities and how efficiently it coordinates the relationships among its activities.

Porter (1985) argues that there are nine important activities that create value in an institution and divides these activities into two main groups: (1) primary activities and (2) support activities.

Primary Activities

Primary activities consist of activities pertained to the primary purpose of the institution, that is, the production and delivery of services. More precisely, primary activities involve procurement of inputs used in the service production process, utilizing these inputs in

the production of services, and provision of after treatment (Porter, 1985:37).

According to Porter's value chain model, primary activities comprise five activities, namely, input procurement, service delivery, distribution, marketing and sales, and after-sales services (Porter, 1985:39-40). We provide brief explanations of these activities below.

i. Input procurement

Input procurement activities basically cover activities related to the procurement process of inputs needed to provide services. Materials (drugs, medical supplies, and other consumables) requirements planning, storage of medical equipment, pharmaceutical products, and general consumables in warehouses, inventory (stock) control, protecting materials stored in warehouses, properly disposing of expired drugs and supplies, and timely delivery of drugs and medical supplies to service departments (such as inpatient services, operating rooms, intensive care units, etc.) are the main activities conducted in the input procurement process. Drug and medical supply expenses are the second highest spending category after personnel expenses in health institutions. Therefore, managers aiming to reduce service costs and increase productivity must be careful in timely procurement, protection, and efficient use (prevention of unnecessary use or waste) of drugs and medical supplies.

Health institutions' most important input is patients. Therefore, analyzing the served population and region (market), evaluating the health needs, performing market competitiveness analysis, determining the services offered, and carrying out promotion, advertising, and marketing efforts to attract patients can be considered as activities related to input procurement.

ii. Service Delivery

Health service delivery refers to activities conducted to transform inputs into outputs. The service delivery process starts with a patient's application to the institution. Health services offered by health institutions vary depending on their position in the comprehensive health system (such as primary, secondary, and tertiary levels). While a primary level health institution (e.g., a family health center) provides basic services such as outpatient examination, basic diagnostic services, and patient referral services, the secondary level health institution (e.g., a general hospital), in addition to examination and diagnostic services, offers more complex services such as surgical and interventional services, and observation services.

iii. Distribution

Distribution activities are more applicable to manufacturing enterprises. The distribution activities in such businesses include storing manufactured products, taking delivery orders, preparing delivery plans, and transporting the products. On the other hand, in health institutions, examples of distribution activities involve patient discharge planning, discharge procedures, patient information during discharge, and free patient transportation services.

iv. Marketing and Sales

Marketing and sales activities include activities such as product and service promotion, advertising, sales, choice of distribution channels, and pricing. Specifically, patient satisfaction surveys, service quality evaluations, public relations, and advertising activities are also part of the marketing and sales activities in health institutions. Marketing activities in health institutions can be considered as part of the activities for attracting patients.

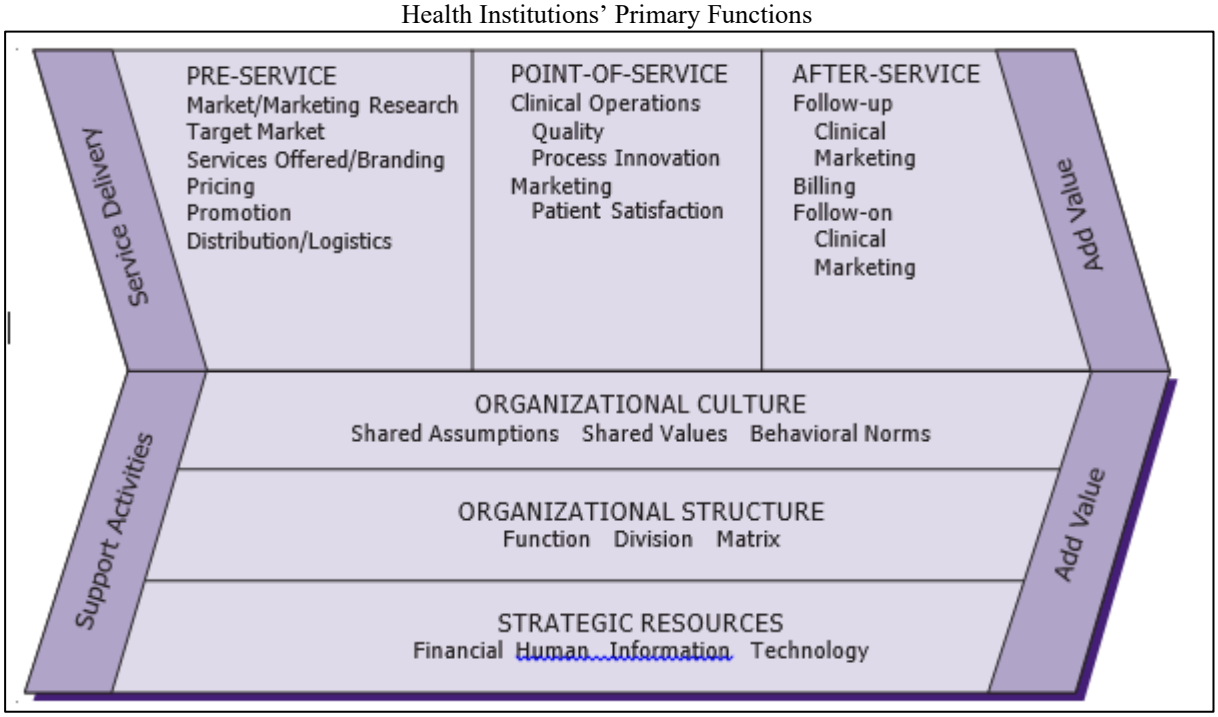
v. After-Sales Services

After-sales services refers to various processes which make sure an institution's customers are satisfied with its products and services after they purchase them. Examples of after-sales services are free shipment, installation, and setup, simple and fast maintenance and repair procedures, and the establishment of a wide service network. In case of health institutions, control check-ups performed after the patient is discharged, wound care and medical dressing services, monitoring of treatment by visiting the patient at home, discounted services for newborns in the hospital, and the distribution of free patient specific instruction brochure are examples of after-sales services.

Swayne et. al. (2006) stress that the basic role of health institutions is health services delivery, and therefore, focus on three primary activities these institutions carry out, namely, activities carried out before service delivery (pre-service activities), activities carried out during service delivery (point-of-service activities), and activities carried out after service delivery. These primary activities and their sub-activities are listed in detail in Figure 9 below.

Figure 9.

Health Institutions' Primary Functions



Source: Adapted from Michael E. Porter, Competitive Advantage: Creating and Sustaining Superior Performance (New York: Free Press, 1985), p. 37.

Value chains are made of primary activities. We provide a detailed description of value chain in terms of primary activities, and their sub activities in table 4 below.

Table 4.

Descriptions of Value Chain Components

Value Chain Component	Description
Service Delivery	The activities in the value chain that are directly involved in ensuring access to, provision of, and follow-up for health services
Pre-Service	
• Market/Marketing Research	Determine the services that create value prior to the actual delivery of health services, determine appropriate target market
• Services offered/ Branding	Information dissemination to present and prospective patients and other stakeholders regarding the range and location of available services
• Pricing	Charge schedule for available services
• Promotion	Activities that ensure all the elements needed to deliver health services are available at the appropriate place at the appropriate time
• Distribution/Logistics	Activities and systems that facilitate patient/customer entry into the service delivery system, including appointments and registration
Point-of-Service	
• Clinical Operations	Those service delivery activities that create value at the point where services are actually delivered
Quality	The activities that convert the human and nonhuman resources into health services
Process Innovation	Actual provision of health services to the individual patient
• Marketing	Activities and groups of activities that are designed specifically to improve the quality and quantity of health services
Patient Satisfaction	Activities to offer new products, seek new customers, provide better services delivery, and cause services to be perceived as higher value
After-Service	
• Follow-up	Activities that create value after the patient has received the health services |
Clinical	Activities designed to determine the effectiveness of or the patient's satisfaction with health services received
Marketing	Activities that assist in determining what other services need to be delivered
• Billing	Value creating activities that ensure more understandable and efficient billing procedures
• Follow-on	Activities that facilitate entry into another value chain (from hospital to home care, etc.)
Clinical	
Marketing	
Support Activities	The activities in the value chain that are designed to aid in the efficient and effective delivery of health services
Organizational Culture	
• Shared Assumptions	The overarching environment within which the health services organization operates
• Shared Values	The assumptions employees and others share in the organization regarding all aspects of service delivery (e.g., needs of patients, goals of the organization)
• Behavioral Norms	The guiding principles of the organization and its employees. The understandings people in the organization have regarding excellence, risk taking, etc.
	Understandings about behavior in the organization that can create value for patients
Organizational Structure	Those aspects of the organization structure that are capable of creating value for customers/patients
• Function	Structure based on process or activities used by employees (e.g., surgery, finance, human resources)
• Division	Major units operate relatively autonomously subject to overarching policy guidelines (e.g., hospital division; outpatient division; northwest division)
• Matrix	Two-dimensional structure where more than a single authority structure operates simultaneously (e.g., interdisciplinary team with representatives from medicine, nursing, administration)
Strategic Resources	
• Financial	Value creating financial, human, information resources, and technology necessary for the delivery of health services
• Human	Financial resources required to provide the facilities, equipment, and specialized competencies demanded by the delivery of health services
• Information	Individuals with the specialized skills and commitment to deliver health services
• Technology	Hardware, software, and information processing systems needed to support the delivery of health services
	The facilities and equipment required to provide health services

Support Activities

Support activities include activities that facilitate or support the implementation of the primary activities. However, while the infrastructure of the institution does not directly relate to any primary activity, it constitutes the backbone of the entire value chain (Porter, 1985: 38). Support functions are summarized below (Porter, 1985: 39):

i. Procurement

The procurement activities refer to the purchasing of the resources needed by the health institution. Procurement is an activity carried out by all departments of the institution. That is, while some materials are purchased by the central procurement department, some materials can be purchased directly by the departments. The efficacy of the procurement activities directly affects the quality and cost of the purchased inputs. Quality of inputs has a direct and significant impact on the patients' safety and service quality. Furthermore, procurement is closely related to service costs. To reduce service costs, high-quality inputs must be purchased in

the most economical way. An efficient procurement process can facilitate the institution's primary and support activities to create more value through enabling the institution to improve the quality and lower the cost of the services it produces. However, value creation requires the procurement process to prioritize the quality of inputs over their costs. It is because purchasing high-quality inputs at a high cost will create more value than purchasing low-quality inputs at a low cost. Although the cost of services provided using low-quality inputs may be low, the actual cost may be higher when considering the costs arising from negative outcomes such as recurrent diseases, re-surgeries, prolonged treatment and resulting rise in average length of stay, and serious side effects.

