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Pedagogical Sciences

ОСНОВЫ ИНТЕГРИРОВАННОГО ШКОЛЬНОГО ОБУЧЕНИЯ

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Аннотация

В статье рассматривается методика интегрированного обучения. Раскрыта актуальная проблема педагогической интеграции в историческом ее становлении и в контексте современных теорий обучения. Освещена практика внедрения интегративного подхода в школьное образование. Приводится формы интеграции, а также примеры интегрированных технологий обучения. Даны рекомендации по проведению интегрированных курсов и интегрированных уроков, по составлению интегрированных заданий.

Введение

Современная парадигма школьного образования направлена на развитие интегративных компетенции у субъектов образования, формирование функционально грамотной и компетентной личности, способной противостоять вызовам XXI века. Для достижения этой стратегической задачи важнейшей предпосылкой видится реализация интегрированного обучения.

В дидактическом аспекте каждая школьная дисциплина представляет собой набор сведений из определенной области знаний, не дающая системного описания действительности и как результат - неумение учащихся связывать материал одного предмета с другими и грамотно использовать эти знания и навыки [1].

Одним из основных вопросов, доминирующих в образовательных кругах 21-го века, является «при каких условиях учащиеся достигают максимальных результатов в обучении и получают навыки, нужные им в реальной жизни?».

Дэвид Уильямсон Шафер (David Williamson Shaffer), американский ученый Центра исследования обучения Университета Висконсин-Мэдисон (University of Wisconsin-Madison), говорит о том, что мы больше не живем в промышленной экономике, сегодня имеем экономику знаний, поэтому должны думать об образовании принципиально другим способом. Именно междисциплинарное обучение лежит в основе новых подходов к образованию, хотя сама идея интеграции совсем не нова.

Ральф Тайлер (Ralph Tyler), основная фигура американского образования в XX веке, описал интеграцию предметных областей как «горизонтальные отношения обучающих программ», и он считал такие связи важными для обучения. Его утверждения основывались на результатах исследовательской работы над знаковой восьмилетней программой обучения для учащихся в 30 средних школах в 1930-х годах. Тогда исследователи обнаружили, что учащиеся хорошо учились в тех средних школах, которые наполняли учебный план не только отдельными предметами, но и курсами по изучению общих тем, связанных с дисциплинами.

Бенджамин Блум, коллега Тайлера, продолжавший развивать свою знаменитую Таксономию учебных целей (Taxonomy of Educational Objectives), призвал к вплетанию «интегративных нитей» в учебный план, чтобы способствовать связям между предметными областями. Такие теоретические основы продолжали строить и другие педагоги, в частности, Сьюзен Ковалик (Susan Kovalik). Она объединила известные в то время сведения о работе мозга и своем опыте в преподавании и создала модель High Effective Teaching (ранее известную как модель Интегрированной науки в обучении (Integrated Science of Learning model) и проект учебного плана).

Комплексный обзор исследований интегрированного обучения предлагается в «Логике междисциплинарных исследований» 1997 года Сандры Матисон и Мелиссы Фримен. Авторы обнаружили, что интегрированная учеба обуславливает приобретение важных навыков для жизни, таких как умение работать в команде и решать проблемы.

Наблюдался рост мотивации к обучению и учебным достижениям, улучшались отношения учащихся и учителей, которые становились партнерскими, поскольку учителя и ученики имели общую цель и вместе открывали быстро расширяющийся и меняющийся мир.

В своем исчерпывающем докладе ученые отчитались о «положительных результатах обучения»:

– повышение понимания, усвоения и применения общих понятий;

– понимание глобальных взаимосвязей в мире и многих точек зрения и ценностей;

– повышенная способность принимать решения, критически и творчески мыслить и синтезировать знания за пределами дисциплин;

– расширенная способность выявлять, оценивать и передавать важную информацию, необходимую для решения новых задач;

– содействие лучшему отношению ученика к себе как гражданину.

Сегодня интегрированное обучение абсолютно привычно для США. В девятом классе учащиеся анализируют разнообразные графики, отыскивая тенденции в пищевых привычках и моделях здравоохранения американцев. На социальных дисциплинах те же учащиеся проводят полевые исследования, сравнивая выбор свежих продуктов в местных бакалейных магазинах. На английском языке они разрабатывают рекламные кампании, направленные на мотивирование улучшить питание среди малоимущего населения, где диабет поражает многие семьи.

Да, это вопросы, которые не входят в общую школьную программу. Для создания такого исследовательского проекта учителя объединили усилия, создавая задачи, при решении которых учащимся приходится синтезировать и применять знания математики, географии, социальных наук, здравоохранения, экономики и английского языка. Они делают важные связи, объединяющие знания по учебным предметам и собственный опыт.

Другие страны также заинтересованы в междисциплинарном подходе. Тематические исследования интегрированных научных, математических и технологических проектов в Австралии показывают, что такие подходы живы и эффективны (Venville, Wallace, Rennie & Malone, 1999).

Манфред Ланг из Германии долго исследовал внедрение комплексного подхода к обучению в европейских странах. Ключевой особенностью его проекта является использование совместного процесса для решения того, что следует знать. В Китае, Японии, Корее и Тайване воспитатели разработали интегрированную программу в области науки после того, как поняли, что обычный подход к образованию не поддерживает понимание, творчество или социальные интересы (Wang & Su, 2002).

Learning Through the Arts (LTTA) художники сотрудничают с преподавателями для разработки интегрированного учебного плана по стандартам. Программа провела свой первый международный курс обучения в Сингапуре в ноябре 2002 года. Во главе с Министерством образования, курс внедрили 80 педагогов для педагогической структуры LTTA через семинары по целостному учебному плану и стилям обучения.

В течение более десяти лет исследователи проекта Zero в Harvard Graduate School of Education изучают междисциплинарную работу в широком диапазоне параметров – от исследовательских центров, занимающихся некоторыми наиболее сложными проблемами в обществе, до школьных классов, которые готовят учащихся к будущему. Было установлено, что междисциплинарное понимание является отличительной чертой современного обучения, а также основной задачей сегодняшних педагогов. Использование возможностей, предлагаемых интегрированным обучением, не означает отказ от отдельных предметов. Каждая дисциплина ставит разные вопросы и предлагает собственные методы расширения знаний.

При решении новых задач, от экономики экологических катастроф до этики клонирования, возникающих на пересечении нескольких дисциплин, учащиеся применяют уже приобретенные знания и навыки новым способом, соответственно и продукт такой деятельности будет иметь совсем другой характер и будет формировать более глубокое понимание основных проблем современности вне школы.

Учащиеся имеют возможность усиливать навыки, основанные на грамотности в науке, описывая, объясняя, спрашивая, анализируя, обсуждая и участвуя в диалоге по концепциям науки через чтение, написание и журналистскую деятельность.

Конечно, введение интегрированного обучения имеет свои плюсы и минусы. Прежде всего, учителя получают новый вызов – научиться обучать по-новому, адаптироваться к новой роли в учебной среде – быть не только лектором или тьютором, но и полноценным членом исследовательской команды, научным руководителем, иногда менеджером учебного процесса и фасилитатором. На это действительно нужно время, и опыт успешных стран показывает, что все реально при тесном сотрудничестве между всеми участниками образовательного процесса. И учителя имеют возможность проявить незаурядное творчество, ранее ограничивающееся стандартом одного предмета, а ученики – получить целостную картину мира и навыки, необходимые в реальной жизни. Наконец, наша повседневная жизнь и работа не накладываются на «часть математики, часть науки, часть истории и часть английского», – подчеркивает Розенсток.

В современной динамичной глобальной экономике, которая сосредотачивается на развитии, обмене знаниями и информацией, выигрывают те, кто при необходимости умеют одновременно и совмещать, и применять свои знания по нескольким дисциплинам. Творчество, адаптивность, критическое мышление и сотрудничество очень ценные навыки. Когда речь идет о приобретении этих навыков в классе, интегрированное обучение является очень эффективным подходом, поскольку помогает учащимся осознать важную роль взаимодействия друг с другом в реальной жизни [2].

Исходные данные и методы исследования

Рассмотрим, понятие «интеграция». Этот термин был впервые применен в 30-х годах XX века немецкими и шведскими учеными. В настоящий момент он широко применяется в биологии, физике, химии, в области политики, информационной, социальной, культурной сферах и пр. Наиболее широко употребляемое значение этого термина – объединение, взаимопроникновение [3].

В философском энциклопедическом словаре приводится такое определение интеграции: «Интеграция (от лат. integer – полный, цельный, ненарушенный) – процесс или действие, имеющий своим результатом целостность; объединение, соединение, восстановление единства»; в 19 философии Спенсера интеграция означает превращение распыленного незаметного состояния в концентрированное, видимое.

В статье Пастирська І.Я отражено развитие интегративных тенденций в педагогике, где наблюдался переход от целостного и системного исследования проблемы межпредметных связей воплощения интеграции как дидактического принципа в образовательном процессе. Установлено, что развитие межпредметных связей послужил пропедевтическим этапом в становлении интегративных образовательных тенденций [4].

Прогностическая функция интеграции состоит в переходе ее статуса от инструментального средства (интеграция знаний, интеграция содержания обучения, интеграция профессий, интеграция учебных занятий и т.д.) к общенаучной методологии, на основе которой можно решать конкретные педагогические проблемы. Мнение о необходимости учета психолого-педагогических аспектов построения методических систем обучения и особенностей компьютерно-ориентированной учебной среды является чрезвычайно важной [5].

Интеграция понимается как создание у обучаемых целостного представления об окружающем мире (интеграция как цель обучения) и нахождение общей платформы сближения предметных знаний (интеграция как средство обучения).

Сущность интеграции прежде всего заключается в интеграции двух основных компонентов обучения, во-первых, содержания образования на основе установления связей между структурными компонентами содержания разных учебных дисциплин с целью формирования целостного представления о мире, во-вторых, интеграции учебной деятельности на основе системного применения межпредметных связей и методов интегрированного обучения на уроках и во внеклассной деятельности.

Интегрированное обучение создает новые условия деятельности учителей и учащихся и представляет собой действенную модель активизации мыслительной деятельности и развивающих приемов обучения. Учитель не должен действовать в одиночку в предметной системе обучения, а работать в содружестве со своими коллегами.

В работе Засекиной Т.Н. раскрыта актуальная проблема педагогической интеграции в историческом ее становлении и в контексте современных теорий обучения. Освещены теоретико-методологические основы и практика внедрения интегративного подхода в школьной естественной образовании. Исследованы преимущества и недостатки интеграционных процессов в школьной естественной образовании на основе анализа исторического опыта и по сравнению с зарубежным [6].

Под интеграцией в педагогическом процессе понимают одну из сторон процесса развития, связанную с объединением в целое раннее разрозненных частей. Этот процесс может происходить как в рамках уже сложившейся системы, так и в рамках новой системы.

Сущность процесса интеграции – качественные преобразования внутри каждого элемента, входящего в систему. Принцип интеграции предполагает взаимосвязь всех компонентов процесса обучения, всех элементов системы, связь между системами, он является ведущим при разработке целеполагания, определения содержания обучения, его форм и методов. Принципы интегрированного обучения призваны в полной мере работать на достижение главной цели интегрированного обучения – развитии мышления учащихся.

В рамках интегрированного обучения по предметам естественнонаучного направления выделяется *транспредметная интеграция*, которая предполагает реализацию горизонтального интегрирования содержания образования, выходящего за рамки учебных предметов и включающую информацию из других областей науки и практики.

При транспредметной межпредметной интеграции осуществляется объединение в единые целые содержания различных образовательных и предметных областей с содержанием дополнительного образования. Одним из примеров реализации транспредметной межпредметной интеграции выступает обучение на основе Phenomenon-based learning (PhBL или PhenoBL). PhBL является многопрофильной, конструктивистской формой обучения или педагогики, где школьники изучают тему или концепцию в целом. также PhBL включает тематическое обучение (также известный как раздел обучение или обучение). PhBL возник как ответ на идею о том, что традиционное предметно-ориентированное обучение устарело и удалено от реального мира. Он начал использоваться в ВУЗах и совсем недавно в школах.

В казахстанской практике школьного образования реализуются интегрированные уроки и интегрированные элективные курсы, в которых также применяются некоторые элементы PhBL.

Интегрированный поход означает реализацию принципа интеграции в любом компоненте педагогического процесса, обеспечивает целостность и системность педагогического процесса. Интегрированные процессы являются процессами качественного преобразования отдельных элементов или всей системы. Применяя интегрированную технологию обучения в свою, учитель разрабатывает и внедряет в педагогическую практику.

Однако, существующий предметный принцип распределения знаний не позволяет полностью реализовать системный подход в обучении не нарушая, не размывая границы сложившихся учебных предметов. Тем более важен принцип межпредметных связей, позволяющий всесторонне раскрыть многоаспектные объекты учебного познания и комплексные проблемы современности. Интегрированное обучение основывается на комплексном подходе. Границы между предметами стираются, а учебный процесс становится частью всеобщей картины мира. Учителя поощряют учащихся искать связь между дисциплинами, опираться на уже полученные знания и навыки из разных сфер.

«Межпредметные связи - педагогическая категория для обозначения интеграционных отношений между объектами, явлениями и процессами реальной действительности, которые нашли свое отражение в содержании, формах и методах учебно-воспитательного процесса и выполняют образовательную, развивающую и воспитательную функции в их органическом единстве» [7].

Межпредметные связи предполагают взаимную согласованность содержания образования по различным учебным предметам, построение и отбор материала, которые определяются как общими целями образования, так и оптимальным учетом учебно-воспитательных задач, обусловленных спецификой каждого учебного предмета.

Принцип межпредметных связей как обязательное требование к содержанию и организации учебно-воспитательного процесса и познавательной деятельности учащихся способствует:

1) формированию системности знаний на основе развития ведущих общенаучных идей и понятий (образовательная функция межпредметных связей);

2) развитию системного и диалектического мышления, гибкости и самостоятельности ума, познавательной активности и интересов учащихся (развивающая функция межпредметных связей);

3) формированию диалектико-материалистических взглядов, политических знаний и умений (воспитывающая функция межпредметных связей);

4) координации в работе учителей различных предметов, их сотрудничеству, выработке единых педагогических требований в коллективе, единой трактовке общенаучных понятий, согласованности в проведении комплексных форм организации учебно-воспитательного процесса (организационная функция межпредметных связей) [3].

Внутрипредметная интеграция включает: фрагментарную интеграцию, с отдельными фрагментами урока, требующими знаний по другим предметам; узловую интеграцию, когда на протяжении всего урока учитель опирается на знание других предметов, что является необходимым условием усвоения нового материала [8].

Внутрипредметная интеграция в рамках обучения по естественно-научным предметам предполагает два вида:

1) вертикальное интегрирование – интеграция содержания образования на основе постепенного обогащения новыми сведениями, связями и зависимостями; «прессование» материала в крупные блоки. Ученики расширяют и углубляют круг знаний по исходной проблеме.

2) горизонтальное интегрирование – интеграция содержания образования путем укрупнения темы, объединяющей группу родственных понятий. Информация постигается путем перехода от одного элемента к другому, которая доступна в пределах крупной единицы усвоения. Горизонтальное интегрирование: содержание построено путем укрупнения темы, объединяющей группу родственных понятий (УДЕ). Особенность: постигается информация перехода от одного элемента к другому, доступная лишь в пределах крупной единицы усвоения.

Основным элементом для осуществления в педагогической практике различных уровней интеграции является методически грамотно организованный интегрированный курс и интегрированный урок. При этом большое значение придается интегрированным заданиям.

Интегрированный курс (элективные, курсы по выбору, дополнительные учебные предметы и так далее) – автономная научная дисциплина со своим специфическим предметом изучения, которая включает в себя элементы разных дисциплин, но в комплексе, и на качественно ином уровне. Результат интегративного обучения проявляется в развитии творческого мышления учащихся. Оно способствует не только интенсификации, систематизации, оптимизации учебно-познавательной деятельности, но и овладению грамотой культуры (языковой, этической, исторической). Процесс обучения сопровождается существенными изменениями в педагогической теории и практике учебно-воспитательного процесса, связанными с внесением корректив в содержание технологий обучения, которые должны быть адекватны современным техническим возможностям и способствовать гармоничному вхождению ребенка в информационное общество [9].

Интегрированный урок. Интегрированные уроки – это уроки, разрабатываемые учителями на межпредметной основе. Их целью является «создание предпосылок для разностороннего рассмотрения учащимися определенного объекта, понятия, явления, формирования системного мышления, возбуждения воображения, положительного эмоционального к познанию» [10].

Интегрированные уроки обладают следующими ключевыми особенностями: четкость; компактность; сжатость; логическая взаимосвязь содержания обучения на каждом этапе урока; большая информативная емкость материала [11].

Интегрировать на уроке можно любые компоненты педагогического процесса: цели, принципы, содержание, методы и средства обучения. Так для интегрирования содержания урока выделяется любой его компонент: понятия, законы, принципы, определения, признаки, явления, гипотезы, события, факты, идеи, проблемы и т. д. Можно также интегрировать такие составляющие содержания, как интеллектуальные и практические навыки и умения. Эти компоненты из разных дисциплин, объединяемые в одном уроке, становятся системообразующими, вокруг них собирается и проводится в новую систему учебный материал.

Системообразующий фактор является главным в организации урока, поскольку разрабатываемая далее методика и технология его построения будут им определяться. Чтобы интегрировать, т. е. правильно соединить объединяемые компоненты учебного процесса, надо совершить определенные действия, которые изначально носят творческий характер. В ходе этой подготовительной деятельности учитель определяет:

- свои мотивы проведения интегрированного урока и его цель;
- состав интегрирования, т.е. совокупность объединяемых компонентов;
- ведущие системообразующие и вспомогательные компоненты;
- форму интегрирования;
- характер связей между соединяемым материалом;
- структуру (последовательность) расположения материала;
- методы и приёмы его предъявления;
- методы и приёмы переработки учащимися нового материала;
- способы увеличения наглядности учебного материала;
- распределения ролей с учителями интегрируемого предмета;
- критерии оценивания эффективности урока;
- форму записи подготовленного урока;
- формы и виды контроля обученности учащихся на данном уроке.

Интегрированное задание – разновидность учебной задачи. Его особенность заключается в синтезе знаний и умений из разных наук, разных учебных дисциплин, тем, проблем, в объединении их вокруг и ради решения одного вопроса, одной проблемы, ради познания одного объекта или предмета.

Как правило, интегративные задания разрабатываются как межпредметные, межцикловые или связывающие теорию и личный опыт учащихся. (Например, по теме «Влажность»: вывести формулу относительной влажности, рассчитать относительную влажность в классе, определить с помощью психрометра относительную влажность воздуха в классе, изготовить прибор для определения влажности, выяснить влияние влажности на самочувствие человека, по предложенным таблице и графику определить от каких величин зависит влажность).

Таким образом, выделяются три уровня интеграции образования: внутрипредметная, межпредметная и транспредметная (рис. 1).

Внутрипредметная – интеграция понятий, знаний, умений и т.п. внутри отдельного учебного предмета

Межпредметная – синтез фактов, понятий, принципов и т.д. двух и более дисциплин

Транспредметная – синтез компонентов основного и дополнительного содержания образования. Наиболее эффективно данный вид межпредметной интеграции реализуется при выполнении заданий формата PISA.

Рисунок 1. Интеграция знаний, умений и навыков

Результаты и обсуждение

Обучение в рамках интеграции предметов предусматривает реализацию межпредметных связей в рамках одинаковых дидактических единиц в параллели класса из разделов учебных программ школьных предметов. Сквозные цели из этих разделов дополняют цели обучения каждого раздела учебной программы в контексте изучаемой темы.

Реализация практико-ориентированного обучения предполагает рассмотрение заданий, ориентированных на формирование и развитие исследовательских навыков; использование практических заданий, с помощью которых у учащихся формируются и развиваются универсальные учебные действия.

В учебном процессе рекомендуется использовать следующие виды практических заданий:

1) наблюдение;
2) измерение;
3) опыт;
4) моделирование (текстовое, графическое, техническое);
5) конструирование;
6) проектирование;
7) исследование.

Основными видами практических заданий выступают исследовательские задания. Они применяются через поиск в научно-популярной литературе, природной и культурной среде нерешенных проблем, их решение и практическая проверка полученных решений.

К исследовательским заданиям относятся следующие материалы в научно-популярных изданиях:

1) теоретический анализ нерешенной проблемы;
2) создание новых методов исследований;
3) описание открытий и изобретений;
4) описание новых нерешенных проблем и т.д.

Для выполнения исследовательских заданий используются алгоритмы информационно-аналитической, интеллектуальной и практической деятельности. Как уже было сказано выше, изучение каждой темы должно заканчиваться этапом научной творческой деятельности учащихся на основе выполнения творческих заданий.

В рамках интегрированных уроков и курсов главным результатом учебно-воспитательного процесса выступают творческие задания, которые требуют от учащихся нестандартных решений в форме творческих продуктов, поскольку задания содержат больший или меньший элемент неизвестности и имеют, как правило, несколько подходов. Творческое задание составляет содержание, основу любого интерактивного метода, придает смысл обучению, мотивирует учащихся. В данном случае очень актуально развитие навыков решения проблем в команде, когда каждый учащийся делится своим опытом и продуктом творческой деятельности через сотрудничество, сообучение и общение всех субъектов учебного процесса. Можно предложить следующие критерии к разработке творческих заданий:

– не имеет однозначного и односложного ответа или решения;
– является практическим и полезным для учащихся;
– связано с жизнью учащихся;
– вызывает интерес у учащихся;
– максимально служит целям обучения.

Интегрированный практикум при изучении предметов естественно-научного направления для решения поставленных задач реализуется на основе использования активных форм и методов обучения (проблемный эксперимент, исследовательский метод, метод коллективного решения проблем и др.), направленных на активизацию познавательной деятельности учащихся; организацию самостоятельной деятельности учащихся со специально разработанными средствами обучения; моделирование и прогнозирование жизненных ситуаций; организацию самонаблюдения, самооценки и самоанализа учащимися в ходе выполнения практико-ориентированных заданий.

На занятиях практикума предусматриваются:

– различные виды эксперимента (демонстрации, лабораторные опыты, практические работы, домашний эксперимент);

– экскурсии (аптека, цветочная оранжерея, лаборатория и др.);

– выполнение исследовательских работ, например, «Определение химических свойств шоколада» и др.;

– написание докладов, рефератов, выступлений по исследовательским темам;

– ролевые и дидактические игры, например: «Охрана водоёмов», «Лаборатория экспресс-анализа», а также ребусы, лото и др.;

– проведение дискуссий, конференций и др.

Заключение

Инновационные преобразования в образовании требуют соответствующих изменений в профессиональной деятельности учителя, развития его личности как конкурентоспособного специалиста, в совершенстве владеет не только отдельными формами и методами обучения, но и применяет в своей работе целостные педагогические технологии, в частности технологии обучения [12].

Технология – это конструирование учебного (воспитательного) процесса с гарантированным достижением цели. Она имеет четкие процессуальные характеристики, дает ответ на вопрос как, каким способом достигать поставленных целей. Каждая технология имеет свое целевое назначение, поэтому будет гарантировать тот результат, который проектируется ее автором-разработчиком.

Интегрированный урок выступает как особый тип урока, объединяющий в себе обучение одновременно по нескольким предметам при изучении одного понятия, темы или явления, при котором учителя могут проводить урок вместе или раздельно. При реализации интегрированных уроков осуществляется интенсификация познавательного интереса и процесса выработки общеучебных умений и навыков на основе решения одного и того же вопроса интегрированного содержания.

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МЕКТЕПТЕ ГЕОГРАФИЯ МҰҒАЛІМДЕРІНІҢ КӘСІБИЛІГІН АРТТЫРУҒА АРНАЛҒАН ЦИФРЛЫҚ ТРЕНИНГ

Жасымбек Бибіжамал Әділбекқызы
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Аннотация

Білім беру саласындағы мұғалімдердің заманауи кәсіби біліктілігін арттыру қазіргі таңда аса өзекті мәселе болып табылады. Бұл өзекті мәселені шешу жолы ретінде цифрлық тренингтерді қолдана аламыз. Цифрлық тренингтер 21-ғасыр оқытушыларының сабақты тиімді өтуінде маңызды рөл атқарады. Бірақ Қазақстандағы мұғалімдердің цифрлық құзыреттілік деңгейі баға қоятын платформалар мен презентация жасайтын бағдарламалармен ғана шектелуде. Бұл жұмыстың мақсаты мектеп мұғалімдерінің цифрлық құзыреттілігіне, цифрлық тренингтердің тиімділік әсерін эксперименттік түрде бағалау болып табылады.

Эксперимент онлайн сауалнама және сұхбат әдістерін қолдану арқылы жүзеге асырылды: 1) 7 мемлекеттік мектеп мұғалімдерінен тұратын топқа 2 дәрістен тұратын цифрлық тренинг өткізілді; 2) онлайн сауалнама жүргізілді;

Эксперимент нәтижесінде мектеп мұғалімдерінің цифрлық сауаттылығы артты және сабақта цифрлық технологияларды қолдану деңгейі жоғарылады. Дегенмен, эксперимент ауқымы тек бір мектеп мұғалімдерін ғана қамтыды.

Кілт сөздер: цифрлық технологиялар, тренинг, цифрлық құзыреттілік;

Кіріспе

Мұғалім білім беру жүйесіндегі оқушының тұлғалық дамуы мен дағдыларын жетілдіруге бағыт-бағдар беретін және оқу процесін басқаратын ең маңызды тұлға. Педоцентристік білім беру жүйесі форматының өзгергенімен, мұғалім оқытуда басқарушы тұлға ретінде өз рөлін жоғалтқан жоқ, тіпті мұғалімнің кәсіби құзыреттілік аясы кеңейді. Яғни мұғалім оқу процесін оңтайлы ұйымдастыра алатын, педагогикалық құралдарды жітік меңгерген, шығармашылық қабілеттерін дамытқан тұлға. Қазіргі цифрлық дәуірде мұғалімнің заманауи технологиялармен жұмыс жасай алу құзыреттілігі де маңызға ие болды. Демек, заман талабына сай білім беру үшін, мұғалім цифрлық технологияларды оқу процесінде қолдануы тиіс. Ал, қазіргі таңда дүниежүзінде цифрлық сауатты білікті мұғалімдердің тапшылығы проблемасы туындауда [1]. 2020 жылғы Пандемия Қазақстан мұғалімдерінің цифрлық сауаттылығының деңгейінің заман талабына сай еместігін көрсетті, осылайша білім беру саласында цифрлық технологияларды оқытуда қолдануды үйрететін модульдық курстар пайда болды. Алайда, бұл курстардың тиімсіздік проблемасы, қарапайым мәліметтерді күрделі түрде ұсынуы. Бұл мәселені шешу үшін мұғалімдірге цифрлық технологияларды оқытуда цифрлық тренингтерде қарапайым оңтайлы тәсілдерін көрсетіп, оны күрделендіруден сақ болу керек. Мысалыға, Индонезияда ағылшын мұғалімдерінің цифрлық сауаттылығын арттыру мақсатында цифрлық тренинг өткізілген. Бұл бірнеше уақыт аралығын қамтитын, оқытушылардың цифрлық құзыреттілігін арттыруға бағытталған тренингтік сабақтар жиынтығы. Бұл зерттеу нәтижесінде Индонезиялық 10 мұғалімнің цифрлық сауаттылығын тренингтер арқылы қалыптасқандығы әсерінен, оқу сапасының көрсеткіштерінің көтерілгендігін айқын көрсеткен [2]. Демек оқу-тәрбие процесінде нәтижені жақсартатын қандайда бір әдіс міндетті түрде оқу процесіне кірітірілуі қолға алынуы керек, оған тиімді құрал ретінде цифрлық тренингтерді мұғалімдердің кәсіби құзыреттілігін арттыру үшін қолдана аламыз.

Әдебиетке шолу

Соңғы онжылдықта цифрлық құзыреттілік пен цифрлық сауаттылық тұжырымдамалары жиі қолданыла бастады, әсіресе саяси құжаттарда және саясатқа байланысты пікірталастарда "білім қоғамындағы адамдар қандай дағдылар мен білімге ие болуы керек, жастарға не үйрету керек және оны қалай жасау керек" [3], деген көзқарастар цифрлық сауаттылықтың білім берудегі маңыздылығы мен өзектілігін арттыруда. Мәселен, Мортен Сёбидің «Цифрлық құзыреттілік – жаңа пәнаралық салаға пароль» атты мақаласында: «Біз оқыту жүйелерінің динамикасына, эволюциясына және одан әрі талқылау қажеттіліктеріне байланысты оқытуда технологияларды енгізуді қарастыруымыз керек» деген ойды айтқан болатын. Мақалада автор оқыту күрделі экожүйеде жүретіндігін, онда әрбір адам технологиялық трендтерден хабардар болуы керектігін жазған болатын. Осылайша, цифрлық технологияларды әрбір мұғалім оқыту динамикасына сай қолдана алуы тиіс деген тұжырымдамаға келеміз [4]. Ал, цифрлық технологияларды енгізу барысында, цифрлық тренингтерді сәтті қолданудың мысалы бола алатын, Осло Метрополитен Университетінің зерттеушісі Уэй Киа Бонго адам мен компьютердің өзара әрекеттесуі және ақпараттық коммуникациялық технологиялардың (АКТ) қолжетімділігі мен медициналық технологиялар бойынша зерттеулер жүргізді. Оның жұмысы мұғалімдерге қол жетімді цифрлық материалдарды жасауға үйретумен байланысты. Осылайша Уэй Киа Бонго оқытушыларға арналған түрлі тақырыптарды қамтитын цифрлық тренингтерді өткізу арқылы, нәтижелікке бағыттайды [5]. Уэй Киа Бонго мен Осло Метрополитен Университетінің профессоры Вейцин Ченнің «Инклюзивті білім беру үшін цифрлық қолжетімділік саласындағы оқытушылардың құзыреттілігін арттыру: әдебиеттерге жүйелі шолу» еңбегінде цифрлық тренингтер тіпті инклюзивті білім беруді оңтайландыратын құрал ретінде де қарастырылған. «Тренингтердің көпшілігінде мүгедектік пен хабардарлық, заңнама және қолжетімді цифрлық материалдарды құру және инклюзивті цифрлық оқыту ортасын қамтамасыз ету әдістері тақырыптары болды» [5]. Еңбекте іріктеліп алынған мақалалардағы цифрлық сауаттылық оқытуда қолданудың маңыздылығын эмперикалық әдіспен зерттеп, бірнеше еңбекті ұсынған [5]. Соның бірі, қолжетімділік пен инклюзивті цифрлық ортаны қалыптастыру мақсатында, Ирландиялық ғалым Джон Гиллиган Европалық білім беруде мұғалімдердің цифрлық сауаттылығын қамту мақсатында цифлық қолжетімділік аспектісін кеңейткен болатын [6]. Яғни ол цифрлық сауатты мұғалім болуы мен оқытушылардың кәсіби құзыреттігін арттыру мақсатында оқыту мазмұнына негіз берген болатын. Цифрлық сауаттылықты қалыптастыруға байланысты тренингтер өтуде, Джон Гиллиганның осы мазмұны негіз бола алады. Осылайша, цифрлық тренингтерді түрлендіру арқылы біз, білім беру жүйесінде, мұғалімдердің кәсіби біліктілігін арттыру мақсатында, цифрлық сауаттылықты қалыптастыратын тренингтерді қолдана аламыз деген шешімге келе аламыз.

Қатысушылар

Эксперименттік зерттеуге Қазақстандағы Шымкент қаласындағы мемлекеттік мектептің мұғалім-модератор, білікті ұстаз және педагог-зерттеуші дәрежесіндегі 7 мұғалімі қатысты.

Деректер жинау

Бұл зерттеуде деректерді жинауда бақылау, оқыту, құжаттау және сұхбат сынды әдістер қолданылды. Сонымен қатар, деректерді жинау барысында 10 сұрақтық тест әзірленді. Тестті дайындау және құрастыру процесінде мұғалімдердің базалық цифрлық білім деңейін анықтауға арналған сұрақтардан әзірленді. Университет мұғалімдерінің пікірлері негізінде тестке қажетті түзетулер енгізілді. Сарапшылар тесттің күрделілік деңгейіне байланысты да қажетті түзетулер енгізді.

Бақылау мұғалімдердің өз сыныптарында цифрлық технологияларды қолдана отырып оқыту барысында кездесетін нақты проблемаларын анықтау мақсатында жүргізілді. Бақылау кезіндегі проблемаларды шешу үшін цифрлық арнайы тренинг өткізу жоспарланып, жүзеге асырылды. Тренинг цифрлық технологияның қандай түрлерін оқыту үшін пайдалануды және оларды белгілі бір пәнді оқытуда қалай қолдануға болатыны туралы білімді беруге бағытталған.

Іске асыру

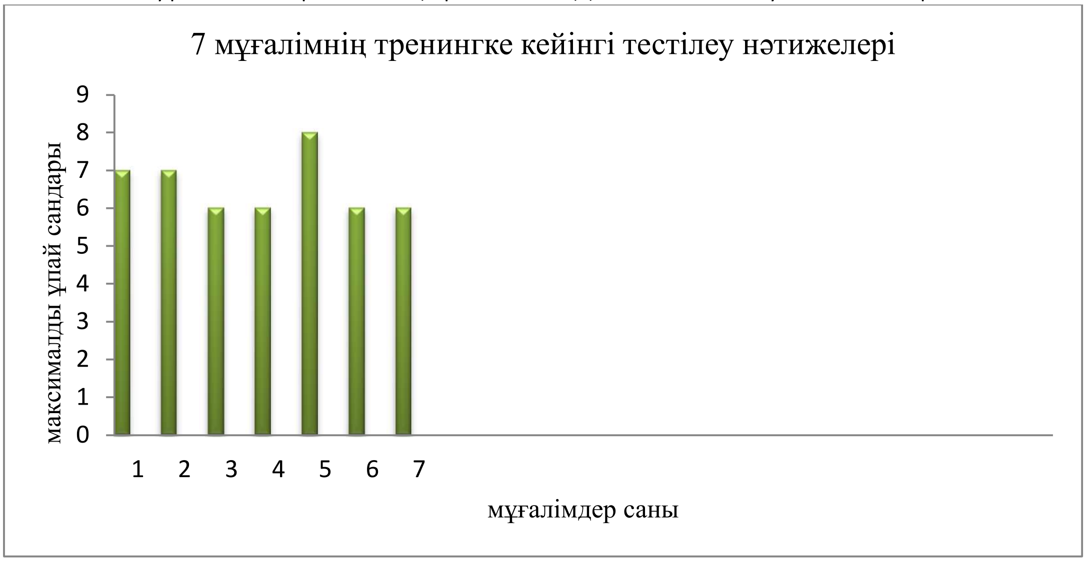
Эксперименттік жүзеге асыру арнайы сабақ өтуге қолданылатын платформалар жайлы деректер беретін нұсқаулық видеодан және арнаулы цифрлық бағдарламаларды қолдану жайлы нақты нұсқаулықтардан тұрды.

Эксперименттік зерттеу жұмысы 3 апта уақытты қамтыды. Эксперимент басында мұғалімдердің цифрлық құзыреттілігін анықтайтын тест алынды. Мұғалімдердің сабақ өту барысында цифрлық технологияларды және арнайы сабақты тиімді өтуге арналған бағдарламаларды қолдануы немесе қолданбауы бақыланды. Эксперимент барысында болған барлық жағдайларды қамту мақсатында арнайы құжаттама жасалынып, онда фотосуреттер сақталыныды. Эксперименттегі соңғы сұхбат цифрлық технологиялардың оқытуда қаншалықты тиімді екендігін сипаттау және талдау мақсатында жүргізілді. Мектеп мұғалімдерімен сұхбатта цифрлық технологияларды оқытуда қолданудың проблемалары жайында бірнеше сұрақтар қойылды. Сонымен қатар, цифрлық технологияларды дұрыс қолдану тренингін өткеннен кейінгі, оқытудағы артықшылықтар жайлы сауалдар талқыланды. Сонан соң сауалнама мен сұхбаттан алынған деректерді өңдеу жұмысы жүргізілді.

Нәтижелер

Нәтижелер цифрлық технологияларды оқыту мұғалімдердің кәсібилігін арттыруға мүмкіндік беретіндігін дәлелдеді. Төменде зерттеу барысында алынған деректер бағдарламасы арқылы өңделді. Бірінші тестілеу мен екінші тестілеу арасы 3 апта уақытты қамтиды.

Сурет 1. 7 мұғалімнің тренингке дейінгі тестілеу нәтижелері.



Сурет 2.7 мұғалімнің тренингке кейінгі тестілеу нәтижелері.

Бірінші сурет пен екінші суретте, 7 мектеп мұғалімінен тұратын топтың, тренингке дейінгі ж/е кейінгі сынақ нәтижелері көрсетілген. x осінде мұғалімдер саны, ал y осі ұпайды көрсетеді.

Кесте 1. Тесттің тренинг өтілгенге дейінгі және кейінгі р мәндері бар нәтижелері.

Нәтиже	Мұғалімдер саны	Орта мән	SD	df	t тест	p мәні
дейінгі	7	5.43	0.53	12	t=3.1789	0.0079
кейінгі	7	6.57	0.79			

Кестеде 7 мұғалімнің SD ж/е орташа балл мәндері, алдын ала тесттің есептелген Т-тесті ж/е р-мәндері берілген. Кестеде көрсетілгендей, тренингке дейінгі орта мән 5.43 баллды құраса, тренингтен кейінгі орта мән 6.57 баллдық көрсеткішті құраған. Ал р мәнінің 0,05 аз 0.0079 болғандығына қарай статистикалық талдау сенімді екендігіне көзжеткізе аламыз.

Талқылау

Статистикалық талдау жүргізу барысында, орта ж/е SD-стандартты ауытқу мәндерін есептеу үшін «online-calculator.com» онлайн есептеу бағдарламасы қолданылды. Т-тестін ж/е сандық деректерді талдауға «Graphpad.com» онлайн бағдарламасы пайдаланылды.

Зерттеу нәтижесінде мектеп мұғалімдері цифрлық технологияларды оқытуда тиісінше қолданбайтындығы анықталды. Мектеп мұғалімдері өздерінің кәсібилігін арттыруда кейбір қиындықтарға тап болды, бұл сұхбаттың келесі нәтижелерінен көрінеді:

"Иә, бұл бағдарламалар жайлы естігенмін, бірақ оны қалай пайдалану керектігін білмеймін. Іс жүзінде қолданбаған соң олар жайлы айту қиын".

" Цифрлық технологияларды қолдану оқушылардың көзіне зиян деп ойлаймын. Оқушылар сабақтан тыс уақыттарда да гаджеттер тым көп пайдаланады, сол үшін де оларды сабақта қолданбаймын".

"Мен бұл туралы естігенмін, мұғалімдерге арналған арнайы вебинарлар да бар. Бірақ онлайн сабақ өту пандемиядан біткен соң тоқтатылды ғой, сондықтан оны қажет деп санамаймын ".