The procurement process is not limited to the purchase of inputs. It requires developing beneficial relationships with suppliers. Constructing and maintaining long-term strategic cooperation with the supplier institutions can facilitate increasing value in the health institutions.

ii. Technology Development

Technology development refers to the design of new products, services, and service delivery processes. Technology includes not only the machinery, tools and equipment, and methods, but also the "knowledge resources" used in production activities (Daft, 2000: 258). Technology development aims not only to make the services offered different than and superior to those of competitors, but also to reduce the cost of the services.

iii. Human Resource Management

Human resource management performs activities pertaining to the employment (recruitment, selection, placement), development (performance evaluation, in-service training, career management), compensation (job evaluation, determining wages and bonuses), and integration (job health, complaints, union relations) of employees. Almost all services in health institutions are provided by health professionals. The knowledge, skills, and motivation of personnel are the most important factors that determine the quality of service. Therefore, human resources should be seen as the most important strategic input that adds the most value to institutional activities.

iv. Infrastructure

Infrastructure refers to institutional culture, management system, and organizational construct. Therefore, activities pertaining to the establishment and management of the institutional culture, development of management systems (planning, leadership, control, etc.), and design of the institutional structure are infrastructural activities.

As discussed above, each primary activity consists of independent sub-activities. These sub-activities can also be classified as direct activities, indirect activities, and quality assurance (QA) activities (Porter, 1985:43-44). Direct activities are value-adding activities. For example, activities such as diagnosing illnesses in hospitals, developing an appropriate treatment plan, and providing surgical services are directly value-adding activities. Indirect activities are activities that facilitate the directly value-adding activities. Keeping patient records organized, maintaining the cleanliness of clinics, performing periodic maintenance on laboratory equipment, and training the personnel are examples of indirect activities. Quality assurance activities cover activities carried out to realize the institution's established quality standards. Process control, checking infection control measures, and controlling the temperature and taste of food offered to patients are just a few examples of activities performed under quality assurance.

Margin

The concept of margin is related to value creation and cost in an institution. Therefore, margin is located at the end of value chain in Figure 10. As mentioned above, value refers to the amount customers are willing to pay for the benefit they obtain from the services of the institution. In this sense, value can be considered as the institution's total revenue. Cost refers to the total costs incurred (sum of the costs of all the activities described above) to provide the services (create value). The margin is the difference between the total value created and the total cost. If the total value created by an institution (total revenue) is higher than the total cost incurred, the institution will make a profit (Porter, 1985:38).

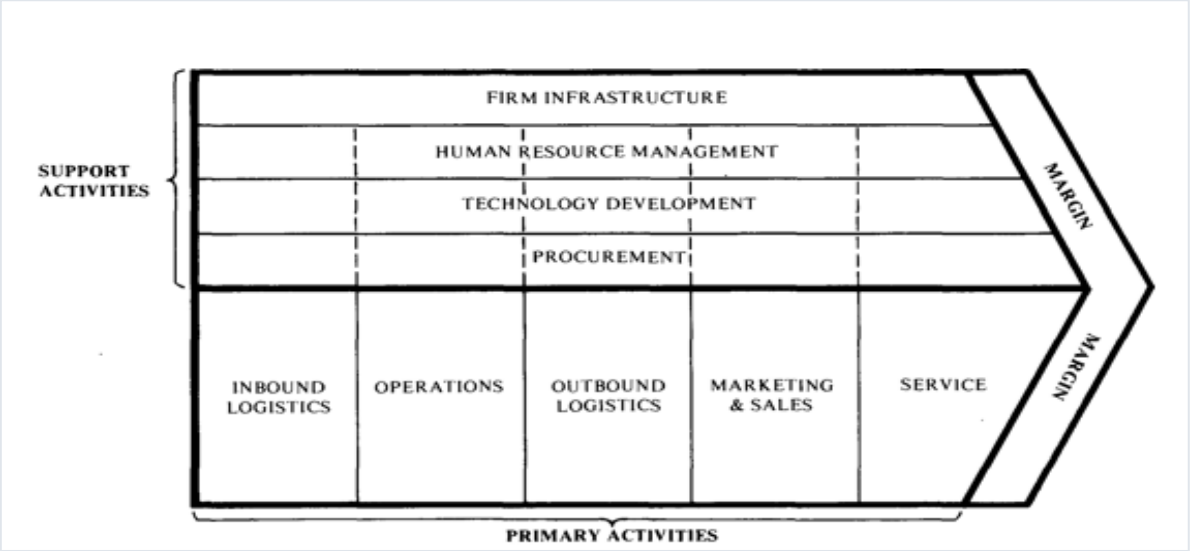


Figure 10. General Value Creation Chain

Perormans analysıs

Quality

From a marketing perspective, the concept of quality can be defined as "meeting customer expectations". This definition focuses on the customers' experiences and perceptions. In this sense, for a service to be considered of high quality, it must satisfy customers' needs. This approach to quality is also widely accepted in quality studies conducted in Turkey. However, despite its wide acceptance, this approach overlooks the scientific-technical aspect of medical care. In general, patients have limited options in making choices regarding medical care they need. On the other hand, customers may have a wide range of alternatives in other service sectors such as accommodation and food sectors. In the medical care sector, patients can only observe the care environment (cleanliness, noise, bureaucracy) and the behavior of health professionals. However, making a quality assessment based on these observations may lead to incorrect results (Kavuncubaşı and Esatoğlu, 1998). Furthermore, if the patients' expectations are very low, meeting these expectations does not prove that the service provided is of high quality.

From a technical perspective, service quality can be measured by the improvement in the patient's health status. In this sense, the concept of quality can be defined as the degree of compliance of the service provided with scientific standards. However, technical quality measure may be inadequate in terms of achieving the quality goal of the health institution if a service does not meet the patient's psychological expectations.

A third approach to quality is the synthetic approach developed by Vincent K. Omachonu (1990). The synthetic quality approach considers both the technical (compliance with scientific norms and standards) and artistic (meeting customer expectations) dimensions of quality. According to this approach, the quality of health services is determined by technical quality and the art of treatment (practical art). Taylor (1994) formulates the quality of health services as follows:

Quality of Healthcare Services = Technical Quality + Art of Treatment.

In this formulation, the technical aspect of quality includes the conformity of diagnostic and treatment services to contemporary medical science and scientific standards and norms; the artistic aspect also includes meeting the patient's expectations for the services provided (John, 1991; Wilson, 1994). Scientific standards and norms are determined by universities, professional organizations, and research and development institutions. Scientific norms also involve common views on inputs used in the health service delivery process. Scientific norms are also referred to as normative criteria (Smith and Kaluzny, 1975:225).

One of the most important approaches to evaluating the technical quality of the services is the Structure-Process-Outcome approach developed by Donabedian. This approach contains three elements, and hence it is referred to as the three-element approach (Donabedian, 1980: 80-85; Donabedian, 1966, Donabedian 1995).

Structure includes the general characteristics of the health institution. The structure of the institution has a significant impact on its performance. The main elements of the structure are:

i. the material resources of the health institution (building, equipment-technology, capital, and service units),
ii. the human resources of the health institution (number and quality of personnel), and
iii. the organizational structure of the health institution (medical services organization, management style, committees, type of clinical supervision).

The process factor is production-oriented and focuses on activities performed during the production and

delivery of services. The process factor includes activities such as examining the patient, diagnosing the disease, recommending an appropriate treatment plan, and executing it. Outcome expresses the impact of the services on the health status of patients. If the services provided have resulted in the desired change in the patient's health status, then the service outcome is considered as good.

According to the three-element approach, technically high-quality service can be achieved through the interaction of these three elements. A good structure (qualified personnel and advanced equipment) leads to the emergence of a good process (correct diagnosis and effective treatment), and a good service process ensures the attainment of desired outcomes. In order to evaluate the technical quality of a service, it is not enough to analyze each of these three elements independently; the relationships between the elements must also be taken into account (Donebedian, 1995).

Productivity

Productivity, in its simplest sense, describes the relationship between inputs and outputs, and is measured by comparing outputs to inputs. Sahney and Warden (1989:30) argues that the definition of productivity as the ratio of output to input is narrow and defines it as the quality, timing, and cost-effectiveness in achieving organizational goals. In this sense, productivity is not solely dependent on the physical outputs of the system. In other words, even if the amount of output produced does not change, increasing the quality of the output will also increase productivity.

Productivity measures how well an institution utilizes its existing resources. In a broader sense, productivity is the relationship between the output produced by a production or service system and the inputs used to create this output. Therefore, productivity can be defined as "the best use of resources in the production of various goods and services" (ILO, 1992:3; Kısa, 1999:15).

It is possible to classify the methods used to measure productivity in health institutions into three main groups, namely, ratio analysis, regression analysis, and data envelopment analysis.

Financial Performance

Another important institutional performance measure that should be focused on in the analysis of the internal environment of an institution is financial performance. Financial resources refer to the money, funds, or capital (Ağırbaş, 2014:18; Kavuncubaşı 2022:206-208). Since, financing is the provision of the institution's financial needs under appropriate conditions, financial management refers to activities pertaining to obtaining and effectively utilizing financial resources.

Value Creation: The financing not only serves the purpose of obtaining and using financial resources under favorable conditions but also contributes to the value of services by helping to improve the quality and reduce the costs of services (Fleming, Boles, 1994: 11-17; Kavuncubaşı 2022:206-208). There is a two-way interaction between value creation and financial performance (Fleming, Boles, 1994: 11-17; Kavuncubaşı 2022:206-208). Financially successful institutions tend to have better results in terms of service quality, patient safety, patient experiences, and re-admission rates (Ecninosa, Bernard, 2005: 60-72; Akinleye, McNutt, Lazariu, McLaughlin, 2019; Bazzoli, Clement, Lindrooth, Chen, Aydede, Braun, Loeb, J2007; Kavuncubaşı 2022:206-208). It is because financially sound institutions allocate more resources to improve quality by way of renewing infrastructure and investing in new technologies. Conversely, institutions with poor financial performance try to improve operational productivity by cutting spending on quality improvement efforts. To reduce costs to increase operational productivity, institutions resort to reducing staffing levels (especially nursing staff), cutting spending on investments in new technologies, and lowering service standards. Reducing staffing levels creates serious quality problems. For example, reducing the number of nurses leads to an increase in the number of patients per nurse, which in turn leads to an increase in the frequency of death rates, infection rates, and other unwanted medical outcomes (Kane, Shamlian, Mueller Duuval, S., Wilt, J. T., 2007: 25-44; Kavuncubaşı 2022:206-208). In summary, hospitals struggling with financial difficulties try to survive by reducing service quality (Dong, 2015; Kavuncubaşı 2022:206-208).

Determining Strengths and Weaknesses: Information about the current financial situation of the institution and predictions about the future financial state are needed in the development of the institution's strategies. To understand the current financial situation and develop future predictions, the financial performance of the institution must be analyzed. Financial statements such as balance sheets and income statements are used to measure and evaluate financial performance. Financial performance analysis can reveal the institution's strengths and weaknesses by demonstrating how effectively the institution is using its financial resources.

A financially successful institution is one that can finance its resources at the desired levels and can provide balanced funding through both debt and equity. Financial performance analysis is an analytical process that uses financial and operational data to assess the financial health of the institution and evaluate the return and risk of investments. Thus, financial performance analysis helps management to assess the past investment projects and future investment potentials, enable a better financial planning/decision-making (Özgülbaş, 2005:125-144, Kavuncubaşı 2022:206-208). Financial performance analysis is also used to evaluate resource allocation decisions. Financial performance analysis is carried out using financial statements such as balance

sheets and income statements. Financial performance analysis includes the calculation and interpretation of financial performance indicators. Financial performance indicators can be compared with other institutions' figures and the sector' indicators to evaluate the institution's position relative to other institutions (Akar, 1992; Ağırbaş, 2014:74-99; Akça, İkinci, 2014:111-126; Kavuncubaşı 2022:206-208).

Financial performance indicators measure the financial health of an institution. The most used financial performance indicators are liquidity ratios, measuring the ability to meet short-term obligations; solvency ratios, indicating the long-term financial stability outlook; activity ratios, measuring the efficiency of using assets to generate revenue; and profitability ratios, measuring the ability to generate profits. By comparing these indicators with the industry standards and competitor's figures, an institution can assess its relative financial performance and identify its strengths and weaknesses.

Technical Performance

Analysis of Information Systems

Another area of focus in internal environment analysis is the institution's information systems. Information system refers to the construct facilitating the collection, storage, processing and analyzing data, reporting the findings of data analysis, and enabling the communication and synchronization among units. Information systems consist of information and communication technologies (servers, computers, wireless devices, etc.), database management, and software management. Compared to the past, information systems are increasingly utilized today to perform and control clinical and administrative activities. It is almost impossible to find a unit or desk without a computer in today's health institutions. Almost all employees in the institutions perform most or a significant part of their work using computers and communication technologies.

Health institutions' information systems can be divided into four main categories, namely, clinical information systems, operational information systems, strategic decision support systems, and electronic networks and e-health (smart and digital health) applications (Glandon, Smaltz, Slovensky, 2008:20-21; Kavuncubaşı 2022:208-212).

i. Clinical Information Systems

Clinical information systems support service delivery processes and help physicians and other service providers to make clinical decisions more effectively. Examples of clinical information systems include electronic patient records, nursing information systems, pharmacy information systems, laboratory information systems, imaging and radiology information systems, operating room information systems, medical education and research information systems, patient monitoring systems, blood bank information systems, and clinical decision support systems.

ii. Operational Information Systems

Operational information systems consist of operational transaction systems and office automation systems. Operational information systems facilitate the improvements in institutional activities. Operational information systems are used for data entry, standard calculations, preparation of standard reports, internal communication (e.g. e-mail, video conferencing system, etc.), and operational control. Accounting records, personnel payrolls, outpatient appointment processes, stock control, invoicing, personnel start-of-work procedures are also carried out with operational information systems.

iii. Strategic Decision Support Systems

Strategic decision support systems are designed to assist top-level managers in the processes of strategic planning, managerial control, performance management, and outcome measurement. These systems integrate operational and clinical information with information obtained from the external environment (epidemiological data, competitor activities) to support managers in making strategic-level decisions.

iv. Electronic Networks and e-Health

Health institutions communicate electronically with insurance institutions, the Ministry of Health, and other health organizations for the purpose of data sharing. Receiving provisions, sending service bills, and sending patient statistics to the Ministry are carried out through electronic networks. The strengthening of the internet infrastructure also contributes to the change of service delivery methods. E-health applications (e.g., telemedicine) have become a strong alternative to the traditional service delivery models.

Analysis of Information Systems and Determination of Strengths and Weaknesses

It is possible to measure the strengths and weaknesses of an institution through its information system. Factors that positively affect the success of the information system are considered as the strength of the institution, while those that have negative impact on the success of the information system are considered as the weakness of the institution. A comprehensive model that constructs a causal relationship between the system structure and its outcomes is needed to measure the success of information systems. The DeLone and McLean Information Systems Success Model is one of the comprehensive models used to measure the success of information systems (Delone, McLean, 2003: 9-30; Seddon, 1997: 240-253; Kavuncubaşı, Yıldırım, Tekeş, 2019: 60-66; Kavuuncubaşı 2022: 208-212).

Conclusion

The main aim of internal environment analysis is to determine the strengths of health institutions required to achieve competitive advantage against rival health institutions, and to identify and alleviate the weaknesses. Moreover, the information about the strengths and weaknesses obtained through the internal environment analysis can be used to support the process of determining and evaluating institutions' strategies. The internal environment of a health institution is a set of factors that are under the control of management, but directly affect the success of the institution. To easily perform an internal environment analysis, it is necessary to divide a health institution into functional subsystems and to analyze these sub-systems first individually and then in relation to other sub-systems. Finally, health institutions must take their current and potential resources into account to develop implementable and evidence-based strategies.

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TECHNICAL SCIENCES

APPLICATION OF ELECTROMAGNETIC CLUTCH SLIPPING IN WIND POWER PLANT

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Abstract
Dishoarding and increase of non-renewable sources of energy are forced humanity to paid attention to renewable sources of energy that one of their is wind. According to the potential possibility wind-power engineering can take second place after the hydroelectric engineering. However utilization of energy of wind is concerned with the great difficulties of technical characteristics. General questions about the utilization of energy of wind have enough highlights, however getting of quality electroenergy from wind has not adequately explored yet. In this article is discussed question about the perspective using of electromagnetic clutch slipping by way of one of elements that made better the work of wind power plant (wind-electric set).

Keywords: renewable sources, wind power plant, electromagnetic clutch slipping, frequency.

Introduction
Under the changes of speed of wind power plant is the conductor with the rapid starting and stop. For prevention of breakage and damages and also elastically junction of generator with the wind power plant, electromagnetic clutch slipping is the effective remedy. In proposal system of wind power plant, electromagnetic clutch slipping not only is execute function as turning on and disconnection of generator and also can decrement vibration of wind wheel. Electromagnetic clutch slipping that has been established between the reduction gears and electrically generator is stabilized frequency rotation at the entry of muff under the variable frequency of wind wheel and also allow to rapid junction and segregation of rollers till and during the driving work and smooth out hits from the wind wheel to the generator. As distinct from other electrically machines in electromagnetic clutch slipping at that condition for cooling is not become worst and overall dimensions of muff in this connection are not increase [1-3].

Main part
In the same way application of electromagnetic clutch slipping in wind power plant is set up the possibility under the solving of more questions about dynamics of wind power plant. As a result of this mathematical modelling and investigation of transitional process in wind wheel system — electromagnetic clutch slipping - generator is gain actual in importance. Specifically peculiarities of work as such system is contain that electromagnetic moment of muff is the compound function of slipping and current excitation. Under the consideration electromagnetic clutch slipping as an object with the distribution parameters in this situation is meet with the serious difficulties. In that case when the investigation of internal process in electromagnetic clutch slipping are not request, for the solution of task is enough take into consideration only resulting influence massive magnetic path and consideration of electromagnetic clutch slipping as an object with the fixed parameters [4-7].

In these situations for the investigation of offered systems can be used equalization of Park in a system coordinate d, q, o. System of differential equalization for the commonly known synchronous generator. For the equivalent of electromagnetic clutch slipping with the massive magnetic path is used from structural diagram setting in figure l. Here massive inductor is equivalent under the longitudional axis with the circuits' f and D, but massive rotor on the longitudinal axis with the circuits' d and transversal axis with the circuits' q. Possibility of such equivalence has been mentioned in (1), but in such situations can be limited with the two-three circuits for the solution of engineering task. Structural diagram has been composed on the basis of similarity of electromagnetic clutch slipping with the synchronous machines. Parameters of circuits' d and q at that is the function of current excitation and comparative rapid between the armature and inductor. Differential equations of electromagnetic clutch slipping in operator form has the aspect:

$$\begin{aligned} 0 &= r_d i_d + P\psi_d - \omega_M \psi_q \\ 0 &= r_q i_q + P\psi_q - \omega_M \psi_d \\ 0 &= r_D i_D + P\psi_D \\ U_f &= r_f i_f + P\psi_f \\ 0 &= r_Q i_Q + P\psi_Q \\ \psi_f &= X_f i_f + X_{ad} i_d + X_{ad} i_D \\ \psi_D &= X_D i_D + X_{ad} i_f + X_{ad} i_d \\ \psi_Q &= X_Q i_Q + X_{aq} i_q \\ \psi_d &= X_d i_d + X_{ad} i_D + X_{ad} i_f \\ \psi_q &= X_q i_q + X_{aq} i_Q \end{aligned} \quad (1)$$

Here the designation is the generally accepted. Solve system of equation (1) under ω_M = const can learn electromagnetic transitional process. Such as particular interest is present dynamics drive with the muffs to the system (1), it is necessary to add equation of movement of electric drive for the learning of electromechanical process [8-12].

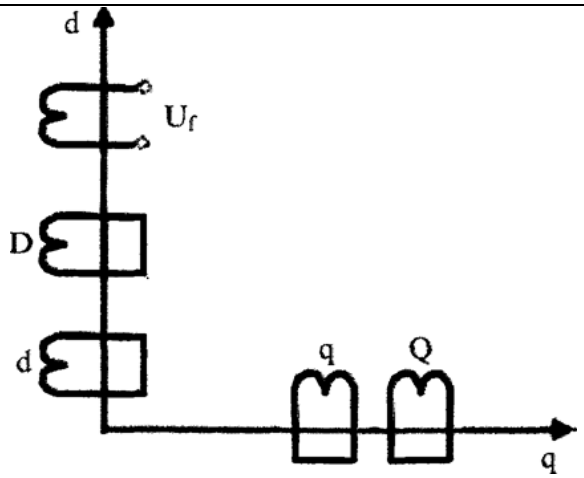

Figure 1. Structure chart electromagnetic clutch slipping

Electromagnetic moment of muff in a system coordinate d, q, o have the aspect:

$$M_M = \psi_q i_d - \psi_d i_q \quad (2)$$

Equalization movement of clutch in general situation is described:

$$T_j P \omega_{BD} = M_{BD} - M_M \quad (3)$$

Where T_j - electromecanical time constant of wind-powered, including multiplicator and inductor of electromagnetic clutch;

ω_{BD}- rotation of wind powered; M_{BD} - torgue of wind powered;

M_M - electromagnetic moment of clutch.

Rotation freguency of armature of clutch is detemninated as:

$$\omega_r = \omega_{BD} - \omega_M \quad (4)$$

Where ω_M - relative slip of clutch, moreover ω_{BD}, ω_r and ω_M – relative values.