"Сабақты цифрлық технологияларды қолданбай да жақсы өтуге болады деп ойлаймын".

"Қолданып көру керек, бірақ цифрлық сауаттылық туралы вебинарлар мен үшін ұзақ әрі түсініксіз болды. Сосын оларды қолдануды меңгере алмадым ".

"Цифрлық дәуірде ондай бағдарламаларды пайдаланған дұрыс, бірақ оны сабақта қолдануға дайындалу керек, ал ол қосымша жұмысты, уақытты талап етеді".

Жоғарыда айтылған жауаптардан шешім шығарар болсақ, кейбір оқытушылар оқытуда қолданылатын кейбір цифрлық бағдарламалар туралы естіген, алайда тәжірбие жүзінде қолдануға тырыспаған. Тіпті мектеп мұғалімдерінің кейбірі цифрлық технологияларды өз сабақтарына қолдануға қарсы, себебі олар оқушылардың денсаулығына зиян деп ойлайды. Ал бірнеше мұғалім цифрлық технологияларды оқытуда қолдану тиімді екендігін айтты. Олар оқытуда цифрлық бағдарламаларды қолдану оқушылардың пәнге деген қызығушылығын арттыруға көмектесетіндігін айтып, цифрлық тренингтегі бағдарламаларды қолдануды үйренуге ұсыныс білдірді.

Қорытынды

Зерттеу нәтижесінің қорытындысына сүйенсек, мұғалімдердің оқу іс-әрекетінде цифрлық технологияларды қолдануында бірнеше проблемалар бар. Мұны шешу үшін мұғалімдердің кәсібилігін арттыру емес, сонымен қатар Қазақстан мектептеріндегі білім сапасының деңгейін көтеруге бағытталған цифрлық құзыреттілікті қалыптастыруды оқыту қажет. Цифрлық құзыреттілік оқытуды енгізудің көптеген артықшылықтары бар. Дүниежүзілік пандемия кезінде цифрлық оқыту мұғалімдерге қашықтықтан оқытуды мүмкіндігінше жақсы меңгеруге көмектесті және сол уақытта мектеп мұғалімдерінің цифрлық құзыреттілігінің деңгейі жоғарылатуды талап ететіндігі проблемасы айқындалды. Демек, цифрлық оқытуды енгізудің нәтижесі мектеп мұғалімдерінің цифрлық оқыту туралы, әсіресе цифрлық бейне, Canva, Google Classroom және Prezi қосымшасы туралы білімдерін кеңейтеді. Цифрлық оқыту осы мектеп оқушыларының үлгеріміне, әсіресе материалдарды қабылдауына жақсы әсер етеді. Қысқаша айтқанда, цифрлық оқыту оқытушылардың кәсібилігін арттырып қана қоймай, сонымен қатар цифрлық дәуірде оқыту нәтижелеріне инновациялар мен шығармашылықты енгізу тәсілі болып табылатын көптеген артықшылықтарға ие.

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СТАН СФОРМОВАНОСТІ САМОСТІЙНОСТІ МАЙБУТНІХ УЧИТЕЛІВ МУЗИКИ У СИСТЕМІ ДИСТАНЦІЙНОЇ ОСВІТИ

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Анотація: *у статті висвітлено основні результати дослідження проблеми формування самостійності майбутніх учителів музики у процесі дистанційного навчання. Проаналізовано стан проблеми самостійності майбутніх учителів музики у процесі дистанційного навчання та шляхи її подолання. Запропоновано діагностику з розробленої нами методики з даної проблематики. Визначено шляхи подальшої наукової роботи щодо втілення методичних напрацювань та їх реалізацію у розробці та впровадженні власного дистанційного курсу.*

Ключові слова: *самостійність, майбутній учитель музики, дистанційне навчання, діагностика, музичне мистецтво, формування, методика.*

Досліджуючи питання формування самостійності майбутніх учителів музики ми виходили з того, що сьогодні музична культура загалом і музична педагогіка зокрема перебувають у ситуації незатребуваності, а музичне життя переживає свою ціннісну «переоцінку» і характеризується такими явищами, як шквал низькосортної музичної продукції, активний розвиток молодіжних субкультур, які часто мають асоціальний характер, «споживацтво» у ставленні до серйозної музики, нерозвиненість музичного смаку в дорослого населення, втратою авторитету музично-творчої та музично-педагогічної діяльності. Тож сьогодні як ніколи відчувається особливо гостро потреба в активних педагогічних кадрах, які сприяють інтенсивному творчому розвитку учнів, залученню їх до емоційного спілкування з музикою і за допомогою музики.

Метою дослідно-експериментальної роботи є розробка, апробація та перевірка ефективності методики та дотичних до неї організаційно-педагогічних умов формування самостійності майбутніх учителів музики у процесі дистанційного навчання.

Дослідно-експериментальна робота здійснювалася упродовж 2017-2018 рр. і передбачала констатувальний, формувальний та контрольний етапи.

Мета констатувального експерименту полягала в тому, щоб визначити вихідний рівень сформованості самостійності студентів, оцінити та проаналізувати існуючі можливості дистанційного навчання в формуванні самостійності майбутніх учителів музики.

Реалізація поставленої мети передбачала вирішення наступних завдань:

- виявити головні показники, критерії та рівні сформованості самостійності майбутніх учителів музики;
- установити наявний рівень сформованості самостійності студентів;
- дослідити стан методичного та дидактичного забезпечення проблеми формування самостійності студентів у процесі дистанційного навчання;
- об’єднати та проаналізувати отримані теоретичні, експериментальні та практичні дані, виявити труднощі та суперечності в досліджуваній науковій площині.

Констатувальний експеримент здійснювався на базі Криворізького держаного педагогічного університету (75 осіб) та Національного педагогічного університету імені М. П. Драгоманова (125 осіб), ним було охоплено студентів 1-2-х курсів спеціальності 014 Середня освіта (музичне мистецтво) та 3-4-х курсів спеціальності 6.020204 Музичне мистецтво. Вибір контингенту мав такі підстави: усі студенти навчалися на музично-педагогічних спеціальностях; при вступі до ЗВО мали передвищу музичну освіту, усі студенти мали приблизно однакове оточуюче середовище, мали практику застосування музично-комп'ютерних технологій і були залучені до дистанційного навчання. Під час визначення критеріїв сформованості самостійності майбутніх учителів музики ми спиралися на теоретично обґрунтовані в попередніх розділах дисертації положення стосовно змісту й сутності цього феномену.

Ми розглядаємо самостійність майбутнього вчителя музики як складну його професійно-особистісну властивість, яка спонукає до активних дій та позапатерналістської поведінки у навчально-професійній діяльності. У процесі дистанційного навчання самостійність студентів передбачає певну спрямованість, здатність і спроможність активно, власними зусиллями, без сторонньої допомоги здійснювати самостійну навчальну діяльність у дистанційному середовищі. Тобто самостійно послуговуватися розмаїттям сучасних технологій, що забезпечують доставку навчальної інформації в інтерактивному режимі, її обробку й засвоєння, а також навчальну комунікації між студентом та викладачем за допомогою ІКТ.

Спираючись на визначений зміст самостійності – мотиваційно-сенсовий, актуалізаційно-пізнавальний, когнітивно-змістовий, процесуально-практичний та оцінно-рефлексивний конструкти було виокремлено мотиваційний, змістовий, діяльнісний та рефлексивний критерії її сформованості в майбутніх учителів музики в процесі дистанційного навчання.

Мотиваційний критерій визначає ієрархію та співвідношення навчальних, пізнавальних і професійних мотивів, навчальних потреб студентів у здійсненні самостійної навчальної діяльності із застосуванням нових комп'ютерно зорієнтованих засобів; систему пріоритетів як передумов до становлення готовності до мистецько-професійної самоосвіти. Особливо важливе значення має потреба та рівень активність студента у мистецько-професійному самопізнанні й самоактуалізації, у самоствердженні завдяки реалізації здібностей, талантів, музично-педагогічної діяльності.

Змістовий критерій окреслює професійну грамотність майбутніх учителів музики, у тому числі якість їх знань із фахових дисциплін, здобутих дистанційно, ступінь самостійності в сприйнятті мистецьких і педагогічних явищ, а також дидактичні й методичні знання щодо видів, форм і способів і прийомів організації самостійної навчальної діяльності у процесі дистанційного навчання.

Діяльнісний критерій віддзеркалює професійні уміння та навички майбутніх учителів музики із застосування професійно профільованих знань в галузях музичного мистецтва та музичної педагогіки, із встановлення міждисциплінарних зв'язків фахових дисциплін із суміжними загальнорозвивальними, із використання системи способів, дій, методів і прийомів самостійної навчальної діяльності в дистанційному середовищі, із імпровізації як в музичній, так і в музично-педагогічній сферах, а також ступінь розвиненості в майбутніх учителів музики музичних і музично-творчих здібностей. Рефлексивний критерій визначає ставлення студента до самого себе як до суб'єкта музично-педагогічної діяльності, ступінь самоспостереження, самоаналізу, самоконтролю, самооцінки власних дій, у тому числі виконавської майстерності, педагогічної діяльності, музично-педагогічної творчості; здатність до аналізу та оцінки творчості інших; прагнення до професійного самовдосконалення; здатність до коригування шляхів організації самостійної навчальної діяльності у процесі дистанційного навчання.

Отже, в основу побудови критеріальної бази сформованості самостійності в майбутніх учителів музики бути покладені соціально-психологічні показники їх професійного розвитку в закладі вищої педагогічної освіти, показники становлення виконавської майстерності музиканта, а також загальні показники ефективності самостійної навчальної діяльності студентів у процесі дистанційного навчання. За яскравістю прояву зазначених показників було визначено ознаки 4-х рівнів сформованості самостійності в майбутніх учителів музики – початкового, середнього, достатнього й високого. Характеризуючи зазначені рівні, ми виходили з особливостей організації дистанційного навчання як процесу, що може мати різний ступінь реалізації й суб'єкта управління ним.

Початковий рівень (потенційна самостійність) характеризується майже повною відсутністю виявів показників самостійності, репродуктивним способом вирішення студентами навчальних завдань під жорстким керівництвом викладача. Середній рівень (копіювальна самостійність) – поодиноким виявом показників, частково продуктивною діяльністю студентів у дистанційному середовищі, безпосередньо керованою викладачем.

Достатній рівень (відтворювальна самостійність) – наявністю більшої частини показників, які описують дистанційне навчання як продуктивне й кероване. Високий рівень (творча самостійність) – наявність майже всіх показників сформованості самостійності, що характеризує дистанційне навчання як ефективне, творчо-продуктивне й самокероване.

Наступним етапом констатувального експерименту було виявлення рівня сформованості самостійності в майбутніх учителів музики. Для цього нами було розроблено спеціальну методику, що передбачала до того ж і застосування засобів дистанційного навчання. Діагностика включала:

– визначення та аналіз показників мотиваційного критерію за результатами: анкетного опитування студентів (блок 1: загальні відомості як чинники формування досвіду самостійності у процесі дистанційного навчання, блок 2: ставлення до майбутньої професійної діяльності як ступінь вияву мотиваційної готовності до формування самостійності, блок 3: ставлення до організації самостійної навчальної діяльності із застосуванням комп'ютерно зорієнтованих та дистанційних технологій); виконання завдань-ситуацій за методикою незакінчених речень.
– за змістовим критерієм – робота з документацією деканатів, експертна оцінка відповідей студентів на питання діагностичної контрольної роботи, що формувалася за тематичними лініями, спрямованими на виявлення знань у галузях музичного мистецтва, методики викладання музики та обізнаності в технологіях дистанційного навчання.
– показники діяльнісного критерію вивчалися за результатами виконання студентами проблемних завдань із застосуванням дистанційних технологій;
– рефлексивний критерій досліджувався за інтегрованим виявом загального рівня самостійності майбутніх учителів музики під час виконання спеціального тесту, а також шляхом самооцінки ними здатності до рефлексивного аналізу навчальних дій у процесі дистанційного навчання.

Покажемо й проаналізуємо отримані результати.

Щоб з'ясувати наявний стан проблеми формування самостійності в майбутніх учителів музики, ми звернулися до 200 студентів 1-4-х курсів з питаннями анкети. Аналізуючи результати проведеного опитування, ми не побачили особливостей у відповідях студентів різних курсів, тож далі подаємо узагальнені результати. Виявилося, що до вступу до ЗВО 75% студентів мали передвищу професійну підготовку, тобто закінчили музичну школу чи студію, школу мистецтв, решта – 25% займалися індивідуально з фахівцями.

Усі залучені нами до експерименту студенти мали відповідний рівень сертифікатів ЗНО, витримали творчий конкурс за тою чи тою музичною спеціалізацією, тобто мали належні стартові умови для навчання, причому 30% майбутніх учителів музики до вступу в університет мали досвід музично-концертної діяльності. Самостійно майбутню професію вчителя музики обрали 55% студентів, 40% здійснили вибір за порадою близьких, 5% – з огляду на перелік сертифікатів ЗНО. Проте, подобається майбутня професія тільки 45% майбутнім учителям музики, 40% – мають бажання пов'язати своє життя з музичним мистецтвом загалом, реалізувати власні музичні здібності чи переорієнтуватися по закінченню навчання на суміжну музичну професію, 15% – прагнуть до визнання своїх талантів та обдарувань і отримання диплома про вищу освіту. Планують працювати в сфері музично-педагогічної діяльності (вчителями чи викладачами музики) 48% студентів, не пов'язують свою кар'єру з викладанням музики – 45%, а 7% – із професійним музичним мистецтвом взагалі.

Змістом професійної підготовки задоволені лише 42% студентів, при цьому її загальний рівень 12,5% майбутні учителі музики оцінили як низький, 55% – як середній і 32,5% – як високий. На думку студентів потребує вдосконалення зміст таких напрямів професійної підготовки, як: теоретичне навчання з музикознавства (7,5%), практична музична підготовка (22,5%), методика музичного виховання і навчання (37,5%), музично-інформатична підготовка (55%) – методика організації електронного, дистанційного, мобільного навчання музичного мистецтва й естетичної культури, застосування ІКТ в музичній творчості тощо; творчий компонент професійної підготовки (22,5%) – методика розвитку дитячої музичної творчості, методика організації позакласної й позашкільної роботи з естетичної культури та мистецтва тощо. Студенти додали також необхідність: вдосконалення змісту навчальних програм з фахових дисциплін згідно з сучасними вимогами (25%); більш широкого впровадження новітніх інтерактивних методів навчання (35%); оновлення комп'ютерної бази університету та змісту комп'ютерно зорієнтованих фахових дисциплін (32%); більшої уваги до професійного виховання майбутніх учителів музики (20%); зняття перевантаженості теоретичними і суспільно-гуманітарними дисциплінами в навчальному плані підготовки за рахунок підвищення питомої ваги фахових та дисциплін практичної підготовки (15%); збільшення ситуацій педагогічного управління замість безпосереднього керівництва чи подекуди тиску з боку викладачів на процес професійного становлення майбутніх фахівців (55%); створення розгалуженого освітнього інформаційного середовища університету, яке забезпечує підтримку самостійній навчальній діяльності студентів (70%).

Тож, на думку значної частки майбутніх учителів музики, зміст професійної підготовки має відповідати специфіці їх професійної діяльності, запитам практики, орієнтуватися на творчий розвиток студентів у музично-педагогічному напрямі, вможливлювати академічну й професійну мобільність, вільний вибір освітніх траєкторій і навчальних стратегій.

За результатами професійної підготовки 70 % студентів наголосили на бажанні отримати систему професійних музично-педагогічних знань і умінь, причому за усіма напрямами підготовки. Бажання займатися самоосвітою виявили 65% студентів, потребу до самопізнання й самореалізації в музично-педагогічній діяльності – 40%, 45% орієнтується на самореалізацію в суто музичній сфері і лише 5% студентів над сенсом в самопізнанні й самореалізації не замислюється.

Наступні відповіді студентів підтвердили нашу думку про те, що дистанційні технології здатні суттєво підвищити рівень професійної підготовленості майбутніх учителів музики, змінити формат представлення, засвоєння навчальної інформації та моніторингу навчальних досягнень студентів. Зокрема, 80% опитаних вважає за доцільне використовувати дистанційні технології в професійній підготовці майбутніх учителів музики, мають відповідний досвід – 85% студентів, припускають, що цей досвід є недостатнім – 65%, помічаючи, що більшість теоретичних курсів фахової підготовки поки що викладаються традиційним шляхом, у той час як існує можливість їх засвоєння в системі відкритої дистанційної освіти.

Оцінюють загалом свій рівень готовності до дистанційного навчання як високий і достатній – 45%, 25% наголошують, що він є на жаль недостатнім.

Майбутні учителі музики назвали чимало переваг дистанційного навчання, ми об'єднали їх у такі головні напрями, як: навчання в зручному темпі будь де і будь коли (100%), реалізація академічної мобільності (85%), переадресація розлогих за часом видів діяльності (прослуховування й самоаналіз музичних творів, ознайомлення з фактами, теоріями, підходами, передовим досвідом, здобутками музичного мистецтва і педагогів-практиків тощо) ІКТ (80%), передання рутинних видів контролю й самоконтролю комп'ютерним програмам (80%), оперативна педагогічна підтримка через засоби масової комунікації (90%), розширення кола професійного спілкування, можливість навчатися в віртуальних класах у найкращих фахівців (100%). Досить вдумливо майбутні вчителі музики поставилися до створення переліку недоліків дистанційного навчання фахових дисциплін. Зокрема, були відмічені: неможливість повноцінного навчання музично-педагогічній діяльності дистанційно (100%), відсутність, у більшості випадків, персоніфікованого моніторингу навчальних досягнень студентів (80%), недоступність якісних навчальних курсів для широкого загалу (75%), недостатня мотивація й організованість у ситуації вільного вибору темпу і траєкторій навчання (50%).

На думку переважної більшості студентів (75%), роль викладача в системі дистанційного навчання має полягати в консультуванні та підтримці навчальної роботи. Проте, як вказує із прикрістю 80% майбутніх учителів музики, вона зазвичай зводиться до контролю знань і темпу роботи студентів. 25% студентів відзначили, що в дистанційному навчанні фахових дисциплін переважно використовуються електронні лекції, аналогічні друкованим, тестовий контроль знань, консультації через листування та групи в соціальних мережах. Решту можливостей не дозволяє застосовувати низький рівень компетентності у новітніх ІКТ більшості викладачів. 50% з опитаних студентів не мали змоги отримати кваліфіковано допомогу з адаптації у дистанційному середовищі.

Отримані нами вище фактичні дані щодо рівня сформованості самостійності майбутніх учителів музики були доповнені результатами виконання ними завдань-ситуацій. Це дозволило з'ясувати ієрархію та співвідношення навчальних, пізнавальних і професійних мотивів, навчальних потреб студентів у здійсненні самостійної навчальної діяльності із застосуванням технологій дистанційного навчання, їх мотиваційну готовність до роботи в дистанційному середовищі відповідно до року підготовки.

Як бачимо найбільш високий рівень мотиваційної готовності майбутніх учителів музики характерний для галузі музичного мистецтва, а найменший – для методичної. Звісно, що показники коливаються за роками навчання й трішки покращуються після проходження системи педагогічних практик, проте більшості студентів імпонує формування самостійності переважно для успіху в сфері музичного мистецтва, не пов'язаною з педагогічною діяльністю.

Дослідження вихідного рівня сформованості самостійності майбутніх учителів музики у процесі дистанційного навчання виявило ряд *труднощів*, серед них: нестача компетентного педагогічного управління цим процесом, неналежний рівень готовності та спеціальної компетентності в більшості викладачів щодо організації самостійної навчальної діяльності студенів із застосуванням ІКТ, брак належних заходів із дидактичної адаптації студентів до дистанційного середовища, неузгодженість дій, відсутність інтердисциплінарної координації змісту й засобів дистанційного навчання у межах фахово зорієнтованих курсів.

Як наслідок, недостатній рівень сформованості самостійності в понад 50% майбутніх учителів музики, суттєві прогалини в знаннях у 10% студентів.

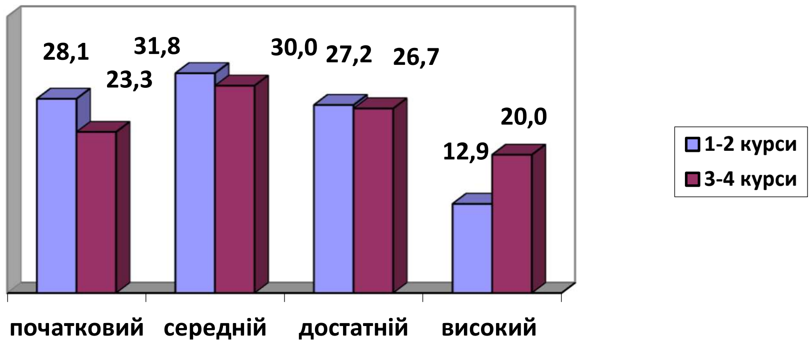

Рис. 2 Природна динаміка формування самостійності майбутніх учителів музики (у%)

Отримані дані дозволяють стверджувати: студенти – майбутні вчителі музики у процесі професійної підготовки в більшості характеризуються низькою навчально-професійною активністю, вузькістю інтересів (нерідко ці інтереси – виключно до музичного виконавства), нерозвиненістю мотиваційної готовності (64%), самоосвітніх і рефлексивних навичок (72%), творчою пасивністю й несамостійністю. Тож, багатий виховний, освітній і розвивальний потенціал музичного мистецтва у подальшому повністю не актуалізується в шкільній дійсності.

Організація вчителем музики активної, особистісно-значущої для школярів музичної діяльності, досить часто підміняється формальним вивченням основ теоретичного музикознавства, обмежується розучуванням пісенного програмного репертуару, що, урешті-решт, віддаляє дітей від живого, емоційного спілкування з музикою і за допомогою музики.

Можна погодитись з думкою про те, що основною причиною кризового становища музичної освіти є соціально-економічна нестабільність в країні і як наслідок, відсутність професійної активності вчителів музики і студентів музично-педагогічних спеціальностей. Однак фактором, не менш вагомим в цій ситуації, є невирішеність в галузі професійної музично-педагогічної освіти низки актуальних проблем теоретичного та організаційно-практичного характеру, що стосуються, зокрема, застосування новітніх засобів і методів музичної педагогіки, наступності в роботі системи безперервної музично-педагогічної освіти; організації професійного виховання, адже не секрет, що серед музикантів-фахівців укорінився погляд на професію шкільного вчителя музики як на другорядну, порівняно з професіями музиканта-виконавця, музикознавця або диригента.

Такий стан речей можна змінити шляхом залучення майбутніх учителів музики дистанційного навчання, яке дозволить їм осягнути ціннісну інформацію, що міститься в музиці, підвищити зацікавленість студентів – майбутніх учителів досягненнями як класичної спадщини, так і сучасного музичного мистецтва, сформувати належний рівень самостійності в професійній сфері.

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Инновационные педагогические приемы и методы, позволяющие повысить мотивацию студентов к изучению иностранного языка

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Түйіндеме: Бұл мақалада студенттердің шет тілін үйренуге деген ынтасын арттыруға мүмкіндік беретін Инновациялық педагогикалық әдістер мен әдістер қарастырылады. Қазіргі жас ұрпақ технологиялармен белсенді өзара әрекеттеседі және динамикалық ақпараттық ортаға үйренеді. Шет тілін оқытуда инновацияларды енгізу бұл шындықты көрсетеді, бұл оқытуды өзекті және қызықты етеді. Нәтижесінде студенттер ынталы және тілдік кедергілерді жеңуге дайын болады.
Түйінді сөздер: білім беру, оқыту, педагогикалық әдістер мен әдістер, мотивация, Инновация, технология.

Аннотация: В данной статье рассматривается Инновационные педагогические приемы и методы, позволяющие повысить мотивацию студентов к изучению иностранного языка. Современные молодые поколения активно взаимодействуют с технологиями и привыкли к динамичной информационной среде. Внедрение инноваций в обучение иностранному языку отражает эту реальность, сделав обучение более релевантным и увлекательным. В результате, студенты становятся более мотивированными и готовыми к преодолению языковых барьеров.
Ключевые слова: образование, обучение, педагогические методы и приемы, мотивация, инновации, технологии.

Abstract: This article discusses innovative pedagogical techniques and methods to increase the motivation of students to learn a foreign language. Today's young generations actively interact with technology and are accustomed to a dynamic information environment. The introduction of innovations in foreign language teaching reflects this reality, making learning more relevant and exciting. As a result, students become more motivated and ready to overcome language barriers.
Keywords: education, training, pedagogical methods and techniques, motivation, innovation, technology.: integrative approach, education, integration, intercultural communication, innovation

В современном мире, где глобализация и межкультурное взаимодействие становятся все более важными, изучение иностранного языка приобретает особую актуальность. Однако, увлекательность этого процесса часто вызывает определенные трудности для студентов. Для достижения успешных результатов в обучении иностранному языку необходимо обратить внимание на мотивацию студентов. Именно здесь важную роль играют инновационные педагогические приемы и методы, которые способствуют повышению мотивации студентов к изучению иностранного языка.

Одним из ключевых инновационных методов является использование проектного обучения. Подобный подход предполагает, что студенты решают реальные задачи, связанные с языком, и при этом активно взаимодействуют между собой. Например, создание мультимедийных презентаций на иностранном языке о культурных особенностях страны изучаемого языка может стать стимулом для более глубокого вникания в языковые особенности. Проектное обучение также развивает навыки самостоятельной работы и коллективного взаимодействия, что вносит элемент игры и соревнования в учебный процесс [1].

Еще одним инновационным методом является использование игр и ролевых упражнений. Игровой подход активизирует внимание студентов, создает атмосферу позитивной мотивации и способствует активному использованию языка в различных контекстах. Например, организация дебатов на иностранном языке, где студенты принимают на себя роли различных сторон, позволяет им развивать навыки аргументации и выразительной речи, при этом испытывая интерес и увлечение .

Использование современных информационных технологий также играет ключевую роль в повышении мотивации студентов. Возможность доступа к онлайн-ресурсам, приложениям для изучения языка, интерактивным платформам обогащает учебный процесс и делает его более интересным и разнообразным. Видеоуроки, онлайн-игры, обучающие приложения стимулируют студентов не только к освоению материала, но и к активному общению на иностранном языке.

Существенным инновационным методом является включение культурных и языковых аспектов в обучение. Познавание культурных особенностей страны, где используется изучаемый язык, создает своеобразную связь между языком и реальной жизнью. Организация культурных мероприятий, праздников, встреч с носителями языка дополняет учебный процесс интригующими и интересными событиями, что стимулирует студентов к более глубокому погружению в изучение языка.

Использование инновационных педагогических приемов и методов в обучении ино странному языку имеет огромный потенциал для повышения мотивации студентов. Проектное обучение, игры и ролевые упражнения, современные информационные технологии и включение культурных аспектов создают более интересную и стимулирующую учебную среду. Эти методы не только активизируют интерес и внимание студентов, но и развивают познавательное любопытство, уверенность в использовании языка и навыки коммуникации[2].

Основным фактором, который определяет успешность обучения иностранному языку, является мотивация студентов. Инновационные педагогические методы и приемы играют важную роль в стимулировании этой мотивации и создании эффективной учебной среды.

Давайте рассмотрим некоторые из них более подробно.

№	метод	описание
1.	Использование информационных и коммуникационных технологий (ИКТ):	В мире, где технологии стали неотъемлемой частью нашей повседневной жизни, интеграция ИКТ в учебный процесс может значительно повысить мотивацию студентов. Возможности онлайн-курсов, приложений для изучения языка, видеоуроков и интерактивных платформ делают процесс обучения более увлекательным и доступным. Студенты могут изучать язык в формате, который подходит именно им, и применять знания в реальных ситуациях.
2.	Проектное обучение:	Создание проектов, связанных с реальными жизненными ситуациями, позволяет студентам использовать язык на практике. Проекты могут включать в себя создание презентаций, видеороликов, публичных выступлений на иностранном языке. Это позволяет студентам не только применить свои знания, но и развить навыки исследования, коммуникации и сотрудничества.
3.	Игровые методы:	Обучение через игры – это не только увлекательно, но и эффективно. Разнообразные игры, викторины, ролевые игры на иностранном языке позволяют студентам совершенствовать свои навыки, не осознавая этого как учебное занятие. Это помогает снизить барьер и страх перед использованием языка.
4.	Интерактивное общение:	Организация дискуссий, групповых обсуждений, обмена мнениями и идеями стимулирует студентов к использованию языка в аутентичных коммуникативных ситуациях. Интерактивное общение создает атмосферу, в которой студенты видят практическую ценность изучения языка.
5.	Поддержка личных интересов:	Индивидуальный подход к студентам, учитывая их интересы и потребности, играет важную роль в повышении мотивации. Материалы и задания, связанные с областями, которые интересуют студентов (музыка, кино, спорт и т.д.), могут сделать процесс изучения более привлекательным.
6.	Сотрудничество и проектирование:	Работа в группах над проектами или задачами способствует развитию коммуникативных и коллективных навыков. Студенты могут обмениваться идеями, поддерживать друг друга и вместе создавать что-то новое.
7.	Поддержка и поощрение:	Важно создать атмосферу поддержки и поощрения в классе. Поощрение студентов за их достижения, независимо от их уровня владения языком, мотивирует к дальнейшим усилиям.
[3]		

Инновационные педагогические методы и приемы, такие как использование технологий, проектное обучение, игры, интерактивное общение, индивидуальный подход и сотрудничество, сыграют важную роль в повышении мотивации студентов к изучению иностранного языка в Казахстане. Педагоги должны быть готовы к постоянному обновлению своих методов и подходов, чтобы эффективно взаимодействовать с современными студентами и обеспечивать качественное обучение.

Повышение мотивации студентов к изучению иностранного языка через инновационные методы способствует более глубокому и эффективному освоению материала. Студенты становятся активными участниками процесса обучения, уверенно применяют изученный язык в реальных ситуациях и приобретают уверенность в своих способностях. Таким образом, инновационные методы не только делают обучение более интересным и занимательным, но и способствуют более успешному и продуктивному усвоению иностранного языка.

Важно отметить, что выбор инновационных методов должен быть адаптирован к особенностям конкретной аудитории и учебной среды. Каждый студент имеет свои интересы, стили обучения и потребности, поэтому важно учитывать индивидуальные особенности при выборе методов. Педагогические исследования и практический опыт показывают, что разнообразие инновационных подходов может эффективно содействовать достижению целей обучения и повышению мотивации.

Инновационные методы также способствуют развитию креативности, критического мышления и коммуникационных навыков студентов. Взаимодействие с разнообразными материалами, технологиями и ситуациями стимулирует у студентов интерес к самостоятельному исследованию и поиску новых путей решения задач. Такое развитие навыков активно влияет на их общее когнитивное и личностное развитие.

В заключение, использование инновационных педагогических методов в обучении иностранному языку способствует формированию более высокой мотивации студентов. Проектное обучение, игры, современные технологии и культурные аспекты создают увлекательную и интересную учебную среду, способствуя активному и глубокому усвоению материала. Такой подход не только обогащает знания студентов, но и формирует у них уверенность в использовании иностранного языка в реальных ситуациях. Важно продолжать исследования и экспериментировать с инновационными методами, чтобы создать оптимальные условия для эффективного обучения иностранному языку и развития личностных компетенций студентов.

Инновационные педагогические методы в обучении иностранному языку продолжают эволюционировать, отражая изменения в образовательных подходах и технологиях. Новые методы и подходы могут включать в себя использование виртуальной реальности, интерактивных онлайн-платформ, а также более глубокое интегрирование мультимедийных ресурсов в учебный процесс.

Технологии машинного обучения и искусственного интеллекта также могут быть внедрены для создания индивидуальных образовательных траекторий и адаптивного обучения. Адаптированный контент и задания могут обеспечить более персонализированный подход к каждому студенту, что, в свою очередь, способствует повышению мотивации[4].

Важным аспектом успешной реализации инновационных методов является активное взаимодействие педагогов и студентов в процессе выбора и адаптации этих методов. Студенты, как активные участники учебного процесса, могут вносить свои предложения и идеи, а педагоги могут применять свой опыт и экспертизу для оптимального внедрения инноваций.

В заключение, инновационные педагогические методы и подходы играют важную роль в повышении мотивации студентов к изучению иностранного языка. С их помощью студенты могут более активно участвовать в обучении, развивать свои языковые навыки и компетенции, а также находить новые пути для применения языка в реальных ситуациях. Инновации в образовании продолжат эффективно содействовать улучшению образовательных результатов и личностного развития студентов.

Однако важно отметить, что успешная реализация инновационных педагогических методов требует не только технологических средств, но и глубокого понимания учебных потребностей студентов, их интересов и способностей. Педагоги должны быть готовы к постоянному обучению и адаптации, чтобы эффективно интегрировать новые методы в учебный процесс.

Кроме того, инновационные методы должны соответствовать учебным целям и задачам, а также соблюдать принципы педагогической этики. Важно балансировать между использованием новых технологий и сохранением основных принципов образования, таких как взаимодействие, обратная связь и социальное взаимодействие.

Продолжающиеся исследования в области педагогики и технологий помогут разработать еще более эффективные и инновационные подходы к обучению иностранному языку. Важно также учитывать разнообразие стилей обучения студентов и создавать обучающие среды, которые будут стимулировать их индивидуальное развитие.

Таким образом, инновационные педагогические приемы и методы действительно могут значительно повысить мотивацию студентов к изучению иностранного языка. Они создают более интересную, вовлекающую и индивидуализированную учебную среду, которая способствует более успешному усвоению языка и развитию личностных компетенций. Продолжение исследований и практическое внедрение инноваций в образовательный процесс будет способствовать дальнейшему улучшению качества обучения и повышению мотивации студентов.

Ключевым аспектом успешной реализации инновационных педагогических методов является их постоянное совершенствование и адаптация к меняющимся потребностям обучения. Педагоги и исследователи должны внимательно следить за новыми тенденциями в образовании, технологическими инновациями и психологическими аспектами мотивации студентов. Это позволит разрабатывать более эффективные и контекстно подходящие методы.

Среди перспективных направлений можно выделить дальнейшее интегрирование виртуальной и дополненной реальности в учебный процесс, создание интерактивных онлайн-платформ с персонализированным контентом и адаптивными заданиями. Также развитие технологий искусственного интеллекта позволит создавать индивидуальные образовательные программы, учитывающие потребности каждого студента.

Однако несмотря на все технологические инновации, важно помнить о значимости межличностных отношений в обучении. Взаимодействие с опытными педагогами, обсуждение материала в группе, коллективные проекты и дискуссии также остаются важной частью образовательного процесса. Инновации должны дополнять, а не заменять, эти традиционные методы.

Итак, инновационные педагогические методы имеют огромный потенциал для повышения мотивации студентов к изучению иностранного языка. Они создают динамичную и интересную учебную среду, активизируют студентов, развивают их креативность и коммуникативные навыки. Однако успешное внедрение инноваций требует глубокого понимания учебных потребностей и адаптации методов к конкретной аудитории. С постоянным развитием и исследованиями в области образования, мы можем ожидать появления еще более эффективных и привлекательных методов, способствующих более успешному изучению иностранного языка.

Инновационные педагогические приемы и методы играют важную роль в современной образовательной практике, особенно при изучении иностранных языков. Эти методы способствуют активному и эффективному обучению, повышению мотивации студентов и развитию их языковых навыков. В ходе данной работы были рассмотрены разнообразные инновационные подходы, которые могут существенно улучшить процесс изучения иностранного языка.

Интерактивные методы, такие как обучение через игры, ролевые игры, обсуждение актуальных тем и проектные задания, позволяют студентам активно взаимодействовать с языковым материалом и применять его на практике. Это не только увлекательно, но и способствует более глубокому усвоению знаний.

Использование современных технологий, таких как онлайн-платформы, виртуальная и дополненная реальность, позволяет создать учебную среду, которая ближе к реальным коммуникационным ситуациям и делает изучение иностранного языка более интересным и практическим.

Однако важно помнить, что успешная реализация инноваций требует грамотной педагогической подготовки и адаптации методов к конкретной аудитории. Педагоги должны уметь грамотно балансировать между технологическими инструментами и традиционными методами обучения, чтобы создать оптимальное обучающее окружение.

В итоге, инновационные педагогические методы не только помогают повысить мотивацию студентов к изучению иностранного языка, но и формируют у них более широкие навыки и компетенции, которые пригодятся им не только в учебе, но и в будущей профессиональной деятельности. Использование таких методов становится ключевым фактором в обеспечении качественного и эффективного образования в современном мире.

Продолжая рассмотрение темы инновационных педагогических методов, следует подчеркнуть их значимость не только для мотивации студентов, но и для создания более глубокого и продуктивного образовательного процесса. Инновации в обучении иностранному языку помогают студентам развивать не только языковые навыки, но и критическое мышление, творческое мышление, коммуникативные навыки и способность к самостоятельной работе [5].

Современные молодые поколения активно взаимодействуют с технологиями и привыкли к динамичной информационной среде. Внедрение инноваций в обучение иностранному языку отражает эту реальность, сделав обучение более релевантным и увлекательным. В результате, студенты становятся более мотивированными и готовыми к преодолению языковых барьеров.

Инновации также поддерживают индивидуализацию обучения. Возможность выбора траектории обучения, адаптации материала к интересам и потребностям студента, позволяет каждому получить наибольшую пользу от учебного процесса. Это способствует повышению успеваемости и уровня владения иностранным языком.

Однако для успешной интеграции инноваций необходимо учитывать не только технические и методологические аспекты, но и адаптировать их к конкретным контекстам обучения. Эффективная комбинация традиционных и инновационных методов может обогатить учебный опыт и создать уникальные условия для развития навыков иноязычной коммуникации.

В итоге, инновационные педагогические методы, направленные на повышение мотивации студентов к изучению иностранного языка, являются ключевым компонентом современного образования. Они способствуют формированию более активных, креативных и адаптированных к изменяющемуся миру обучающихся, что является важным шагом в развитии образовательных систем.

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ANALYSIS OF SOME BIOLOGY MANUALS USED IN CLIL

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The article presents an analysis of 5 teaching manuals from several European countries, which are used in the framework of content and language integrated learning (CLIL). According to Do Coyle, CLIL is of interest because in this learning the content of the subject or discipline is carried out through the language - foreign or second, used in the country or region. The release of manuals varies from 2006 to 2017. The general characteristics of teaching manuals, which includes the country, year and focus of the manual, are presented in Table 1.

Table 1 - General characteristics of teaching manuals

Manual number	Country	Year	Direction / Discipline
1	Sweden	2014	Synthetic biology
2	England	2017	Microbiology
3	Hungary	2013	Microbiology
4	England	2007	Human
5	England	2006	Cell biology

The analysis of teaching manuals was carried out according to the criteria and characteristics proposed by Peeter Mehisto in 2012, which help to make a more effective manual in the framework of CLIL. The characteristics of the criteria are presented in Table 2.