Preliminary analysis of the present task displayed that under its solution is appear difficulties, connected with the necessarily of determination of parameters of electromagnetic clutch slipping, especially because during the application of electromagnetic clutch slipping with the massive magnetic path the parameters are change within the wide limits and task executable under the application only equivalent means of parameters.

Conclusions

1. Under the investigation transfer process in wind power plant contents electromagnetic clutch slipping with the massive magnetic path is arise definite difficulties with the definition parameters of muff.

2. This task is easy enough fulfillment under the utilization as called equivalent parameters of electromagnetic clutch slipping.

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DEVELOPMENT OF A DESIGN RESEARCH ALGORITHM FOR SERVICE PERSONAL ROBOTS BASED ON THE USE OF TYPIFICATION METHOD

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Abstract

Design research is a pre-project investigation necessary to create a new product. It is quite challenging to consider design research separately from design thinking, which is one of the leading tools for conducting such research. Design thinking is closely linked to project awareness. According to one of the founders of design thinking philosophy - design is essentially an artificial process that can be controlled to create something more perfect compared to natural processes that require human intervention. Natural processes arise out of necessity, while artificial ones provide opportunities and are responsive to the environment.

Keywords: Design research, service personal robots, design

That is, engineering, architecture, painting, and others are not necessary but possible processes under certain circumstances, which means they involve design. Design thinking creates a product oriented towards people, users. Therefore, to design something new, it is necessary to conduct research that focuses on user needs, and only then consider technical and economic possibilities. To streamline the process of designing a new product, it is necessary to define its stages and formalize them. Research allows for more effective collaboration with the client and immerses the designer in the context of the task at hand. Any research begins with the formation of initial information on specific indicators. Primary research is necessary to understand who and what to design for. Then, the collected information must be processed appropriately through data summarization and grouping. Secondary research is used as a means of further shaping the design and sales strategy: what should be prioritized to attract users. American industrial designer, philosopher, and design theorist method of implementing design for its intended purpose, i.e., the method of developing design activities, highlights specific primary functional criteria for evaluating the product. His approach is cyclical, with all elements interconnected (Figure 1).

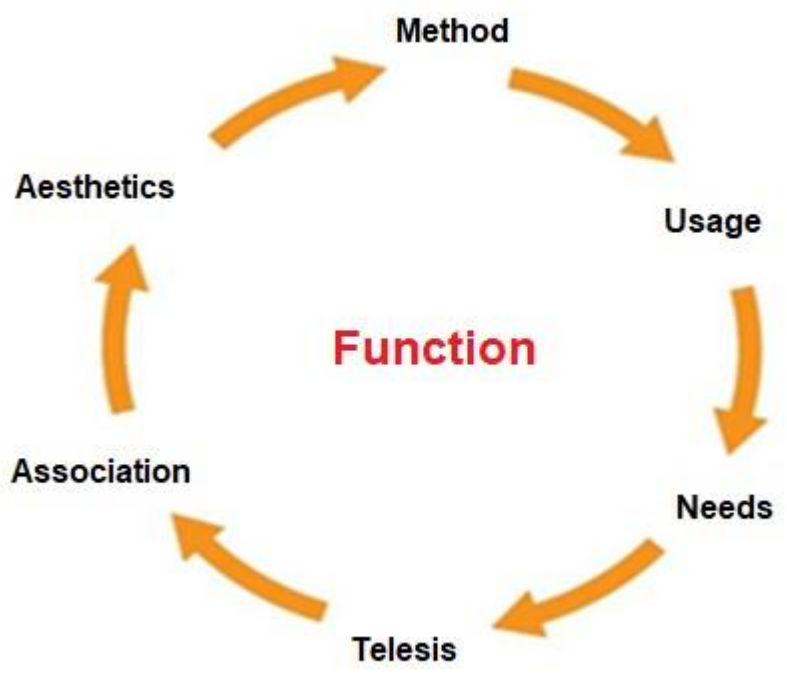

Figure 1 - Method of developing design activities from the perspective of design theory

He places the method that defines the interaction of tools, processes, and technologies at the core of product development. Before and during the design process, one should ask how functionally the designed product will be used, what qualities it should possess depending on its functional purpose as a tool, means of communication, or symbol. The end product should satisfy human needs, not just momentarily but genuinely. Among these requirements, also highlights telethesis, as the characteristic(s) of the product that should reflect the time and conditions, correspond to the place where the product will operate. Telethesis is closely linked to associations that determine adherence to certain values that are prominent markers of the target audience.

Not the least, although quite contradictory, role, in his opinion, is played by aesthetics, for which there is no specific measure but which serves as a measure of the quality of the design research process. The classical sociological approach to research is linear: the question posed at the beginning of the research determines the structure and methods of the research (Figure 2). American sociologist David Morgan suggests revising the classical theoretical approach by considering design research as a practical cyclical process in which the selected research data determine the research questions. The researcher must understand the set and boundaries of their competencies and be able to identify the potential of both existing data and possible developments (Figure 2).

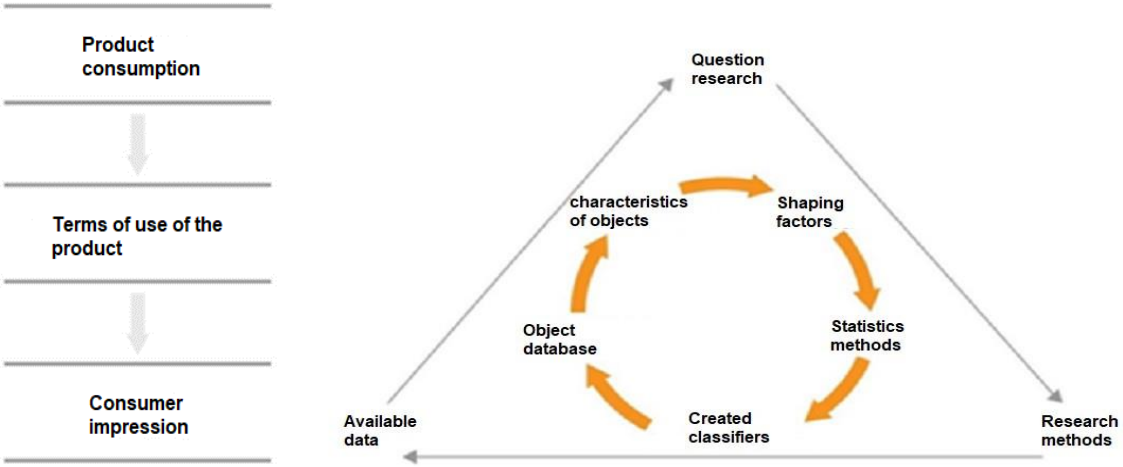

Figure 2 - Approaches to design research from a sociological perspective

Depending on the research strategy, two approaches are distinguished for their implementation: qualitative and quantitative. Usually, qualitative and quantitative strategies are implemented simultaneously. The most productive approach to obtaining research results is the "sequential contributions" principle, which allows for a chain of continuity between data: the results of one method serve as data for moving on to the next method. Marketing views design as a business activity that starts with defining corporate objectives. During the implementation of the design strategy, tasks receive material solutions that are released to the market to generate income. To create a competitive product, it is necessary to have information about the design requirements. To achieve this, market research should be conducted. Among many business leaders, there is a viewpoint that the main goal of marketing is to stimulate maximum consumption, which, in turn, stimulates production growth. This idea is based on the belief that the more people consume, the happier they become. However, not all marketers agree with this statement. Some, for example, believe that the goal of marketing is not to achieve the maximum level of consumption but to maximize consumer satisfaction. Unfortunately, measuring satisfaction is quite complex. The developers who determine the product or service strategy often lack information about what happens to these products or services after they reach consumers directly. Therefore, he proposes a special approach to developing new products – impression-based design. In his opinion, products developed by designers occupy an intermediate position between the business world and the world of consumers. Therefore, it is necessary to merge these two worlds by formulating design tasks in such a way as to consider, firstly, the conditions of product use and, secondly, consumer impressions (Figure 3).

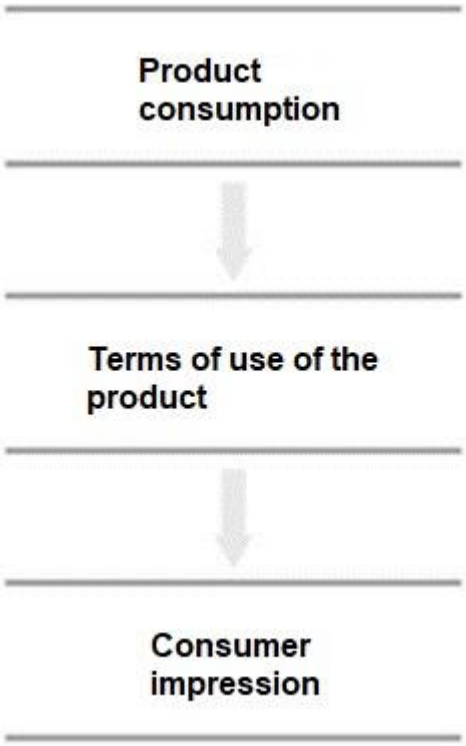

Figure 3 - Approaches to design research from a marketing perspective

To understand what impression consumers get from using service personal robotics, it is necessary to consider, firstly, the characteristics of the objects and, secondly, the impressions obtained from them.

The following characteristics should be distinguished for objects of industrial design: functionality (expands or improves user capabilities); informativeness (provides users with knowledge); communicativeness (facilitates or enhances the communication process); aesthetics (evokes emotions from the perception of beauty); status (indicates membership in a social group); and sensuality (stimulates user emotions and those of their surroundings). Activity development method, where criteria such as tools, materials, and technologies correspond to functionality; use as a means of communication is communicativeness; telethesis, based on knowledge about society and nature, their characteristics, represents in formativeness; aesthetics remains in its place in both approaches, serving as the content of ideal object perception by humans; the need that determines not only survival but also an individual's identity in society is realized through status; and associations, inseparably linked with family, environment, education, and culture of a specific individual, are identical to sensuality.

The typology of characteristics of industrial design objects allows for describing service personal robots based on specific characteristics:

1. **Functionality**: Service personal robots assist with household chores, provide security and supervision, can carry loads, and help the elderly and disabled individuals. They also entertain and contribute to leisure activities. The design and planning of these robots should be based on a method that, considering their range of functions, allows for the selection of materials and technologies for their production.

2. **In formativeness**: A service personal robot is an information-rich product that not only receives information but is also capable of transmitting it personally or remotely. The robot's external appearance should be designed taking into account knowledge about its surrounding environment and its interaction with humans, i.e., it should be ergonomic and harmonious.

3. **Communicativeness**: A service personal robot, as a social object, is part of social life, creating new forms of communication and developing communication possibilities. These forms of communication are expressed semiotic ally in the search for new forms of the robot's external appearance.

4. **Aesthetics**: Technology is the result of the process of aestheticizing material culture, and a robot, as the pinnacle of its creation, can attract or repel, but it rarely leaves anyone indifferent. The artistic image should possess both constructive and semiotic qualities, becoming the necessary final criterion for stylistic characterization.

Status: The subculture of users of high-tech items is expressed in the clear differentiation of certain distinctions and belonging to different social groups through the demonstration of ownership. This characteristic is realized in the robot's external appearance through the use of modern, high-tech, expensive materials and their special processing.

The approaches to design research and the typology of characteristics of industrial design objects described above allow for the development of a methodology for design research of service personal robotics (Figure 4), which is, on one hand, a linear process based

on primary data, the analysis of which helps formulate questions and select research methods. On the other hand, it is a cyclical process where each element complements the others.

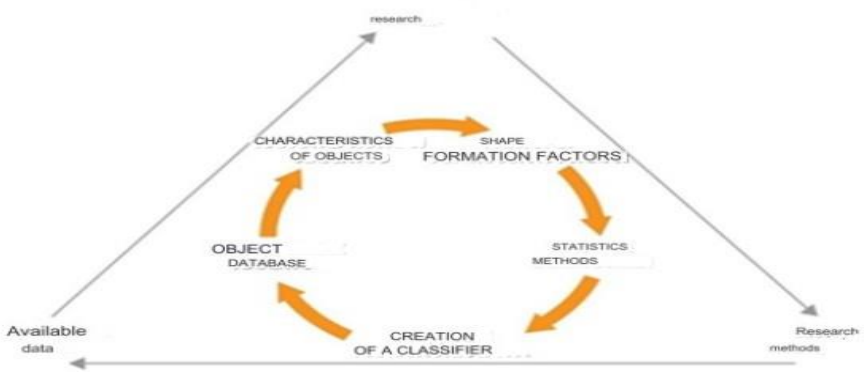

Figure 4 - Methodology for Design Research of Service Personal Robots

Typifying existing service personal robot objects based on characteristics identified by manufacturers and consumers reveals the possibility of posing the question to the designer of how to design such a product. It allows for the formation of a group of factors influencing the formative process. Subsequent data processing using statistical analysis methods makes it possible to create a classifier of formative characteristics for practical use in the design of service personal robotics.

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MORE ABOUT THE FMG SYSTEM (FREE MOVEMENT OF GASES) KUZNETSOVA. KUZNETSOV'S FMG SYSTEM.

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Abstract

The text compares two fuel combustion systems - the Forced Draft Gas (FDG) system and the Free Movement of Gases (FMG) system. It explains the limitations of traditional FDG furnaces and boilers, where gases cannot separate by temperature in the combustion chamber, leading to inefficient and dirty combustion. The patented FMG system allows temperature separation of gases, enabling an oxidation-reduction reaction that increases efficiency 30%, eliminates CO2 emissions, and allows countless clean heat generator configurations. The text urges adopting FMG standards, given FDG's pollution and climate impacts. It notes resistance to FMG adoption in the US, EU and Russia, citing corruption. But FMG's design aligns with nature's laws, and transition from FDG is straightforward. The text aims to inform consumers so they can choose between the two systems wisely.

Keywords: Forced Draft Gas (FDG) system, Free Movement of Gases (FMG) system, Oxidation-reduction reaction, Efficiency, Atmospheric pollution, Heat generators, Transition from FDG to FMG, Standards, CO2 emissions, Clean fuel combustion, Climate crisis, Clean fuel combustion, Laws of nature

Before you choose a furnace, boiler, you need to know what fuel burning systems exist in the world. What are their capabilities.

The customer, who decides what kind of household furnace to build, needs to understand well the essence of the question. I want to detail the differences, opportunities, prospects, in the existing methods of fuel combustion.

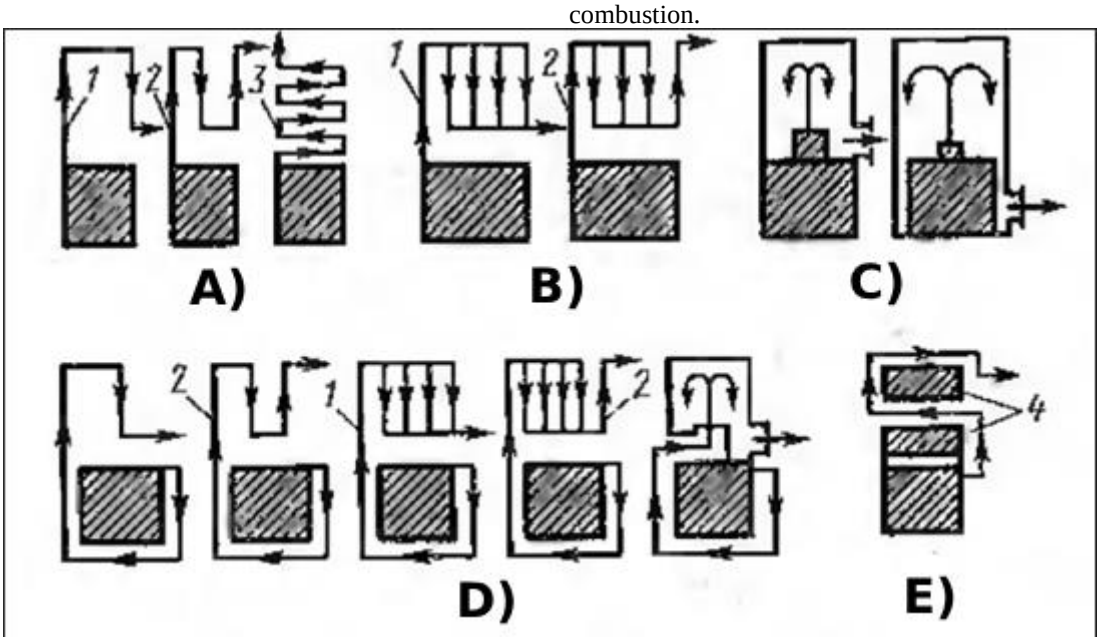


Figure 1 - convection furnace systems

Figure 1 (A.E. Shkolnik) shows the furnaces of the FGM (Forced Gas Movement) system.

A. Successive
B. Parallel
C. Buctless (capped)
D. Combined
E. Air chamber

1. Single-turn
2. Double-turn
3. Multiturn
4. Air chamber

In it, the movement of the gas flow occurs due to the draft of the pipe. The main feature of the FDG (Forced Draft Gas) furnace is that the separation of gases by degree of heating does not occur in the firebox. The convection system includes gases mixed with ballast gases. For this reason, the I.S. Podgorodnikov and V.E. Furnaces of the Grum-Grjimailo system, FDG furnaces and not a two-tier hood, but a single-tier hood.

In the firebox during combustion there are combustion products, hot CO2, H2O. There are also combustible gases - products of incomplete combustion. In case of lack of air, they are able to burn and form explosive mixtures with air, carbon monoxide, soot and

various hydrocarbons. All come out into the pipe, worsening the ecology. With excess air, the combustion temperature decreases (the efficiency decreases). At different stages of fuel combustion, it is difficult to accurately supply the required amount of air for combustion to the firebox. Therefore, over the firing cycle, incomplete combustion products and excess air come out into the pipe. Both are bad. In US standards, the first and last 5 minutes of results are not taken into account. This is wrong, self-reassurance. When the damper is closed at the wrong time, the furnace cools down quickly. The gas flow moves up, down, left, right. The heating of the furnace is uneven. There is no place in the furnace to accommodate a heat exchanger. In the firebox, the heat exchanger reduces the combustion temperature, that is, the efficiency. The length of the channel for the release of gases reduces the draft of the pipe and the temperature of the outgoing gases, which causes condensation, water enters the pipe and destroys it. It is impossible to create multifunctional furnaces, including high power ones. Each furnace, boiler and heat generator must be certified. MAINLY, it is impossible to create conditions for the redox reaction to proceed in it. By the course of which the main issues on combating the climate crisis are solved by building a clean and fair energy economy and introducing innovations in the field of renewable energy sources.

FMG (Free Movement of Gases) System.

The French scientist A. Lavoisier, in 1777, created the oxygen theory of combustion. He described the redox combustion reaction. These are countercurrent parallel chemical reactions occurring simultaneously. However, no one could create conditions for its flow. I did it.

In Russia on March 5, 2014, I patented the Fuel Combustion Method, RU 2 553 748. The Ministry of Energy gave the name to the invention “FMG (Free Movement of Gases) Kuznetsov System”. It creates conditions for such a reaction to flow, which corresponds to the laws of nature and practically solves the indicated problems. It is characterized by high efficiency, clean combustion, lack of CO2 emissions into the atmosphere. The ability to create countless heat generators for various functional purposes and new technologies.

In the FMG system, the movement of gas flow particles occurs due to heat exchange processes. Hot particles move up, cooled ones down. It creates conditions for redox reactions.

A lot of air is supplied to the furnace. Oxygen enters the reaction in the required amount at each period of time. Excess air - ballast gases descend downwards and enter the pipe. It releases warm air (without water vapor) at a temperature below 100 degrees Celsius, possibly up to 40 degrees, and condensation does not occur in the pipe.

In the furnace, the separation of gases by degree of heating occurs. The hot combustion products CO2 and H2O enter through a dry seam into the upper part of the hood combined with the furnace. Having given off heat, they descend down along the walls. Hydrocarbon comes towards them. When carbon affects CO2 and H2O, a restoration reaction occurs. Flammable gases, 2CO and water gas arise, THIS IS ADDITIONAL FUEL. When secondary air is supplied, they are oxidized (burned, products arise, hot gases CO2 and H2O) rise up the hood. The oxidation-reduction process occurs simultaneously. This continues as long as combustion occurs in the furnace. Additional fuel arises and burns. Efficiency increases. The movement of gas flows occurs due to heat exchange processes.

To test FMG system furnaces, a new standard must be developed and approved. In the FDG system, efficiency and purity are measured by gases from the pipe.

From the FMG system pipe comes only warm air. According to the standard, it is necessary to measure the heat transfer from the surface of the furnace. The furnace is marked with squares.

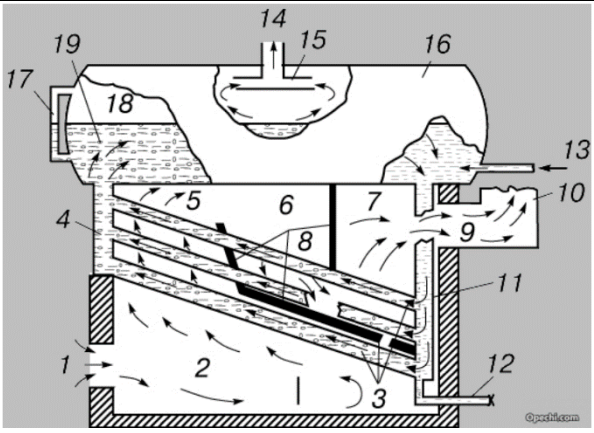
A sensor is placed in each square. Measurements are taken every 5 seconds from the initial temperature to the final temperature equal to the initial one.