Table 2 - Characteristics of the criteria of teaching manuals used in the framework of CLIL

No.	Criterion	Characteristics
		General requirements
1	Technical (according to local or national education authorities)	Ease of use Correspondence of size and weight, volume in pages Font selection Excerpt art style and color Orientation and focus on non-electronic sources of learning (for electronic materials) Navigation throughout the material (availability of links for electronic materials)
2	Illustrations	Correspondence Clarity and Precision The presence of captions (for example, to define key terms, introduce the topic, highlight the main points in voluminous texts)
3	Graphic organizers	Availability of charts Availability of tables Availability of schemes
		CLIL
1	Determination of goals	By content By language By learning skills
2	Learning Outcomes	Short term Long term
3	Upgrading the target language	Estimated language results (short-term, long-term) for the consistent development of the academic language of students Subject terminology (glossary) Subject Vocabulary and Linguistic Clues Subject dictionary and ready-made sets of phrases Used language assignments Additional language support (for example, information is broken into smaller parts)
4	Use of authentic language	Using the language of everyday speech in different social and work contexts
5	Use of academic language	Listening and reading exercises that promote academic language and content
6	Development of learning skills and independence	Pre-work exercises (for example, brainstorming, determining the meaning of unfamiliar words, reading the text several times) Used assignments by content Tips for teaching skills to effectively complete tasks (guidelines, recommendations)
7	Development of critical thinking	The presence of tasks that contribute to the application and evaluation of the received information to create a new
8	Developing cognitive fluency in content	Linking the topic of the introductory paragraph or task to the daily life of students, using graphic organizers, avoiding complex sentences, highlighting key ideas or facts, using subheadings in large numbers, providing electronic links

9	Development of cognitive fluency in language	Repetition of new nouns instead of pronouns, shortening of paragraphs, insertion of synonyms, marginal notes to explain key words and expressions, introduction of electronic pronunciation and dictionary references for complex terms (for electronic materials)
10	Development of cognitive fluency in learning skills	Providing samples of answers before completing tasks, identifying samples of good work among students, providing comments on samples of poorly performed student work
11	Assessment forms	Applied forms of assessment (teacher, student, self-assessment)
12	Learning flexibility	The sequence of the material presentation Increasing material complexity
13	The Importance of learning	Deepening the acquired knowledge Implementation of interdisciplinary links Giving students freedom of choice and control over the learning process
Additional requirements		
1	Ecological problems	Inclusion of illustrations showing the main aspects of life in terms of environmental sustainability. Where appropriate, focus on consumption reduction, reuse and renewable energy sources.
2	Social problems	Reflection of everyday life (so that students recognize themselves), honesty and integrity in relation to work and other areas of life.
3	Cooperative learning	Terminology and set of phrases necessary for the management and analysis of group work.

According to the analysis, all selected manuals (100%) are easy to use, the volume of which ranges from 182 to 576 pages. Also, in all the analyzed manuals (100%), the selection of the font, the exposure of the artistic style and color are observed. Orientation and focus on non-electronic sources of learning is taken into account in 80% of the manuals. Navigation throughout the material (the presence of links for electronic materials) is also present in 80% of the manuals.

Illustrations corresponding to the content are found in all manuals (100%). The clarity and accuracy of the illustrations range from medium to high in 40% of the manuals, while 60% of the manuals are high. Captions for illustrations are presented in all manuals (100%).

Diagrams, tables and schemes are used in all analyzed manuals (100%). In terms of goals, 20% of the manuals had content goals, while language and learning skills goals were missing in all manuals (100%). Learning outcomes – both short-term and long-term – were presented in only 20% of benefits. The intended language outcomes were not present in any of the manuals (0%).

40% of the manuals contain a glossary on subject terminology. In all manuals (100%) there were no linguistic prompts, a subject dictionary and language tasks. However, additional language support in the form of breaking down information into smaller parts is present in 80% of the manuals. The use of the language of everyday speech in various social and work contexts is practiced in 60% of the manuals. Listening and reading exercises that promote academic language and content, as well as pre-work exercises, are absent in all manuals (100%).

All manuals (100%) use assignments by content, including:

1) performance of laboratory work - 40%;
2) filling out the report form according to the tasks - 20%;
3) checking with the use of tasks "True or False" and comparing definitions with their values - 20%;
4) case study - 20%.

Tips for teaching effective task completion skills are presented in 60% of the manuals in the form of guidelines (40%) and technical advice (20%). Tasks that facilitate the application and evaluation of the received information to create a new one are used in 80% of the manuals, including laboratory work (60%), logical questions (20%) and case study tasks (20%).

The development of cognitive fluency in content is carried out in all manuals (100%) with the help of:

1) use of graphic organizers - 100%;
2) highlighting key ideas or facts - 80%;
3) the use of subheadings in large quantities - 100%;
4) provision of electronic links - 40%.

The development of cognitive fluency in language is carried out in all manuals (100%) with the help of:

1) reduction of paragraphs - 80%;
2) marginal notes explaining key words and expressions - 20%.

The development of cognitive fluency in learning skills is carried out in only 20% of manuals with the help of explanations of answers. In the analyzed manuals, teacher assessment is used (80%), and any form of assessment is allowed (20%).

The sequence of presentation of the material, the increasing complexity of the material and the deepening of the acquired knowledge can be traced in all manuals (100%). In 80% of the manuals, interdisciplinary connections are made and students are given freedom of choice and control over the learning process.

Among the additional requirements in 20% of the manuals, one can note the presence of terminology and a set of phrases necessary for managing and analyzing group work.

რუკის მნიშვნელობა გეოგრაფიის სწავლებისას

მაია ბლიაძე

გეოგრაფიის დოქტორი, ევროპის უნივერსიტეტის პროფესორი, მასწავლებელთა პროფესიული განვითარების ეროვნული ცენტრის გეოგრაფიის ექსპერტ-კონსულტანტი

შორენა ტყემალაძე

განათლების აკადემიური დოქტორი, ქუთაისის აკ. წერეთლის სახელობის სახელმწიფო უნივერსიტეტის მოწვეული ლექტორი

საკვანძო სიტყვები: გეოგრაფია, რუკის კითხვა, სწავლების მეთოდი.

შესავალი

კარტოგრაფია მეცნიერებაა ობიექტური სინამდვილის საგნებისა და მოვლენების კონკრეტული სივრცის და მისი დროის მიხედვით ცვალებადობის შესახებ. ეს კონკრეტული სივრცე, როგორც სინამდვილის საგნებისა და მოვლენების ურთიერთგანლაგების წესრიგი, სამგანზომილებიანი, დროში ცვალებადი კონტინუუმია.
კარტოგრაფია სპეციფიკურ ხელოვნურ ნიშნობრივ სისტემას - „რუკის ენას"და სპეციფიურ მეთოდს - კარტოგრაფიულ მოდელირებას იყენებს. კარტოგრაფიული შემეცნების შედეგს საკვლევი სინამდვილის კარტოგრაფიული მოდელიწარმოადგენს, რასაც მეცნიერებაში და საზოგადოებრივ პრაქტიკაში რუკა ეწოდება.
მთელი სინამდვილის შესაბამისად, კარტოგრაფია და რუკები ორ დედამიწისეულ და კოსმოსურ ჯგუფად იყოფა. პირველში გეოგრაფიული კარტოგრაფია და გეოგრაფიული რუკები, ხოლო მეორეში - ასტრონომიული კარტოგრაფია და ასტრონომიული რუკები შედის. რეალური სინამდვილის კონკრეტულ სივრცეს აქვს გარკვეული სტრუქტურა. მისი ელემენტებია ათვლის სივრცითი სისტემა, და მის მიმართ ურთიერთგანლაგების დროში ცვალებად წესრიგში მყოფი საგნები და მოვლენები.
შესაბამისი სტრუქტურა აქვს იმავე სინამდვილის კარტოგრაფიულ გამოსახულებასაც (რუკას). გეოგრაფიული კარტოგრაფიისთვის ათვლის სივრცით სისტემად მიჩნეულია დედამიწის საკოორდინატო ბადე - გრადუსთა ბადე, რომლის გამოხატულება სიბრტყეზე - კარტოგრაფიული ბადე - გეოგრაფიული რუკის მათემატიკურ საფუძველს წარმოადგენს და გარკვეული კარტოგრაფიული პროექციის დახმარებით მიიღება.
გეოგრაფიული სინამდვილის საგნების (მაგ., ოკეანეები და ხმელეთი, მდინარეთა ქსელი, რელიეფი, დასახლებული ადგილები და სხვ.), მოვლენების (მაგ., ატმოსფეროში მიმდინარე პროცესები, ზედაპირული ჩამონადენი, და სხვ.), მოსახლეობის ეროვნული შემადგენლობის, განათლებისა, და ა.შ. გამოსახულებებს კარტოგრაფიული ბადის მიმართ ზუსტად ისეთივე განლაგება აქვს რუკაზე, როგორც სინამდვილეში. ეს არის სინამდვილის კარტოგრაფიული მოდელის უნიკალური თავისებურება, რაც მას დიდ მეცნიერულ და პრაქტიკულ მნიშვნელობას ანიჭებს.
გეოგრაფიული კარტოგრაფიისთვის მნიშვნელობა აქვს გეოდეზიის მონაცემებს დედამიწის ფორმისა და ზომების შესახებ, საყრდენი წერტილების კოორდინატებსა და აეროფოტოტოპოგრაფიული გადაღების მასალას, რომელთა საფუძველზე მიიღება დედამიწის ყველა რუკის პირველწყარო — ტოპოგრაფიული რუკა. ამ თვალსაზრისით კარტოგრაფია ტექნიკურ მეცნიერულ ციკლში შედის, ხოლო სიმანდვილის გარკვეული მხარის კარტოგაფიული მეთოდით გამოკვლევის პროცესში იგი საბუნებისმეტყველო და საზოგადოებრივ მეცნიერებებს უკავშირდება, რომლებსაც თავისი შემეცნების საგნის შინაარსის გარდა, საგნის სივრცითი თავისებურებებიც აინტერესებს. ამ კავშირის

საფუძველზე იქმნება სპეციალური სამეცნიერო კარტოგრაფიული დისციპლინები (მაგ., გეოლოგიური კარტოგრაფია, გეომორფოლოგიური კარტოგრაფია, ეკონომიკური კარტოგრაფია) და მათი განმაზოგადებელი დისციპლინა — თემატიკური კარტოგრაფია.
გეოგრაფიული რუკა დედამიწის ზედაპირის ან მისი ნაწილის შემცირებული და განზოგადებული გამოსახულებაა სიბრტყეზე. რუკაზე გეოგრაფიული ობიექტების შემცირების ხარისხს გვიჩვენებს მასშტაბი. რუკების უმრავლესობას არა ერთი საერთო მახასიათებელი გააჩნია. ყოველ რუკაზე წარმოდგენილი მასშტაბი, გრადუსთა ბადე, პირობითი ნიშნები და გეოგრაფიული ობიექტების ნაწილი.
ადამიანი რუკებს უძველესი დროიდან ქმნიდა და მათი დახმარებით შესაძლებლობა ეძეოდა თვალსაჩინოდ წარმოედგინა გეოგრაფიული ობიექტების ურთიერთგანლაგება.
ამჟამად ქაღალდის რუკების გარდა არსებობს ელექტრონული რუკები — რუკები, რომელიც გამოსახულია კომპიუტერის ეკრანზე. ამგვარი რუკების მეშვეობით მანძილების და სხვა კარტოგრაფიული გაზომვების ჩატარება ბევრად ადვილი, სწრაფი და ზუსტია. მასზე მხოლოდ ხაზის გატარებაა საჭირო ნებისმიერ ორ პუნქტს შორის, მონაცემებს კი სპეციალური პროგრამა მყისიერად დაითვლის. ერთ-ერთი ამგვარი კომპიუტერული პროგრამაა Google Earth.

რუკის მნიშვნელობა სასწავლო პროცესში

სასწავლო პროცესში რუკა მრავალმხრივ საგანმანათლებლო ფუნქციას ასრულებს.
1. გეოგრაფიის სწავლებისას რუკა ძირითადი და ყველაზე მნიშვნელოვანი თავლსაჩინოებაა, მისი საშუალებით შესაძლებელოა სწრაფად მიმოვიხილოთ დედამიწის ზედაპირის უკიდეგანო სივრცეები და საერთოდაც მთლიანად დედამიწა. ამ ფაქტის განსაკუთრებული მნიშვნელობა უფრო გასაგები გახდება, თუ გავითვალისწინებთ, რომ სწორ და ღია ადგილასაც კი წარმოქმნილ ჰორიზონტს მხოლოდ 5 კმ-ის რადიუსი აქვს, რაც დედამიწის ზედაპირის დაახლოებით 1/7 მემილიონედ ნაწილს შეადგენს. თვალმიუწვდომელი სივრცის უშუალო მხედველობითი გამოსახულება, რომელიც რუკის საშუალებით იქმნება, გვეხმარება მასზე წარმოდგენის ფორმირებაში. სავსებით უიმედო და უშედეგო საქმე იქმნებოდა შეგვექმნა მოსწავლეებისათვის სწორი წარმოდგენა კავკასიის, დიდი ბრიტანეთის, სამხრეთ ამერიკის თუ სხვა გეოგრაფიული ობიექტის, ასევე მათთვის დამახასითებელი ისეთი ნიშნების შესახებ, როგორიცაა სანაპირო ხაზი, რელიეფი, კლიმატი, ჰიფროგრაფიული ქსელი, მცენარული საფარი და ა.შ., თუ მოსწავლეები ვერ ხედავენ აღსაწერ და შესასწავლ ტერიტორიას ან ობიექტს ყველაზე უხეშ სქემატურ რუკაზეც კი.
2. რუკის მთავარი ფუნქციაა დედამიწის ზედაპირზე გეოგრაფიული ობიექტების განლაგებისა და მდებარეობის შესახებ ცნობების ასახვა. სწორედ ამ კუთხით ის შემეცნების შეუცვლელი საშუალებაა, რამეთუ არც ერთი სხვა საშუალება - არც სიტყვა, არც სურათი და თვით ადგილმდებარეობასთან ”პირადი ნაცნობობაც” კი - არ იძლევა ნათელ, მკაფიო და ზუსტ განსაზღვრებას სივრცეში ობიექტების განლაგების, მიმართულებების, კონფიგურაციისა და მოხაზულობის შესახებ. ასეთი ცოდნა კი აუცილებელია ადამიანისათვის, იმის და მიუხედავად, სამეურნეო საქმიანობის თუ რომელ სფეროში მოღვაწეობს იგი. სწორედ ამიტომაც, აქვს რუკას დიდი მნიშვნელობა ადამიანის ცხოვრებაში, განსაკუთრებით კი დიდ როლს ასრულებს გეოგრაფიაში: იგი ნებისმიერი სახის გეოგრაფიული კვლევის საწყისი პუნქტია, ასევე მუშაობის პროცესში ყველა ეტაპის თანმხლებია და, ამავე დროს, კვლევის ერთ-ერთი შედეგიცაა. ამიტომაც მას სავსებით სამართლიანად გეოგრაფიის ”ალფას და ომეგას” ვუწოდებთ. როგორ გამოიყენება რუკის ეს ძირითაი ფუნქცია სკოლაში? რუკის უკვე მარტივი მხედველობითი აღქმაც კი გარკვეულ წარმოდგენას უქმნის მოსწავლეებს ობიექტების განლაგების შესახებ. რუკაზე ვიზუალურად ანუ თვალით შეიძლება შევაფასოთ გეოგრაფიული ობიექტების ფორმები, დავადგინოთ მათი ურთიერთმიმართება, განლაგება და

ფართობები, ასევე მათ შორის მანძილები. გეოგრაფიის მასწავლებლები ხშირად იყენებენ რუკას ამ მიზნით. მაგალითად, მოსწავლეებს სთხოვენ რუკის გამოყენებით და უპასუხონ მარტივ კითხვებს გეოგრაფიული ობიექტების მდებარეობის, მათი შეფარდებითი ზომების, მათ შორის მანძილების და სხვ. შესახებ. ასეთი ტიპის სავარჯიშოები კი მოსწავლეებს ისეთ უნარ-ჩვევას უვითარებს, როგორიცაა სივრცეში ორიენტირება.

3. რუკა, სიმბოლოების ენის საშუალებით, ასახავს გეოგრაფიული ობიექტების არა მხოლოდ განლაგებას, არამედ ახასიათებს კიდეც მასზე გამოსახულ ობიექტებს. ამასთან ასახავს, არა მხოლოდ მათ არსებულ მდგომარეობას, არამედ გამოსახავს მათ მოძრაობას, განვითარებას და ცვლილებებსაც კი. ასეთია მაგალითად, ისტორიული, ზოგიერთი ეკონომიკური და სხვა თემატური რუკები. ამ სახის რუკების გამოყენებით შესაძლებელია, არა მარტო გეოგრაფიული ობიექტების შედარება, არამედ ასევე, მათ შორის სივრცობრივი კავშირებისა და ურთიერთზემოქმედების დადგენაც. შედეგად მოსწავლეებს ეძლევათ საშუალება იმსჯელონ და გამოიტანონ დასკვნები გეოგრაფიული ობიექტების იმ თვისებების შესახებ, რომლებიც რუკებზე უშუალოდ არ არის ასახული. მაგალითად, რუკაზე რომელიმე ქვეყნის, ტერიტორიის მდებარეობის დადგენისას მოსწავლეს შეუძლია საკმარისად საფუძვლიანად დაახასიათოს მისი კლიმატი, მცენარეულობა. ამ და რუკაზე მოცემული მონაცემების (რელიეფი, ჰიდროგრაფიული ქსელი) შეჯერების საფუძველზე კი დაახასიათოს მდინარეთა წყლის რეჟიმი, ნიადაგები და, ასევე, გამოთქვას ვარაუდი მოცემულ ბუნებრივ პირობებში ადამიანის სავარაუდო სამეურნეო საქმიანობის შესახებ. თუმცა, უნდა აღინიშნოს, რომ განხილული მაგალითიდან არ შეიძლება ვიფიქროთ, რომ რუკა თავად საუბრობს ობიექტის ყველა თვისებაზე. რუკა თავის მდიდარ შინაარსს მხოლოდ მას უმხელს, ვისაც აქვს როგორც კარტოგრაფიული, ისე გეოგრაფიული ცოდნა და შეუძლია მისი გამოყენება ანუ რუკის კითხვა. თვითონ რუკა, მისი სწორედ წაკითხვისას, წარმოადგენს ცოდნის არა მარტო მდიდარ და მრავალფეროვან წყაროს, არამედ მოსწავლეთა გონებრივი განვითარების სტიმულატორსაც. რუკის კითხვა მოსწავლეებს ისეთ უნარებს უყალიბებს, როგორიცაა ლოგიკური, დიალექტიკური აზროვნება. ობიექტებისა და მოვლენების ფართო სპექტრით და მოცულობით აღქმა ანუ დიდი კატეგორიებით აზროვნება ავითარებს მრავალმხრივ და "ცოცხალ" წარმოდგენებს რუკაზე გამოსახული ობიექტების შესახებ; და ბოლოს, რუკა გეოგრაფიის შეგნებულად და მყარად მიღებული ცოდნის კარგი საფუძველია.

4. რუკა, გეოგრაფიის სწავლების პროცესში ფსიქო-პედაგოგიურ როლს ასრულებს. იგი ხელს უწყობს ცოდნის სისტემატიზაციას, აიოლებს ცოდნის მიღებას და ინფორმაციის დამახსოვრებას. რუკის ეს როლი შენარჩუნებულია არა მხოლოდ სკოლაში, არამედ მაშინაც, როცა მოზრდილი ადამიანი თავის გეოგრაფიულ ცოდნას ივსებს წიგნებიდადან, ჟურნალ-გაზეთების, ინტერნეტიდან თუ სხვა წყაროებიდან. რუკის კარგად ცოდნისას ადამიანის გეოგრაფიული ცოდნის მარაგიც მუდივად ივსება, იზრდება, ფართოვდება და იგი წინარე გეოგრაფიულ ცოდნას ეფუძნება. სწორედ ამიტომ არის მეტად მნიშვნელოვანი, რომ სკოლაში მოსწავლეებს ვასწავლოთ რუკაზე გეოგრაფიული ნომენკლატურის გარკვეული რაოდენობა მაინც. ამ მიზნით, სასურველია, მასწავლებელმა ხშირად გამოიყენის სწავლების ისეთი ხერხები, რომლებიც ხელს უწყობს კარტოგრაფიული ნახატის დამახსოვრებას. მაგალითად, ასეთია რუკის ან კარტოგრაფიული სქემის დახაზვა, კონტურულ და მენტალურ რუკებზე მუშაობა და სხვ. ასეთი სავარჯიშოები ხელს უწყობს მოსწავლეებში მეხსიერების, წარმოსახვის, ლოგიკური აზროვნებისა და მეტყველების უნარების განვითარებას, ასევე ანალიზის, შედარების, მსჯელობის და დასკვნების გამოტანის უნარების ჩამოყალიბებას.

რუკა სწავლების აქტივიზაციის პროცესში ყველაზე ხელმისაწვდომ და მოქმედ საშუალებას წარმოადგენს, რადგან იგი ხელს უწყობს მოსწავლეთა დამოუკიდებელ

მუშაობას, ასევე უღვიძებს მათ ინტერესს ამა თუ იმ გეოგრაფიული ობიექტისა და მოვლენის მიმართ და, რაც მთავარია, ერთმანეთთან აკავშირებს სასკოლო გეოგრაფიასა და პრაქტიკულ საქმიანობას. მაგალითად, რუკების გამოყენებით გეოგრაფიის გაკვეთილებზე შესაძლებელია ჩატარდეს, შინაარსისა და ფორმის მიხედვით, მრავალფეროვანი ფრონტალური თუ ინდივიდუალური პრაქტიკული სამუშაოები, ამოიხსნას სხვადასხვა გეოგრაფიული ამოცანები.

ამრიგად, შეიძლება ითქვას, რომ რუკას უდიდესი როლი აკისრია გეოგრაფიის სწავლების პროცესში. მისი მნიშვნელობის შეფასება რთულია. ფრთიანი გამონათქვამი ”რუკის გარეშე არ არსებობს გეოგრაფია”, მართლაც და ღრმა აზრის მატარებელია, რადგან როგორც გეოგრაფიულ მეცნიერებას არ შეუძლია რუკის გარეშე არსებობა, ისე გეოგრაფიის სწავლაც შეუძლებებლია მის გარეშე.

რუკის კითხვა

გეოგრაფიის სწავლებისას რუკაზე მუშაობის მთავარი მიზანია, ვასწავლოთ მოსწავლეებს რუკის გაგება, კითხვა და გამოყენება. შევეცდებით ავხსნათ რას ნიშნავს ეს ტერმინები.

რუკის გაგება ნიშნავს, რომ მოსწავლეს აქვს კარტოგრაფიული ცოდნა: იცის რა არის რუკა, როგორია მისი თვისებები, შინააარსი, მნიშვნელობა, რას აღნიშნავს თითოეული პირობითი ნიშანი მასზე, როგორ გამოიყენოს რუკა და რა სარგებელი შეიძლება მიიღოს მისგან.

რუკის კითხვა ნიშნავს, რომ მოსწავლეს შეუძლია პირობითი ნიშნების გამოყენებით გამოიტანოს დასკვნა ამა თუ იმ გეოგრაფიული ობიექტის დამახასიათებელი თვისებების შესახებ, დაინახოს და აღიქვას ობიექტი, ადგილი, ტერიტორია რეალურთან მიახლოებულად, შეუძლია წაიკითხოს და გაიგოს ბუნებასა და საზოგადოებაში მიმდინარე სხვადსხვა მოვლენა, მდგომარეობა და დაამყაროს მათ შორის კავშირები.

რუკის გამოყენება რუკის ფლობის მაღალი საფეხურია. შეიძლება იცოდე კარტოგრაფიის ანბანი (პირობითი ნიშნები, მასშტაბი, რუკის პროექცია და ა.შ.), მაგრამ არ შეგეძლოს მისი სწორედ კითხვა და, შესაბამისად, სწორედ გამოყენება. რუკის სწორედ წასაკითხად აუცილებელია, როგორც კარტოგრაფიული, ასევე გეოგრაფიული ცოდნა და, აგრეთვე, ბევრი და მრავალმხრივი სავარჯიშოებისა და დავალებების შესრულება, რადგან რუკის კითხვა - ეს უნარ-ჩვევაა და ნებისმიერი უნარ-ჩვევა კი სწორედ ვარჯიშის შედეგად გამომუშავდება.

რუკის კითხვის სწავლება ჯერ კიდევ დაწყებით კლასებში, ბუნებისმეტყველების კურსის შესწავლისას იწყება. კარტოგრაფიული ცოდნის საფუძვლები, გეოგრაფიული ცოდნა და რუკის კითხვა მჭიდროდაა ერთმანეთთან დაკავშირებული და ერთ, განუყოფელ მთლიან სისტემას ქმნიან, რომელიც მუდმივად ვითარდება სასკოლო განათლების ყველა საფეხურზე.

ამრიგად, რუკა გეოგრაფიული და კარტოგრაფიული ცოდნის მდიდარ წყაროს წარმოადგენს, ამიტომაც რუკის კითხვა გეოგრაფიის სწავლებისას მნიშვნელოვანი რგოლია.

რუკის კითხვის მეთოდები

რუკის გაგებისა და კითხვის პროცესი საკმაოდ ხანგრძლივია. ჯერ კიდევ დაწყებით კლასებში მოსწავლეები იღებენ საწყის ცოდნას და იძენენ უნარებს ადგილზე ორიენეტირების შესახებ. ისინი ეცნობიან ადგილის გეგმას, გლობუსს, ნახევარსფეროებისა და საქართველოს რუკებს. ადგილის გეგმის შესასწავლად მოსწავლეები ეუფლებიან ფურცელზე ჰორიზონტის მხარეების გამოსახვას, ეცნობიან მარტივ ადგილის გეგმებს (მაგ; კლასის, სკოლის), თავად ცდილობენ მსგავსი გეგმების დახაზვას,რაც ხელს უწყიობს სივრცეში ორიენტაციის უნარის გამომუშავებას. ასეთი პრაქტიკული სამუშაოების უმეტესობა მასწავლებლის ხელმძღვანელობით მიმდინარეობს და ისინი რუკის გაგებას ემსახურება. რუკის პირობითი ნიშნების სწორედ

აღსაქმელად, საჭიროა რომ მათ ჰქონდეთ კონკრეტული წარმოდგენა შესაბამის რეალურ ობიექტზე. ასეთი წარმოდგენები კი მათ ექსკურსიებზე, ლაშქრობებზე, ასევე ნახატებიდან, მოდელებიდან და კინოფილმებიდან ექმნებათ. თუმცა ეს, რა თქმა, უნდა საკმარისი არ არის. აუცილებელია, რომ მოსწავლეებმა გააცნობიერონ, თუ როგორ არიან ეს ობიექტები დაკავშირებულნი მათ კარტოგრაფიულ გამოსახულებებთან. ამისათვის კი საჭიროა მოსწავლეებს ვაჩვენოთ და შევადარებინოთ რუკები და სურათები, ასევე გამოვიყენოთ შესაბამისი მხატვრული და ლიტერატურული ნაწარმოებები.

მუშაობის შედარებით აქტიური ფორმებია რუკაზე წარმოსახვითი მოგზაურობა, ტოპოგრაფიული კარნახი და სხვ. ამ გზით მოსწავლეებს ვაჩვევთ რუკაზე მუშაობას და, ამავე დროს, ვასწავლით სხვადასხვა გეოგრაფიული ობიექტის დამოუკიდებლად გამოსახვას.

დაწყებითი კლასების სახელმძღვანელოებში დიდი დრო ეთმობა პრაქტიკულ სამუშაოების ჩატარებას კლასში თუ გარემოში. კარტოგრაფიის სწავლა და სწავლება შეუძლებელია მხოლოდ მასწავლებლის სიტყვებით ან სახელმძღვანელოთი. აქ აუცილებელია მუდმივი პრაქტიკა, ჩვენება. სწავლების წარმატება და შედეგი დამოკიდებულია მეთოდურად სწორედ შერჩეულ დავალებებსა და სავარჯიშოებზე. ამასთან, სწავლება უნდა იყოს თანამიმდევრული და თანდათან უნდა გადადიოდეს მარტივიდან რთულისკენ. მაგალითად. სავარჯიშოები კომპასზე უნდა დავიწყოთ მისი ისრის საშუალებით ჰორიზონტის ძირითადი მხარეების დადგენით, შემდეგ ჩავრთოთ კომპასის სკალა, მისი გამოყენებით ვასწავლოთ ჰორიზონტის, როგორც ძირითადი, ისე შუალედური მხარეები, მოგვიანებით კი - აზიმუტი.

პრაქტიკული მუშაობისას მეტად მნიშვნელოვანია, რომ ისეთი სავარჯიშოები და დავალებები შეირჩეს, რომლებიც მოსწავლეების ცხოვრებას უკავშირდება. ასევე, დიდი ყურადღება უნდა დაეთმოს მრავალფეროვანი თვასაჩინოებების გამოყენებას და ხატვა-ხაზვას. ისინი სწავლების აქტივიზაციას უყწობენ ხელს და თავისი პედაგოგიური ეფექტით შეუცვლელია ისეთი საკითხების შესწავლისას, როგორიცაა ადგილზე, გეგმაზე, გლობუსსა და რუკაზე ორიენტირება.

მეტად მნიშვნელოვანია საკითხია რუკის გრადუსთა ბადის და მათი გეომეტრიული თავისებურებების შესწავლა, მათი საშუალებით რუკასა და გლობუსზე ორიენტირება და გეოგრაფიული ობიექტების ადგილმდებარეობის დადგენა. გამოცდილებამ აჩვენა, რომ ეს საკითხები საკმაოდ უჭირთ მოსწავლეებს: ძირითადი სირთულე იმაში მდგომარეობს, რომ მოსწავლეებს ფორმირებული აქვთ არასწორი სივრობრივი წარმოდგენები დედამიწის ფორმასა და ზომებზე, მის ზედაპირზე პარალელებისა და მერიდიანების მდებარეობის შესახებ და სხვ. სწორედ ამიტომ, ამ საკითხების შედეგიანად და წარმატებით შესასწავლად, მეტად მნიშვნელოვანია ისეთი თვალსაჩინოების გამოყენება, როგორიცაა შავი (ინდუქციური) გლობუსი. ასევე მიზანშეწონილია მთელი რიგი სავარჯიშოების შესრულება, მაგალითად, რვეულებში ნახევარსფეროების რუკის გრადუსთა ბადის დახატვა, გლობუსსა და რუკაზე მერიდიანებისა და პარალელების გადაკვეთის ადგილების მოძებნა, ერთსა და იმავე გრძედსა და განედზე მდებარე გეოგრაფიული ობიექტების დადგენა და პირიქით, სხვადასხვა ობიექტის გეოგრაფიული კოორდინატების განსაზღვრა და სხვ. აღნიშნული მასალის შესწავლა უნდა მოხდეს "გლობუსი - რუკა" თანმიმდევრობით. გრადუსთა ბადის ხაზები ჯერ განხილული უნდა იქნეს გლობუსზე, დადგინდეს მათი არსი, გეომეტრიული თავისებურებები და განისაზღვროს კოორდინატები, ხოლო შემდეგ იგივე სამუშაო უნდა შესრულდეს რუკაზე.

რუკის კითხვის უნარ-ჩვევა სწრაფად და ერთბაშად არ ყალიბდება. იგი თანდათან უნდა ჩამოყალიბდეს და სრულყოფილი გახდეს. რუკის კითხვა მოიცავს: ა)რუკის ლეგენდის გამოყენებით რუკაზე გამოსახული ცალკეული ობიექტების ან მოვლენების თავისებურებების ახსნას; ბ)ობიექტებისა და მოვლენების მდებარეობისა და მათი ურთიერთგანლაგების შესახებ სწორი სივრცობრივი წარმოდგენების მიღებას;

გ)სივრცეში მდებარე ობიექტებისა და მიმდინარე მოვლენების შეჯერებას, ამა თუ იმ ტერიტორიის, ან დამატებით, რუკაზე არ გამოსახული ობიექტისა და მოვლენის შესახებ ერთიანი წარმოდგენის შესაქმნელად; დ)შესასწავლი ობიექტების განლაგების, ურთიერთკავშირების, ურთიერთზემოქმედებისა და განვითარების კანონზომიერებების მიზეზების დადგენას.

სირთულის მიხედვით რუკის კითხვის სამი დონე გამოიყოფა: 1.რუკის ელემენატრული კითხვა - მოიცავს მოცემული ობიექტის თავისებურებების ახსნას მისი გარეგნული იერსახის მიხედვით. ობიექტის სახეწოდებისა და მისი გამოსახულების შეჯერების შედეგად მივიღებთ მტკიცებულებას: " ეს კავკასიონის მთებია"; " ეს აფრიკაა"; "ეს საქართველოს სახელმწიფო საზღვრებია". რუკის კითხვის ეს დონე თავისი დონითა და ხასიათით პრიმიტიულია და დამახასიათებელია მხოლოდ დაწყებითი კლასების მოსწავლეებისთვის. ეს დონე შეიძლება ანბანის ათვისებას შევადაროთ. თუმცა, უნდა აღინიშნოს, რომ რუკის ელემენტარული კითხვის გარეშე შეუძლებელია შედარებით რთულ დონეზე გადასვლა. ამიტომ მეტად მნიშვნელოვანია, რომ მასწავლებელმა დიდი ყურადღება დაუთმოს ამ საკითხების შესწავლას, რათა რუკის "ანბანი" მოსწავლეებმა საკმაოდ მყარად და საფუძვლიანდ აითვისონ.

რუკის რთული კითხის არსი იმაში მდგომარეობს, რომ რუკის გამოყენებით შესაძლებელია მსჯელობა რუკაზე გამოსახული ობიექტების თავისებურებების, ამ ობიექტების დედამიწის ზედაპირზე მდებარეობისა და ურთიერთგანლაგების შესახებ სწორი სივრცობრივი წარმოდგენების შექმნაში. მოსწავლეებში ამ უნარ-ჩვევის ფორმირება შეადრებით რთულია, თუმცაღა აქაც სირთულის ხასიათი მოსწავლეთა კარტოგრაფიული და გეოგრაფიული ცოდნასა და უნარ-ჩვევებზეა დამოკიდებული. მოვიყვანოთ მაგალითი: "ურალის მთები გადაჭიმულია ჩრდილოეთიდან სამხრეთისაკენ"; "აფრიკა არ არის დანაწევრებული კონტინენტი, მისი ზედაპირი ერთგვაროვანია. იგი ცხელ სარტყელში მდებარეობს"; როგორც ვხედვათ ობიექტის გეოგრაფიული თავისებურებების შესახებ მსჯელობა იმ მონაცემებთა საფუძველზე დაყრდნობით მიმდინარეობს, რომლებიც ასახულია რუკაზე (ისე, როგორც რუკის ელემენტარული კითხვის დროს), მაგრამ ობიექტების დახასიათება შედარებით სრულად ხდება.

რუკის კითხვის მესამე დონე გონებრივი შესაძლებლობების უფრო მეტ დაძაბვას მოითხოვს. ამ დროს მოსწავლე იყენებს, როგორც გეოგრაფიულ ცოდნას, ასევე სარგებლობს რუკაზე გამოსახული ფაქტებით. მათზე დაყრდნობით მას გამოაქვს დასკვნები და იძენს ახალ ცოდნას. მოვიყვანოთ მაგალითი: რომელიმე ქვეყნის დახასიათება რუკაზე მოცემული ინფორმაციის საფუძველზე. დავუშვათ, რომ ამ ქვეყნის რუკაზე აღნიშნულია ქვიშები, მლაშე ტბები, სარწყავი არხები. მოსწავლეს შეუძლია განსაზღვროს ამ ქვეყნის გეოგრაფიული მდებარეობა და მოცემული ინფორმაციის ანალიზის შედეგად დაახასიათოს ეს ქვეყანა. ის ამბობს, რომ ამ ქვეყანაში ცხელი და მშრალი კლიმატია. მართალია, ეს რუკა კლიმატის შესახებ უშუალო ცნობებს არ იძლევა, მაგრამ რუკიდან ამოკითხული მონაცემების ასოციაციის საფუძველზე მოსწავლეს სწორედ შეექმნა წარმოდგენა ამ ქვეყნის კლიმატის შესახებ. მან, ამავე დროს, გამოიყენა გეოგრაფიული ცოდნა განედური ზონალურობისა და მშრალი კლიმატიდან გამომდინარე შედეგების შესახებ. რუკის კითხვის ეს დონე განსაკუთრებით მნიშვნელოვანია საგანმანათლებლო კუთხით, რადგან აქ ორგანულად და ღრმად ერწყმის ერთმანეთს გეოგრაფიული და კარტოგრაფიული ცოდნა და უნარები. მოსწავლეები ეჩვევიან ნებისმიერი მოვლენა განიხილონ არა იზოლირებულად, არამედ გეოგრაფიული ფაქტებისა და მოვლენების ურთიერთდამოკიდებულების მიზეზ-შედეგობრივ სისტემაში.

გეოგრაფიის საწვლებისას მოსწავლეებს უნდა გავუღვიძოთ ინტერესი, რომ ხშირად გამოიყენონ რუკა მათთვის საჭირო ინფორმაციის მოსაძიებლად. ამ მიზნის მისაღწევად

პედაგოგმა მოსწავლეებს წინასწარ არ უნდა ამცნოს ის, რისი ამოკითხვაც მათ რუკიდან შეუძლიათ. მართალია, რუკის დამოუკიდებელი კითხვა შედარებით დიდი დროს მოითხოვს, მაგრამ სამაგიეროდ, ამ დროს მოსწავლეთა საქმიანობა აქტიურდება, რის შედეგადაც ისინი მასალას უფრო ღრმად და საფუძვლიანად ითვისებენ.
მასწავლებლის მიერ გეოგრაფიული ობიექტების სახელწოდებების ჩამოთვლა და მათი რუკაზე ჩვენება მოსწავლეებში მოწყენილობას, უყურადღებობას იწვევს, ხოლო დამოუკიდებელი მუშაობა - პირიქით, მათ ახალისებს, ასევე მათ პასუხისმგებლობას, ყურადღებას უვითარებს. აქედან გამომდინარე, მასწავლებლის მეთოდური ამოცანა იმაში მდგომარეობს, რომ მოსწავლეთა რუკაზე მუშაობის ფორმები და სახეები გაამრავალფეროვნოს, გააქტიუროს და, ამისთვის, სხვადსხვა თამაშები, სავარჯიშოები, კითხვები გამოიყენოს.
შედარებით რთული ამოცანაა, ვასწავლოთ მოსწავლეებს რუკის კითხვა იმ მიზნით, რომ მათ დამოუკიდებლად მოძიებული ინფორმაციის გამოყენებით ცალკეული ტერიტორიების გეოგრაფიული აღწერა შეძლონ. ამ დროს მეტად ეფექტურია მოსწავლეთათვის წინასწარ იმ პროგრამის გაცნობა, რომლის მიხედვითაც მათ უნდა წაიკითხონ რუკა. მასწავლებელი წინასწარ ადგენს იმ კითხვებს, რომელთა პასუხებიც მოსწავლეებმა რუკიდან უნდა ამოიკითხონ. ასეთი კითხვები მასწავლებელმა ხშირად უნდა შეადგინოს. მაგალითად, ზღვების შესწავლისას, შესაძლებლია, გამოყენებული იქნეს შემდეგი სახის პროგრამა- კითხვები:

1. აჩვენეთ ზღვები რუკაზე მათი სახელწოდებების დასახელებით;
2. დაადგინეთ, რომელი ოკეანეების აუზებს მიეკუთვნებიან ისინი.
3. დაადგინეთ, რომელ კონტინენტებსა და ქვეყნებს ესაზღვრებიან ისინი.
4. დაასახელეთ ამ ზღვებში მდებარე კუნძულები და ნახევარკუნძულები.
5. დაადგინეთ, რომელი მდინარეები ჩაედინებიან მათში.
6. დაადგინეთ, რომელი ზღვები იყინებიან.
7. დაადგინეთ, რომელი მნიშვნელოვანი ნავსადგურები მდებარეობენ მათ ნაპირებზე.
8. დაადგინეთ, გადის თუ არა ამ ზღვებზე სამგზავრო თუ სატვირთო გემების სანავიგაციო გზები.