For example, the initial temperature is 20 degrees, then the measurements stop at the same temperature. Then it will be possible to determine the amount of heat and heat emission time.

Unlike the FDG system, for FMG system heat generators, only the furnace needs to be certified. All furnaces of any power are made according to this standard, only of a different size, larger or smaller, respectively, depending on the furnace power.

Using the FMG system for combustion, it is possible to eliminate the disadvantages in the manufactured FDG system heat generators.

For example, in water-tube and gas-tube boilers:



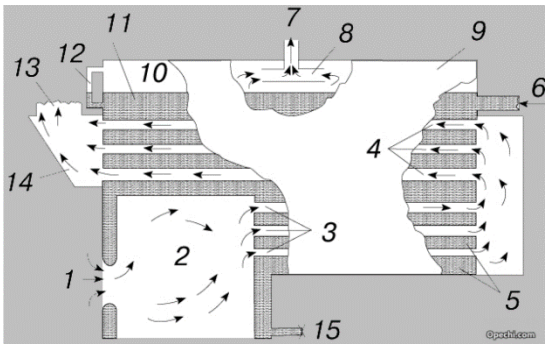
In the diagram, the scheme of a water-tube boiler: 1 - fuel supply, 2 - furnace, 3 - pipes for water movement; the direction of its movement is indicated by the numbers 5, 6 and 7, the place of water inlet - 13, the place of water outlet - 11 and the drain point - 12, 4 - the zone where the water begins to turn into steam, 19 - the zone where there is both steam and water, 18 - steam zone, 8 - partitions that direct water movement, 9 - flue and 10 - chimney, 14 - steam outlet through the separator 15, 16 - outer surface of the water tank (drum).

What are the disadvantages here and how can they be eliminated:

The water in the drum is heated only from below and through the pipes passing through the furnace. The bottom of the drum and the pipes are a cold core in the furnace and reduce the combustion temperature there;

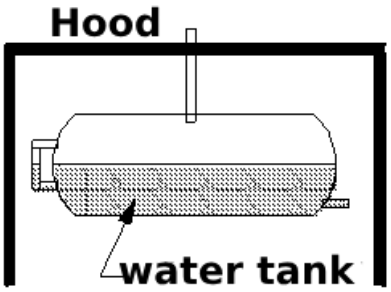
The movement of gases in the furnace is forced, due to the draft of the pipe, that is, this is a FDG (Forced Draft Gas) system. In the furnace there is no separation of gases by degree of heating. The combustion reaction products, hot CO2 and H2O, ballast gases (air with an increased nitrogen content and carbon monoxide) are mixed, reduce the combustion temperature there and quickly leave the pipe. Inefficient and dirty combustion.

The same can be said about the gas-tube boiler.



Scheme of a gas-tube boiler:

1 - fuel and water supply, 2 - combustion chamber, 3 and 4 - convection tubes with hot gas exiting further through the flue (positions 13 and 14 - flue), 5 - grate between the tubes, 6 - water inlet, outlet indicated by number 11 - its outlet, in addition at the outlet there is a device for measuring the amount of water (marked with number 12), 7 - steam outlet, steam formation zone marked with number 10, 8 - steam separator, 9 - outer surface of the container in which water circulates.



In the FMG system, the hood can be any size. A container for water (drum) of any size can be inserted into it so that its entire surface is heated, including above the steam. All the disadvantages of the above furnaces and boilers are eliminated. Not only water is heated, but also steam. Steam heating calculation must

be done, we could not. In addition, there is the possibility of regulating the heating of the container. It needs to be patented.

In the USA, EU and Russia to the present time, outdated FDG system furnaces are being built. Furnace builders are being trained to build FDG system furnaces. People receive inefficient, dirty furnaces and boilers that pollute the atmosphere. These countries allocate huge funds to solve this problem. On May 22, 2015, the FUEL COMBUSTION METHOD, FMG Kuznetsov System was patented in Russia. (this name is reflected in the documents of the MINISTRY OF ENERGY of RUSSIA). This is a significant step forward in solving many world problems. Practical tests of the invention were carried out with scientists from the Ural Federal University. The Ministry of Energy of Russia approved the method and recommended in a letter to contact development institutions to integrate the Fuel Combustion Method into the country's energy system. However, our proposals were not supported there. A loan at 10% was offered.

The Federal Service for Intellectual Property Patent and Trademark is to blame for this, as well as some corrupt federal officials. A corrupt federal team was created with the aim of re-registering the Patent to another person. Everything that has been developed over several decades is being destroyed. We are blocked everywhere possible. Our team has been virtually destroyed. This continues to this day. The METHOD could have been integrated into Russian and global energy 10-15 years ago.

The hood can be any shape and volume. Various heat exchangers can be inserted into it. The hood can have multiple furnaces. The furnace can have multiple hoods. This makes it possible to regulate the temperature of heat exchangers located in different places both horizontally and vertically. This makes it possible to create a countless number of heat generators for various functional purposes and capacities. CO2 and H2O do not come out into the pipe, but are restored to combustible gases and burned. Warm air comes out of the pipe. The result is clean and efficient combustion.

The transition from the FDG system to the FMG system is simple, from small to large, from simple to complex. The website http://www.stove.ru/ has free drawings of many FMG system furnaces. They are about 30% more efficient than FDG system furnaces. People from many countries use the drawings, including the USA, Germany, Sweden, Canada, where these furnaces have been tested for efficiency. There is an article "To help people making our furnaces."

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ORACLE MAXIMUM SECURITY ARCHITECTURE

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Abstract
Oracle Database Vault (ODBV) user security issues concerning the rules of creation and its features superior to password protection. The use of ODBV in the banking sector was discussed. Oracle database administrators (ODBA) in the banking sector were informed about the problems that ODBA can cause and the importance of protecting confidential information.The Oracle Database (ODB) is one of the databases that stores information. It has database and user security to keep information confidential in ODB. It is critical in both the banking and financial sectors.

Keywords: Oracle Database Vault, software, hardware, management systems.

Oracle is a leading provider of enterprise software and hardware solutions, including database management systems that are used by organizations to manage and secure their data. Oracle provides a range of technologies that can be used to enhance data security, and these technologies can be grouped into four categories based on their characteristics:

1. Access Control Technologies: These technologies are designed to control access to data and prevent unauthorized access. Access control technologies include tools such as authentication and authorization mechanisms, identity and access management solutions, and single sign-on capabilities.
2. Data Protection Technologies: These technologies are designed to protect data from unauthorized access, modification, or destruction. Data protection technologies include encryption and tokenization solutions, data masking and obfuscation techniques, and backup and recovery mechanisms.
3. Monitoring and Auditing Technologies: These technologies are designed to monitor and audit data access and usage, and to detect and respond to security incidents. Monitoring and auditing technologies include security information and event management (SIEM) solutions, log management tools, and network and endpoint security solutions.
4. Compliance and Governance Technologies: These technologies are designed to ensure compliance with regulatory and industry standards, and to manage and enforce security policies and procedures. Compliance and governance technologies include policy and risk management solutions, security assessment and testing tools, and vulnerability management and patching solutions.

The technologies for each group are depicted in Figure 1.

Figure 1. Oracle DB's user security orientation

By using a combination of access control, data protection, monitoring and auditing, and compliance and governance technologies, organizations can enhance their data security and protect their sensitive data from cyber threats.

ODB is a powerful and widely used database management system that stores and manages data for organizations of all sizes. To ensure user security in Oracle DB, the following orientation can be employed:

- Authentication and Authorization: Oracle DB supports various authentication and authorization mechanisms, including password-based authentication, role-based access control, and fine-grained access control. These mechanisms can be used to ensure that only authorized users can access the database and that they are granted access only to the data they need.
- Encryption: Oracle DB supports various encryption techniques, including transparent data encryption (TDE), which can be used to encrypt data at rest and in transit. TDE ensures that sensitive data is protected from unauthorized access and can be decrypted only by authorized users.
- Patching and Upgrades: Oracle DB releases security patches and updates regularly to address known vulnerabilities and improve database security. It

is essential to apply these patches and upgrades to ensure that the database is protected against known security threats.

- Best Practices: Oracle provides various best practices for securing the database, such as creating strong passwords, disabling unnecessary features, restricting access to the database, and regularly backing up the database. These best practices can help to enhance the security of the database and protect it from cyber threats.

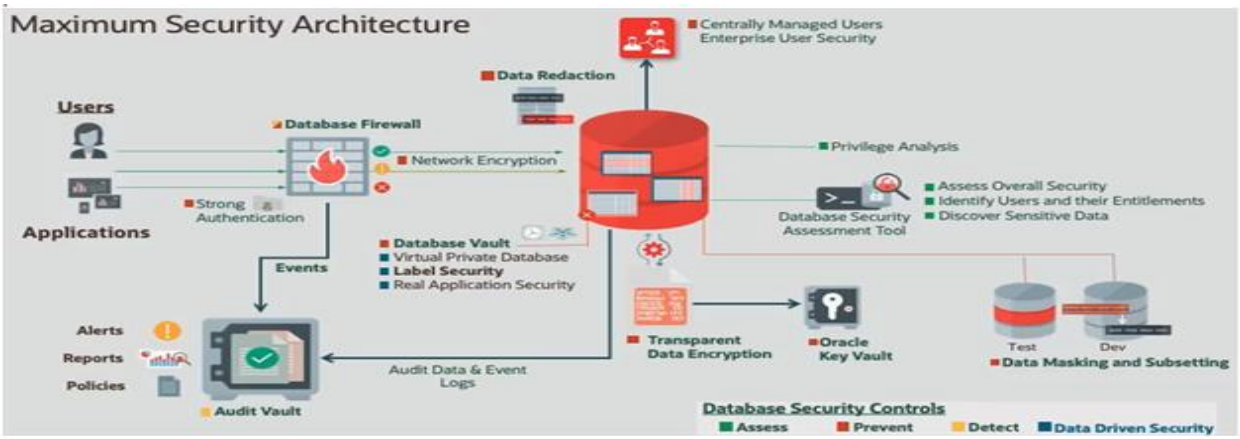

Figure 2. Depicts the Oracle Maximum security architecture.

Organizations may assure the confidentiality of their Oracle DB while safeguarding their private information from hacking attempts by using these safety precautions.

ODB Firewall is a security solution that provides real-time database activity monitoring and blocking capabilities to prevent unauthorized access, SQL injection attacks, and other threats to the ODB. It acts as a proxy between the database and the application, intercepting all database traffic and enforcing security policies to prevent malicious activity [9].