როგორც ვხედავთ, ეს კითხვები რუკის კითხვის პირველ და მეორე დონეს შეესაბამებიან.
ახლა კი გავეცნოთ რუკის კითხვის მესამე დონის შესაბამის კითხვებს:

1. შესაძლებელია თუ არა მთელი წლის განმავლობაში ნავიგაცია კარის, ბარენცის, ჩრდილოეთის ზღვებში?
2. სად უფრო ხანგრძლივადაა შესაძლებელი ნავიგაცია სკანდინავიის ნახევარკუნძულის დასავლეთითმ ნორვეგიის ზღავსთან თუ თეთრ ზღავში და რატომ?

ამ კითხვებზე პასუხების გასაცემად მოსწავლეებმა უნდა გაითვალისწინონ ზღვებში გაყინვის ხაზის მდებარეობა და გამოიტანონ დასკვნა, რომ ნავიგაცია კარის ზღვაში შესაძლებელია მხოლოდ ზაფხულში, ხოლო სკანდინავიის დასავლეთით კი მთელი წელი, რადგან იქ ჩრდილო-ატლანტიკური თბილი დინება გადის.
ასეთი დავალებების შესრულება ხელს უწყობს გეოგრაფიული და კარტოგრაფიული ცოდნის გაღრმავებას და გაფართოებას.
მოსწავლეებში გასაკუთრებულ სირთულეს იწვევს თემატური რუკის კითხვა. ასეთი რუკები ფართოდ გამოიყენება შედრებით მაღალ კლასებში და ხშირად ისინი სხვადასხვა საჭირო ინფორმაციის მოძიების ძირითად საშუალებას წარმოადგენენ. თემატური რუკის სირთულე იმაში მდგომარეობს, რომ ჯერ ერთი ისინი გასაკუთრებული შინაარსისაა და მეორეც, მოსწავლეებს არ შეუძლიათ მათი შედარება. ამ რუკების

შინაარსი ხშირად აბსტრაქტული ხასიათისაა, რადგან მათზე გამოსახულ მოვლენებს სინამდვილეში არა აქვთ ხილული კონტურები. ასეთია, მაგალითად კლიმატური, სხვადასხვა ეკონომიკური მაჩვენებლების და სხვ. რუკები. ამ რუკებზე გამოყენებულია გამოსახვის გასაკუთრებული ხერხები (მაგალითად წერტილები, პუნსონები, კარტოგრამები და კარტოდიაგრამები და ა.შ.), რომლებიც მოსწავლეებს არ ხვდებათ ზოგადგეოგრაფიულ რუკებზე. ასეთი ტიპის რუკებზე, საწყის ეტაპზე, მოსწავლეებს საკმაოდ უჭირთ ობიექტის გეოგრაფიული მდებარეობის დადგენა, რადგან მათთვის ცნობილი ორიენტირების მახასიათებელთა ქსელი (მაგალითად, რელიეფი) ასეთ რუკებზე არ ხვდებათ. ამ შემთხვევაში უპრიანია მათ ერთროულოდ გამოიყენონ ფიზიკური და თემტური რუკები, რომ მიეჩვიონ ამ უკანასკნელზე იგივე ობიეტქების მოძებნას და მათი მდებარეობის დადგენას. მოსწავლეებმა ასეთი რუკების ურთიერთშეჯერების საფუძველზე უნდა შესძლონ მსჯელობა და დასკვნების გამოტანა. ამ მეთოდს, პირობითად, შეიძლება "რუკების ერთმანეთზე დადების " მეთოდი ვუწუდოთ და მისი არსი იმაში მდგომარეობს, რომ ორი ან მეტი სხვადსხვა შინაარსის რუკების მონაცემთა შედარებითა და შეჯერებით ხდება მსჯელობა და დასკვნების გამოტანა შესასწავლი ტეირტორიიის თავისებურებებისა და მიზეზ-შედეგობრივი კავშირების შესახებ.

ახალი გეოგრაფიული ცოდნის მიღება, ასევე შესაძლებელია შინაარსის მიხედვით ერთნაირი, მაგრამ მასშტაბით განსხვავებული რუკების შედარებით.

ამრიგად, შეიძლება დავასკვნათ, რომ რუკა გეოგრაფიის (და არა მარტო მისი) სწავლების მნიშვნელოვანი საშუალებაა, ხოლო რუკის კითხვა ამ სწავლების პროცესში მეტად ეფექტური მეთოდია, რადგან იგი ცოდნის მიღებასთან ერთად ბევრ უნარ-ჩვევას უყალიბებს და უვითარებს მოსწავლეებს.

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ОСОБЛИВОСТІ НАВЧАЛЬНОГО ПРОЦЕСУ З ОСНОВ МЕНЕДЖМЕНТУ ТА МАРКЕТИНГУ У ФАРМАЦІЇ ДЛЯ МОЛОДШИХ БАКАЛАВРІВ СПЕЦІАЛЬНОСТІ 226 «ФАРМАЦІЯ, ПРОМИСЛОВА ФАРМАЦІЯ» ФАХОВОГО КОЛЕДЖУ БДМУ

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Анотація. Сучасний розвиток фармації потребує від фахівців галузі досить високого рівня знань і творчої ініціативи, володіння нормами фармацевтичного законодавства, вивчення фундаментальних засад менеджменту і основних напрямків маркетингової діяльності на фармацевтичного підприємства, опанування навичок практичної роботи у сфері менеджменту та маркетингу у фармації і вивчення теоретичних основ менеджменту та маркетингу у фармації.

Ключові слова: навчальний план, фармацевтична галузь, фармація, аптека, дисципліна, менеджмент, маркетинг.

Фармацевтичний ринок характеризується підвищеним рівнем конкуренції, тому без знань менеджменту і маркетингу утриматися на ньому практично неможливо. Незважаючи на універсальність фундаментальних положень менеджменту для окремих галузей економіки, існує специфіка їх застосування, що пояснюється необхідність адаптації загальної теорії до фармацевтичної практики.

Ринкові економічні відносини вимагають від керівників фармацевтичних підприємств володіння сучасними підходами до роботи, що й обумовлює доцільність якісної підготовки фахівців фармації з маркетингу. Зараз головним напрямком діяльності підприємства є орієнтація його на запити споживача. Використання маркетингу дозволяє координувати інтереси споживачів з одного боку і інтереси підприємства - з іншого.

Менеджмент - це поняття, яке використовують переважно для характеристики процесів управління господарськими організаціями (підприємствами).

Менеджмент - це надзвичайно широке та багатомірне поняття. Для того, аби краще усвідомити його сутність, на нього слід подивитись з різних боків. Менеджмент можна характеризувати як науку, яка спирається на об'єктивні закони та закономірності, чіткі правила й технології. З іншого боку, менеджмент має справу з людськими спільнотами, які суттєво відрізняються одна від одної звичками, традиціями, життєвими цінностями, інститутами, рівнем освіти, суспільною мораллю тощо. За допомогою менеджменту людське суспільство з хаотичного перетворюється на високоорганізоване й ефективне. Сучасна ситуація в теорії та практиці світового менеджменту характеризується співіснуванням і взаємодією трьох основних підходів: системного, процесного і ситуаційного, при явному домінуванні останнього [1].

Сучасний менеджмент в значній мірі відрізняється від традиційного менеджменту. Так, традиційний менеджмент виходить з уявлення процесу управління у вигляді виконання менеджменту ряду функцій, що включають планування, організацію, координацію, активізацію та контроль.

Маркетинг - це комплексна система організації виробництва і збуту продукції на рівні підприємства, яка орієнтована на максимальне задоволення попиту конкретних споживачів і отримання на цій основі високого і тривалого прибутку [2].

Широке використання маркетингу пояснюється тим, що за допомогою маркетингу ринкові проблеми можна вирішити найбільш раціональним шляхом, максимально використовуючи свої ринкові можливості.

Маркетинг ввібрав в себе досягнення світової господарської практики, а також досягнення економіки і управлінських наук, інформатики, психології та ін..

Головне в маркетингу - його цільова орієнтація і комплексність, тобто злиття в єдиний "технологічний процес" всіх окремих складових маркетингової діяльності. Мета маркетингової діяльності підприємства - забезпечення стійкої рентабельності в заданому відрізку часу (5-7 років) [3].

Фармацевтична галузь посідає значне місце у системі охорони здоров’я, так і економіці країни в цілому. Фармація України має лідируючі позиції, як в науковому, так і в практичному плані. У XXI столітті суттєво змінилися пріоритети розвитку охорони здоров’я в аспекті самодостатності фармації, необхідності інтегрованого та комплексного вирішення проблем організації медичної та фармацевтичної допомоги. Важлива соціально-суспільна функція фармацевтичного забезпечення населення та лікувально-профілактичних закладів покладена на аптечну мережу різних форм власності та господарювання.

Найбільш часто у навчальних планах зустрічається дисципліна «Основи менеджменту та маркетингу у фармації», яка як правило, викладається на 2 курсі для студентів фахового коледжу БДМУ спеціальності 226 «Фармація, промислова фармація», освітній ступінь «молодший бакалавр» з терміном навчання 2 роки. Відповідно до змісту навчальної програми, вказана дисципліна викладається з метою підготовки майбутніх фахівців до відповідальних керівних посад в аптечних закладах. Під час вивчення дисципліни особлива роль відводиться розвитку самостійного мислення і практичних навичок усіх структурних елементів знань. Для забезпечення студентів методичною літературою розроблено методичні вказівки для підготовки до практичних занять, які представлені в системі дистанційного навчання університету [5] та курс лекцій представлений у вигляді мультимедійних презентацій.

Вибіркова дисципліна «Основи менеджменту та маркетингу у фармації» є одна із профілюючих дисциплін у підготовці молодших спеціалістів першого ступеня вищої освіти. Програма навчальної дисципліни включає розділи: що забезпечує високий рівень знань і творчої ініціативи, оволодіння закономірностей, принципів формування, функціонування та розвитку системи управління фармацевтичною організацією, а також маркетинговою філософією та методи господарювання в умовах конкуренції. Викладання дисципліни передбачає 16 годин лекцій, 16 годин практичних занять, 13 годин самостійної роботи с та закінчується складання диференційованого заліку з «Основи менеджменту та маркетингу у фармації».

Метою «Основи менеджменту та маркетингу у фармації» як навчальної дисципліни згідно з освітньо-кваліфікаційною характеристикою є набуття студентами загально-професійних компетенцій, що передбачає оволодіння базовими знаннями відповідно до практичної роботи аптечних підприємств різних видів та форм власності, для формування оптимального асортименту, для визначення рентабельності лікарських засобів та управління персоналом, якими можуть займатися фармацевти за умови реформування системи охорони здоров`я та наближення її до європейських стандартів.

Висновок. Отже, з урахуванням змін у суспільстві ролі та функцій аптечного закладу та провізора, збільшення частки приватних аптек в Україні, а також з огляду на закономірності взаємодії бізнесу та суспільства, доцільним є здобуття фахівцями практичної фармації знань з теорії та практики, яка може вивчатися на рівні освітнього ступеню молодший бакалавр у рамках дисципліни «Основи менеджменту та маркетингу у фармації».

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ОСОБЛИВОСТІ ВИКЛАДАННЯ ВИБІРКОВОЇ ДИСЦИПЛІНИ «РОЗРОБКИ ЛІКАРСЬКИХ ЗАСОБІВ» ДЛЯ СТУДЕНТІВ ФАРМАЦЕВТИЧНОГО ФАКУЛЬТЕТУ

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Анотація: у статті висвітлено підхід до викладання дисципліни «Розробка лікарських засобів» для студентів IV курсу фармацевтичного факультету спеціальності 226 «Фармація, промислова фармація,» з метою якості підготовки фармацевтичних фахівців.

Ключові слова: розробка лікарських засобів, дисципліна, фармація, студент, навчальний план

Якісна підготовка фармацевтичних працівників є однією з важливих складових реформи та розбудови вітчизняної фармації. На сьогодні підготовка фахівців для галузі охорони здоров'я в Україні здійснюється у вищих медичних (фармацевтичних) навчальних закладах) I-IV рівнів акредитації МОЗ України [1]. Основним завданням сучасної системи вищої освіти є вдосконалення форм і методів навчання, наближення його організації до сучасних вимог, що забезпечить кожному студенту якісні знання та можливість бути конкурентоспроможним на ринку праці. У процесі вивчення розробки лікарських засобів важливими є нові методи і технології викладання, які підвищують рівень засвоєння інформації студентами [2].

Клінічне випробування (дослідження) лікарських засобів – науково-дослідницька робота, метою якої є будь-яке дослідження за участю людини як суб'єкта дослідження, призначене для виявлення або підтвердження клінічних та фармакологічних ефектів одного або декількох досліджуваних ЛЗ, та виявлення побічних реакцій на один або декілька досліджуваних ЛЗ, та для вивчення усмоктування, розподілу, метаболізму, та виведення одного або кількох лікарських засобів з метою підтвердження їх безпечності або ефективності.

Метою роботи стало вивчення особливостей викладання навчальної дисципліни «Розробка лікарських засобів» для студентів IV курсу фармацевтичного факультету. Дисципліна «Розробка лікарських засобів» є предметом вивчення доклінічних і клінічних випробування лікарських засобів з метою виявлення, дослідження та підтвердження їх ефективності, безпеки та якості лікарських засобів.

Згідно до навчального плану дипломної підготовки магістрів другого (магістерського) рівня за спеціальністю 226 «Фармація, промислова фармація» вивчення навчальної дисципліни «Розробка лікарських засобів» здійснюється студентами на IV курсі. Дисципліна базується на попередньо вивчених студентами таких предметів, як біохімія, фармакологія, неорганічна, органічна, фармацевтична хімії та технологія ліків. Програма навчальної дисципліни включає розділи: «Доклінічні випробування нових лікарських засобів» та «Клінічні випробування нових лікарських препаратів» та закладає фундамент для подальшого засвоєння студентами знань та вмінь із профільних теоретичних і практичних дисциплін (належні практики у фармації, стандартизація лікарських засобів, управління якістю, технологія ліків, тощо.)

Розробка лікарських засобів згідно з робочою програмою передбачає лекційні та практичні занняття, а також індивідуальну самостійну роботу студентів. Для забезпечення студентів методичною літературою розроблено методичні вказівки для підготовки до практичних занять, які представлені в системі дистанційного навчання університету [3] та курс лекцій представлений у вигляді мультимедійних презентацій.

Завданням для вивчення дисципліни «Розробка лікарських засобів» є засвоєння основних питань загальної теорії адаптованої до фармацевтичної практики, які розглядаються при вивченні дисципліни. Забезпечити теоретичну базу для оволодіння та поглиблення знань в галузі впровадження в життя нових лікарських засобів, клінічного вивчення лікарських засобів, організацією контролю за безпечністю при їх застосуванні в Україні.

Робочою програмою з дисципліни передбачено індивідуальну самостійну роботу, що сприяє підготовці до заліку. Оцінюється самостійна робота студента під час поточного контролю теми на відповідному практичному занятті. Оцінювання тем, які виносяться на самостійне опрацювання і не входять до тем аудиторних навчальних занять, контролюються під час проведення заліку.

Головне завдання самостійної роботи студентів – це опанування актуальних наукових знань з розробки лікарських засобів, що не увійшли в перелік питань лекцій та практичних занять, шляхом особистого пошуку інформації, формування активного інтересу до творчого підходу у навчальній роботі. Результати навчання, формуванню яких сприяє дисципліна – це здатність знати принципи роботи клінічної лабораторії і принципи реєстрації даних про побічні реакції та відсутності ефективності лікарського засобу. Також, на основі отриманих знань вміти оцінювати токсичність та ефективність лікарських засобів, знати класи токсичності речовин в залежності від шляху введення. Проводити розрахунок терапевтичних доз, визначати широту терапевтичної дії лікарського засобу. Користуватися одержаними знаннями для розуміння характеристики побічної токсичної дії лікарських засобів, приведеної в Інструкції для медичного застосування.

Отже, вивчення розробки лікарських засобів займає важливе місце у підготовці майбутніх магістрів фармації.

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Enhancing English Language Acquisition for Youth: Effective Strategies in Second Language Education

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Abstract:
This comprehensive article, authored by a master's degree English teacher with extensive experience in teaching young learners for eight years, delves into the multifaceted domain of teaching English as a second language (ESL) to the youth demographic. Merging scholarly insights with practical expertise, this article meticulously examines a range of pedagogical methods that have proven to be efficacious in facilitating ESL acquisition. These methods include creating an immersive learning environment, implementing Communicative Language Teaching (CLT), integrating technology and multimedia, nurturing cultural sensitivity, personalizing learning experiences, fostering critical thinking, and deploying continuous assessment strategies. The synthesis of these approaches equips educators with a comprehensive tool kit to enhance the ESL learning journey for youth.

Introduction:
In an era defined by globalization and cross-cultural interactions, proficiency in English as a second language (ESL) has emerged as a pivotal skill for the youth. Drawing on a wealth of experience spanning eight years of dedicated instruction to young learners, this article embarks on a comprehensive exploration of pedagogical methodologies tailored to the developmental nuances of the youth demographic. These strategies are rooted in established educational theories while embracing contemporary advancements in language instruction. By adeptly incorporating techniques that cultivate an immersive classroom ambiance, foster communicative fluency, harness the potential of technology, promote cultural inclusivity, tailor instruction to individual needs, stimulate critical cognitive faculties, and integrate ongoing assessment, educators can play a pivotal role in shaping linguistically adept and culturally aware global citizens.

Effective Strategies for Teaching English as a Second Language to Youth:

1. Creating an Engaging Learning Environment:
A crucial foundation for successful language acquisition is the creation of an engaging and inclusive learning environment. Young learners are more likely to thrive when they feel comfortable, valued, and motivated. To achieve this, teachers must foster a sense of community, encourage open communication, and establish clear expectations for behavior and participation. Incorporating interactive activities, group discussions, and collaborative projects not only enhances language skills but also cultivates social and cognitive development.
Freeman & Freeman (2014) emphasize the power of an inclusive and supportive classroom environment. They note that such an environment "fosters linguistic autonomy by encouraging learners to take linguistic risks" (p. 142). This immersive atmosphere nurtures linguistic confidence, facilitating enhanced language acquisition. By cultivating a space where learners feel

safe to experiment with language, educators create an atmosphere conducive to language exploration and growth.

2. Utilizing Communicative Language Teaching (CLT):

Language Teaching (CLT)

Communicative Language Teaching (CLT) is a widely recognized and effective approach in second language education. This method focuses on developing students' ability to communicate meaning effectively, rather than solely on memorizing grammar rules and vocabulary. Through real-life scenarios, role-playing, and problem-solving activities, young learners are encouraged to use language in authentic contexts, enhancing their fluency and confidence.

Richards & Rodgers (2001)champion Communicative Language Teaching as an approach that promotes language learning through interaction and communication (p. 3). Rooted in authentic language use, CLT engages learners in meaningful language tasks that mirror real-life language contexts which prioritizes the development of communication skills over rote memorization of grammar rules. They assert, "Language is best learned when it is used for meaningful communication" (p. 4). Through interactive activities, role-playing, and real-world scenarios, learners acquire language that is contextual and practical.

3. Integrating Technology and Multimedia:

Incorporating technology and multimedia resources into language instruction can greatly engage and motivate young learners. Interactive language learning apps, educational websites, and multimedia materials such as videos, podcasts, and online games provide a dynamic and interactive platform for language practice. These tools offer diverse learning opportunities, catering to different learning styles and preferences

The integration of technology is underscored by Levy & Stockwell (2006), highlight the transformative role of technology in language education. Digital tools provide interactive and engaging platforms for language practice, catering to the tech-savvy generation also assert that "technology-rich environments engage digital-native learners effectively" (p. 10).The incorporation of technology enriches language learning by enhancing engagement and catering to diverse learning preferences. Interactive language learning applications, online platforms, and multimedia resources engage learners through diverse modes of interaction, catering to their technological inclinations.

4. Fostering Cultural Sensitivity:

Language is intricately linked to culture, and teaching English as a second language should also involve fostering cultural sensitivity and global awareness. Integrating lessons on different cultures, traditions, and perspectives not only enriches students' understanding but also promotes empathy and open-mindedness. Cultural insights provide a broader context for language use and enhance students' ability to communicate effectively in diverse settings.

Kramsch's work (1993) accentuates the symbiotic relationship between language and culture ,noting that culture shapes language use and vice versa . As Kramsch notes, "Language is an embodiment of culture; understanding one necessitates understanding the other" (p. 31). Incorporating cultural elements into language instruction helps learners navigate language in diverse cultural contexts, enhancing their cross-cultural communicative competence. Integrating cultural insights into language lessons promotes both linguistic competence and cultural understanding.

5. Personalizing Learning:

Recognizing that every student has unique strengths, challenges, and learning styles is essential for effective language instruction. Personalized learning and differentiation strategies allow teachers to tailor their lessons to meet individual needs. Providing a variety of learning materials, offering choices in assignments, and adapting teaching methods to suit different abilities can lead to more effective language acquisition outcomes.

Tomlinson's differentiation approach (2001) recognizes the unique learning profiles of each student. This principle advocates for recognizing and accommodating learners' diverse strengths and needs, promoting holistic growth. Tomlinson asserts, "Effective teaching respects learners' diverse strengths and needs, promoting holistic growth" (p. 15). By catering to individual learning styles, preferences, and paces, educators create a tailored and effective learning experience.

Personalized learning experiences cater to individual learners, enabling them to progress at their own pace and capitalize on their unique learning preferences.

6. Emphasizing Critical Thinking:

Language learning is not only about memorizing vocabulary and grammar; it also involves developing critical thinking and problem-solving skills. Engaging young learners in activities that require analysis, interpretation, and creative thinking enhances their cognitive abilities while also reinforcing language skills. Debates, discussions on current events, and project-based learning tasks stimulate intellectual growth alongside language development.

Paul's emphasis on critical thinking (1993) resonates deeply with language education. Paul asserts, "Mastery of language is magnified when coupled with proficiency in critical thinking" (p. 7). Integrating critical thinking activities within language instruction not only enhances linguistic skills but also nurtures cognitive flexibility.Incorporating activities that stimulate critical thinking within language instruction fosters higher-order cognitive skills alongside language development.

7. Continuous Assessment and Constructive Feedback:

Regular assessment is crucial for tracking progress and identifying areas that need improvement. However, assessment should not be limited to traditional tests; incorporating varied assessment methods such as presentations, group projects, and self-assessment encourages active learning and self-reflection. Constructive feedback helps students understand their strengths and areas for growth, motivating them to continue their language learning journey

The formative role of assessment is highlighted by Black & Wiliam (1998),is an integral part of the learning process, providing insights into learner progress and shaping instructional strategies (p. 139). who stress that ongoing evaluation "fuels learning progression through timely feedback" (p. 142). Implementing varied assessment methods and providing constructive feedback fosters ongoing improvement and reflective learning.Incorporating a variety of assessment methods, such as formative assessments and peer evaluations, ensures a comprehensive view of students' language development.

Conclusion:

Teaching English as a second language to youth requires a holistic and dynamic approach that considers the unique characteristics of young learners. By creating engaging environments, utilizing effective teaching methods, embracing technology, promoting cultural awareness, and emphasizing critical thinking, educators can empower young learners to not only acquire English language skills but also develop into globally aware and confident communicators. As an English teacher with eight years of experience, I firmly believe that the future of language education lies in innovative and student-centered approaches that nurture both linguistic and personal growth.

By weaving together these multifaceted strategies, educators can craft a dynamic ESL learning experience that equips the youth with not only linguistic proficiency but also the cultural awareness and critical acumen to excel in an interconnected global society.

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Exploring the Educational Journey: International Students from Kazakhstan Pursuing ESL in the United States

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Abstract: In an increasingly interconnected world, the pursuit of quality education knows no boundaries. The surge of overseas students seeking English as a Second Language (ESL) training in the United States is one of the most exciting phenomena in global education. Kazakhstani students have made a huge impact among these students. The paper dives into the difficulties, obstacles, and advantages that Kazakhstani students face when beginning their ESL language training journey in the United States.

Keywords — ESL, multilingual education, international collaboration, culture, learning experience.

Introduction

Cultural and Linguistic Diversity

Kazakhstan, a country at the crossroads of Europe and Asia, has a rich cultural mosaic made from the threads of diverse races, languages, and traditions. Kazakhstan has a distinct language situation with a multicultural population that has persisted for a long time. Kazakhstan will have a population of 19,606,633 people in 2023. Kazakhs make up 63.1% of the population, Russians 23.7%, Ukrainians 2.1%, Uzbeks 2.8%, Belarusians, Uighurs 1.4%, Germans (1.1%), Azerbaijanis, Lithuanians, Poles, Ukrainians, Koreans, Chechens, and Meskhetian Turks. As a result, language education has always been a pressing issue, and it is now becoming a top priority for educational institutions. It is possible to develop a discussion between different cultures in this manner, which will lead to tolerance and intercultural communication. Kazakhstan's diversified and multinational population shapes the educational environment. This variety poses both a challenge and an opportunity for Kazakhstani students seeking to improve their English language skills. ESL programs in the United States provide an immersive setting that encourages students to interact with classmates from all over the world, facilitating international exchanges and giving a well-rounded learning experience.

As a result, Kazakhstan's educational system has consistently developed. From the perspective of the education section, the fundamental purpose of reforming education is to raise the competency of its people and the export potential (Bayniyeva et al., 2013). As a result, the Kazakhstani government aims to progressively transition to 12-year education in schools utilizing Latin drawings beginning in 2023.

The development of a unified multilingual education system demands a variety of scientific and methodological studies that take into account worldwide experience. Unfortunately, no ideal trilingual model exists. Linguistic education, which was provided during the Soviet era, is not recognized, and is even rejected, because national languages were ignored. Russian was the prevalent language. Furthermore, according to Bayniyeva et al. (2013), none of these models can be applied in multinational regions without first being tailored to local characteristics. The contact's language and culture will be different. Today, the most appropriate and significant language combination for Kazakhstan is Kazakh, Russian, and English. This sort of trilingualism is driven by economic and sociopolitical necessity. The establishment of such a trilingualism necessitates significant training in terms of trained teaching staff, educational materials, and the availability of technology training tools.

If we want to contribute to the development of our country, we must speak these three languages and totally support people who know additional languages, because there is always and everywhere a green road for someone who knows, who can speak numerous languages.The mission of the state language is to unite Kazakhstani society, while Russian serves as an intercultural communication language and English serves to enter the global economy and society (Kadirova, 2021).

The majority of people in Kazakhstan can be classified into two groups based on the language they converse in: Kazakh and Russian speakers. As previously stated, Kazakh is the state language, although Russian is an official language. As a result, education is provided in both languages, and we have mixed Kazakh-Russian schools. The number of schools offering Kazakh language teaching as a principal language has expanded in recent decades, whereas the number of schools offering Russian language instruction has declined significantly (see table 1).

Year	Russian	Kazakh	Mixed
1999-2000	2514	3474	2107
2005-2006	2100	3723	2125
2013-2014	1395	3817	2156

Source: National Statistical Agency of Kazakhstan

According to Aldashev and Danzer (2015), schools with Russian instruction outperform schools with Kazakh instruction in terms of educational quality. Silova (2002) explains this by citing a wide range of subjects as well as the availability of textbooks in Russian. Furthermore, Fierman (2006) observes that, despite the fact that lectures are delivered in Kazakh, many textbooks, particularly on technical subjects, are written in Russian. The issue of textbooks and teaching materials was critical. Despite the fact that Kazakh classes were smaller, schools in the country lacked resources and skilled teachers. There were no notable variations in this number until 2010, but after that, the scarcity of necessary books grew even more apparent. The only change in Kazakh schools at the time was oral instruction, but resources still needed to be modernized. Furthermore, Kazakh schools required a big number of highly qualified teachers in 2010. A considerable number of teachers who could teach in Kazakh schools were needed. As a result, when the Kazakh educational system developed, the standards for teacher education were dropped (Silova, 2002).

Because of their varied mentalities, language structures, and histories, we expect that learning English as a foreign language for these two groups will differ as well. If we delve deeper into Kazakhstan's history, particularly the teaching and learning of English as a foreign language, we may identify the source of all these distinctions.

The root could be located a long distance away. It should be mentioned that Kazakhstan was a part of the Russian Empire for 260 years, or a quarter of a century. What language was English taught to Kazakh schoolchildren during the Soviet Union? It is written in Russian. The essence of the distinction between these two groups is that for many years in Kazakhstan, English was taught in Russian rather than Kazakh. English was not taught in any Kazakh school, whether in the countryside or in the city. The student's first language was Russian, and he began learning English in Russian. Teaching a foreign language in one's native language, in this case Kazakh, was an unusual occurrence.

In our country, for example, there was just one English textbook in Kazakh (eng. Kaliev, V. S. Maltsev, Z. N. Ochakovskaya, Mektep Publishing House, 1981). The same phenomenon happened not just in schools, but also in colleges and universities. However, the situation began to change in the 1980s and 1990s of the twentieth century. Kazakh schools began to open in significant numbers, and the number of schools in the Kazakh language rose, particularly in rural areas and metropolitan towns. Due to a rise in the number of pupils enrolled in Kazakh schools, English is now taught in Kazakh rather than Russian.

Today, pupils in Kazakhstan's education system begin learning English in primary school and continue to study it at universities. To provide graduates and undergraduate students with the opportunity to study abroad, expand their knowledge, and gain experience, the Government of Kazakhstan is working to establish close links with English-speaking nations and offers a variety of exchange programs for its residents. According to Frank et al. (2009), Kazakhstan's economic condition has improved, and as a result, instructors from all over the world have come to teach in the country. Furthermore, Kazakhstan is in need of employees who know and can speak English in the workplace and in numerous parts of work (Nurshatayeva, 2011, 2017).

The Quest for Academic Excellence

The United States is known for its world-class education system, which includes ESL programs. Because of the academic excellence, cutting-edge teaching approaches, and substantial resources available at American institutions, international students, including those from Kazakhstan, frequently pick the United States as their destination for ESL training. According to the Republic of Kazakhstan's Ministry of Education, there are six reasons for this: obtaining a high-quality education; the high value of a European or American diploma; the availability of additional career opportunities; the possibility of learning one or more foreign languages; the possibility of intercultural communication; and the opportunity to travel and explore the world. Around 2,000 Kazakh students study at American universities each year, out of the 25,000 who travel overseas to study each year (excluding students on the Bolashak program). According to the Institute of International Education, the number of Kazakh students enrolled in undergraduate and graduate programs in US universities increased by 2.5% between the 2010/11 and 2011/12 academic years, totaling 1890 and 1938 students in the 2010/11 and 2011/12 academic years, respectively.

Kazakhstani students have compelling reasons to pursue ESL training in the United States. According to a study by Aryn Karpinski and Gillian Hayes ("Foreign and Domestic Language Anxiety in Undergraduate and Graduate Students"), international students' desire to integrate into the global academic and professional landscape is a key driver. These programs are intended to promote not only English language abilities but also critical thinking, communication, and teamwork - all of which are necessary in today's international employment environment.

Navigating Challenges

The journey of Kazakhstani students pursuing ESL instruction in the United States is not without difficulties. It can be difficult to adjust to a new culture, climate, and school system In their report "Obstacles to ESL Students’ Academic Performance," Maria Hajimichael and Despina Stylianou highlight linguistic challenges as a primary concern. Additionally, cultural adaptation difficulties and homesickness are common emotional struggles. However, with the right support mechanisms in place, such as academic advisers, cultural exchange organizations, and counseling services, these obstacles can be overcome.

High prices. A week of training costs $400 USD depending on intensity, and lodging is 290-500 USD per week. Scams are frequent in this country due to the high cost. Always examine the school's accreditation and evaluations. Especially if the cost of schooling is lower than the market rate.
Difficulties obtaining a visa. It is no longer feasible to apply for a US visa in Russia as of 2021. Russians are required to apply for visas at American consulates and embassies around the world. Large queues accompany the entire operation. Adult students must additionally show proof that they do not intend to immigrate to the United States (for example, a permanent employment or ownership).
Long and costly air travel. A flight from Astana to New York or any other US city costs around $1000-1500 USD on average. It takes more than fifteen hours, not including transfers.
To enroll in language courses in the USA, a student needs to prepare a package of documents, which includes: application form, copy of valid passport pages, receipts of payment for tuition (in full) and the registration fee of the school.
In addition, the student should take care of obtaining a visa in advance to study at language courses in America. This process can take from several weeks to 2-3 months.
The US Migration Service is very stringent on language students, as many foreigners exploit their studies as a way to gain entry into the country. As a result, document preparation should be approached with caution. One of the most common grounds for refusing is a lack of ties to one's motherland. That is, proof that you intend to return to your home country after studying in the United States. The document requirements have recently been gradually relaxed, but we nevertheless urge that you thoroughly prepare for an interview with the consul. Property certificates, familial ties at home, and/or steady work will be beneficial.

Cultural Exchange and Personal Growth

One of the most remarkable aspects of the experience for Kazakhstani students in the U.S. is the opportunity for cultural exchange and personal growth. Beyond language skills, these students gain a deep appreciation for diverse perspectives, lifestyles, and worldviews. This exposure not only broadens their horizons but also fosters a sense of empathy and open-mindedness – qualities that are invaluable in an interconnected world. A report by the Migration Policy Institute ("The Integration Outcomes of U.S. Refugees: Successes and Challenges") underscores the transformative impact of ESL training on students' personal growth and future opportunities.
Notable Instances of Cultural Exchange:

1. Fulbright Program: The Fulbright Program, a flagship international educational exchange program sponsored by the U.S. government, has facilitated cultural and educational exchanges between the United States and Kazakhstan. Through this program, scholars, researchers, and students from both countries have had the opportunity to engage in collaborative projects and academic pursuits.
2. Educational Partnerships: Many universities in Kazakhstan and the United States have established partnerships that promote student and faculty exchanges. These partnerships often result in cultural exchanges where students and scholars from Kazakhstan study, research, and share their cultural perspectives in U.S. institutions.
3. Cultural Events and Exhibitions: Various cultural events, art exhibitions, musical performances, and film festivals have been organized by both nations to showcase their artistic and cultural heritage. These events provide platforms for artists and performers to engage with audiences from both countries.
4. Business and Economic Exchanges: Economic partnerships also contribute to cultural exchange. Business delegations, trade missions, and investment collaborations lead to

cultural interactions as professionals from both countries engage in discussions and negotiations.

5. The U.S. Embassy in Kazakhstan: The U.S. Embassy in Kazakhstan plays a pivotal role in promoting cultural exchange between the two nations. They often organize events, workshops, and cultural programs.
6. American Corners: These are spaces established by the U.S. Embassy and American Consulates in Kazakhstan that provide resources and information about the United States. They often host events related to education, culture, and society.
7. Bilateral Chambers of Commerce: Organizations like the American Chamber of Commerce in Kazakhstan and similar Kazakhstani counterparts contribute to both economic and cultural exchange between the nations.
8. Kazakhstan Fulbright Alumni Association: Alumni of the Fulbright Program often form associations that continue to foster cultural and academic ties between the United States and Kazakhstan.

Language training programs:

Advantages of studying in the USA

Availability. Most courses do not have a minimum language requirement. It affects only the curriculum and is determined on the first day of training. Schools are quite flexible in their level distribution. If the course is too easy for you, you can move to a higher level group.
American English. English has many accents and dialects. In the UK, Singapore and Australia, the pronunciations differ so much that they have official names. But the most common is the American version. We hear it in TV shows and it is spoken in a business environment. In American language schools, you can practice it directly with native speakers.
Campuses at universities. Some language courses provide programs with housing on the Yale and other famous university campuses. These are typically entire cities with sprawling libraries, parks, entertainment venues, and sports facilities.
Pathway Programs. These are preparatory programs for potential university students with a B2 or higher level of language ability. The fundamental benefit of these courses is that following completion, students are automatically enrolled in the first or second year of university.
Country with a diverse population. Migrants from all over the world call the United States home. Other language course students, tourists, and natives will teach you more about the culture, cuisine, and lifestyle of many nations.
Work both before and after school. With a specific permit, you can lawfully work up to 20 hours per week on an F1 visa. Employment on campus is a required condition. Students in university programs are more likely to do this than students in language schools.
A wide range of programs are available. There are numerous specific courses (for example, Club 40+) as well as normal ones (General, Exam, Business) of varying severity.

Types of programs

English as a Second Language (ESL) - "English as a foreign language" is the most prevalent program category. General English or Academic English can be implemented. All other sorts of courses are subcategories, however if you simply see ESL in the title, this course is not the most intense, and is suited for beginners or intermediates.

IEPs (Intensive English Programs) - "Intensive English programs." Such courses are distinguished by a greater number of weekly hours. This category frequently comprises programs for test preparation (test Preparation Courses), professional (English for Work, Business English, English for Teaching), and intermediate (Bridge program). The latter help, but do not ensure, continued entrance to a college or university. Typically, the intensity of such courses is 20-30 hours, although there are highly intensive ones that can last up to 50 hours.

American Language and Culture Programs (ALCPs) - "American Language and Culture Programs" are designed for students with advanced English (minimum B2). They are aimed at adapting future students to US culture, life on campus and developing individual skills (reading, writing, grammar). Universities where the programs are held count credits to graduates. Upon graduation, you can enter these universities without TOEFL and IELTS certificates. Most often, ALCPs courses last from 4 weeks with an intensity of 20-30 hours per week. Their main difference is that the curriculum focuses on the culture and history of the United States. Some schools can accommodate you on campus and teach in university classrooms.

English plus hobby combines learning English with learning other skills. For example, drawing, music, sports.

Vacation English is somewhat reminiscent of the previous program, but here you combine your studies not with hobbies, but with relaxation / vacation. These are more relaxed programs with low intensity. In the morning or evening, you study the language for several hours, and then explore the city, or relax on the beach. This course has other names. For example, Afternoon, English in the City.

One-to-One lessons are individual courses with a teacher. They have a high cost, but this is offset by the quality and effectiveness of training. Students choose the intensity themselves, and the curriculum is adapted to your language level and learning goal.

Young adult 13-17 / adult 30+, 40+, 50+ are designed for groups of certain ages. They are distinguished by greater student involvement. Teachers try to maintain a dialogue with students, teaching first of all conversational skills.

Summer Language Programs - short-term summer courses. They can be of different intensity and for different age groups. They are often combined with a touristic program. In addition to language schools, many prestigious universities offer summer courses: Yale University, Columbia University, The University of Chicago, The University of Washington.

Contributions to Both Nations

The relationship between Kazakhstan and the United States is mutually beneficial. As Kazakhstani students contribute to the cultural mosaic of American campuses, they also bring with them a unique cultural heritage that can enrich the educational environment. Furthermore, these students often return to Kazakhstan after their studies, armed with improved language skills and a global perspective that can contribute to their home country's development and international collaborations. A study by Marguerite B. Dennis ("Kazakhstan: Ethnicity, Language, and Power") highlights the role of language proficiency in fostering international collaborations and strengthening diplomatic ties. Likewise, American students who study in Kazakhstan experience the nation's vibrant history, traditions, and contemporary life firsthand. This exchange of students creates a cultural fusion that enriches both nations' educational landscapes.

Cultural diplomacy plays a pivotal role in enhancing mutual understanding between Kazakhstan and the United States. Cultural events, art exhibitions, musical performances, and film festivals provide platforms for showcasing the cultural heritage of each nation. These events not only expose audiences to new forms of expression but also serve as catalysts for meaningful dialogues that transcend linguistic and geographic barriers.

Conclusion

The journey of Kazakhstani students to the United States for ESL language training is a testament to the power of education to transcend borders and foster global understanding. These students undertake challenges, embrace opportunities, and ultimately emerge as more empowered individuals equipped with language skills and cross-cultural competencies. As the world continues to grow more interconnected, such educational endeavors pave the way for a brighter and more harmonious global future.

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Technical Sciences

Business Intelligence (BI) Trends: Navigating the Data-Driven Landscape

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ABSTRACT

In today's data-driven business landscape, staying ahead of the curve in Business Intelligence (BI) is not just advantageous; it's imperative. This article explores the latest trends in BI, shedding light on the transformative shifts that organizations are embracing to gain a competitive edge. From self-service BI empowering non-technical users to make data-driven decisions, to embedded analytics seamlessly integrated into everyday workflows, the evolution of BI is reshaping how businesses harness the power of their data. We delve into the emergence of mobile BI, enabling real-time insights on the go, and the growing influence of AI and machine learning, which are revolutionizing data analytics and predictive modeling. Moreover, we address the critical importance of data governance and security, ensuring that BI initiatives comply with increasingly stringent regulations. As BI continues to evolve, understanding and leveraging these trends becomes paramount for organizations aiming to extract actionable insights from their data and drive innovation and growth in an ever-competitive market.

KEY WORDS

Business Intelligence (BI); BI Trends; Self-Service BI; Embedded Analytics; Artificial Intelligence (AI); Machine Learning (ML); Mobile BI; Data Governance; Compliance; Cloud-Based BI; Collaborative BI; Natural Language Processing (NLP); Data-Driven Decision-Making.

1.INTRODUCTION

In the modern business landscape, data is not merely a byproduct of operations; it is the driving force behind informed decision-making, innovation, and sustainable growth. Business Intelligence (BI) has emerged as the compass guiding organizations through the vast and complex sea of data, helping them chart a course towards success. As we stand on the threshold of a new era, the world of BI is undergoing a profound transformation, driven by technological advancements and changing business needs.

This article serves as a navigational chart, guiding you through the exciting and dynamic realm of BI trends. It's a journey into the future of data analytics, where we will explore the latest developments reshaping the BI landscape. From self-service BI platforms that empower business users to extract insights from data without requiring a background in analytics, to the infusion of artificial intelligence (AI) and machine learning (ML) into the core of BI, this article paints a vivid picture of the evolving BI ecosystem.

We'll also dive into the concept of embedded analytics, where data-driven insights are seamlessly integrated into daily workflows, providing actionable information right when and where it's needed most. The rise of mobile BI, enabling decision-makers to access real-time data and insights on the go, adds another layer to this ever-evolving tapestry.

But it's not just about the tools and technologies. In this data-centric age, the importance of data governance, privacy, and security cannot be overstated. We'll explore how organizations are navigating these choppy waters, ensuring compliance with stringent data regulations while still harnessing the power of data.

Join us on this expedition into the exciting world of BI trends, where data isn't just a resource; it's the lifeblood of innovation, competitiveness, and informed decision-making. As we embark on this journey, we invite you to chart your course to success in the data-driven business landscape of tomorrow.

2.RESEARCH IN BUSINESS INTELLIGENCE (BI) TRENDS

2.1. Self-Service BI Empowerment:

Self-service BI has gained prominence as organizations seek to empower non-technical users to access and analyze data independently. Research by Davenport and Harris (2007) emphasized the importance of this trend, noting that enabling business users to generate their own reports and insights fosters a culture of data-driven decision-making. This trend has continued to evolve, with Gartner (2020) predicting that, by 2022, up to 70% of organizations will be using self-service BI tools.

2.2. Embedded Analytics Integration:

The integration of BI and analytics directly into operational workflows is a trend explored by Chen and Chiang (2019). They emphasize that embedding analytics within applications or processes enhances user adoption, making data-driven insights more actionable. Such integration ensures that insights are presented within the context of decision-making, facilitating faster and more informed choices.

2.3. AI and ML-Powered BI:

AI and machine learning have become integral to BI. A study by Mishra and Deshmukh (2020) discussed the transformative impact of AI and ML in BI, particularly in predictive analytics and data discovery. These technologies enable organizations to move beyond historical analysis to predictive and prescriptive analytics, thus supporting more proactive decision-making.

2.4. Mobile BI and Real-Time Insights:

The demand for mobile BI solutions has been driven by the need for real-time data access. Market research by Domo (2021) revealed the ever-increasing volume of mobile app downloads and text messages, highlighting the importance of delivering real-time insights to decision-makers on the go. This trend is particularly significant in fast-paced industries.

2.5. Data Governance and Compliance:

The importance of data governance and compliance in BI is emphasized by Kimball and Ross (2013). They stress that as data regulations like GDPR and CCPA become more stringent, organizations must ensure rigorous governance practices to protect data while deriving value from it. This alignment between governance and analytics is crucial for building trust in BI systems.

2.6. Cloud-Based BI Adoption:

The adoption of cloud-based BI solutions has been driven by scalability and flexibility. Research by Hagerty and Hostmann (2020) highlighted the growing adoption rates of cloud BI, with organizations leveraging the cloud to reduce infrastructure costs and easily scale BI capabilities.

2.7. Collaborative BI:

Collaboration within BI tools is explored by Olszak and Bartuś (2017). They argue that collaborative BI enhances information sharing and teamwork within organizations, enabling stakeholders to collaborate on insights and fostering a data-driven culture.

2.8. Natural Language Processing (NLP):

NLP's role in making BI more accessible is discussed by Liu and Ren (2017). They highlight how NLP is enabling conversational analytics and the extraction of insights from unstructured data sources, making BI more user-friendly.

3.CONCLUSION

As we conclude our journey through the ever-evolving landscape of Business Intelligence (BI) trends, it becomes abundantly clear that data is no longer just a commodity; it's the lifeblood of modern organizations. The compass guiding businesses toward success in this data-rich era is BI, and it's steering a course that leads to exciting new horizons.

From our exploration of self-service BI, we've learned how organizations are democratizing data, putting the power of insights into the hands of business users. This shift promotes a culture of data-driven decision-making, where informed choices are made swiftly and confidently.

Our voyage into the world of embedded analytics has shown us how data is becoming an integral part of everyday workflows. It's not just about accessing insights; it's about using them to drive action. BI is no longer a separate entity; it's seamlessly woven into the fabric of business operations.

We've ventured into the realm of AI and machine learning, where data isn't just analyzed; it's anticipated and prescribed. Predictive and prescriptive analytics have made the leap from science fiction to business reality, enabling proactive decision-making and offering a competitive edge.

The journey wouldn't be complete without a visit to the shores of mobile BI. Real-time insights, accessible anywhere, have become essential in industries that move at the speed of light. This trend has made decision-makers agile, enabling them to respond to changing conditions with grace and precision.

We've crossed the turbulent waters of data governance and compliance, recognizing that the safe and ethical use of data is paramount. In the age of strict data regulations, organizations must navigate these waters with care, striking a balance between data protection and data utilization.

Our exploration of cloud-based BI has shown how organizations are leveraging the scalability and flexibility of the cloud to transform their BI capabilities. This shift not only reduces infrastructure costs but also offers the agility needed to thrive in a rapidly changing business environment.

Collaborative BI has opened our eyes to the power of teamwork in data analysis. The collective intelligence of teams, harnessed through collaborative BI tools, enhances information sharing and fosters a data-driven culture within organizations.

Lastly, we've seen how Natural Language Processing (NLP) is breaking down barriers in BI, making data more accessible to a wider audience. Conversational analytics and the extraction of insights from unstructured data are making BI more user-friendly and inclusive.

In conclusion, BI is not merely a technology or a tool; it's a mindset, a culture, and a strategic imperative. It's about making data-driven decisions that fuel innovation, competitiveness, and business success. As we sail into the data-driven future, understanding and embracing these BI trends will be the wind in our sails, propelling us toward the promising shores of tomorrow's business landscape. So, set your course, adapt to the trends, and chart your path to success in the data-driven world that awaits.

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NEW TECHNOLOGIES IN CONSTRUCTION

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ABSTRACT

Investment in ConTech has skyrocketed in recent years, reaching unprecedented demand. The industry is making efforts to innovate, streamline and digitalize as it increases its resilience. Building technology funding hit a record $5.38 billion in 2022, down 1% from $5.4 billion in 2021, according to CEMEX. The industry has shown strong performance compared to other sectors and venture capital in general (1).

Investment by region increased in North America and the EU: they account for the "lion's" share in the world. However, the Asia-Pacific region and the Middle East are showing significant growth. A commitment to investing in building technology has been a long-term strategy for decades, as evidenced by the wide range of deals made in 2022. Contech's top 50 startups include businesses focused on green building, construction supply chain, productivity improvement, and the future of construction. And this investment in innovation is paying off. Research shows that companies that adopt technology increase their bottom line by 48% in revenue and 15% in net margin.

The technology market continues to change at an accelerated pace, innovation will lead to even greater development and progress. Already, there are more than a dozen demanded technologies. The main trends in the second half of 2023 are similar to previous years. But the market makes its own adjustments, because for the conservative construction market, all these are experimental techniques. And so far, the participants are only adapting to them, developing a format in which these techniques will take root, and then standardization, development of standards, and so on will be required.

Technologies will be selected and evaluated empirically to identify leaders and apply the most practical solutions. Analysts are now betting on cloud computing, project management software, the ubiquity of drones and sensors, house printing technology, and of course BIM technologies in construction, which allow creating digital twins and using virtual and augmented reality tools to deeply understand the project.

But some technologies, although already on everyone's lips, still have not found widespread use. For example, despite the global relevance of building information modeling (BIM), its complexity and high cost limit its use in digitalization. Instead, mobile construction apps are becoming more popular. They give results in real time and have practical value already at the current stage, without the need for long-term implementation.

INTRODUCTION

The construction industry is often criticized for its conservatism and bureaucracy. The introduction of the latest building technologies is indeed difficult due to high safety requirements. Each technology must have an appropriate regulatory framework and standardization (2).

Behind every step at the construction site there are many norms. In addition, the new technology must be self-sustaining: the costs of its development must be adequate, and the potential savings in the future must be significant and long-term. The implementation of any construction technology requires complex design, quality control and employee training.

Urbanization, population growth and changing modes of communication, as well as the growth of the economy and the development of IT, have stimulated the construction industry to more dynamically integrate innovations and technological solutions.

1. Popular modern construction technologies

The rapid development of construction technologies leads to large-scale digitalization of the entire industry. The use of IT technologies is becoming key in ensuring competitiveness. Innovations in construction are changing the face of construction sites, increasing profits and winning project tenders (3).

It is innovation that brings economic benefits and distinguishes the company from competitors. What technologies are the most promising and in demand in 2023?

But the growth of cities and population, as well as a new format for the level of human communications in the era of BIG DATA, the growth of economies and the well-being of people, has activated the construction industry for a more dynamic integration of innovations and technological solutions.

In addition, the very speed of development of construction technologies leads to large-scale digitization of the entire industry. And the question of applying IT technologies is already a question of competitiveness. Construction innovations transform the construction site and increase profits, as well as win project tenders.

Since it is innovations that bring economic benefits and increase the competitiveness of a particular construction company, and ultimately realize the client's request with maximum efficiency.

1.1 Cloud services and mobile technologies

Today, one of the most common technologies used in various aspects of construction is cloud services. The cloud provides the ability to store information, access it from anywhere in the world and update data. This provides project participants with the relevance of information, excluding the use of outdated data. Cloud platforms help to connect all processes, technologies, resources.

Construction companies often have to deal with information repositories, and those who have not yet switched to digital - and they are the majority in our region - are forced to deal with a paper routine. These problems are exacerbated by the huge amount of data and resources that inevitably arise in the implementation of any large object. In order for stakeholders to work effectively on projects, they need a solid foundation, a single source of data.

This foundation can be built and maintained using cloud solutions. They provide integrated and connected data, workflows and technologies, bringing together information, processes and people in one common data system. This contributes to effective decision-making both in the short and long term in the implementation of the strategic plan (4).

Advantages of cloud services:

• High mobility: information is available from any device with an Internet connection, you can work on remote construction sites.

• Infinite data storage capacity: the ability to store large amounts of information without restrictions allows project participants not to worry about running out of space.

• Scalability: Cloud services can be easily scaled to meet the needs of a particular construction project, saving resources.

• Cost effective services: using cloud services is much more affordable than building and maintaining your own IT infrastructure.

• Quick access to information: provide instant access to all relevant information for the entire project team.

• Improved communication and collaboration: the ability to work in real time greatly simplifies the collaboration between project participants.
• Synchronization and management of multiple sites: the cloud helps you effectively synchronize data and manage multiple sites without losing control.
• Reduce office space costs: Using cloud services can reduce the cost of large offices and maintenance of your servers.
• Maximum data protection: electronic storage and data encryption provide higher security than paper versions.

1.2 Construction management software

Manual process management is significantly outperformed by digital assistant project management. Resource and workforce management is a huge expense for construction companies. Effective workforce management can help companies ensure business continuity, optimize resource allocation, and avoid unexpected costs and delays (5).

Today, more and more companies are turning to digital solutions to improve efficiency and streamline remote office operations.

Digital project management solutions help you get analytics and make accurate forecasts. Mobile solutions streamline many of the manual processes involved in resource planning.

So, PlanRadar is a construction management tool that integrates control over each stage of the construction process, planning, collecting statistics, analytics, and working with information models. Modern construction management software solves the main task of any manager: it connects the construction site and the office. Even without leaving the place, you can have a complete picture of all the ongoing processes before your eyes. And employees do not waste time filling out endless documents: they only need to enter data on the platform once right on the construction site, directly from their mobile phone.

The application itself will generate reports according to the previously set templates. Filling in any documentation becomes simple, does not require duplication, and, therefore, reduces the likelihood of accidental errors. This saves up to 7 hours of time per week on reporting: the whole working day is freed up for other, more qualified tasks instead of paperwork.

All data is collected into statistics and then formed into analytical data in the form of graphs and tables. This helps to track key project indicators and work progress. In addition, you monitor all processes in real time.

Solutions like these allow companies to access predictive metrics and analytics to better allocate project resources. HR solutions are especially important in today's economy, where volatile markets require companies to be as accurate and efficient as possible in their operations.

1.3. Artificial Intelligence and Machine Learning for Construction Workflows

Successful project implementation requires process optimization and work with a huge amount of data. However, due to the complexity of construction, workflows tend to be siled and manually managed.

Artificial intelligence (AI) is a technology that mimics human cognitive functions, including problem solving, pattern recognition, object recognition, and the ability to learn. One of the important areas of AI is machine learning, which is based on the collection of statistical data and the application of inferences and conclusions based on them.

The three most important areas of streamlined construction workflows are communication, data, and transparency. AI makes it easier to achieve success in all three of these areas, resulting in higher productivity and higher profits. For example, Accenture, a consulting company that provides consulting services to organizations in the areas of strategic planning and information technology, said that AI could increase industry profits by 71% by 2035 (6).

Predictive analytics has quickly become one of the important tools in the construction industry. Using current and historical data, as well as machine learning, companies can predict outcomes. They can be used to make better decisions and strategize next steps.

Companies need a reliable way to mitigate risk, seize opportunities, and prepare for emerging challenges.

For example, Royal BAM Group, the largest construction company in the Netherlands, used Construction IQ as a predictive analytics tool. This resulted in a 20% improvement in the quality of construction and a 20% improvement in site safety.

AI is also used to create computer vision models, which is the ability to detect security problems.

You can have the machine help analyze thousands of scenarios so that it warns of a threat when certain signals occur. For example, Newmetrix uses artificial intelligence to enforce safety protocols at work sites.

AI in construction can detect potential safety hazards, lack of personal protective equipment for workers, violation of social distancing, working at height without permission, and much more. The ability to analyze data allows construction firms to mitigate risk and generate customizable benchmark reports.

CONCLUSION

It is obvious that large-scale digitalization and the introduction of BIM technologies in the construction industry will progress - this is a market demand, where efficiency and reduction of time and costs are becoming a priority. Therefore, construction becomes smart not only in computer design, but also in the direct process of creating an object using robots, 3D printing, sensors, smart materials and technologies. And finally, new technologies will definitely affect the profits of the construction business, as they are aimed at optimizing and efficiency of all stages of the project, from engineering surveys to operation (7). However, this does not mean that the search for new building materials will become less relevant - on the contrary, the synergy of technologies in the construction process with the latest eco-materials gives construction new horizons.

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Влияние двухстороннего прессования на распределение твердости в сырной массе среднего слоя зрелых сыров “Лори” после удаления уплотняющих слоев (2.5см)

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Ключевые слова: *Анизотропия, растворимый и небелковый азот, гофрированный, зажимы.*

Influence of double-sided pressing on the distribution of hardness in the cheese mass of the middle layer of mature cheeses "Lori" after removal of sealing layers (2.5sm)

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Key words: *Anisotropy, soluble and non-protein nitrogen, goffered, clamps.*

Вступление

В сыроделии из технологических процессов важную роль играют формование и прессование сыра. Зерна в готовой сырной массе обычно бывают разной величины, и их необходимо соединить в крупные куски-монолиты. Монолитам придают различную форму: шаровидную, цилиндрическую, прямоугольную, квадратную и др. Формуют сыры также для отделения оставшейся между зернами сыворотки. Кроме того, форма сыра некоторым образом влияет на процесс его созревания и усушки во время хранения. Таким образом, созревание мягких сыров идет с поверхности внутрь, поэтому их вырабатывают в основном в небольших размерах (2-3 кг), но с большой удельной поверхностью. Твердые сыры созревают из центра к периферии, их размеры больше, а удельная поверхность по отношению к массе сыра меньше. С изменением формы изменяется и площадь поверхности. При одной и той же массе наименьшую поверхность будет иметь сыр круглой формы, затем цилиндрической, квадратной и прямоугольной. [1] , [2], [3]

С изменением формы и площади поверхности изменяются также распределение влаги сырной массы (анизотропия), развитие и распределение микроорганизмов, протекающих при созревании, что и в конечном итоге влияет на качество продукции.

Источники вкусовых и ароматических веществ сыра – все макронутриенты: жиры, белки, углеводы. Гидролиз этих макронутриентов осуществляется микроорганизмами, то есть без микроорганизмов невозможно выработать сыр. [1] , [2], [3] Таким образом, для выработки сыров требуемого качества крайне необходимо создать условия (влага, температура и pH). Важнее распределить влагу в сырной массе, что зависит от завертывания салфетки, перепрессовок, бессалфеточно и без перепрессовок оптимальных режимов (давление и продолжительность) и способа прессования, а также несовмещения технологических процессов (сборка и разборка форм, розлив сырного зерна, формование, прессование и выемка сыра из прессформы), которые приводят к повышению анизотропии сырной массы. В этой области проведен технологический анализ обзорной литературы, для выяснения влияния каждой из этих технологических процессов изменение анизотропии (неравномерное распределение влаги) в сырной массе. Технологический анализ показал, что как за рубежом, так и в СНГ до настоящего времени в сыроделии используют три способа – самопрессование с использованием салфетки с перепрессовками, одностороннее прессование с использованием салфетки с перепрессовками и одностороннее прессование без салфеток, без перепрессовок сырной массы. При самопрессовании имеет место давление верхних слоев сырной массы на нижние. При способе второго и третьего одностороннего прессования по направлению прессуемой стороны сверху вниз давление, разумеется, падает. Что происходит в третьем способе? В способе происходит следующее: первоначальная действующая сила давления 0,1кг/см^2 очень слаба и не доходит до нижних слоев сырной массы. При этом уплотняются верхние слои. Одновременно с этим уплотняются нижние слои сырной массы за счет давления верхних слоев на нижние (самопрессование). Постепенное увеличение давления до 0,5кг/см^2 достигает до нижних слоев, но не до конца и оно больше, чем действующее давление верхних слоев на нижние (самопрессование). В результате этого, верхние слои уплотняются больше, чем нижние. Этот способ эффективен для сыров малой высоты. В обоих способах требуется перепрессовка сырной массы для уравнения распределения влаги и плотности верхних и нижних слоев сырной массы. Если давление в технологическом режиме выше нормы над сырной массой, то дренаж салфетки больше отпрессовки приводит к быстрому осушиванию и закрытию из-за отверстий капилляров и в конечном итоге - к отстаиванию сыворотки в капиллярах. Кроме того, большие отпрессовки могут отрезаться при выемке отпрессованного сыра из формы. В эти места могут попадать нежеланные микроорганизмы, которые в дальнейшем ухудшают качество сыра. Если же давление меньше, то сыр получается недопрессованным, т.е. опять приводит к отстаиванию сыворотки в капиллярах. Эти операции повышают себестоимость сыра, снижают производительность труда, мешают осуществлению поточности производства, затрудняют комплексную механизацию и автоматизацию сыродельного производства. [4]

Теория образования анизотропии. При смещении сырных зерен под давлением прессующего усилия в межзерновом пространстве образуются капилляры, через которые происходит утечка сыворотки в разных направлениях к поверхности сырной массы. При этом перепрессовка и салфетка приводят к совпадению отверстий серпянки с отпрессовками, вследствие этого увеличиваются размеры отпрессовки и быстро осушиваются и закрываются отверстия, что приводит к отстаиванию сыворотки в капиллярах. Сыворотка может выходить через другие капилляры, если давление выше, чем в соседних капиллярах, но при этом удлиняется продолжительность прессования. А если сыворотка остается в капиллярах, то влажность будет больше, чем в тех капиллярах, отверстия которых не закрылись. В результате этого и повышается анизотропия, столь нежелательная в анизотропии. Кроме того, при одностороннем прессовании давление от прессуемой стороны по направлению к нижним слоям уменьшается, вследствие этого плотность в верхних и нижних полотнах получается неодинаковая, для чего прибегают к перепрессовке. [4] Вышеуказанные факторы отрицательно влияют на интенсивность протекания биохимических и микробиологических процессов. В связи с этим важнейшей проблемой сыроделия является разработка и широкое промышленное внедрение новых прогрессивных технологий и технических средств, каковым и является бессалфеточное прессование сыров. Таким образом, вышеуказанные технологические процессы повышают анизотропию сырной массы, снижая качество сыра.

Технический анализ. В последнее десятилетие многие процессы производства натуральных сыров механизируются и автоматизируются. Применяются несколько полупромышленных и промышленных способов непрерывного получения сырной массы, ее формования и прессования, разнообразные конструкции аппаратов периодического и непрерывного действия. Для получения качественной сырной массы стали применяться формовочно-дозировочные устройства, прессы (рычажные, винтовые и пневматические, горизонтальные, туннельные). До настоящего времени в сыроделии применялись способы, конструкции форм и устройств в основном для осуществления одностороннего прессования сыров. Среди них особое место занимают туннельные прессы, в которых в качестве силовых элементов, развивающих усилие прессования, используют два типа устройств: [5], [6]

1. Пневмоцилиндры - на каждый брусок сыра давит отдельный пневмоцилиндр. При этом различие в высоте каждого из брусков сыра не имеет большого значения, прессы с пневмоцилиндрами имеют большую высоту рабочего пространства, что облегчает загрузку. Кроме того, их конструкция обеспечивает параллельность верхней и нижней плоскостей при любой загрузке и любом способе формования. Это положительное свойство делает такие прессы привлекательными для многих производителей сыров. Такая конструкция пресса весьма дорогостоящая и материалоемкая, но считается самой лучшей и применяется при производстве сыров с большой массой.

2. Гибкие надувные силовые элементы. Недостаток таких элементов заключается в небольшой величине рабочего хода (при больших различиях в высоте головок сыра качество прессования может ухудшиться), достоинство – в высоком удельном давлении, обеспечиваемой специфичностью конструкций прессов с использованием гибких силовых элементов. При этом основным способом создания давления прессования является использование энергии сжатого воздуха и в них чаще всего на каждый брусок сыра давит отдельный пневмоцилиндр. При этом уплотнение сырной массы по направлению от прессуемой стороны вниз все равно падает, и для получения одинаковой плотности верхней и нижней стороны сыры перепрессуют. Это очень трудоемкий процесс, приводящий к неравномерному распределению влаги и твердости в сырной массе, следовательно, к неравномерному распределению и развитию микрофлоры и не интенсивному протеканию биохимических процессов в сырной массе, в результате чего снижается качество сыра. Поэтому, действующий способ одностороннего прессования сыров с перепрессовками, без перепрессовок и применением салфеток приводит к анизотропии сыра. [5], [6] Из существующих туннельных прессов различают прессы высокой автоматизации производства фирмы Пресс-паллет. Пресс-паллеты объединяются в блоки, имеющие общую систему питания сжатым воздухом, а также систему подъемно-транспортных устройств для загрузки и разгрузки прессов (прессовое отделение, оборудованное пресс-паллетами “Шалон Мегар”). [7] Анализ существующих систем прессования позволяет сделать вывод о том, что они постоянно совершенствуются, но основным способом создания давления прессования является использование энергии сжатого воздуха. Совершенствования касаются автоматизации систем загрузки и разгрузки, а не конструкции форм, прессформ и установок. [5], [6] Таким образом, для выработки качественного сыра, необходимо при прессовании получить сырную массу с более равномерным распределением влаги и твердости. Следовательно, совершенствование и разработка высокопроизводительных непрерывно действующих технических средств, техники и технологии производства натуральных сыров, особенно процессов получения сырной массы, ее формования и прессования, было и остается актуальной задачей науки и практики.

Предложено впервые 3 способа двустороннего прессования: двустороннее бессалфеточное, двустороннее ступенчатое (шаговое) бессалфеточное (с меньшим количеством пневмоцилиндров) и двустороннее бессалфеточное прессование с использованием электромагнитных сил (без пневмоцилиндров). Поскольку форма сыра частично влияет на процесс созревания сыров, то после изучения влияния первого способа на сыры круглой формы (голландский) и швейцарский (цилиндрический) и получение положительных результатов, мы решили изучить его влияние на сыры прямоугольной формы (“Лори”). Сыр “Лори” вырабатывают из пастеризованного молока, с содержанием 50 % жира, не более 42-44% влаги и 3,5-4,5 % соли. Форма сыра прямоугольный брусок длиной 28- 30 см, шириной 14-15 см, высотой 10-12 см и массой 4,5-5 кг. Формуют из пласта, отрезанные куски укладывают в форму с салфеткой и самопрессуют в течение 5-6 ч при неоднократном (4-5 разовом) переворачивании. Сыр созревается в пленке в течение 45 суток. Зрелый продукт уплотняюшии слой. Органолептические показатели сыра “Лори”: обладает острым и соленым вкусом; консистенция плотная, слегка ломкая при изгибе; цвет теста от белого до желтого; рисунок состоит из глазков различных форм и размеров.

Для разрешения поставленной цели нами были сформулированы следующие задачи:

1. Разработать и изготовить опытные образцы винтовой и пневматической прессформ для двустороннего прессования прямоугольного сыра “Лори”, и динамометр для измерения прессующего усилия над сырной массой. Разработать и изготовить прибор для определения твердости сыров.
2. Установить оптимальный режим (давление и продолжительность) двустороннего прессования для сыра “Лори” в зависимости от высоты и массы. [8]
3. Совместить технологические процессы (сборка и разборка форм, розлив сырного зерна, формование, прессование и выемка сыра из прессформы).
4. Изучить влияние двустороннего прессования (первого способа) на качество сыра “Лори”.

Материалы и методы. Исходя из вышесказанного, предлагаем впервые 3 способа двустороннего прессования без перепрессовок: 1. двустороннее бессалфеточное, 2. двустороннее ступенчатое (шаговое) бессалфеточное (с меньшим количеством пневмоцилиндров), 3. двустороннее бессалфеточное прессование с использованием электромагнитных сил (без пневмоцилиндров).

Методика проведения исследования первого способа. Экспериментальные исследования проводились по стандартным и общепринятым методикам согласно ГОСТ-у. Опытные сыры “Лори” подвергались двустороннему прессованию реконструированной и изготовленной винтовой и пневмонической прессформы. [9] [10] Твердость сыра определили при помощи сконструированного. Сущность работы заключается в том, что необходимая конусность в 20 градусов достигается проникновением (30 мм) в сырную массу за считанные секунды. Целью работы было исследование нового способа двухстороннего бессалфеточного прессования на сырах “Лори”, поскольку форма сыра частично влияет на процесс созревания сыра для уменьшения анизотропности сыра, с исключением салфетки и его перепрессовки и сокращением продолжительности прессования, а также совмещение технологических процессов (сборка и разборка форм, розлив сырного зерна, формование, прессование и выемка сыра из прессформы), что должно привести к повышению качества сыра, а также разработка прессформ для его осуществления. Изучение влияния двухстороннего прессования на качество сыра “Лори” определяется установлением впервые технологического режима (давление продолжительности). Для обоснования оптимальности установленного режима проводили микробиологические, биохимические предолжается реологические исследования.

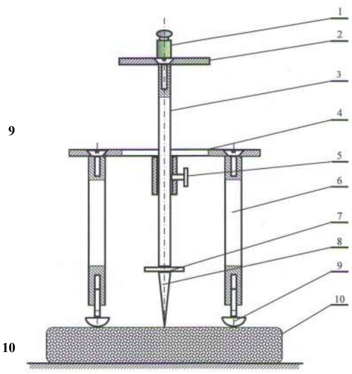

Рис. 1. Устройство для определения твердости сыров:
1 - гири; 2, 4 - диски; 3 - стержень; 5 - стопорный винт; 6 - ножки; 7 - выступ; 8 - конус; 9 - опоры; 10 – сыр

Результаты исследования. Исследование проведено отрезанной из верхнего и нижнего полотна слоя толщиной 2,5 см.

1. Исследование показало, что в верхнем и нижнем полотнах среднего слоя зрелых, опытных сыров “Лори” составляет в среднем 19,6 и 21,2 сек., а в контрольных – 63,6 и 107,3 сек, что больше по сравнению с опытными в 3,2 и 5,1 раз. Следовательно, в контрольных сырах твердость распределяется с большим колебанием на верхнем полотне 4-540 сек., а в нижнем – 4-580 сек.

Отсюда видно, что по распределению твердости в верхнем полотне среднего слоя зрелый контрольный сыр без верхнего и нижнего уплотняющихся слоев превосходит опытный сыр на 44 сек., в нижнем полотне - на 86,1 сек., а по максимальному значению твердости – соответственно на 540 и 580 сек. Причиной этому является уплотняющийся слой, образующийся при самопрессовании с использованием салфеток и пере-прессовок технологический режим и способ прессования.

2. Твердость среднего слоя зрелых и контрольных сыров на краях по ширине верхнего полотна на точке 2 составляет 67 сек., на нижнем – 20-55 сек., тогда как у опытного сыра составляет в соответствующих точках 2. - 23 сек. и 20. - 23 сек. Очевидно, что у контрольного сыра твердость выше опытного сыра в точках 2. на 44 сек. и 20. – на 32 сек.

3. Исследование в углах верхнего полотна среднего слоя контрольного сыра в точках 1, 3, 19, 21 твердость в среднем составляет 231,25 сек., а в углах нижнего полотна в точке 3, 1, 21, 19 – в среднем 321,75 сек. В углах нижнего полотна на 90,5 сек больше, чем в углах верхнего полотна. А в опытном сыре в углах соответственно в точках 1, 3, 19, 21 в среднем твердость составляет 21,75 сек., в нижнем полотне в точках 3, 1, 21, 19 в среднем 23 сек., разница между контрольным 90,5 сек. и опытным сырами 1,25 составляет 89.25 сек.

Высокая твердость контрольного сыра по сравнению с опытным обусловлена неравномерным распределением твердости в результате перепрессовки и применения салфеток при самопрессовании, поэтому использовалась 0.5-кг-ая гиря. При этом нижнее полотно самопрессуется больше на 40 мин.

Влияние двустороннего прессования на распределение твердости в среднем слое зрелого сыра «Лори» и после удаления уплотняющихся слоев (2,5см)

Как уже отмечено в предыдущей подглаве, по размаху твердости верхнего полотна боковины N1 составляет в контрольных сырах 130.2, 130.3, 134.6 сек., нижнего полотна боковины N2 – в среднем 139.4, 141.8, 138.2 сек., а колебание твердости из трех сыров – 5-1080 сек., 5-650 сек., а в опытных сырах составляет в верхнем полотне 62.7, 63.7, 65.6 сек., в нижнем полотне – 66.9, 66.9, 67.75 сек. соответственно, а колебание твердости из трех сыров – 16-96, 16-38 сек. Причем, твердость сырной массы была определена специальным устройством на глубине 30 мм от поверхности боковин N1, N2, что по нашему мнению твердость объясняется тем, что при смещении сырных зерен образуются боковины, и при их смещении под давлением с разных сторон в углах и 2-х краях по ширине боковин головки сыра сырная масса уплотняется больше и из-за этого увеличиваются средние данные твердости сырной массы на верхнем и нижнем полотнах сырной головки. Причиной высокой твердости уплотняющего слоя контрольных сыров также является усушка сыра при созревании, неоднократные переворачивания и завертывания салфеткой, а также более продолжительное самопрессование нижнего полотна (согласно технологическому режиму на 40 мин больше) по сравнению с верхним. Поэтому для получения достоверных данных распределения твердости в сырной массе дальнейшие исследования проводили после удаления поверхностного уплотняющегося слоя толщиной 2,5 см как у опытных, так и у контрольных сыров, что позволит тестировать в более глубоких слоях головки сыра и выявить истинную картину анизотропности. Нашей целью было сравнение распределения твердости в среднем слое зрелого контрольного сыра “Лори” (без уплотняющегося слоя) со средним слоем опытного сыра (без уплотняющегося слоя), выработанного двусторонним прессованием.

1. Исследовали распределение твердости на верхних и нижних полотнах боковины N1, N2.
2. Исследовали распределение твердости на верхних и нижних краях по ширине.
3. Исследовали распределение твердости в углах верхнего и нижнего полотен среднего слоя опытного и контрольного зрелых сыров. Были взяты по 1-ой головке опытного и контрольного сыров, от которых с верхнего и нижнего полотен отрезали поверхностный слой толщиной 2,5 см. Оставшийся средний слой сыров имел размеры 30x15x7 см. На верхнем и нижнем полотнах среднего слоя сыров отмечали 3 точки по ширине и 7 точек по длине, где и определяли твердость с 0,5 кг гирей (рис. 2, 3).