ODBF uses a combination of signature-based and behavioral analysis techniques to identify and block unauthorized access attempts and malicious SQL queries. It can also monitor user activity and generate alerts when suspicious activity is detected, allowing security administrators to investigate and respond to potential security incidents.

Some of the key features and benefits of ODBF include:

- Real-time monitoring and blocking of database traffic: ODBF provides real-time monitoring of database traffic and can block unauthorized access and SQL injection attacks in real-time.
- Customizable security policies: ODBF allows security administrators to create and customize security policies based on specific needs and requirements.
- Centralized management: ODBF provides centralized management of security policies, alerts, and reports, making it easy to manage and monitor database security across multiple databases and environments.
- Regulatory compliance: ODBF helps organizations comply with regulatory requirements such as PCI DSS, HIPAA, and SOX by providing audit logs and reports.
- Reduced risk of data breaches: ODBF reduces the risk of data breaches by blocking unauthorized access attempts and SQL injection attacks, protecting sensitive data stored in the database.

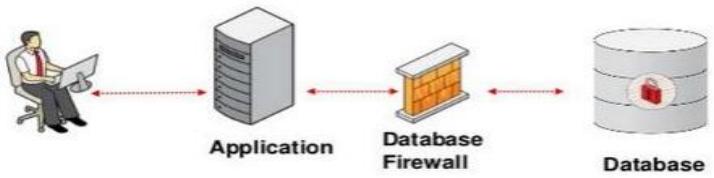

Figure 3. Oracle Database Firewall

ODBF is a powerful security solution that can help organizations enhance their database security and protect their sensitive data from cyber threats.

Oracle Virtual Private Database (VPD) is a security feature that provides fine-grained access control to data stored in an ODB . VPD enables organizations to enforce data access policies based on user roles, responsibilities, and other attributes, providing a high level of security and control over sensitive data.

VPD works by dynamically modifying SQL statements at run time, based on the policies defined by the administrator. This allows VPD to control access to data at the row and column level, ensuring that users can only access the data they are authorized to access.

Some of the key features and benefits of Oracle VPD include:

- Fine-grained access control: Oracle VPD provides fine-grained access control to data, allowing administrators to enforce data access policies based on user roles, responsibilities, and other attributes.
- Dynamic security policies: Oracle VPD allows administrators to define and modify security policies dynamically, providing a high degree of flexibility and control over data access.
- Transparent to applications: Oracle VPD is transparent to applications, which means that applications do not need to be modified to work with VPD.
- Improved performance: Oracle VPD can improve database performance by reducing the number of database queries required to retrieve data.
- Enhanced security: Oracle VPD enhances database security by enforcing data access policies at the row and column level, reducing the risk of unauthorized data access.

Oracle Virtual Private Database (VPD) has three main components, which are:

1. Security Policy: A security policy is a set of rules and conditions that are defined by the administrator to control data access. The policy is defined using SQL statements or PL/SQL code and is associated with a database table or view.
2. Security Function: A security function is a PL/SQL function that is defined by the administrator and is used to enforce the security policy. The function is invoked by the ODB at run time to dynamically modify SQL statements to enforce the security policy.
3. Application Context: An application context is a set of attributes that are defined by the administrator to identify the current user and other relevant session information. The attributes are stored in a context namespace and can be used to enforce the security policy.

These three components work together to enforce data access policies based on user roles, responsibilities, and other attributes. The security policy defines the rules and conditions for data access, the security function enforces the policy by modifying SQL statements at run time, and the application context provides the user and session information necessary to enforce the policy.

To create a generating function with a dynamic WHERE clause and add a security policy to it in ODB , you can follow these steps:

1. Create the generating function: The generating function will be used to dynamically generate a WHERE clause for the SELECT statement based on the input arguments (schema and object names). Here is an example of a generating function:

```
CREATE OR REPLACE FUNCTION get_where_clause(p_schema_name IN VARCHAR2, p_object_name IN VARCHAR2)
RETURN VARCHAR2
IS
v_where_clause VARCHAR2(1000);
BEGIN
v_where_clause := 'WHERE owner = ''' || p_schema_name || ''' AND object_name = ''' || p_object_name || '''';
RETURN v_where_clause;
END;
```

This function takes two input arguments (p_schema_name and p_object_name) and returns a VARCHAR2 value containing the WHERE clause for the SELECT statement.

2. Create the security policy: The security policy will use the generating function to dynamically generate the WHERE clause for the SELECT statement and enforce data access policies based on user roles and privileges. Here is an example of a security policy:

```
BEGIN
DBMS_RLS.ADD_POLICY(
object_schema => 'security_administrator',
object_name => 'surveys',
policy_name => 'surveys_security_policy',
function_schema => 'security_administrator',
policy_function => 'get_where_clause',
statement_types => 'SELECT, INSERT, UPDATE, INDEX, DELETE',
update_check => TRUE,
enable => TRUE
);
END;
```

This policy applies to the 'surveys' table in the 'security_administrator' schema and uses the 'get_where_clause' function to dynamically generate the WHERE clause for the SELECT statement. The policy applies to SELECT, INSERT, UPDATE, INDEX, and DELETE commands and performs an update check to ensure that users can only modify data that they are authorized to modify. The policy is enabled by setting the 'enable' parameter to TRUE.

By creating a generating function and adding a security policy to it, you can enforce fine-grained data access control in ODB based on user roles, privileges, and other attributes. The combination of these three components provides a powerful and flexible mechanism for enforcing fine-grained data access control in

VPD provides several useful features for data security and access control in ODB , including:

- Fine-grained access control: VPD allows administrators to define fine-grained access control policies based on user roles, responsibilities, and other attributes. This allows for more precise control over data access and ensures that users can only access the data that they are authorized to access.
- Dynamic data masking: VPD can be used to dynamically mask sensitive data based on user roles or other criteria. This ensures that sensitive data is not exposed to unauthorized users, even if they have access to the database.
- Row-level security: VPD can be used to enforce row-level security, which means that users can only access specific rows of data within a table. This is useful for multi-tenant applications or other scenarios where users should only be able to access their own data.
- Consistent security across applications: VPD provides a consistent security model across all applications that access the database. This ensures that data access policies are enforced consistently, regardless of the application used to access the data.

- Easy to implement: VPD is easy to implement and can be configured using SQL statements or PL/SQL code. This makes it easy to integrate into existing applications and workflows.

Oracle VPD provides a powerful and flexible mechanism for enforcing data access control and ensuring data security in ODB . Its fine-grained access control, dynamic data masking, row-level security, and ease of implementation make it a valuable tool for organizations that need to protect sensitive data and ensure compliance with data privacy regulations.

OLS is a security feature of ODB that provides a high-level security model for data protection. It enables administrators to define security policies based on data classifications, which are represented by labels. These labels are attached to rows in database tables and can be used to enforce data access control and data protection policies.OLS provides the following features:

- Label-based access control: OLS allows administrators to define access control policies based on labels. Users can only access data with labels that match their clearance level. For example, users with a "top secret" clearance level can only access data with a "top secret" label.
- Label-based data protection: OLS can be used to protect data based on labels. For example, data with a "top secret" label can be encrypted, while data with a "public" label may not require any encryption.
- Policy-based control: OLS enables administrators to define policies for data access and data protection. These policies can be based on data classifications, user roles, and other criteria.
- Easy to use: OLS is easy to use and can be integrated with existing Oracle security features such as roles and privileges.

To create a policy in OLS, which can be applied to the schedule, you need to perform the following steps:

1. Identify the data that needs to be protected: Determine which tables or columns in your database contain sensitive data that needs to be protected.
2. Define data classifications: Determine how you want to classify your data. For example, you might classify data as "public," "internal," or "confidential."
3. Create labels: Create labels that correspond to your data classifications. For example, you might create a label called "confidential" to correspond to your most sensitive data.
4. Create a security policy: Create a security policy that defines how data access should be controlled based on labels. You can use the Oracle Label Security Administrator tool to create the policy.
5. Assign labels to data: Assign labels to the tables or columns in your database that contain sensitive data.
6. Test the policy: Test the policy to ensure that it is working as expected.
7. Apply the policy to the schedule: Once the policy is working as expected, you can apply it to the schedule. This will ensure that the policy is enforced on a regular basis.[10]

By following these steps, you can create a policy in Oracle Label Security that can be applied to the schedule, ensuring that your sensitive data is protected against unauthorized access or disclosure. OLS is particularly useful for organizations that handle sensitive or confidential data, such as government agencies, financial institutions, and healthcare providers. It provides a high-level security model that is designed to protect data against unauthorized access, disclosure, or modification.

Oracle Audit Vault(OAV) is a security solution that provides a centralized repository for audit data from various sources, including ODB, operating systems, and third-party applications. It enables organizations to collect and analyze audit data from multiple sources in real-time, providing a comprehensive view of security events across the enterprise. OAV provides the following features:

- Centralized audit data collection: Audit data from various sources is collected and stored in a centralized repository, providing a single location for analysis and reporting.
- Real-time alerts: OAV can generate real-time alerts when security events occur, allowing organizations to respond quickly to potential threats.
- Comprehensive reporting: OAV provides a range of reporting capabilities, including customizable dashboards, pre-built reports, and ad-hoc reporting.
- Auditing compliance: OAV supports auditing compliance with industry standards such as PCI DSS, HIPAA, and SOX.
- Secure storage: Audit data is securely stored in the Audit Vault repository, providing protection against unauthorized access and tampering.
- Integration with ODB : OAV can be integrated with ODB to provide additional security features such as database firewall and database activity monitoring.

The high-level design of Oracle Audit Vault is depicted in Figure 4.

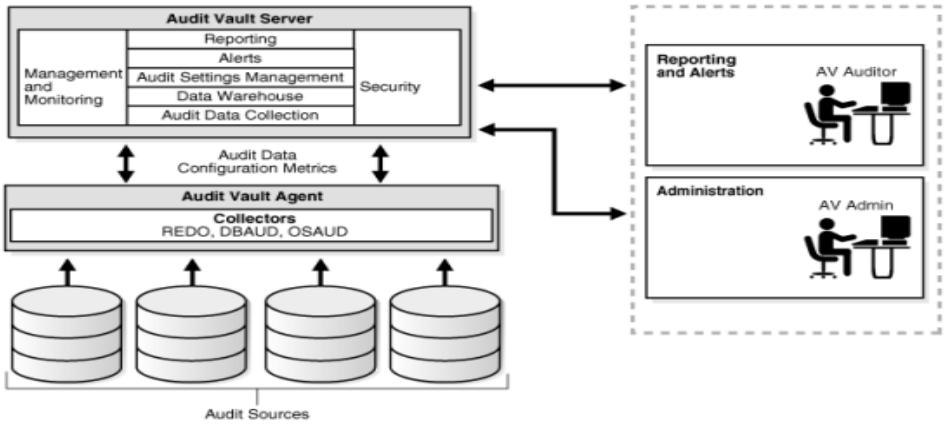

Figure 4. Architecture of Oracle Audit Vault

The high-level architecture of OAV consists of three main components:

- Oracle AV Server: This component is the central management platform for Oracle Audit Vault. It provides a web-based interface for configuring and managing audit policies, alerts, and reports. It also includes the audit data repository, which stores the audit data collected from AV agents.
- Oracle AV Agents: These are lightweight software components that are installed on the target database servers or other systems to be audited. The agents collect audit data from the target systems and send it to the Audit Vault collector.
- Oracle AV Collector: This component collects the audit data from the agents and sends it to the Audit Vault Server. The collector can be installed on a separate system or co-located with the Audit Vault Server.

Together, these components provide a comprehensive auditing and compliance reporting solution for enterprise systems. The agents are responsible for collecting audit data from the target systems, the collector is responsible for transmitting the data to the Audit Vault Server, and the server is responsible for storing and managing the data and generating compliance reports.

OAV is particularly useful for organizations that need to comply with regulatory requirements, such as those in the financial services, healthcare, and government sectors. It provides a centralized, real-time view of security events across the enterprise, enabling organizations to identify and respond to potential threats quickly and efficiently.

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INNOVATIVE DEVELOPMENT OF THE ANCIENT LAND - APPLICATION AND DEVELOPMENT OF TECHNOLOGICAL INNOVATIONS

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ИННОВАЦИОННОЕ РАЗВИТИЕ ДРЕВНЕЙ ЗЕМЛИ – ПРИМЕНЕНИЕ И РАЗВИТИЕ ТЕХНОЛОГИЧЕСКИХ ИННОВАЦИЙ

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Abstract

The development of innovative infrastructure is the main task aimed at modernizing the economy. Currently, in Azerbaijan and around the world, industries that are associated with high technologies allow countries to increase their socio-economic potential, and modern innovative structures play a major role in this process. Technopark is a subject of scientific and innovative infrastructure that creates conditions that positively affect the development of production in the scientific and technical sphere, with highly qualified personnel and experimental base. The continuous cycle of successful development of the state of Technoparks is considered as a link where new technologies developed at universities (research institutes) receive their commercial implementation. This allows you to create new jobs for graduates and young professionals.

Аннотация

Развитие инновационной инфраструктуры является основной задачей, которая направлена на модернизацию экономики. В настоящее время в Азербайджане и во всем мире, отрасли которые связаны с высокими технологиями, позволяют странам увеличить социально-экономический потенциал, а главную роль в данном процессе играют современные инновационные структуры. Технопарк – это субъект научной и инновационной инфраструктуры, которая создает условия, положительно влияющие на развитие производства в научно-технической сфере, обладающие высококвалифицированными кадрами и экспериментальной базой. Непрерывный цикл успешного развития государства Технопарки рассматриваются как звено, где новые технологии, разработанные в университетах (научно-исследовательских институтах), получают свою коммерческую реализацию. Это позволяет создать новые рабочие места для выпускников и молодых специалистов.

Keywords: Technopark, innovative company, nanotechnology, biotechnology, space research, satellite technology, electronics, science park, semiconductor electronics.

Ключевые слова: Технопарк, инновационная компания, нанотехнология, биотехнология, космические исследования, спутниковая технология, электроника, научный парк, полупроводниковая электроника.

В современное время сфера влияния информационных и коммуникационных технологий расширилась, включив в нее государственные структуры, экономическую и социальную сферы, науку и образование, культуру и общество в целом. Именно поэтому места, где инновационные процессы более широко распространены, считаются самыми передовыми обществами в мире.

В последние годы определение нового направления развития системы образования, дальнейшее углубление реформ в этой сфере показывает, что важность сектора образования остается актуальной как один из главных приоритетов государственной политики.[1]. В Нахчыванской Автономной Республике предпринимаются целенаправленные шаги по внедрению и развитию инноваций в этих сферах. Чтобы предоставить студентам развитые технические знания в университетском образовании, необходимо разрабатывать и применять современные приемы и методы. Среди таких методов и приемов наиболее передовыми и эффективными являются технопарки, созданные при университетах. .[2]

Технопарк – полезный капитал на будущее. В результате бюджет получит доход, налоги будут уплачиваться государству и, самое главное, сформируется новое поколение, которое приобретет технологические знания и создаст необходимые условия для его развития. Этот фактор в нашей стране станет большим вкладом в реализацию эффективного механизма от военных действий до других важных сфер. Развитие этой области очень важно, чтобы равняться быстро обновляющимся и развивающимся миром.

Технопарк - это объединение компаний, занимающихся научно-технической деятельностью в рамках единой инфраструктуры. Это расширенные капитальные вложения, которые могут быть осуществлены только со временем. Основными составляющими технопарка являются инновационные компании и команды, технический и управленческий персонал вузов.

По словам Мерви Кеки, основателя технопарка Otaniem в Финляндии: «Технопарки - это не место,

а процесс, и его главная цель - помогать компаниям»..[1]

Технопарки - это подходящая инфраструктура для производства высокотехнологичных продуктов и услуг, основанная на ценных исследованиях и разработках, с целью расширения сотрудничества между университетами, промышленностью, исследовательскими центрами, предпринимателями и рынками, а также для облегчения передачи знаний и технологий.

Создаваемый в Автономной Республике технопарк будет работать при Нахчыванском государственном университете. Для этого в университете есть необходимые условия и потенциал. Технопарк будет включать в себя энергетику, цветоводство, сельское хозяйство и агрономию, географию, виноградарство, мелиорацию земель, пчеловодство, учебные классы и выставочный биопарк, здания технопарка, а также ботанический сад. Согласно проекту Технопарка, в него также могут входить офисы техносервиса, нанотехнологий, биотехнологий, центры прототипов, комнаты программирования и автоматизации, офисы Nakhchivan Products, Microsoft, оператора 4G Naxtel, CISCO, KOICA, Bakunity и других будущих компаний-резидентов. координация, услуги информационных технологий, исследовательские центры искусственного интеллекта, услуги в области искусства, дизайна и архитектурных проектов, электроника и другие учебные классы. В проект также входят бизнес-инкубатор, банк идей, Co-working-центр и стартап-центры.

Все построенное в Технопарке будет основано на нанотехнологиях. Технопарк позволит студентам освоить уроки как теоретически, так и практически. Все это, наряду с развитием человеческих ресурсов, является важным шагом в раскрытии талантов молодых людей, реализации идей и поддержке стартап-инициатив.

Можно сказать, что технопарки вносят весомый вклад в технологическое и экономическое развитие региона и страны. Но на это нужно немного времени. Примерно через 5-10 лет после его создания возможны ожидаемые результаты. Технопарки увеличивают возможности трудоустройства в том регионе, где они созданы, в таких местах происходит региональное развитие, повышается уровень образования.

ТЕХНОПАРКИ В МЕЖДУНАРОДНОЙ ПРАКТИКЕ

Первый научно-технический парк был основан в Стэнфордском университете в 1950-х годах. В то время, когда полупроводниковая электроника быстро развивалась из-за изобретения полупроводникового транзистора, университет сдавал в аренду неиспользуемые здания и пустующие земли творческим коллективам по более низкой цене .

Американские технопарки в основном создаются на университетских базах. После США технопарки были созданы и в других развитых странах: научно-технический парк при Кембриджском университете в Англии, научно-техническая инновационная и производственная зона в Академии Гренобля во Франции и так далее. Позднее идея технопарка распространилась в других странах мира. В соответствии с государственной научно-производственной программой, принятой в Китае в 1988 году, были созданы зоны высокотехнологичного развития – технопарки, которые предназначены для объединения научно-технического потенциала в ряде наукоемких областей (микроэлектроника, информатика, волоконно-оптическая связь, биотехнологии и др.).

Первый технопарк в соседней России - Томский научно-технический парк, созданный в 1990-х годах. Он основан на опыте одного из регионов Франции. Затем в течение года технопарки появились в Москве и Зеленограде. В Турции ускорение движения технопарков стало возможным только в начале 2000-х годов. Планировался создание технопарков в основных секторах биотехнологии, космических исследований и спутниковых технологий, электроники, возобновляемых источников энергии, новых ресурсов, морской науки, технологий производства железа и угля, развития животных и растений и пищевых технологий.

42% технопарков мира находятся в США. .[4] Американские технопарки в основном базируются на университетских базах. Из остальных технопарков 34% находятся в европейских странах, 11% - в Китае и 13% - в других странах.

Технопарки создаются в основном при университетах и крупных научно-технических центрах. В мировой практике идея технопарка больше всего реализуется в регионах Шанхая и Гонконга.

В международной практике одним из важных условий работы Технопарка является территория, на которой он расположен. Основными условиями для этого района являются:

1) технопарки должны быть близко к городу;

2) находиться в районе с благоприятными условиями проживания для населения;

3) научные парки должны состоять из высококвалифицированных научных кадров региона;

4) Научные парки должны располагаться рядом с исследовательскими центрами и университетами, которые проводят исследования и разрабатывают новые технологии.

Модели технопарков сильно отличаются друг от друга. Международная ассоциация научных парков (IASP) проанализировала лучшие практики в области технопарков в 63 странах и разработала нормы, правила и требования, которые обобщают концепцию технопарков, отметив, что она носит глобальный характер. Несмотря на некоторые различия между научным парком, технологическим районом, исследовательским парком и другими учреждениями, общие цели, элементы и методологии позволили объединить их в одну концепцию - концепцию технопарка. Согласно IASP, Научный парк - это учреждение, управляемое специализированными профессионалами, целью которого является увеличение доходов общества за счет развития конкурентоспособности инновационного бизнеса и инновационной культуры научных учреждений.

Опыт США, Китая, Южной Кореи, Индии, Австралии и Объединенных Арабских Эмиратов может быть использован для создания современной модели технопарков. .[4]

Университетские технопарки создаются на базе университетов, а иногда и в результате стратегического сотрудничества университета и промышленного предприятия. Есть 3 основные цели создания университетских технопарков.

1. Коммерциализация накопленных научных знаний;

2. Обеспечение привлекательности научной работы в высшей учебной заведении;

3. Обеспечение потока новых знаний в результате практических задач.

Технопарки позволяют стране увеличивать свои инновационные и производственные мощности, сокращать безработицу, повышать свой имидж и авторитет в мире, повышать уровень науки и технологий, развивать специализированную рабочую силу и открывать страну для международного рынка. Несомненно, в этом смысле много ожиданий от нового технопарка, который будет создан в Нахчыване. Благодаря планомерной и стратегической работе в этой сфере возлагаются большие надежды на ближайшее время.

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