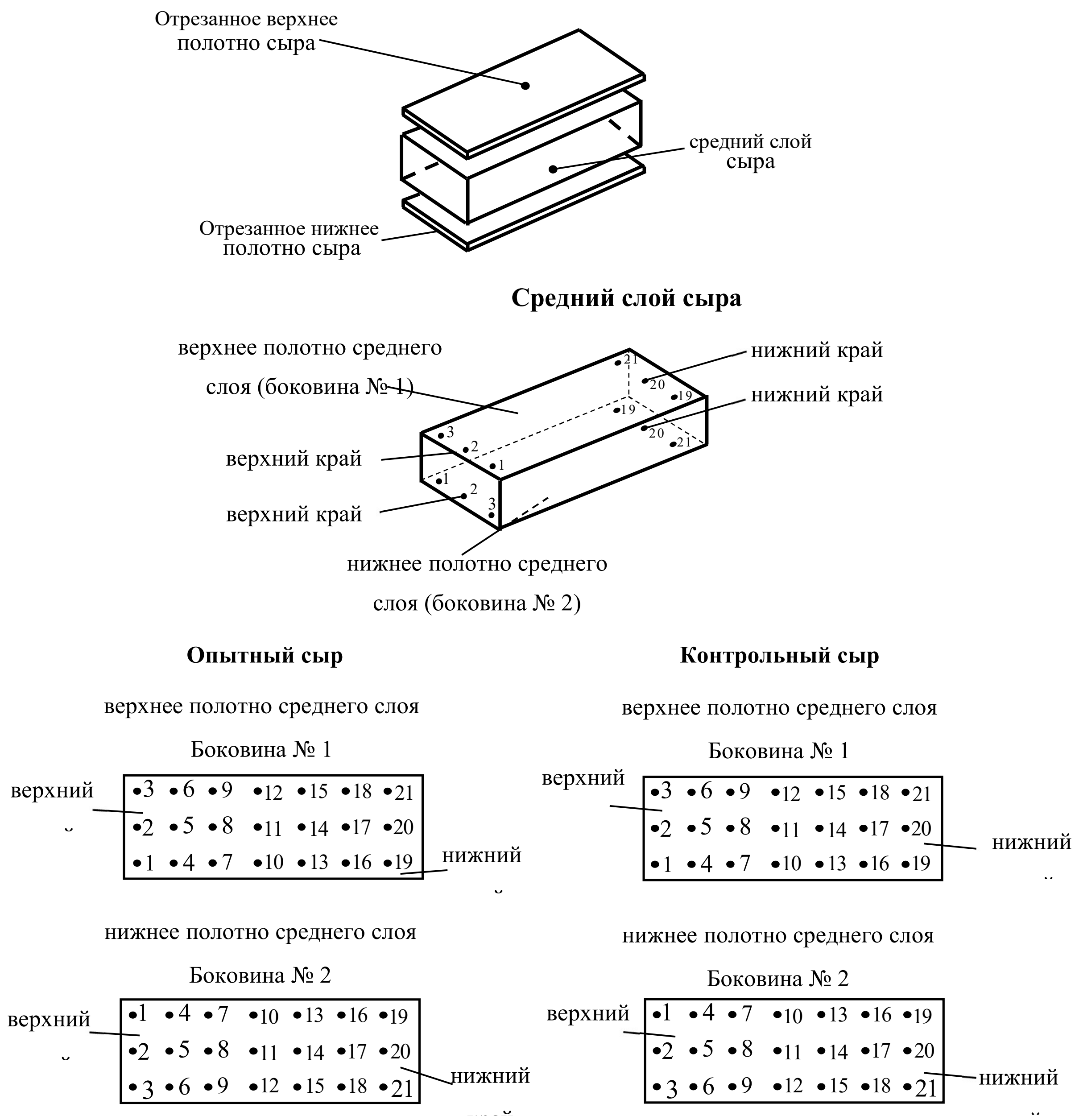

Рис. 2 Точки определения твердости в среднем слое боковин № 1 и № 2 зрелого сыра “Лори”

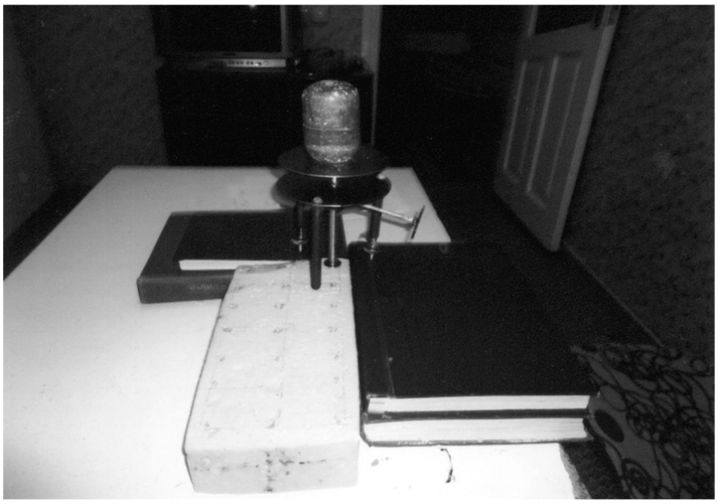

Рис. 3 Определение твердости сырной массы в среднем слое зрелого сыра “Лори” с 0,5 кг гирей

Данные таблицы 1 показывают, что твердость сырной массы в верхнем и нижнем полотнах среднего слоя зрелых опытных сыров “Лори” составляет в среднем 19,6 и 21,2 сек., а в контрольных - 63,6 и 107,3 сек., что больше по сравнению с опытными в 3,2 и 5,1 раза, это является результатом перепрессовок и применения серпянок. Твердость сырной массы в верхнем и нижнем полотнах среднего слоя контрольных сыров распределяется неравномерно - с большим колебанием - на верхнем полотне 4-540 сек. и нижнем - 4-580 сек.

Отсюда видно, что по распределению твердости в верхнем полотне среднего слоя зрелый контрольный сыр без верхнего и нижнего уплотняющихся слоев превосходит опытный сыр на 44 сек., в нижнем полотне - на 86,1 сек., а по максимальному значению твердости – соответственно на 540 и 580 сек. Причиной этому является уплотняющийся слой, образующийся при самопрессовании с использованием салфеток и пере-прессовок технологический режим и способ прессования. Определили твердость среднего слоя зрелых опытного и контрольного сыров на краях по ширине верхнего и нижнего полотен в указанных точках (рис. 2). Получены следующие результаты: опытный сыр – верхнее полотно среднего слоя, верхний край - 1-ая точка 22 сек., 2-ая - 23 сек., 3-ая - 21 сек., нижний край - 19-ая точка 20 сек., 20-ая -23 сек., 21-ая - 24 сек., нижнее полотно среднего слоя, верхний край - 3-ая точка 21 сек., 2-ая - 23 сек., 1-ая - 24 сек., нижний край - 21-ая точка 25 сек., 20-ая - 23 сек., 19-ая - 22 сек. Контрольный сыр - верхнее полотно среднего слоя, верхний край – 1-ая точка 45 сек., 2-ая - 67 сек., 3-ая - 540 сек., нижний край – 19-ая точка 245 сек., 20-ая - 55 сек., 21-ая - 95 сек., нижнее полотно среднего слоя, верхний край – 3-ая точка 362 сек., 2-ая - 290 сек., 1-ая - 180 сек., нижний край - 21-ая точка 580 сек., 20-ая - 380 сек., 19-ая - 165 сек (табл. 1).

Таблица 1. Распределение твердости в среднем слое опытного и контрольного (без верхнего и нижнего уплотняющихся слоев (2,5 см)) зрелых сыров “Лори”, сек.

№ точки	Опытный сыр		Контрольный сыр	
	верхнее полотно	нижнее полотно	верхнее полотно	нижнее полотно
1.	22	24	45	180
2.	23	23	67	290
3.	21	21	540	362
4.	19	22	33	52
5.	18	20	80	40
6.	20	22	9	30
7.	16	18	4	4
8.	17	16	15	4
9.	16	17	5	5
10.	18	20	4	26
11.	17	21	28	3
12.	18	20	4	23
13.	17	23	10	13
14.	16	21	4	17
15.	15	20	6	32
16.	19	22	3	6
17.	19	21	12	17
18.	17	23	72	24
19.	20	22	245	165
20.	23	23	55	380
21.	24	25	95	580
В среднем	19,6	21,2	63,6	107,3
Колебания	16-24	16-25	4-540	4-580

Как видно из вышеприведенных данных, твердость сырной массы среднего слоя контрольного сыра, на верхнем крае верхнего полотна на точке 2. составляет 67 сек., на нижнем крае на точке 20. - 55 сек., когда у опытного сыра она на соответствующих точках составляет – 2. - 23 сек. и 20. - 23 сек. Как видим, твердость сырной массы на верхнем и нижнем краях верхнего полотна среднего слоя контрольного сыра значительно выше опытного сыра в точках 2. - на 44 сек. и 20. - на 32 сек., что обуславливается неравномерным распределением твердости при салфеточном самопрессовании с перепрессовками, в результате чего уплотнение края по ширине среднего слоя контрольного сыра опять-таки получается более прочным, чем в остальных частях среднего слоя, кроме того при традиционном способе обработки сыра, как уже отмечено выше, во время неоднократных переворачиваний нижнее полотно самопрессуется больше (на 40 мин.), чем верхнее полотно, поэтому нижнее полотно более плотное, чем верхнее.

Исследования показали, что в углах верхнего полотна среднего слоя контрольного сыра в точках 1; 3; 19 и 21 твердость сырной массы в среднем составляет 231,25 сек., а в углах нижнего полотна в точках 3; 1; 21 и 19 – в среднем 321,75 сек. Отсюда видно, что в углах нижнего полотна твердость сырной массы на 90,5 сек. больше, чем у верхнего полотна. Причиной этого является смещение сырных зерен при самопрессовании под давлением верхних слоев и под давлением с разных сторон получается значительно неравномерное уплотнение именно в углах головки сыра. Поэтому при определении твердости сырной массы в углах и в отдельных местах краев полотен использовали 0,5 кг гирю.

В среднем слое зрелого опытного сыра в углах верхнего полотна твердость сырной массы в точках 1, 3, 19 и 21 в среднем составляет 21,75 сек., а в углах нижнего полотна в точках 3, 1, 21 и 19 – в среднем 23,0 сек., следовательно в среднем слое опытного сыра уплотняющийся слой по сравнению со средним слоем контрольного сыра получается сравнительно тонким из-за одновременного уплотнения сырной массы под давлением с двух сторон. Кроме того, в углах нижнего полотна опытного сыра сырная масса всего на 1,25 сек.

прочнее, чем в углах верхнего полотна, когда в углах нижнего полотна контрольного сыра она прочнее верхнего полотна на 90,5 сек. Итак, опять-таки отмечается значительная разница в распределении твердости в сырной массе между средним слоем контрольного и опытного сыров - разница составляет 89,25 сек.

Высокая твердость сырной массы в верхних и нижних краях верхнего (боковина № 1) и нижнего полотен (боковина № 2) среднего слоя контрольного сыра всегда приводит к повышению твердости сырной массы в ее центральной части. Из таблицы 1 видно, что у контрольного сыра без верхнего и нижнего уплотняющихся слоев отмечается повышенная твердость сырной массы в верхних и нижних полотнах. У опытного сыра, в верхнем полотне среднего слоя в среднем составляет 19,6 сек., а колеблется в пределах 16-24 сек., в нижнем же полотне в среднем составляет 21,2 сек., с колебанием в пределах 16-25 сек. (табл. 1), когда у контрольного сыра без верхнего и нижнего уплотняющихся слоев твердость сырной массы в верхнем полотне среднего слоя соответственно составляет в среднем 63,6 сек., с колебанием от 4-х до 540 сек., а в нижнем полотне – 107,3 сек. с колебанием от 4-х до 580 сек. Отсюда видно, что по распределению твердости в верхнем полотне среднего слоя зрелый контрольный сыр без верхнего и нижнего уплотняющихся слоев превосходит опытный сыр на 44 сек., в нижнем полотне - на 86,1 сек., а по максимальному значению твердости – соответственно на 531 и 570 сек. Причиной этому является уплотняющийся слой, образующийся при самопрессовании с использованием салфеток.

Также выше на краях по ширине верхнего и нижнего полотна. Бок №1 (7,6; 8,6) и бок №2 (9,3; 9,3), а на контрольном (13,0; 14,3), (12,3; 16,3), а в углах тоже соответственно составляет (8,25; 9,5), (14,25; 14,75) сек.

Обсуждения. Впервые предложено двухстороннее бессалфеточное прессование с исключением перепрессовок, с уменьшением анизотропности сыра “Лори” и сокращением продолжительности прессования.

1. Для проведения опыта сконструирована и изготовлена винтовая прессформа сыра “Лори” и динамометр для измерения прессующего усилия над сырной массой.
2. С целью определения технологического режима двухстороннего бессалфеточного прессования с исключением перепрессовок, сокращением продолжительности прессования сыра “Лори”, винтовой пресс был реконструирован на пневматическую с целью обеспечения более точной перпендикулярности штока пневмоцилиндра по отношению к поверхностному слою сырной головки.
3. Исследована оптимальность предлагаемого нового режима для двухстороннего прессования сыра “Лори” реконструирован винтовой пресс на пневманическую.
4. Исследовано распределение твердости сырной массы отрезанной 2,5 см толщиной слой из верхних и нижних полотен среднего слоя, т.е. без уплотняющих слоев.
5. Для осуществления двухсторонних прессов разработаны схемы прессформ для двухстороннего прессования сыра “Лори”, которые подлежат автоматизации, совмещая сборку, разборку прессформ, формирование, прессование и выемка отпрессованного сыра.

Заключение. Таким образом можно заключить, что распределение твердости в среднем слое сырной массы опытных сыров (без перепрессовок и салфеток, сокращением продолжительности прессования) более постоянное и стабильное по сравнению с контрольными сырами, следовательно, двустороннее прессование в какой-то мере уменьшает анизотропность, повышает однородность сырной массы за счет одновременного уплотнения сырной массы с двух сторон. Кроме того, предлагаемый способ способствует уменьшению твердости именно в краях по ширине, в углах и на боковинах за счет не отстаивания сыворотки в капиллярах в межзерновом пространстве, а наоборот, интенсивного выделения сыворотки поверхности, смягчая консистенцию сырной массы, увеличивая съедобные части.

Вывод.

1. Исследование показало, что высокая твердость сырной массы верхних и нижних краев верхнего полотна (боковина N1) и нижних полотен (боковина N2) среднего слоя контрольного сыра всегда приводит к повышению твердости сырной массы.
2. Видно также, что высокая твердость образуется именно на краях по ширине и в углах сырной головки.

Для осуществления двухсторонних прессов разработаны схемы прессформ для двухстороннего прессования сыра "Лори", которые подлежат автоматизации, совмещая сборку, разборку прессформ, формирование, прессование и выемка отпрессованного сыра.

Сборка форм осуществляются в следующем порядке.

При сборке прессформы рис. 5 из штоку пневмоцилиндров обеих сторон, подвешенные верхние (2) и нижние (6) крышки, получают движение навстречу друг на другу до внутри корпуса (7) прессформы так, чтобы пальцы зацепляли первый зуб зубчатой линейки (холостой ход). При этом конические сухарики (5), зажимы (3) за счет имеющие конусности закрывают зазор между корпусом и крышки и паз пресс-формы. После, автоматический клапан подачи сырного зерна осуществляют розлива сырного зерна в прессформы. Прессование сырного зерна осуществляется двухсторонним ступенчатым (шаговым), способом, т. е прессующее усилие над сырной массой (4) увеличиваются за счет изменение шага зубчатой линейки, согласно технологическому режиму данного ссора.

Разборка форм осуществляется при помощи стол выемки от прессованного сыра (4), механизм ступенчатого прессования, клапан (1) разлива сырного зерно (в чертеже не показано), механизм отцеплена пальца линейки осуществляется при помощи магнитного сила.

Аннотация

В статье рассматривается влияние, предложенное впервые новыми способами: двустороннего бессалфеточного, без перепрессовок: двустороннее ступенчатое (шаговое) бессалфеточное, без перепрессовок с меньшим количеством пневмоцилиндров.

Продолжается исследование распределение твердости отрезной из верхнего и нижнего полотна слоя толщиной 2,5 см для выяснения причины высокой твердости контрольного сыра именно в верхних (44см) (86,1см) с колебанием максимально на 540 см, 580см и нижних полотнах на краях по ширине и в углах 89,25 сек всегда превосходит опытного сыра (2 точ. 44 сек, 20точ. 32 сек).

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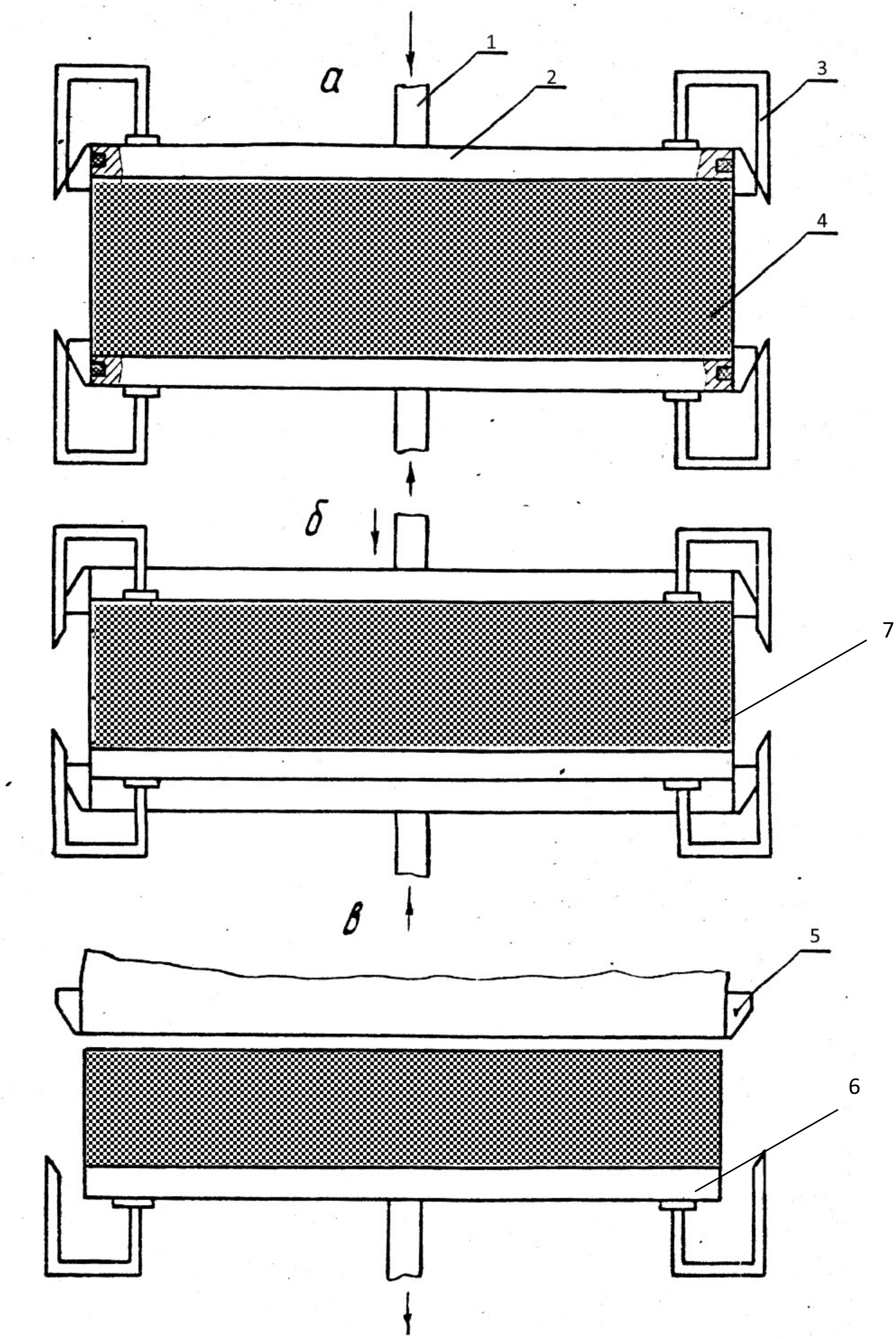

1-автоматический клапан для регулирования подачи сырного зерна в прессформу,

2-крышки прессформы, 3-зажимы, 4-сырная масса, 5-конические сухарики, 6-нижняя крышка, 7 - корпус

а – разлив зерна, В – прессование, с - выемка сыра

Рис. 5 Позиции прессования и выемка сыра

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Влияние двухстороннего прессования на распределение твердости в сырной массе среднего слоя зрелых сыров “Лори” после удаления уплотняющих слоев (2.5 + 1.5см)

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Ключевые слова: *Анизотропия, растворимый и небелковый азот, гофрированный, зажимы.*

Influence of double-sided pressing on the distribution of hardness in the cheese mass of the middle layer of mature cheeses "Lori" after removal of sealing layers (2.5 + 1.5sm)

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Key words: *Anisotropy, soluble and non-protein nitrogen, goffered, clamps.*

Вступление

В сыроделии из технологических процессов важную роль играют формование и прессование сыра. Зерна в готовой сырной массе обычно бывают разной величины, и их необходимо соединить в крупные куски-монолиты. Монолитам придают различную форму: шаровидную, цилиндрическую, прямоугольную, квадратную и др. Формуют сыры также для отделения оставшейся между зернами сыворотки. Кроме того, форма сыра некоторым образом влияет на процесс его созревания и усушки во время хранения. Таким образом, созревание мягких сыров идет с поверхности внутрь, поэтому их вырабатывают в основном в небольших размерах (2-3 кг), но с большой удельной поверхностью. Твердые сыры созревают из центра к периферии, их размеры больше, а удельная поверхность по отношению к массе сыра меньше. С изменением формы изменяется и площадь поверхности. При одной и той же массе наименьшую поверхность будет иметь сыр круглой формы, затем цилиндрической, квадратной и прямоугольной. [1] , [2], [3]

С изменением формы и площади поверхности изменяются также распределение влаги сырной массы (анизотропия), развитие и распределение микроорганизмов, протекающих при созревании, что и в конечном итоге влияет на качество продукции.

Источники вкусовых и ароматических веществ сыра – все макронутриенты: жиры, белки, углеводы. Гидролиз этих макронутриентов осуществляется микроорганизмами, то есть без микроорганизмов невозможно выработать сыр. [1] , [2], [3]

Таким образом, для выработки сыров требуемого качества крайне необходимо создать условия (влага, температура и pH). Важнее распределить влагу в сырной массе, что зависит от завертывания салфетки, перепрессовок, бессалфеточно и без перепрессовок оптимальных режимов (давление и продолжительность) и способа прессования, а также несовмещения технологических процессов (сборка и разборка форм, розлив сырного зерна, формование, прессование и выемка сыра из прессформы), которые приводят к повышению анизотропии сырной массы. В этой области проведен технологический анализ обзорной литературы, для выяснения влияния каждой из этих технологических процессов изменение анизотропии (неравномерное распределение влаги) в сырной массе. **Технологический анализ показал,** что как за рубежом, так и в СНГ до настоящего времени в сыроделии используют три способа – самопрессование с использованием салфетки с перепрессовками, одностороннее прессование с использованием салфетки с перепрессовками и одностороннее прессование без салфеток, без перепрессовок сырной массы. При самопрессовании имеет место давление верхних слоев сырной массы на нижние. При способе второго и третьего одностороннего прессования по направлению прессуемой стороны сверху вниз давление, разумеется, падает. Что происходит в третьем способе? В способе происходит следующее: первоначальная действующая сила давления 0,1кг/см^2 очень слаба и не доходит до нижних слоев сырной массы. При этом уплотняются верхние слои. Одновременно с этим уплотняются нижние слои сырной массы за счет давления верхних слоев на нижние (самопрессование). Постепенное увеличение давления до 0,5кг/см^2 достигает до нижних слоев, но не до конца и оно больше, чем действующее давление верхних слоев на нижние (самопрессование). В результате этого, верхние слои уплотняются больше, чем нижние. Этот способ эффективен для сыров малой высоты.

В обоих способах требуется перепрессовка сырной массы для уравнения распределения влаги и плотности верхних и нижних слоев сырной массы. Если давление в технологическом режиме выше нормы над сырной массой, то дренаж салфетки больше отпрессовки приводит к быстрому осушиванию и закрытию из-за отверстий капилляров и в конечном итоге - к отстаиванию сыворотки в капиллярах. Кроме того, большие отпрессовки могут отрезаться при выемке отпрессованного сыра из формы. В эти места могут попадать нежеланные микроорганизмы, которые в дальнейшем ухудшают качество сыра. Если же давление меньше, то сыр получается недопрессованным, т.е. опять приводит к отстаиванию сыворотки в капиллярах. Эти операции повышают себестоимость сыра, снижают производительность труда, мешают осуществлению поточности производства, затрудняют комплексную механизацию и автоматизацию сыродельного производства. [4]

Теория образования анизотропии. При смещении сырных зерен под давлением прессующего усилия в межзерновом пространстве образуются капилляры, через которые происходит утечка сыворотки в разных направлениях к поверхности сырной массы. При этом перепрессовка и салфетка приводят к совпадению отверстий серпянки с отпрессовками, вследствие этого увеличиваются размеры отпрессовки и быстро осушиваются и закрываются отверстия, что приводит к отстаиванию сыворотки в капиллярах.

Сыворотка может выходить через другие капилляры, если давление выше, чем в соседних капиллярах, но при этом удлиняется продолжительность прессования. А если сыворотка остается в капиллярах, то влажность будет больше, чем в тех капиллярах, отверстия которых не закрылись. В результате этого и повышается анизотропия, столь нежелательная в анизотропии. Кроме того, при одностороннем прессовании давление от прессуемой стороны по направлению к нижним слоям уменьшается, вследствие этого плотность в верхних и нижних полотнах получается неодинаковая, для чего прибегают к перепрессовке. [4]

Вышеуказанные факторы отрицательно влияют на интенсивность протекания биохимических и микробиологических процессов. В связи с этим важнейшей проблемой сыроделия является разработка и широкое промышленное внедрение новых прогрессивных технологий и технических средств, каковым и является бессалфеточное прессование сыров. Таким образом, вышеуказанные технологические процессы повышают анизотропию сырной массы, снижая качество сыра.

Технический анализ. В последнее десятилетие многие процессы производства натуральных сыров механизируются и автоматизируются. Применяются несколько полупромышленных и промышленных способов непрерывного получения сырной массы, ее формования и прессования, разнообразные конструкции аппаратов периодического и непрерывного действия. Для получения качественной сырной массы стали применяться формовочно-дозировочные устройства, прессы (рычажные, винтовые и пневматические, горизонтальные, туннельные). До настоящего времени в сыроделии применялись способы, конструкции форм и устройств в основном для осуществления одностороннего прессования сыров. Среди них особое место занимают туннельные прессы, в которых в качестве силовых элементов, развивающих усилие прессования, используют два типа устройств: [5], [6]

1. Пневмоцилиндры - на каждый брусок сыра давит отдельный пневмоцилиндр. При этом различие в высоте каждого из брусков сыра не имеет большого значения, прессы с пневмоцилиндрами имеют большую высоту рабочего пространства, что облегчает загрузку. Кроме того, их конструкция обеспечивает параллельность верхней и нижней плоскостей при любой загрузке и любом способе формования. Это положительное свойство делает такие прессы привлекательными для многих производителей сыров. Такая конструкция пресса весьма дорогостоящая и материалоемкая, но считается самой лучшей и применяется при производстве сыров с большой массой.
2. Гибкие надувные силовые элементы. Недостаток таких элементов заключается в небольшой величине рабочего хода (при больших различиях в высоте головок сыра качество прессования может ухудшиться), достоинство – в высоком удельном давлении, обеспечиваемой специфичностью конструкций прессов с использованием гибких силовых элементов. При этом основным способом создания давления прессования является использование энергии сжатого воздуха и в них чаще всего на каждый брусок сыра давит отдельный пневмоцилиндр. При этом уплотнение сырной массы по направлению от прессуемой стороны вниз все равно падает, и для получения одинаковой плотности верхней и нижней стороны сыры перепрессуют. Это очень трудоемкий процесс, приводящий к неравномерному распределению влаги и твердости в сырной массе, следовательно, к неравномерному распределению и развитию микрофлоры и не интенсивному протеканию биохимических процессов в сырной массе, в результате чего снижается качество сыра. Поэтому, действующий способ одностороннего прессования сыров с перепрессовками, без перепрессовок и применением салфеток приводит к анизотропии сыра. [5], [6]
3. Из существующих туннельных прессов различают прессы высокой автоматизации производства фирмы Пресс-паллет. Пресс-паллеты объединяются в блоки, имеющие общую систему питания сжатым воздухом, а также систему подъемно-транспортных устройств для загрузки и разгрузки прессов (прессовое отделение, оборудованное пресс-паллетами “Шалон Мегар”). [7]

   Анализ существующих систем прессования позволяет сделать вывод о том, что они постоянно совершенствуются, но основным способом создания давления прессования является использование энергии сжатого воздуха. Совершенствования касаются автоматизации систем загрузки и разгрузки, а не конструкции форм, прессформ и установок.

[5], [6]

4. Таким образом, для выработки качественного сыра, необходимо при прессовании получить сырную массу с более равномерным распределением влаги и твердости. Следовательно, совершенствование и разработка высокопроизводительных непрерывно действующих технических средств, техники и технологии производства натуральных сыров, особенно процессов получения сырной массы, ее формования и прессования, было и остается актуальной задачей науки и практики.

Предложено впервые 3 способа двустороннего прессования: двустороннее бессалфеточное, двустороннее ступенчатое (шаговое) бессалфеточное (с меньшим количеством пневмоцилиндров) и двустороннее бессалфеточное прессование с использованием электромагнитных сил (без пневмоцилиндров). Поскольку форма сыра частично влияет на процесс созревания сыров, то после изучения влияния первого способа на сыры круглой формы (голландский) и швейцарский (цилиндрический) и получение положительных результатов, мы решили изучить его влияние на сыры прямоугольной формы (“Лори”). Сыр “Лори” вырабатывают из пастеризованного молока, с содержанием 50 % жира, не более 42-44% влаги и 3,5-4,5 % соли. Форма сыра прямоугольный брусок длиной 28- 30 см, шириной 14-15 см, высотой 10-12 см и массой 4,5-5 кг. Формуют из пласта, отрезанные куски укладывают в форму с салфеткой и самопрессуют в течение 5-6 ч при неоднократном (4-5 разовом) переворачивании. Сыр созревается в пленке в течение 45 суток. Зрелый продукт уплотняюший слой. Органолептические показатели сыра “Лори”: обладает острым и соленым вкусом; консистенция плотная, слегка ломкая при изгибе; цвет теста от белого до желтого; рисунок состоит из глазков различных форм и размеров.

Для разрешения поставленной цели нами были сформулированы следующие задачи:

1. Разработать и изготовить опытные образцы винтовой и пневматической прессформ для двустороннего прессования прямоугольного сыра “Лори”, и динамометр для измерения прессующего усилия над сырной массой. Разработать и изготовить прибор для определения твердости сыров.

2. Установить оптимальный режим (давление и продолжительность) двустороннего прессования для сыра “Лори” в зависимости от высоты и массы. [8]

3. Совместить технологические процессы (сборка и разборка форм, розлив сырного зерна, формование, прессование и выемка сыра из прессформы).

4. Изучить влияние двустороннего прессования (первого способа) на качество сыра “Лори”.

Материалы и методы. Исходя из вышесказанного, предлагаем впервые 3 способа двустороннего прессования без перепрессовок: 1. двустороннее бессалфеточное, 2. двустороннее ступенчатое (шаговое) бессалфеточное (с меньшим количеством пневмоцилиндров), 3. двустороннее бессалфеточное прессование с использованием электромагнитных сил (без пневмоцилиндров).

Методика проведения исследования первого способа. Экспериментальные исследования проводились по стандартным и общепринятым методикам согласно ГОСТ-у. Опытные сыры “Лори” подвергались двустороннему прессованию реконструированной и изготовленной винтовой и пневмонической прессформы. [9] [10]

Твердость сыра определили при помощи сконструированного и изготовленного устройства. Сущность работы заключается в том, что необходимая конусность в 20 градусов достигается проникновением (30 мм) в сырную массу за считанные секунды. Целью работы было исследование нового способа двухстороннего бессалфеточного прессования на сырах “Лори”, поскольку форма сыра частично влияет на процесс созревания сыра для уменьшения анизотропности сыра, с исключением салфетки и его перепрессовки и сокращением продолжительности прессования, а также совмещение технологических процессов (сборка и разборка форм, розлив сырного зерна, формование, прессование и выемка сыра из прессформы), что должно привести к повышению качества сыра, а также разработка прессформ для его осуществления. Изучение влияния двухстороннего прессования на качество сыра “Лори” определяется установлением впервые технологического режима (давление продолжительности). Для обоснования оптимальности установленного режима проводили микробиологические, биохимические продолжается реологические исследования.

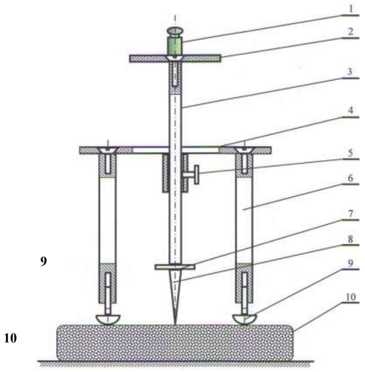

Рис. 1. Устройство для определения твердости сыров: 1 - гири; 2, 4 - диски; 3 - стержень; 5 - стопорный винт; 6 - ножки; 7 - выступ; 8 - конус; 9 - опоры; 10 – сыр

Результаты исследования – Иследование проводено отрезной изверхного и нижнего полотна слоя толшиной 2.5см и с 4-х боковых краев 1,5см средного слоя.

Также проведено исследование отрезанной из верхних и нижних слоев 2,5 см и с 4- х боковых краев 1,5 см среднего слоя. Было установлено, что в среднем слое опытных сыров твердость распределилась (6.9 сек.) в верхнем полотне, а в нижнем (7,2 сек.) при колебании соответственно (4-9 сек) и (4-10 сек), а твердость контрольных соответственно 9,1 сек. и 10,3 сек. Разница незначительна при колебании в пределах 3-18 сек., 4-22 сек. Видно, что твердость контрольных сыров чуть выше опытных сыров из-за применения салфеток и перепрессовки, а также технологического режима при самопрессовании. Также выше на краях по ширине верхнего и нижнего полотна. Бок №1 (7,6; 8,6) и бок №2 (9,3; 9,3), а на контрольном (13,0; 14,3), (12,3; 16,3), а в углах тоже соответственно составляет (8,25; 9,5), (14,25; 14,75) сек.

Влияние двусторонннего прессования на распределение твердости в среднем слое зрелого сыра «Лори» и после удаления уплотняющихся слоев (2,5см – 1,5см)

Из проведенных анализов стало выдно

1. Исследование показало, что в верхнем и нижнем полотнах среднего слоя зрелых, опытных сыров “Лори” составляет в среднем 19,6 и 21,2 сек., а в контрольных – 63,6 и 107,3 сек, что больше по сравнению с опытными в 3,2 и 5,1 раз. Следовательно, в контрольных сырах твердость распределяется с большим колебанием на верхнем полотне 4-540 сек., а в нижнем – 4-580 сек. Отсюда видно, что по распределению твердости в верхнем полотне среднего слоя зрелый контрольный сыр без верхнего и нижнего уплотняющихся слоев превосходит опытный сыр на 44 сек., в нижнем полотне - на 86,1 сек., а по максимальному значению твердости – соответственно на 540 и 580 сек. Причиной этому является

уплотняющийся слой, образующийся при самопрессовании с использованием салфеток и пере-прессовок технологический режим и способ прессования.

2. Твердость среднего слоя зрелых и контрольных сыров на краях по ширине верхнего полотна на точке 2 составляет 67 сек., на нижнем – 20-55 сек., тогда как у опытного сыра составляет в соответствующих точках 2. - 23 сек. и 20. - 23 сек. Очевидно, что у контрольного сыра твердость выше опытного сыра в точках 2. на 44 сек. и 20. – на 32 сек.
3. Исследование в углах верхнего полотна среднего слоя контрольного сыра в точках 1, 3, 19, 21 твердость в среднем составляет 231,25 сек., а в углах нижнего полотна в точке 3, 1, 21, 19 – в среднем 321,75 сек. В углах нижнего полотна на 90,5 сек больше, чем в углах верхнего полотна. А в опытном сыре в углах соответственно в точках 1, 3, 19, 21 в среднем твердость составляет 21,75 сек., в нижнем полотне в точках 3, 1, 21, 19 в среднем 23 сек., разница между контрольным 90,5 сек. и опытным сырами 1,25 составляет 89.25 сек.

Высокая твердость контрольного сыра по сравнению с опытным обусловлена неравномерным распределением твердости в результате перепрессовки и применения салфеток при самопрессовании, поэтому использовалась 0.5-кг-ая гиря. При этом нижнее полотно самопрессуется больше на 40 мин.

Чтобы получить достоверных данных распределения твердости в сырной массе дальнейшие исследования проводили после удаления поверхностного уплотняющегося слоя толщиной 2,5 см как и 4-х бокавих кроев 1,5см у опытных, так и у контрольных сыров, что позволит тестировать в более глубоких слоях головки сыра и выявить истинную картину анизотропности. Нашей целью было сравнение распределения твердости в среднем слое зрелого контрольного сыра “Лори” (без уплотняющегося слоя) со средним слоем опытного сыра (без уплотняющегося слоя), выработанного двусторонним прессованием.

1. Исследовали распределение твердости на верхних и нижних полотнах боковины N1, N2. 2,5 см и 1,5см боквых сторон.
2. Исследовали распределение твердости на верхних и нижних краях по ширине.
3. Исследовали распределение твердости в углах верхнего и нижнего полотен среднего слоя опытного и контрольного зрелых сыров.

Высокая твердость сырной массы в верхних и нижних краях верхнего (боковина № 1) и нижнего полотен (боковина № 2) среднего слоя контрольного сыра всегда приводит к повышению твердости сырной массы в ее центральной части. Чтобы подтвердить вышесказанное, у 1-ой головки опытных и 1-ой головки контрольных зрелых сыров (с удаленными уплотняющимися верхним и нижним слоями) с 4-х боковых краев среднего слоя отрезали слой толщиной 1,5 см (рис. 4) и определяли твердость (с 0,5 кг гирей) на оставшемся бруске размером 27х12х7 см.

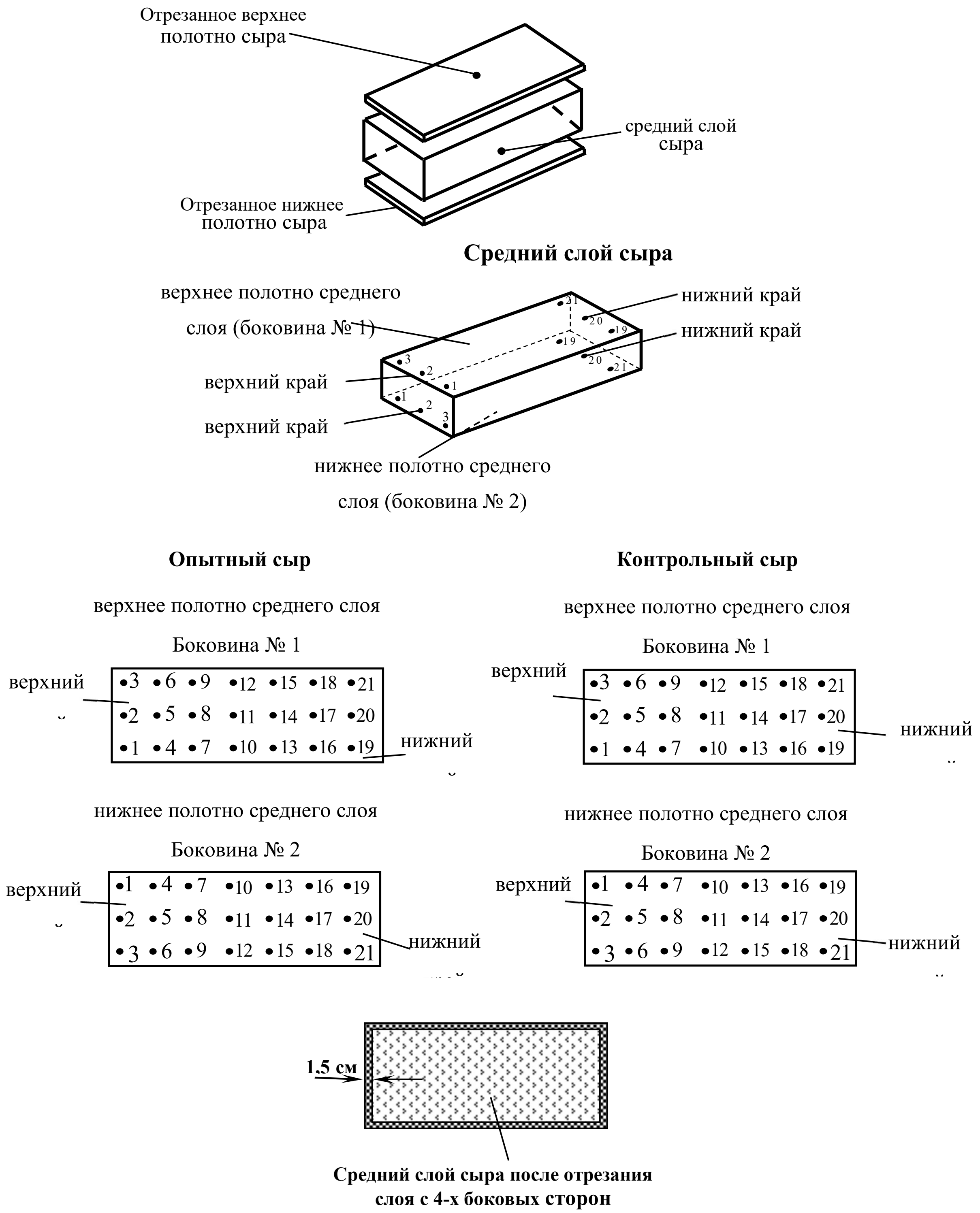

Рис. 4 Удаление 1,5 см-го слоя от краев среднего слоя зрелых сыров

Таблица 2. Распределение твердости в среднем слое зрелых сыров “Лори” после удаления всех уплотняющихся слоев, сек. (с 0,5 кг гирей)

№ точки	Опытные сыры без верх., ниж. и боковых уплотняющихся слоев (2,5 см и 1,5 см) (27x12x7 см)		Контрольные сыры без верх., ниж. и боковых уплотняющихся слоев (2,5 см и 1,5 см) (27x12x7 см)	
	верхнее полотно	нижнее полотно	верхнее полотно	нижнее полотно
1.	9	10	13	22
2.	8	9	12	14
3.	6	9	14	13
4.	8	7	12	10
5.	7	7	6	7
6.	9	8	11	10
7.	5	7	6	9
8.	6	5	4	8
9.	5	7	7	8
10.	7	6	7	5
11.	6	6	4	4
12.	7	7	3	5
13.	6	5	9	9
14.	5	4	6	9
15.	4	5	8	10
16.	8	6	10	13
17.	8	8	5	10
18.	6	7	11	13
19.	9	9	12	12
20.	8	9	13	13
21.	9	10	18	12
В среднем	6,9	7,2	9,1	10,3
Колебания	4-9	4-10	3-18	4-22

Как видно из данных таблицы 2, что распределение твердости в среднем слое контрольного и опытного сыров после удаления всех уплотняющихся слоев различается незначительно. По размаху колебаний они также различаются незначительно. Из таблицы 2 также видно, что средний слой зрелого контрольного сыра после удаления бокового уплотняющегося слоя уже мало отличается от опытного сыра. Так, например, у опытного сыра, твердость сырной массы в верхнем полотне составляет 6,9 сек. с колебанием 4-9 сек., в нижнем полотне – 7,2 сек. с колебанием 4-10 сек., когда твердость сырной массы в верхнем полотне среднего слоя контрольного сыра без верхнего, нижнего и боковых уплотняющихся слоев соответственно составляет 9,1 сек. с колебанием 3-18 сек., в нижнем полотне – 10,3 сек. с колебанием 4-22 сек. Как видим, твердость сырной массы как в верхнем, так и в нижнем полотне среднего слоя контрольного сыра без верхнего, нижнего и боковых уплотняющихся слоев лишь чуть выше твердости верхнего и нижнего полотен среднего слоя опытного сыра без верхнего и нижнего уплотняющихся слоев. Это свидетельствует о том, что многократное переворачивание контрольных сыров приближает к условиям двустороннего прессования.

Также проведено исследование отрезанной из верхних и нижних слоев 2,5 см и с 4- х боковых краев 1,5 см среднего слоя. Было установлено, что в среднем слое опытного сыра твердость распределилась (6.9 сек.) в верхнем полотне, а в нижнем (7,2 сек.) при колебании соответственно (4-9 сек) и (4-10 сек), а твердость контрольного соответственно 9,1 сек. и 10,3 сек. Разница незначительна при колебании в пределах 3-18 сек., 4-22 сек. Видно, что твердость контрольных сыров чуть выше опытных сыров из-за применения салфеток и перепрессовки, а также технологического режима при самопрессовании. Также выше на краях по ширине верхнего и нижнего полотна. Бок №1 (7,6; 8,6) и бок №2 (9,3; 9,3), а на контрольном (13,0; 14,3), (12,3; 16,3), а в углах тоже соответственно составляет (8,25; 9,5), (14,25; 14,75) сек.

Высокая твердость сырной массы в верхних и нижних краях верхнего (боковина № 1) и нижнего полотен (боковина № 2) среднего слоя контрольного сыра всегда приводит к повышению твердости сырной массы в ее центральной части. Провели сравнение полотен среднего слоя опытных и контрольных сыров без верхнего и нижнего уплотняющихся слоев с сырами без верхнего, нижнего и боковых уплотняющихся слоев.

Из данных видно, что распределение твердости в среднем слое контрольных и опытных сыров после удаления всех уплотняющих слоев различается незначительно. По размаху колебания они также различаются незначительно.

Обсуждения. Впервые предложено двухстороннее бессалфеточное прессование с исключением перепрессовок, с уменьшением анизотропности сыра "Лори" и сокращением продолжительности прессования.

1. Для проведения опыта сконструирована и изготовлена винтовая прессформа сыра "Лори" и динамометр для измерения прессующего усилия над сырной массой.
2. С целью определения технологического режима двухстороннего бессалфеточного прессования с исключением перепрессовок, сокращением продолжительности прессования сыра "Лори", винтовой пресс был реконструирован на пневматическую с целью обеспечения более точной перпендикулярности штока пневмоцилиндра по отношению к поверхностному слою сырной головки.
3. Исследована оптимальность предлагаемого нового режима для двухстороннего прессования сыра "Лори" реконструирован винтовой пресс на пневманическую.
4. Проводили иследование распределение твердости верхных и нижних полотнаь на краях по ширине и в углах в среднем слое зрелых сыров "Лори" после удаления всех уплотняющих слоев (2,5-1,5 см) с 4-х бокавых краев.

Заключение. Таким образом можно заключить, что распределение твердости в среднем слое сырной массы опытных сыров (без перепрессовок и салфеток, сокращением продолжительности прессования) более постоянное и стабильное по сравнению с контрольными сырами, следовательно, двустороннее прессование в какой-то мере уменьшает анизотропность, повышает однородность сырной массы за счет одновременного уплотнения сырной массы с двух сторон. Кроме того, предлагаемый способ способствует уменьшению твердости именно в краях по ширине, в углах и на боковинах за счет не отстаивания сыворотки в капиллярах в межзерновом пространстве, а наоборот, интенсивного выделения сыворотки поверхности, смягчая консистенцию сырной массы, увеличивая съедобные части.

Также следует отметить, что распределение твердости в сырной массе происходит незакономерно, и для того, чтобы при исследовании распределения твердости в слоях сырной головки получить достоверные данные необходимо удалить уплотняющиеся слои сырной массы (2,5см и 1,5см).

Вывод.

1. Исследование показало, что высокая твердость сырной массы верхних и нижних краев верхнего полотна (боковина N1) и нижних полотен (боковина N2) среднего слоя контрольного сыра всегда приводит к повышению твердости сырной массы.
2. Видно также, что высокая твердость образуется именно на краях по ширине и в углах сырной головки.
3. По нашему мнению твердость объясняется тем, что при смещении сырных зерен образуются боковины, и при их смещении под давлением с разных сторон в углах и 2-х краях по ширине боковин головки сыра сырная масса

уплотняется больше и из-за этого увеличиваются средние данные твердости сырной массы на верхнем и нижнем полотнах сырной головки.

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Sociological Sciences

The Power of Visual Storytelling: Analyzing Apple's Use of Visual Elements in Content Marketing to Drive Audience Engagement and Shape Brand Perception

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Abstract

This study explores the intriguing realm of visual storytelling in the context of content marketing, with a particular emphasis on the strategic approach employed by Apple. This study aims to examine the impact of visual storytelling on audience engagement and brand perception through an analysis of Apple's utilization of visual elements. The evaluation of Apple's campaigns includes an analysis of engagement metrics, emotional resonance, and authenticity, which provides insights into the fundamental factors contributing to their achievements. Furthermore, the study investigates the impact of Apple's visual storytelling on the establishment of its brand identity, hence influencing consumer views on the brand's values and personality. The utilization of comparative analysis and measurement measures provides valuable insights into the efficacy of Apple's visual storytelling strategy. This research aims to enhance the existing knowledge regarding Apple's strategies in creating visually captivating narratives that are consistent with their brand messaging. By doing so, it contributes to the larger comprehension of the significance of visual storytelling in content marketing and its impact on audience engagement and brand perception.

Keywords: visual storytelling, content marketing, Apple, audience engagement, brand perception, visual elements, emotional resonance, authenticity, brand identity, comparative analysis, measurement metrics, brand messaging.

Introduction

The amalgamation of visual storytelling and content marketing has become a formidable presence in the current marketing realm, altering the manner in which brands interact with their target consumers and construct captivating storylines. Apple, a well recognized worldwide brand, has a prominent position at the vanguard of this intersection. It is renowned not only for its innovative goods but also for its adeptness in effectively communicating messages through aesthetically appealing tales. This study explores the dynamic field of visual storytelling in the context of content marketing, specifically examining Apple's strategic utilization.

In contemporary society, characterized by an abundance of information and limited attention spans, the practice of visual storytelling has emerged as a crucial means of captivating audience attention and cultivating more profound connections. Visual storytelling surpasses conventional modes of communication by utilizing the potency of visual elements, artistic composition, and narrative structure to effectively communicate messages that evoke profound emotional and intellectual responses. At the core of this phenomenon is Apple, a renowned brand recognized for its simplistic yet compelling visual ads that effectively convey both practicality and sentiment.

The objective of this study is to analyze Apple's visual storytelling methods in the context of content marketing, examining the interplay between their campaigns' visual aspects, emotional impact, and authenticity. Through an analysis of the primary visual elements employed in Apple's marketing campaigns, our objective is to ascertain the manner in which their visual tales surpass superficial aesthetics and effectively captivate people at a deeper level. This research will examine Apple's strategic utilization of visual components, including images, design, and typography, in order to establish a unified and captivating narrative encounter.

Moreover, the primary objective of this study is to investigate the impact of Apple's visual storytelling on the formation of its brand image. In addition to conventional engagement metrics, our research endeavors to examine the impact of Apple's visual tales on the brand's identity and consumer perceptions. Through an examination of the emotional resonance and the veracity of these narratives, our objective is to elucidate the underlying mechanisms through which Apple's visual storytelling influences customer perceptions, thereby establishing a firm position for the brand within the cognitive and affective realms of its audience.

The primary objective of this inquiry is to provide insight into Apple's proficient use of visual storytelling as a strategic instrument in the realm of content marketing. Through the analysis of the subtleties inherent in their methodology, our objective is to enhance the comprehension of how brands can effectively utilize visual narratives to establish a strong emotional connection, encourage active participation, and shape individuals' perceptions. This endeavor provides significant knowledge for marketers who aspire to construct captivating visual narratives that endure over time.

Apple's Visual Storytelling Strategies

The Visual Storytelling Strategies employed by Apple demonstrate a skillful integration of visual elements and deliberate intention that effectively connect with viewers, eliciting significant emotional reactions (Kosara & Mackinlay, 2013). Kosara and Mackinlay argue that visual storytelling goes beyond its aesthetic appeal and serves as a fundamental element in facilitating effective communication by offering context and narrative structure for intricate material (p. 44). This approach aligns with Apple's technique, which intentionally utilizes visual components to communicate tales that go beyond product features and engage consumers on an emotional level with the brand.

on their 2020 study entitled "A Pictorial Representation's Significance," Seifert and Chattaraman examine the impact of visual imagery on conveying information. The article titled "The Impact of Visual Storytelling on the Aesthetic Experience of Novel Designs" highlights the profound influence of visual narratives on the aesthetic perception of novel designs (p. 882). The writers place significant emphasis on the notion that visual narrative serves to enhance the aesthetic experience of designs, concurrently captivating the attention of viewers. Apple demonstrates its dedication to harnessing this revolutionary potential through strategic initiatives that actively include and nurture target consumers, so establishing a distinct and recognizable brand image.

At the center of Apple's visual storytelling strategy lies a deliberate and careful process of choosing and coordinating essential visual elements that align with the brand's language and fundamental principles. The incorporation of these components, encompassing photography, design, typography, color palettes, and composition, facilitates Apple in crafting narratives that evoke emotional resonance among its target audience. The deliberate arrangement of these components in marketing campaigns enables the transmission of subtle connotations and implications, promoting stronger affiliations with the brand.

The narrative-focused strategy employed by Apple is effectively demonstrated by their renowned "Shot on iPhone" advertising campaign. The brand encourages customers to engage in the exploration and sharing of their personal narratives by showcasing user-generated photographs and films taken with iPhones. This method effectively embodies the fundamental principles of visual storytelling by skillfully constructing a cohesive narrative that highlights the profound impact of Apple's products in capturing individual experiences and fostering deep connections with customers on a global scale.

According to Kosara and Mackinlay (2013), the utilization of visual elements for narrative purposes serves as a means to connect data with understanding, hence facilitating its application in the field of marketing (p. 50). Apple utilizes the potency of visual storytelling as a means of effectively conveying narratives that evoke a profound connection with its target audience. The deliberate use of visual representations, chromatic compositions, and artistic components in Apple's advertising endeavors serves as evidence of the brand's dedication to establishing a profound and instinctive bond with customers, surpassing the mere transactional nature of product marketing.

In summary, Apple's Visual Storytelling Strategies serve as a noteworthy case study illustrating the effectiveness of visual tales in establishing lasting relationships between businesses and their target consumers. The brand's careful curation of visual elements, precise arrangement, and evocative impact align with the research conducted by Kosara, Mackinlay, Seifert, and Chattaraman. The success of Apple in effectively using visual storytelling into its marketing efforts highlights the significant potential for transformation that this method has. In the realm of modern marketing, Apple's techniques stand out as a guiding light for marketers who aspire to establish impactful and emotionally engaging connections by means of visual storytelling.

Audience Engagement and Emotional Resonance

The reciprocal relationship between Audience Engagement and Emotional Resonance plays a pivotal role in Apple's Visual Storytelling Strategies, exemplifying the brand's exceptional capacity to establish significant relationships with its audience. By strategically combining visual tales and intention, Apple establishes a synergistic effect that not only engages but also elicits powerful emotional reactions, cultivating a lasting connection between the company and its clientele.

Engagement metrics play a crucial role in the current marketing scene, serving as essential instruments that provide valuable insights into the efficacy of techniques employed to attract and maintain audience attention. Quantifiable evidence of the effectiveness of visual storytelling can be obtained through metrics such as click-through rates, content interaction length, and social media engagement. The authors Garrido and Macritchie (2018) explore the notion of emotional contagion, a phenomenon that significantly influences the level of involvement. The aforementioned phenomena refers to the transmission of emotions among individuals in a collective environment, highlighting the contagious quality of emotions (p. 39). The concept described aligns well with Apple's strategy of visual storytelling, as metrics of engagement measure the extent to which the narratives connect with viewers, promoting active participation and deep involvement in Apple's narrative realm.

The emotional effect of a message is a crucial factor in capturing the attention and involvement of the audience. This highlights the significant role that emotions play in creating a lasting impression and motivating individuals to take action. The study conducted by Giorgi (2017) emphasizes the significance of emotions in determining the efficiency of frames, hence influencing individuals' cognitive processing and behavioral reactions towards information (p. 337). This concept is consistent with Apple's strategic approach of constructing narratives that evoke a wide range of emotions, encompassing both joy and nostalgia. Through the cultivation of emotional bonds, Apple effectively converts consumers into brand champions who not only praise the product, but also deeply identify with the underlying values and principles of the brand.

The effectiveness of Apple's integration of interaction data and emotional resonance is clearly demonstrated by advertisements like "Shot on iPhone." This campaign utilizes user-generated content as a means to cultivate a sense of community engagement, enabling individuals to share personal narratives captured via their Apple devices. The result is an increased level of involvement and a shared emotional connection focused on Apple's products.

In result, Audience Engagement and Emotional Resonance are essential components of Apple's Visual Storytelling Strategies. The combination of engagement metrics and emotional impact results in a potent synergy that drives Apple's tales beyond the boundaries of traditional marketing strategies. The research conducted by Garrido, Macritchie, and Giorgi provides a comprehensive understanding of the complex mechanisms that underlie audience engagement and emotional connections. This research highlights Apple's proficiency in effectively translating theoretical ideas into visually compelling tales that evoke strong emotional responses. The Visual Storytelling Strategies employed by Apple serve as a notable demonstration of how businesses may effectively utilize engagement metrics and emotional resonance to construct narratives that effectively engage, resonate with, and make lasting connections with audiences worldwide.

Shaping Brand Perception:

The influence of visual tales on brand perception is a key aspect of Apple's Visual Storytelling Strategies, which plays a significant role in shaping consumer interactions and responses. This component, which is distinguished by its impact on the identity of a brand and the perceptions of consumers, reveals the complex manner in which visual storytelling influences the way in which audiences perceive and establish a connection with the brand.

Apple's capacity to reinvent and strengthen its brand identity is rooted in the fusion of visual narratives and strategic intent. The research conducted by Booth and Matic (2011) emphasizes the importance of influencers in social media as key actors in affecting the views of corporate brands. In a similar vein, the visual narratives produced by Apple serve as influential entities in their own regard, constructing storylines that encapsulate the fundamental principles, character, and ambitions of the brand. The selection of visuals, including design, color, and imagery, effectively contributes to the establishment of the brand's identity by eliciting emotional responses and creating connections that are consistent with the intended image.

Visual tales possess the capacity to shape consumer perceptions, exerting an influence on how audiences perceive and establish connections with the brand. The research conducted by van Rompay and Pruyn (2011) highlights the significance of aligning visual product attributes with typography, and its influence on brand impression and price expectations. Within the realm of Apple, visual tales function as a means of connecting the physical product with the abstract brand, facilitating consumers' perception of the product in accordance with the overarching brand identity. The alignment between visual aspects, such as the clean form of Apple gadgets and the aesthetic appeal of its marketing materials, plays a significant role in shaping consumer perceptions and influencing their interpretation of the brand's offerings.

The successful incorporation of these perspectives into Apple's Visual Storytelling Strategies is exemplified by ads such as "Think Different" and "Shot on iPhone." These narratives serve the purpose of not only commemorating the brand's core principles but also eliciting emotional responses and establishing connections that deeply resonate with consumers. The deliberate selection of graphics, including the usage of famous silhouette pictures and engaging user-generated material, plays a strategic role in shaping a favorable brand perception.

The concept of Shaping Brand Perception explores the complex relationship between visual storytelling and the way viewers perceive a brand. The research conducted by Booth, Matic, van Rompay, and Pruyn highlights the significant impact that visual components have on shaping brand identity and consumer attitudes. The Visual Storytelling Strategies employed by Apple leverage these findings, enabling the creation of tales that are in line with the brand's identity and serve to shape consumers' impressions. In conclusion, the integration of visual storytelling and brand perception serves to reinforce Apple's status as an innovative brand that not only develops advanced products but also constructs tales that influence and connect with consumer perspectives.

Effectiveness of Apple's Visual Storytelling: A Comparative Analysis

Within the domain of visual narrative, Apple stands out as an exemplar of triumph when compared to worldwide corporations such as Samsung. The comparative research underscores the unique strengths of Apple, demonstrating its capacity to utilize visual narratives as a strategic resource that extends beyond traditional marketing efforts, effectively engaging with its target demographic.

Apple possesses a notable strength in its unrivaled capacity to elicit emotions and establish genuine connections through the use of visual narratives. When conducting a comparative analysis of Apple's advertising campaigns, such as the "Shot on iPhone" campaign, and Samsung's campaigns, a notable divergence becomes evident. Apple's narratives adeptly incorporate human stories into its product promotion, effectively tapping into relevant experiences that elicit a universal response. The emotional resonance exhibited by Apple allows the company to beyond the purely transactional aspects of advertising, thereby constructing storylines that evoke deep emotional responses and leave enduring impacts.

Apple's ability to consistently communicate a cohesive corporate identity through its visual tales distinguishes it from Samsung. Apple's advertising efforts constantly reflect its simple design philosophy and user-centric approach, but Samsung's message occasionally lacks a cohesive corporate identity. This advantage reinforces Apple's reputation, allowing people to identify and link its visual tales with the brand's fundamental principles and beliefs.

The comparative examination highlights Apple's ability to humanize technology. In contrast to Samsung's marketing strategies that primarily emphasize product features, Apple's advertising efforts focus on portraying the everyday experiences of regular individuals. The use of a human touch in Apple's goods evokes empathy and relatability, so elevating them from being just devices to becoming essential components of consumers' daily existence. This edge allows Apple to cultivate emotional ties that extend beyond just product specifications.

Apple's ability to captivate and maintain audience engagement is a notable feature that sets it apart from Samsung. The storylines presented by Apple constantly exhibit a high level of engagement, indicating their capacity to captivate and sustain the interest of viewers. Furthermore, Apple's marketing campaigns exhibit a higher level of brand recall in comparison to Samsung's, as audiences demonstrate a greater propensity to retain Apple's narratives and establish a connection with the brand. This advantage underscores the lasting influence of narratives, so enhancing the deep-rooted presence of Apple's brand in the minds of consumers.

The visual storylines employed by Apple are of significant importance in fostering long-lasting brand loyalty, so conferring upon the company a distinct advantage over its competitor, Samsung. The storylines establish emotional bonds that cultivate a sense of loyalty that surpasses mere product attributes. Although Samsung likewise possesses a dedicated client base, Apple's tales have the ability to cultivate a more profound emotional attachment, thereby successfully converting users into brand supporters.

The comparative analysis conducted between Apple and Samsung highlights the substantial advantages that Apple possesses in the domain of visual storytelling. The distinctive capacity of this medium to elicit emotional responses, uphold brand coherence, humanize technological elements, elicit active participation, enhance brand memorability, and cultivate strong allegiance demonstrates its expertise in constructing storylines that strongly resonate with target audiences. The aforementioned advantages establish Apple as an innovative leader that employs visual storytelling not only as a marketing strategy, but also as a means of establishing long-lasting emotional bonds. Within this comparison framework, Apple serves as a prominent illustration of how visual narratives possess the capacity to enhance a brand's standing above its rivals. By crafting a narrative tapestry that encompasses its products and ethos, Apple effectively establishes a lasting impression on its worldwide audience.

Conclusion

Within the dynamic realm of marketing and branding, Apple's Visual Storytelling Strategy stands out as an unrivaled exemplification of efficacy and influence. The extraordinary characteristics of Apple's approach in visual storytelling excellence are highlighted through a comparative analysis that juxtaposes it with worldwide brands such as Samsung.

The capacity of Apple to elicit deep emotional impact through its narratives represents a distinctive competitive edge. In contrast to other companies in its industry, Apple strategically constructs tales that serve the dual purpose of promoting its products while also fostering genuine emotional relationships with its audience. The remarkable ability of Apple to beyond mere transactional interactions and establish enduring impacts elevates the effectiveness of their visual narratives to a degree that is unmatched by many.

The maintenance of brand identity by Apple through consistent visual narratives serves to reinforce its distinctiveness. While most competitors struggle to effectively communicate a cohesive corporate identity, Apple regularly reinforces its simple design aesthetic and user-centric philosophy through its tales. This alignment facilitates a cohesive acknowledgment of the brand's fundamental principles, embedding them in the consciousness of consumers through persuasive narratives.

Apple's proficiency at humanizing technology provides an additional unique advantage. In contrast to brands that place emphasis on technical specs, Apple adeptly weaves together human experiences and its goods within its storylines. Through the presentation of sympathetic narratives involving everyday individuals, Apple effectively enhances the perceived value of its goods, beyond their plain utilitarian functionality and establishing them as indispensable components inside the lives of consumers. This distinctive methodology fosters interpersonal relationships that evoke a deep emotional response, hence enhancing the effectiveness of visual narrative.

The quantifiable evidence of Apple's dominance in this domain is demonstrated by engagement rates and brand recall measurements. Apple routinely exhibits high levels of user interaction, so emphasizing the compelling nature of its storylines and the strong commitment of its audience. Furthermore, it has been shown that audiences demonstrate a heightened ability to remember and recognize the brand narratives crafted by Apple, thereby emphasizing the long-lasting influence of these stories. The capacity to persist in the consciousness of customers is indicative of the narratives' persistent impact and the lasting bond they establish.

One notable aspect is Apple's ability to foster deep brand devotion through its storylines. While loyalty is an often seen phenomenon, Apple's storylines surpass the conventional notion of loyalty and instead evoke fervent enthusiasm. The storylines establish emotional connections that result in clients becoming enthusiastic advocates that actively promote the company. The degree of dedication observed is indicative of the effectiveness of the storytelling in converting Apple devotees into storytellers in their own right.

In summary, Apple's Visual Storytelling Strategy serves as a prime example of exceptional quality, reinforcing its status as a prominent global frontrunner. The comparative study conducted in relation to industry leaders such as Samsung serves to underline the unquestionable capabilities of Apple, so establishing its tales as a benchmark in the realm of visual storytelling. Apple's Visual Storytelling Strategy solidifies its transformative impact on global audiences through various key elements. These include the evocation of emotions, the maintenance of brand consistency, the humanization of technology, the command of engagement, the fortifying of brand memory, and the building of unequaled loyalty. The combination of these extraordinary capabilities serves to affirm Apple's Visual Storytelling Strategy as a very influential and powerful narrative on a global scale.

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Medical Sciences

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RESULTS OF THE SCREENING PROGRAM FOR EARLY DETECTION OF COLORECTAL CANCER IN THE REPUBLIC OF KAZAKHSTAN

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Annotation: This publication presents regional rates of incidence and mortality from colorectal cancer, as well as a detailed methodology and results of screening for this pathology in our country. Clinical and organizational aspects of early diagnosis based on the method of active detection of this type of cancer in clinically asymptomatic patients are presented. The technology of two-stage screening and the subsequent routing of examined patients depending on the results of this type of preventive examination of the population are described in detail.

Key words: colorectal cancer, epidemiology, morbidity, mortality, screening, hemocult test, fecal occult blood test - FOBT, total colonoscopy.

History knows many examples when the originally formulated postulates in a particular area continue to be relevant to this day. These postulates, which follow from one of the main tasks of the oncological service, include the early diagnosis of malignant tumors. Colorectal cancer (CRC) occupies one of the leading positions in terms of morbidity and mortality, and early symptoms are very poor, which leads to a high neglect of this disease at the time of diagnosis. In this regard, two-stage colorectal screening is one of the most important areas to improve the early diagnosis of this cancer localization. At the same time, the main conditions for screening are the availability of trained personnel and a standard approach to identifying the trait under study and evaluating the results. The applied methods should be quite simple, reliable and reproducible [1,2].

Colon cancer with a share of 5.2% (2020 - 5.5%) in the structure of oncopathology of both sexes of the population and women (4.9%) remained in 6th place in 2021, in men it fell from 5th to 6th place (5.5%). The incidence rate per 100 thousand of the population with cancer of this localization in the country in 2021 increased from 8.7 to 8.8 [3].

Above the average republican level, the incidence of colon cancer was noted in 11 regions: Kostanay - 15.9, Pavlodar - 15.3, Karaganda - 15.0, East Kazakhstan - 13.4, North Kazakhstan - 12.7, Akmola - 10, 2, West Kazakhstan - 10.1, Aktobe - 9.0 regions and years. Almaty - 12.1 and Nur-Sultan - 9.0. Least of all, colon cancer was noted in Turkestan - 2.7 per 100 thousand population, Kyzylorda - 4.6, Almaty - 4.7, Mangystau - 4.9, Zhambyl - 5.8 regions and Shymkent - 4.0.

Rectal cancer in the structure of malignant tumors of both sexes retains the 7th place in terms of rank with a specific gravity of 4.9% (2020 - 5.0%), but in men it has risen from 6th to 4th place, in women it is stable at 9th place. The incidence rate increased from 7.8 to 8.4 per 100,000 population. At the same time, a high incidence rate was registered in Pavlodar - 18.1 per 100 thousand population, Kostanay - 16.2, North Kazakhstan - 15.1, East Kazakhstan - 13.9, Akmola - 13.1, Karaganda - 11, 7, West Kazakhstan - 9.8 regions. Traditionally, a low incidence of rectal cancer is observed in Turkestan - 2.7, Mangystau - 2.8, Zhambyl - 5.1, Kyzylorda - 5.3, Almaty - 5.6, Atyrau - 6.3 regions and Shymkent - 5.0 per 100 thousand population [3].

Colon cancer in the structure of causes of death from malignant neoplasms of the population of both sexes in 2021 dropped from 5th place to 6th, with a share of 5.0% (2020 - 5.4%). At the same time, the mortality rate in the country decreased from 4.1 to 3.6 per 100,000 population. Above the national average, mortality rates were noted in 9 regions: Zhambyl - 3.7, Akmola - 3.8, West Kazakhstan - 4.4, North Kazakhstan - 5.0, East Kazakhstan - 5.1, Karaganda - 5 .6, Kostanay - 5.6, Pavlodar - 6.0 - the maximum result, regions and Almaty - 5.3 per 100 thousand population. Low rates of mortality from colon cancer were found in Turkestan - 1.7 (the best result), Almaty - 1.8, Atyrau - 1.8, Aktobe - 2.5, Mangistau - 2.6, Kyzylorda - 2.7 regions and gg. Shymkent - 2.4 and Nur-Sultan - 2.7 per 100 thousand population.

Rectal cancer in the structure of causes of death in the population of both sexes in 2021 rose from 6th to 5th place with a share of 5.4% (2020 - 5.22%). In general, the death rate from this form of cancer in the republic was 3.9 per 100,000 people. A high mortality rate was recorded in East Kazakhstan - 8.6 (maximum level), Pavlodar - 7.6, Akmola - 5.3, Karaganda - 5.2, Kostanay - 4.9, North Kazakhstan - 4.3 regions and Almaty city - 4.3 per 100 thousand population. Below the average republican level, mortality rates from this pathology were ascertained per 100 thousand of the population in Mangistau - 1.2 (the lowest indicator), Turkestan - 1.6, Kyzylorda - 2.1, Almaty - 2.6, Zhambyl - 2.7, Atyrau - 3.4 regions and Shymkent - 2.1 [3].

Screening of CRC screening is the systematic use of screening studies in an asymptomatic population. The purpose of screening is to identify people with abnormalities suggestive of CRC. These persons in the future need additional examination to clarify the diagnosis. Opportunistic screening is the non-systematic use of screening tests in routine medical practice. A screening program is much more challenging than an early detection program. At the same time, the success of the screening program is largely determined by the awareness of the population and medical workers about the possibilities of early diagnosis of CRC. The feasibility of a screening program is determined by several factors that relate to the disease being screened, the screening test, the characteristics of the population, and the characteristics of the healthcare system.

The first factor is that the disease must be well understood, common enough in the target population to justify screening, have a recognizable early stage; treatment of the disease at an early stage should be more effective than at a later stage.

The second is that the test should be characterized by sufficient sensitivity, i.e. the ability to detect cancer among people with the disease; sufficient specificity - the probability that among people who do not have a disease, the test result will be negative; have a high positive predictive value (positive predictive value) or, in other words, the likelihood that people with a positive test result have the disease; have a high predictive value of a negative result (negative predictive value), i.e. the likelihood that people with a negative test result do not have the disease; security; low cost; and acceptability - the likelihood that people for whom this test is intended will agree to the examination (which to some extent depends on the awareness of the population about the possibilities and importance of early diagnosis).

The third factor is that the healthcare system should be ready for maximum screening test coverage of the target group, have the resources to confirm the diagnosis, appropriate treatment and follow-up of people with positive test results, and regularly conduct screening tests at regular intervals. At the same time, the benefits of screening must outweigh the potential physical and psychological harm and justify the financial costs of its implementation [4].

The factors most significant for the development of CRC are:

- the presence of chronic inflammatory bowel diseases, adenomatous polyps, cancer of other localization, etc.;

- family history (presence of one or two first-degree relatives with CRC or familial diffuse intestinal polyposis);

- the age of men and women over 50 years old, taking into account the fact that more than 90% of patients with colorectal cancer are people of this age (medium risk).

Age, regardless of gender, is an important risk factor for CRC. After the age of 50, the incidence of CRC increases from 8 to 160 per 100,000 population. Thus, people who have reached the age of 50, even in the absence of symptoms, constitute a moderate risk group for CRC.

The second category of increased risk of CRC (20%) is made up of persons with a genetic and family predisposition, suffering from chronic inflammatory bowel diseases, diffuse familial polyposis.

The high-risk CRC group is determined by the so-called Amsterdam criteria (the presence of malignant tumors in two generations, the presence of cancer in a first-line relative under the age of 50 years), in this case, CRC screening should be carried out after the age of 30 years [5].

The degree of individual risk of developing CRC is determined before screening to select the scope of studies and the frequency of their conduct.

The interval for oncological colorectal screening is 1 time in 2 years, target group: men and women aged 50-70 years, with the exception of persons registered at the dispensary for CRC and colon polyposis. At the same time, when forming the target group, one should take into account the absence of severe concomitant diseases, such as the presence of a common malignant neoplasm, cerebrovascular diseases in the stage of decompensation, chronic obstructive pulmonary disease with respiratory failure, cirrhosis of the liver, myocardial infarction with congestive heart failure, diabetes mellitus with vascular complications. and others, which are highly likely to lead to death in the next 10 years.

The first step in screening for CRC is the fecal occult blood test (FOBT). Traditionally, such methods include a benzidine test for occult blood in the feces. This is a biochemical method based on the assessment of pseudoperoxidase activity of hemoglobin. There is ample evidence that invitation to guaiac FOBT screening (gFOBT) reduces CRC mortality by approximately 15% in age-matched average-risk populations.

To ensure the effectiveness of screening with gFOBT, the interval for screening under the national screening program should not exceed two years. To date, there is an immunochemical FOBT method - iFOBT, which is superior in efficiency to gFOBT in terms of the probability of detecting adenoma and cancer. iFOBT has improved analysis performance compared to gFOBT.

Immunochemical (immunochromatographic) examination of feces for occult blood - iFOBT or hemocult test is carried out for all men and women of the target group using an express method, which allows you to get a result within 3-5 minutes, without the participation of a medical worker. However, the evaluation of the test is carried out only by a medical worker in the PHC preventive department.

With a positive analysis of feces for occult blood, the second stage of colorectal screening is performed, which consists in endoscopic examination of the colon - total colonoscopy [6]. At the same time, in this case, this medical manipulation is of a therapeutic and diagnostic nature, since it allows one-stage removal of adenomatous polyps, which, according to various authors, occur in every third subject after 50 years of age. At the same time, women have 20% fewer polyps than men, but they have more right-sided lesions, which are more difficult to detect using fecal blood tests, because they are less traumatic [6,7].

Now, regarding the results of CRC screening. In 2021, despite the difficult epidemiological situation in the country, 920,640 men and women of the target group from 50 to 70 years old were examined during colorectal screening (971,450 in 2020) [3].

According to the results of colorectal screening, 211 cases of colon and rectal cancer were detected in 2021, which is 24 cases more than in the previous year - 187 cases. The detection rate increased from 0.19 to 0.23 per 1000 examined patients.

The low detection rate of CRC was noted mainly in regions with a low level of basic incidence - in Turkestan, Zhambyl, Atyrau, Kyzylorda, Mangystau regions, Shymkent - from 0.01 to 0.20 per 1000 examined, as well as in West Kazakhstan, Akmola regions, Nur-Sultan - regions with an average and high incidence of CRC.

Compared to 2020, screening showed a decrease in the detection rate of CRC in the Mangistau region (from 1.04 to 0.20), Almaty (from 0.36 to 0.26), and Akmola (from 0.26 to 0.13), Karaganda (from 0.29 to 0.22) and Turkestan (from 0.06 to 0.01 per 1000 examined).

Colon precancer (adenoma detection rate) was detected in 22.8% of patients who underwent colonoscopy (2020 - 19%). Below the national average, the detection rate of colorectal precancer was noted in Akmola, Aktobe, Almaty, Atyrau, Zhambyl, Kyzylorda and Mangystau regions.

It should be noted that the indicator of detection of precancer of the colon for 2021, according to the Comprehensive Plan for the Control of Cancer, was 21.0% and was achieved. At the same time, in 2021, the proportion of patients with CRC identified during screening studies with early stages (0-I, II stages) was 89.1% (in 2020 - 89.3%).

The proportion of stage 0-I CRC was 27.5% (2020 - 33.7%); Stage II - 61.6% and 55.6% - respectively. High early detection of CRC (above 30%) was noted in the following regions: Akmola, Zhambyl, Kostanay, North Kazakhstan, Turkestan, East Kazakhstan regions, the cities of Almaty and Shymkent. Cases of cancer in stages III-IV detected during screening were registered in Almaty, West Kazakhstan, Karaganda, Kostanay, Pavlodar, East Kazakhstan regions, Almaty city. A total of 18 cases of CRC in stage III and 5 cases in stage IV were identified [3].

Summarizing the above, it can be stated that satisfactory results of colorectal screening can only be achieved with its proper organization, high quality of conduct, active participation in population screening, the use of highly sensitive tests and instrumental methods of preventive examination, accurate subsequent diagnosis of detected tumors and timely treatment. High-quality colorectal screening leads to early diagnosis of colon neoplasms, both benign in the form of polyps, and CRC in the early stages, which, in turn, improves the effectiveness of treatment and improves the prognosis of the disease. Target groups surveyed, who for one reason or another do not participate in this screening, should be informed that there are no other screening methods that could also effectively reduce mortality from CRC.

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Literature

THE EPISTOLARY GENRE OF CLASSICAL LITERATURE

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Literary letters are mostly written in letter form, articles, essays, criticism, memories and daily diary. The fact that the letter is accepted as a literary type is mostly based on composition and style.

Language and expression in the letter vary according to the type of letter the letter is written in and the context of the letter. The letter begins with the correct title in which it is written. The title, which is the first expression in the letter, varies depending on whether it is a literary, businesslike or formal letter.

What they want not to be included in the letter's afflicted share is done. Feelings and thoughts can be explained in detail in literary and verbal letters. Belə letters have a sincere and effective expression. In addition to this, the expression in business letters or official letters is short and laconic. In the written letters, only an explanation or explanation is given.

All letters and e-pockets are completed with sentences expressing either greetings or greetings. The words expressing sincerity and friendship are used as greetings or words that look for a reply to a letter. In official letters, the salutation section is formalized in accordance with the printer's position.

In the development process of human literature and literature, a series of literary figures and genres emerged. These genres, created and formalized by the human body, still remain in the ancient system, to release their different language, other words, genres. We first come across this classical style in Aristotle's “Poetics”.

The history of genres has been a great practice ever since. It is possible to compare the development and activities of each genre that was taken apart, but in a certain poetic axis, it is possible to compare with other poetic genres of the whole school. In the middle ages, when the poetics took shape like an apple, the literature of some countries of both Near and Middle East, both part of India and Central Asia, developed this apple.

Each literary genre that is canonized in poetic works is very closely related to other genres, and in this context, it preserves its integrity. From here, it is a qənaətə coming, that the genre is cateqoriya.

In the formation and coloration of the genres system of the rich, a certain amount of history has shown its essence. Sometimes long ages are needed for the evolution of the history of certain genres, which confirms the inclination to be mindful of the genre.

The development history of each literary genre is created on the basis of various literary genres, first of all, it starts with jerseys. The essence of the process is to determine their meaning; These meanings are customarily prepared on the edge of the literary process and are only later accepted as a basis, for example, by literary social enterprise.

One of the greatest influences of the public and one of the first written genres created after writing was discovered - undoubtedly, it was the epistolary genre. However, the ideya-aesthetic meaning of the essence of this genre can be taken in a broad and limited sense. In the meaning of this, if the written documents belonging to the various official correspondences are written, in a broad sense, the most common form of this genre is. In other words, when localizing this genre, it is not possible to take the word of being written as a basis. It is only one of the forms of fixing the text - epistolary text. It is possible to make use of these materials, words, various items, flowers, even music.

While the German scholar Lessinq defines the specifics of the genre, he points out that the words overlap in time and evoke each other.

Lessinqin characterizes this definition in the epistolary genre in the fullest sense. However, it is not just the precedents and events that are depicted here, but also the external elements of the epistolary genre, new address, address, ambassador, *qasid*, mixed *rəmzi* wares. At the same time, they have the ability to act.

In connection with this, the famous Russian scholar M. M. Bakhtin writes in his book titled "Aesthetics of verbal creativity: It makes you realize that we call it genres.

The scholar who emphasized that the genres are do not forget to include the epistoliar genre here. At this time, verbal and written examples are approached from the same subdivision.

When approaches this medium, it turns out that it is not the right way to limit the letters with only written examples.

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Economic Sciences

Swot Analysis for Mariott International: In comparison with Hilton Hotels & Resorts and Jin Jiang International

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INTRODUCTION:

It goes without any hesitations that Marriott International is a multinational hotel company that was founded in 1927 and the company is not going to lose ground. The company's portfolio includes 6.080 hotels with a total capacity of 1.190.604 rooms under the trademarks owned by Marriott International, but only 22 hotels with 9,900 rooms are owned by the company, the rest are franchised or managed.

As one of the most powerful brands in the world, Marriott has gained unconditional consumer acceptance, customer preference, unparalleled international reach and a reputation for excellence. Company's mission is to occupy and maintain a leading position in the hotel services market, showing special care for guests, business partners, employees, and society.

Marriott International has built strong brand image with the help of the right marketing which can be changed depending on the countries and cultures. Brand components include logo, corporate colors, corporate website, correctly selected advertising candidates and influencers.

COMPETITORS:

One of the main competitors is Hilton Hotels & Resorts that was founded in 1919 in Cisco, Texas. Under 18 brands, including Motto, Tru, Hilton Garden Inn, Homewood Suites, Conrad, LXR Hotels & Resorts, and Canopy, Hilton operates and franchises a variety of hotels and resorts. It oversees 6,110 hotels with 977,000 rooms that are dispersed over 120 different nations. Hilton had 173,000 employees and a $9.45 billion revenue turnover as of 2019. Hilton is world's second-largest hotel chain after Marriott being one of the main competitors for the company. Also, Hilton earned a top spot on the 2021 World's Best Workplaces list and been recognized as a global leader on the Dow Jones Sustainability Indices.

Another competitor is Jin Jiang which is a Chinese state-owned tourism and hospitality company. The company manages the Shanghai Jinjiang Hotel, Jinjiang Inn, Jinjiang Hotel, Peace Hotel, Metropole Hotel, Bestay Hotel Express, and Magnotel. Around 100,000 people worked for Jin Jiang in 2021, and the company oversaw more than 8,000 hotels. With over 1.1 million rooms, Jin Jiang is the third-largest hotel company worldwide. The business teamed up with Tencent in December 2021 to promote innovation in China's hospitality sector. To bring innovative technologies for the travel and hospitality industries, the multi-pronged alliance will make use of Tencent's SaaS accelerator, iPaaS, WeChat, and internet-related businesses. A creative rival of Marriott is Jin Jiang. For vacationers in China, it is also the greatest Marriott alternative.

It would be fair to mention that Marriott International hotel chain has the legendary Marriott Rewards program. The accumulative system supports tourists and business people who make regular trips to major cities in Asia, Europe, US, and Canada. Marriott hotels were the first to launch their own loyalty program in 1984. The modern program is a funded system of four levels: Basic, Silver Elite, Gold Elite and Platinum Elite. The hotel giant Marriott International managed to capture the loyalty of two categories of guests at once: the wealthy elite and middle-class businessmen. Representatives of business circles got the opportunity to exchange accumulated bonuses for inexpensive, but important preferences in work such as WiFi in the room, relaxation after a business meeting in the SPA or dinner in a restaurant. As for Hilton Hotels & Resort, the company has the Hilton HHonors program. The wide geography of the service is complemented by the opportunity to earn Gold Points on purchases with Citi Visa and American Express credit cards. Membership in the program is divided into four categories: Blue, Silver, Gold, and Diamond. The experience of Hilton chains is particularly interesting in terms of reducing the financial costs of maintaining loyalty programs. For example, Hilton HHonors does not have a fixed number of points per "standard" toll-free number. Thus, as Hilton Hotels & Resorts and Marriott International have almost the same bonus programs, it can be difficult for Marriott to take advantage.

Marriott International have higher prices compared to Jin Jiang Hotels. Jin Jiang Hotels runs or has under construction 795 hotels, including landmark hotels, luxury hotels, business hotels, and budget hotels, totaling approximately 116.000 rooms. The company has granted a license to use the reputable 'Jin Jiang' and 'Jin Jiang Inn' trademarks. With a horizontally integrated hospitality platform that includes both the upscale Jin Jiang Hotel and Peace Hotel as well as the more affordable Jin Jiang Inn Budget Hotels, Jin Jiang Hotels can meet the needs of a variety of clients. As one of the leading brands in the PRC's low-cost hotel industry, 'Jin Jiang Inn' offers domestic business and leisure tourist tidy, comfortable housing at an affordable price. The Group has made investments in several restaurants in addition to its hospitality business, including a high-end Chinese restaurant and significant fast-food brands.

STRENGTH AND WEAKNESS ALTERNATIVE FACTORS:

Marriott International, Jin Jiang Inn, and Hilton Hotels & Resorts are World's TOP-3 hotel chains, with strengths such as global presence, strategic partnerships, and profitable acquisitions. As for weakness points, the following factors are included: poor positioning, negative publicity, and strictness for employees. The companies' internal factors such as the World ranking, brand portfolio, global presence, shareholders and partners, and customer loyalty, physical resources, financial grants, activities and processes, past experiences.

1. According to the number of properties, Marriott International is the biggest hotel chain worldwide. They operate a vast network of hotels and resorts in numerous nations on six different continents. As of the September 2021 deadline, Marriott had over 7,600 properties operating all over the world. Hilton Worldwide Holdings is another company with a big global footprint. They manage a variety of lodging facilities under several brand names, including Hilton Hotels & Resorts, DoubleTree by Hilton, Embassy Suites, and others. Worldwide, Hilton had around 6,500 properties as of September 2021.The Chinese company Jin Jiang International Holdings has been enlarging its global reach. However, compared to Marriott and Hilton, their international reach is somewhat lower. To expand its global presence, Jin Jiang has been actively purchasing hotel chains and brands. As for geographic reach, Marriott has properties in well-known locations all around the world and is well-established in North America, Europe, and Asia. They serve a wide range of market categories, including the luxury, upmarket, and budget markets, with a varied portfolio of brands. Although Jin Jiang is most recognized for their presence in China, they have been working to diversify their market abroad. Their position in Europe and other continents has increased as a result of their acquisitions of hotel chains like Louvre Hotels Group, Plateno Group, and Radisson Hotel Group. In conclusion, Marriott and Hilton are more well-known and have a larger global footprint than Jin Jiang. Both Marriott and Hilton have a wider audience, more locations, and more well-known brands globally. Despite being largely well-known in China, Jin Jiang has been growing

abroad through acquisitions, yet it may have a somewhat smaller presence and less well-known brand outside of its native market. [1] [2] [3]

2. Marriott has built a substantial network of industry-specific strategic alliances. To provide their clients with improved perks and services, they have formed partnerships with top airlines, travel agencies, credit card providers, and travel firms. Expedia, United Airlines, and American Express are a few notable collaborations. For flights, vehicle rentals, and experiences, members of Marriott's loyalty program, Marriott Bonvoy, can earn and redeem points through relationships with a variety of travel partners. This increases Marriott's offerings' value and strengthens client loyalty. In order to improve the customer experience and broaden their market, Hilton has formed various strategic alliances. They have partnered with organizations like American Express, Lyft, and Amazon to provide their customers special incentives and individualized selections. In order to provide seamless travel experiences, Hilton also maintains connections with significant airlines and rental car agencies. Members of Hilton Honors, the company's loyalty program, can earn and redeem points for a variety of travel-related services through partnerships with airlines, car rental agencies, and credit card issuers. To increase its global presence, Jin Jiang has been actively purchasing and developing alliances with foreign hotel businesses. Louvre Hotels Group and Radisson Hotel Group are two notable purchases that have boosted Jin Jiang's property portfolio and improved its market presence outside of China. Collaborations with Chinese businesses: Jin Jiang has worked with several Chinese businesses to offer their clients integrated services. For instance, to improve distribution channels and reach a larger consumer base, they have relationships with Ctrip, one of the biggest online travel agents in China. Overall, both Marriott and Hilton have formed solid strategic alliances with well-known firms in the travel and hospitality sectors, allowing them to provide their clients with improved advantages, reach a bigger audience, and facilitate a more seamless travel experience. Although Jin Jiang has mostly been focused on growing its global presence through acquisitions, it has also developed partnerships with other Chinese businesses to exploit their distribution networks and serve the domestic market. [4]

3. Marriott purchased Starwood Hotels & Resorts Worldwide in 2016, Protea Hotels in 2014, Hilton acquired Waldorf Astoria in 2009, DoubleTree by Hilton in 1999, Radisson Hotel Group in 2018, and Louvre Hotels Group in 2015. These acquisitions increased Marriott's presence in Western markets, increased its footprint in Western markets, and established Jin Jiang in Europe.

4.Marriott manages a variety of brands in several market niches. Brand overlap and cannibalization, in which related brands contend for the same target market, are risks. Confusion among consumers and compromised brand positioning could come from this. Despite having a significant global footprint, Marriott might have trouble differentiating its brands and preserving a consistent brand perception across all its locations. It might be difficult to make sure that every brand offers a distinctive value proposition and experience. [5]

5. Data breaches: Marriott is susceptible to them, just like any other large corporation. Any instances of customer data compromise might result in unfavorable press and damage customer confidence. In 2018, Marriott suffered a serious data breach that compromised millions of visitor records and hurt the company's reputation. Variations in service quality: With a big network of properties and brands, Marriott may find it difficult to ensure uniform service quality everywhere. Negative publicity can emerge from instances of bad service or unpleasant visitor encounters, particularly in the age of social media, where customer feedback spreads quickly. Hilton may face negative publicity due to poor guest experiences and labor disputes, which can have an adverse effect on its reputation. But Hilton never had a large negative publicity in comparison with Marriott. In comparison to major hotel chains like Marriott and Hilton, Jin Jiang may be less visible and subject to unfavorable press because of its limited global brand recognition. However, if Jin Jiang grows its global reach, it can be more exposed to bad press as its brand gets more well-known.

6. Marriott employees' freedom of movement and autonomy may be restricted by a rigid work environment. Strict adherence to rules and regulations may limit employees' ability to make decisions, which may make it harder for them to meet the needs of customers or deal with unusual circumstances. Excessive rigidity may have an adverse effect on staff morale and job satisfaction. Employees may become less motivated and creative, which are necessary for offering outstanding customer experiences and creative solutions, if they feel micromanaged or constrained. Like Marriott, Hilton's rigid workplace culture can restrict employee autonomy, leading to decreased productivity, higher turnover, and lower employee well-being. Jin Jiang's managerial style may not meet the expectations of workers from different cultural backgrounds, leading to a disconnect and a decrease in employee engagement. [6]

COMPARISON OF THE ALTERNATIVE FACTORS OF OPPORTUNITY AND THREAT BETWEEN MARRIOTT AND ITS COMPETITORS:

The possible opportunity and threat factors were defined after analyzing external factors like government policies, environmental and social changes, and appearance of new players in the market. Opportunities factors for Marriott are:

1. Growing demand for luxury hotels and resorts worldwide;

Luxury travel: Increasing wealth, more discretionary spending, and shifting consumer preferences for one-of-a-kind experiences have all contributed to a growth in demand for luxury travel across the globe. All three hotel companies can target luxury guests thanks to this trend. Chinese market: China is now a major source of upscale tourists. Being a Chinese company, Jin Jiang may be able to take advantage of its regional knowledge and reputation to enter this expanding industry. But Marriott and Hilton are also well-represented in China and are actively courting Chinese tourists. In the luxury hotel industry, Marriott and Hilton are well-known, well-established brands that are renowned for their high standards of quality, service, and loyalty programs. They can flourish in the luxury market because of their solid reputation and devoted consumer base. Despite being a major player in the Chinese industry, Jin Jiang can have less widespread brand recognition. To strengthen its network of premium hotels, they have been investing in international expansion and acquisitions. Although there are potential for all three hotel chains in the expanding luxury hotel and resort market, Marriott and Hilton benefit from having a more established global presence, a well-known brand, and significant development pipelines. Jin Jiang has been growing worldwide and may target the need for luxury travel, notably among Chinese travelers, despite being predominantly strong in the Chinese market. [7] [8]

2. Increasing popularity of leisure, travel, and vacation trips;

From luxury to value, Marriott's portfolio of brands caters to various leisure traveler subgroups. This gives them the chance to attract a variety of tourists with different tastes and spending capacities, offering plenty of chances to draw leisure visitors. Marriott Vacation Club, a division of Marriott, provides choices for vacation ownership, enabling visitors to take advantage of prolonged stays and the advantages of ownership in well-liked vacation spots. This opens up a new source of income and fits in well with the rising popularity of leisure travel. Hilton, Jin Jiang, and other hotel chains can capitalize on the increasing popularity of leisure travel by implementing strategies such as marketing campaigns, enhanced amenities and services, and partnerships with travel agencies and tour operators. The COVID-19 pandemic may impact the timing and pace of recovery in the leisure travel market, so hotel chains need to stay adaptable and responsive to changing traveler preferences and expectations.

3. Emergence of new travel markets, such as millennial travelers and remote working.

By introducing brands like Moxy Hotels and Aloft Hotels, which cater to younger, tech-savvy visitors, Marriott has acknowledged the significance of appealing to millennial tourists. These companies provide fashionable, reasonably priced lodging with cutting-edge amenities and energetic communal areas. With the help of brands like Canopy by Hilton and Tru by Hilton, Hilton has also been concentrating on snagging the millennial market. These companies seek to meet the needs of millennial visitors by offering flexible spaces, real local experiences, and reasonably priced choices. Compared to Marriott and Hilton, Jin Jiang has traditionally served the Chinese market and may not place as much emphasis on appealing to millennial tourists. However, Jin Jiang might modify its offers as Chinese millennials' interests change. Marriott has launched programs like "Work Anywhere" and "Day Pass" that enable customers to book hotel rooms or workspaces for remote work in recognition of the expanding trend of remote working. To meet the needs of remote workers, they are also looking into adding co-working facilities to several of their buildings. Hilton has introduced "WorkSpaces by Hilton," which provides exclusive office spaces inside of its hotels and is bookable. Additionally, "Hilton CleanStay" measures have been implemented to offer a secure and hygienic environment for remote workers. Jin Jiang The way Jin Jiang reacts to working remotely may change depending on the locations and certain properties. To serve this market niche, they might think about introducing comparable solutions as remote work spreads across the globe. Three hotel chains are investing in technology, flexible workspaces, and personalized experiences to attract millennial travelers and remote workers. Marriott and Hilton have a broader reach and resources, while Jin Jiang has opportunities to leverage the growing millennial and remote working trends.

As for possible threat factors:

1. Economic downturns, and fluctuations in currency exchange rates;

Marriott is a globally diversified hotel chain that is exposed to economic downturns in various markets. Hilton's performance can be influenced by economic downturns, but Hilton's global presence and strong brand recognition may provide some resilience. Jin Jiang's focus on the Chinese market may also provide some insulation against economic downturns in other regions. Marriott's broad portfolio of brands across different market segments may help mitigate the impact, while Hilton's extensive global presence and strong brand recognition may provide some resilience. Jin Jiang's focus on the Chinese market may also provide some insulation against economic downturns in other regions.

Marriott, Hilton, and Jin Jiang are all exposed to currency exchange rate fluctuations, which can have implications for their financial performance. Marriott's global footprint and diversified revenue streams can help mitigate the impact of currency fluctuations. Hilton's hedging strategies and revenue diversification across multiple markets may help manage currency risks. Jin Jiang's ability to adapt, manage costs, and diversify their revenue streams across markets can play a crucial role in navigating these challenges. External factors such as government policies, geopolitical tensions, and global events can also influence the threats posed by economic downturns and currency exchange rate fluctuations. Each hotel chain's ability to adapt, manage costs, and diversify their revenue streams across markets can play a crucial role in navigating these challenges. [9]

2. Increased competition from both traditional hotels and alternative accommodation providers like Airbnb;

Marriott is facing strong competition from other established hotel chains, both globally and regionally. It competes with alternative accommodation providers like Airbnb, which offer unique and often more affordable lodging options. Hilton is facing intense competition from other well-known hotel brands, which can lead to price competition and impact Hilton's ability to maintain occupancy rates and revenue. Jin Jiang is facing traditional hotel competition from other domestic and international hotel chains, with both local and international players vying for market share and seeking to capture the growing demand for travel and accommodation. As Jin Jiang expands its international presence, it may encounter competition from alternative accommodation providers like Airbnb in various markets.

3. Downward pressure on pricing and profitability due to changing consumer behavior.

Price sensitivity is one factor that may cause Marriott's pricing to decline as consumer behavior changes, including increased price sensitivity. Nowadays, customers may compare costs and shop around on a variety of online platforms, which may result in price wars and decreased profitability. Some customers are choosing value-oriented lodging options, such as low-cost hotels or other lodging options like Airbnb, which may have an effect on Marriott's pricing power. Marriott may need to make sure that its pricing is in line with the value offered to customers in order to effectively compete. Changing customer behavior may cause hotels, particularly Hilton, to face more intense pricing rivalry. In order to draw customers while preserving profitability, hotels must carefully manage pricing as consumers become more price-conscious and have access to a wide range of options. Demand for flexibility, tailored experiences, and added value is on the rise, according to trends in consumer behavior. In order to provide flexible booking alternatives, loyalty incentives, and service bundles that take into account shifting consumer preferences, Hilton must modify its pricing tactics. Increased competition in the Chinese market: Jin Jiang is up against fierce rivalry as Chinese consumer behavior changes. Chinese tourists are becoming pickier and price conscious as they look for the best deal possible. As a result, there may be more competition, which could push prices down for Jin Jiang. To counteract the risk of downward price and profitability pressure, Jin Jiang should concentrate on differentiation by providing distinctive experiences, individualized services, and cutting-edge amenities to support premium pricing and draw clients. [10]

SWOT FOR MARIOTT INTERNATIONAL:

- STRENGTHS:

1. Global presence: A multinational hospitality corporation with operations in over 130 countries and territories is Marriott International. They have a wide range of hotel brands that serve various market niches and travel tastes. They can be found in major cities, vacation spots, and commercial centers all around the world.
2. Strategic partnerships: Marriott International has strategic alliances with organizations including Alibaba, Samsung, Amazon, and Emirates Airlines to improve customer service, provide individualized services, and increase the advantages of loyalty programs.
3. Profitable acquisitions: Marriott International's acquisition of Starwood Hotels & Resorts in 2016 turned out to be a wise and profitable decision, increasing its brand portfolio and global footprint.

- WEAKNESSES:

1. Poor positioning: From its managerial structure to its market position, Marriott is branded as a family-focused company. Young, unmarried millennials are the future of the hotel sector, making Marriott's positioning as a family-oriented company a significant vulnerability.
2. Negative publicity: Public impression is important to the service sector. The decision to only evacuate hotel guests from St. Thomas following Hurricane Irma and to keep non-guests off the cruise ship even though it was only partially full has damaged Marriott's reputation in 2017.
3. Strictness for employees: Breathing down the necks of employees is a surefire method to lower morale, productivity, and efficiency even while strictness is necessary for success. Marriott dismissed a worker in 2018 for "liking" a tweet that upset China because it requires staff to adhere to its code of conduct to the letter.

- OPPORTUNITIES:

1. Growing demand for luxury hotels and resorts worldwide: Globally, there is a growing demand for luxury hotels and resorts due to increased wealth, aspirational travel, wellness and experience trends, and the desire for distinctive and individualized services. To meet this demand, luxury hotel businesses are growing and investing in distinctive experiences. [8]
2. Increasing popularity of leisure, travel, and vacation trips: Due to increased salaries, a focus on work-life balance, improved travel alternatives, a desire for new experiences, and the influence of

social media, leisure travel and vacation travels are becoming more and more popular. As locations and companies meet this rising demand, the sector is expanding.
3. Emergence of new travel markets, such as millennial travelers and remote workers: There are burgeoning new travel markets, including millennial travelers and remote workers. While remote employees look for work-life balance while traveling, millennials place a higher priority on experiences and sustainability. To appeal to these new audiences, the industry is changing by providing specialized experiences and facilities.
- THREATS:
1. Economic downturns, and fluctuations in currency exchange rates: Hotels are impacted in a variety of ways by economic downturns and currency exchange rate volatility. Reduced demand, lower prices, higher cancellation rates, and a necessity for cost-cutting measures are all things they experience. Changes in exchange rates can have an impact on global tourism. Operating costs increase, obtaining financing becomes more difficult, and profitability suffers. For long-term success, hotels must diversify their clientele, concentrate on cost management, improve the guest experience, and adjust to shifting market conditions.
2. Increased competition from both traditional hotels and alternative accommodation providers: Traditional hotels and other types of lodging are fierce competitors for hotels. As a result, there is pressure on prices, a need for technological developments, a change in market share, and marketing difficulties. To succeed in the competitive world, hotels must differentiate themselves, embrace technology, provide new experiences, and adapt.
3. Downward pressure on pricing and profitability due to changing consumer behavior: Due to shifting consumer behavior, Marriott's price and profitability are under pressure to decline. Their profitability is impacted by rising price sensitivity, competition from competing lodging options, reliance on internet platforms, and the demand for individualized experiences. To stay profitable, Marriott must prioritize low prices, direct bookings, reward programs, customization, and distinctive guest experiences.

APPLICATION STRATEGY BASED ON ‘SWOT’ FACTORS:
1. Capitalize on brand reputation and loyalty program:
- Strengthen brand reputation by consistently providing high-quality service, creating memorable visitor experiences, and playing close attention to customer feedback. A great example of the strengthen of brand reputation for Marriott was in 2014. Since, 2014, Marriott has committed to producing a wide range of content in abundance. Marriott’s content studio has thus far produced: ‘Marriott Traveler’ (online travel publication), TV programs, simulated reality scenarios, short movies, social network information you can share. Additionally, Marriott has a long history of prioritizing its clients. Thus, in the century of new technologies, where people believe in different influencer you are following, it can be a good idea for Marriott to create its own TikTok page to strengthen its brand reputation among millennials. Showing the luxury content and inviting young generation to evaluate the quality of service can be a good idea for creating and strengthen the brand reputation.
- Even though Marriott was one of the first hospitality company to create its loyalty program, enhancing the Marriott Bonvoy loyalty program by providing exclusive discounts, individualized gifts, and alliances with other travel-related businesses to further encourage patron loyalty, could increase the brand loyalty among existing customers, as well as attract newcomers.

2. Expand global presence and market reach:
- Find important emerging markets with high growth potential, and use acquisitions or new hotel construction to strategically increase Marriott’s presence there. For example,

Kazakhstan is trying to develop its tourism by restoration its historical places such as Turkestan. Thus, you can find Marriott's hotels only in Astana, Almaty, Aktau, Atyrau.

- Adapt hotel offerings to meet the unique demands and tastes of regional markets, assuring a customized approach that appeals to a variety of clientele.

3. Take advantage of technological innovation;
   - To improve productivity, modernize customer experiences, and streamline processes, invest in technology-driven solutions. For example, creating a user-friendly smartphone application that enables visitors to digitally check in and out, choose their preferred room settings, and access essential information about the hotel and its amenities. Boost the app's digital concierge services so that users can interact with hotel staff in real time and receive personalized recommendations.
4. Personalization of the guest experience:
   - Utilize technology and guest data to customize the guest experience. Recognize guest preferences using customer relationship management (CRM) systems to deliver individualized offers, services, and suggestions.
   - Utilize technologies for managing customer feedback to collect input in real-time and quickly respond to customer issues, increasing customer happiness and loyalty.
5. Put an emphasis on sustainable practices:
   - Implement environmentally friendly designs, waste reduction measures, and energy-efficient technology throughout all of Marriott's facilities.
   - Inform visitors about these programs to demonstrate Marriott's dedication to sustainability and draw in environmentally aware tourists.
6. Improve one's competitive positioning
   - Monitor and assess the competitive environment constantly to spot trends, compare against rivals, and maintain an edge in service offerings, pricing, and marketing tactics.
   - To attract discerning guests, distinguish Marriott's properties by emphasizing special selling features including location, facilities, and curated experiences.
7. Be prepared for and flexible to shifting market dynamics:
   - To proactively alter plans and services, evaluate market trends, consumer preferences, and economic conditions on a regular basis.
   - By exploring collaborations, creating new brands, or introducing novel concepts, be flexible and creative to respond to disruptive factors in the sector, such as the rise of alternative lodging providers.

CONCLUSION

By utilizing the suggested tactics, Marriott International may establish itself as a market leader by enhancing its strengths, correcting its weaknesses, seizing opportunities, and successfully countering threats. Marriott can maintain its success and continue to provide top-notch experiences to visitors from all over the world by adopting a comprehensive strategy that strikes a balance between innovation, guest-centricity, sustainability, and flexibility.

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EXPORT ACTIVITY OF THE REPUBLIC OF KAZAKHSTAN IN THE CONDITIONS OF GLOBALIZATION

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Abstract.
In the modern world, an important economic indicator of any state is the export of goods or services. The article considers the features of the export activities of exporting countries in the context of globalization. The authors show both positive and negative consequences of its influence. The features of the export activity of the Republic of Kazakhstan in the context of globalization are considered.
Keywords: export, export activity, globalization, world market, international market, competitiveness.

Exports are important on a global scale, which means increased interconnection between countries in different regions such as economy, culture, politics and technology. In a global environment, exports become even more important as they allow companies and countries to access global markets and expand their business beyond national borders.

One of the main sources of income in a global economy is access to new markets and users. Many countries have different advantages such as low production costs, high product quality, limited technology, and more. Export allows you to use these advantages to promote goods and services on the market.

However, on the other hand, globalization can also create competition in the world market. Larger and more developed economies are increasing the pressure on less developed countries, which may reflect higher production costs and damage to the export industry. Therefore, it is important that exports are carried out taking into account all factors, including the competitive environment, tariff barriers, trade rules and other trade rules.

In addition, exports can be an important source of income for countries as they can increase sales and hence cash receipts. At the same time, exports can lead to environmental violations of technologies, increase in production and increase the number of new jobs in the export industry.

Globalization also promotes competition in a world market that is not ready for competition. Also, exports can be affected by consumer preferences, including changes in the final currency, political instability, tariffs and barriers to foreign trade, and changes in consumer preferences.

Globalization has a great impact on product exports because it expands the boundaries for exports, which expand the export of goods and services in the world market. The main impacts of globalization on product exports include:

1) Expansion of sales markets, since globalization allows companies and even countries to gain access to new markets, which can lead to an increase in exports and an increase in income;

2) Increased growth, which is increased competition in the global market, which can create problems for companies that are not ready for this;

3) Improving the quality of products, because otherwise the products will simply be uncompetitive in the international market;

4) Change in consumer preferences, which consists in the growth of consumption on consumer preferences in various countries of the world;

5) Change in trade policy, because global spread can lead to the spread of trade policies of different countries, such as tariffs and foreign trade barriers, which can increase exports;

6) Changes in exchange rates, since growth can be expected depending on the exchange rate, which can consume the cost of exported goods and services.

Over the past ten years, the focus of global commodity producers has shifted towards electronic computers and components for it. The main goods of international trade are presented in Table 1.

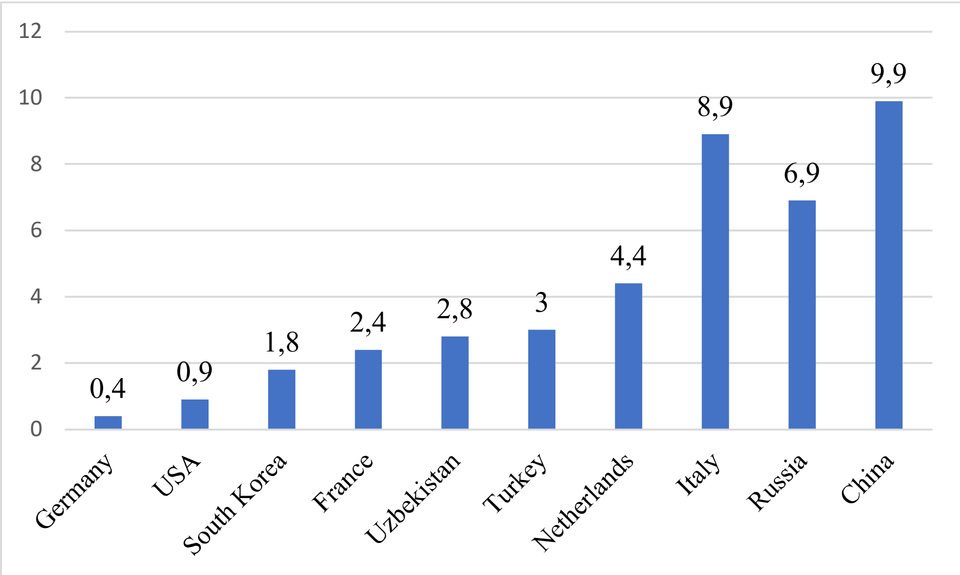
Table 1 – Main goods of international trade

№	Name of goods	Good's rank			Changes	
		2012 year	2019 year	2022 year	For 2012-2022 years	For 2019-2022 years
1	Crude oil	1	1	1	-	-
2	Processors and controllers integrated/not integrated with storage devices	7	3	2	+5	+1
3	Other distillates and products	2	2	3	-1	-1
4	Medicines used for therapeutic and prophylactic purposes	4	4	4	-	-
5	Other electronic integrated circuits	10	7	5	+5	+2
6	Telephone sets for cellular communication networks	8	6	6	+2	-
7	Gold in rough forms	3	9	7	-4	+2
8	Storage devices	23	10	8	+15	+2
9	Light distillates and products	5	8	9	-4	-1
10	Iron ores and concentrates, non-agglomerated	14	15	10	+4	+5
11	Cars with a volume of more than 1500 cm3, but not more than 3000 cm3	6	5	11	-5	-6
12	Portable digital computing machines (laptops)	12	12	12	-	-
13	Liquefied natural gas	11	13	13	-2	-
14	Machines for receiving, converting and transmitting voice, images	18	11	14	+4	-3
15	Natural gas	9	18	15	-6	+3

Compiled by the author based on data from the World Trade Center (ITC UNCTAD/WTO) [1]

The Republic of Kazakhstan is also included in world trade. As for its trading partners, the list of countries for the export of Kazakhstani products is headed by China (9.9 billion US dollars, which is 16.4% of the share in total exports). Next are Italy (8.9 billion dollars, or 14.8%), Russia (6.9 billion dollars - 11.4%), the Netherlands (4.8 billion dollars - 7.3%) and Turkey ($2.9 billion - 4.9%). They are followed by: Uzbekistan (2.8 billion dollars - 4.7%), France (2.4 billion dollars - 4.0%), South Korea (1.8 billion dollars - 3.1%) %), USA (0.9 billion dollars -1.4%). The tenth position is occupied by Germany (0.4 billion dollars - 0.7%). For more details on the main exporting countries of Kazakhstani products, see Figure 1. These ten countries account for more than 2/3 of Kazakhstani exports [2].

Figure 1 – The main exporting countries of Kazakhstani products, in billions of US dollars



Compiled by the author based on data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan [2]

The foreign trade turnover of the Republic of Kazakhstan for 2021 amounted to 101.5 billion US dollars. Of these, exports amount to 60.3 billion US dollars. An analysis of the dynamics of exports in foreign trade turnover since 2015 indicates that Kazakhstan's exports reached their maximum value in 2018 and amounted to 61.1 billion US dollars. Then, during the covid period, when foreign trade activity decreased due to objective conditions, since the quarantine regime was introduced, there was a sharp drop in trade activity, and national exports amounted to 46.9 billion US dollars. After the end of the epidemic, the situation on the international trade market returned to normal and Kazakhstani exports in absolute terms increased again (in 2021 compared to 2020 by 26.9%), and the country's foreign trade turnover reached its maximum and amounted to 101.5 billion US dollars. At the same time, 28.8% of the foreign trade turnover accounted for the CIS countries, including 24.0% for the EAEU countries, and 71.2% for the rest of the states. Table 2 shows the dynamics of foreign trade turnover and exports of Kazakhstan in billions of US dollars and percentages compared to previous years.

Table 2 – Dynamics of foreign trade turnover and exports of the Republic of Kazakhstan

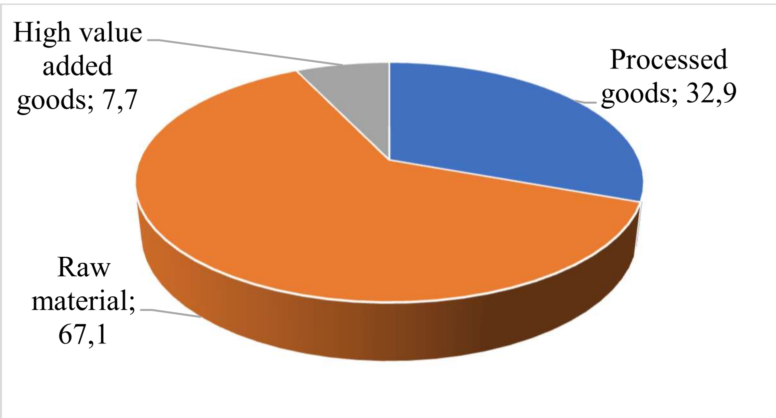
Year	Name			
	Foreign trade turnover, in billion US dollars	In % to the previous year	Export, in billion US dollars	In % to the previous year
2015 year	76,5	63,4	45,9	57,8
2016 year	62,1	81,2	36,7	79,9
2017 year	78,1	125,7	48,5	132,0
2018 year	94,7	121,3	61,1	126,0
2019 year	97,7	103,2	58,0	95,0
2020 year	85,0	87,0	46,9	80,9
2021 year	101,5	117,4	60,3	126,9

Compiled by the author based on data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan [2]

Kazakh scientist K.A. Turkeeva, characterizing the export activity of Kazakhstan, notes that: «Currently, the country is implementing an extensive trade-exchange export strategy, which is characterized by the export of a narrow group of goods and its limited state regulation. This is evidenced by the situation that has developed in the national economic complex of Kazakhstan, which shows a significant dependence of a number of industries on imports» [3].

An analysis of the structure of Kazakhstan's exports for 2021, which in absolute terms is 60.3 billion US dollars, shows that it is represented mainly by commodities - 2/3 of the total volume (67.1%), a third of the total volume of exported products is processed goods (32.9%), while high value-added goods account for 7.7% (Figure 2) [4].

Figure 2 – The structure of exports of the Republic of Kazakhstan in 2021, in%

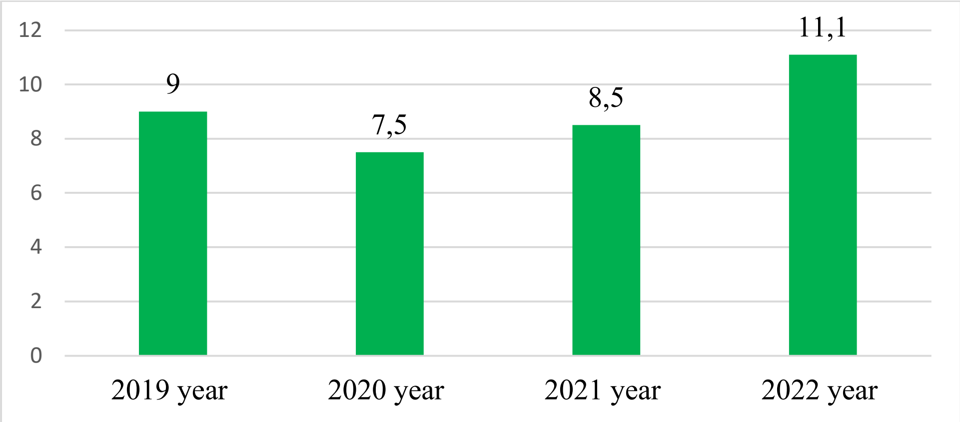


Compiled by the author based on the data of the review of foreign trade of the Republic of Kazakhstan [4]

As globalization presents challenges as well as opportunities for export businesses, countries must be prepared to adapt to the changing nature and opportunities that global revenue provides. According to Kazakh scientists Madiyarova D.M. and Amirbekova A.S., export geography should be reviewed, since the geography of exports is more diversified than the export structure itself [5]. Kazakhstan has a favorable geographical location, which gives it additional logistical opportunities, which, in turn, can be used to increase exports to the CIS countries, in particular, to the EAEU countries. However, according to the Kazakh author Argyngazinov A.A. «The expansion of the geography of sales is hindered by such factors as the lack of sufficient financial resources from small and medium-sized exporting enterprises for the transportation of products and services, a narrow range of goods and services produced, and their low competitiveness. In addition, the unsatisfactory state of the road transport network and the inaccessibility of storage facilities also do not contribute to the expansion of the geography of deliveries» [6].

In this context, the Ministry of Trade and Integration of the Republic of Kazakhstan, as part of promoting the promotion of Kazakhstani exports to foreign markets, allocates more and more financial resources every year. So, in 2019, 9 billion tenge was allocated for all measures to support exporters, in 2020 - 7.5 billion tenge, in 2021 - 8.5 billion tenge, and in 2022 - 11.1 billion tenge (Figure 3). All these measures can be considered effective, because over the past year alone, Kazakhstani exports have grown by 43.6% compared to 2021.

Figure 3 – Financing of measures to support exporters in the Republic of Kazakhstan, in billion tenge



Compiled by the author based on the data of the review of foreign trade of the Republic of Kazakhstan [3]

The range of measures to support Kazakh exporters is quite wide. The President of Kazakhstan, Kassym-Jomart Tokayev, notes that: «The economic model of Kazakhstan considers exports as the most important factor in development. The additional export potential of the country's manufacturing industry is estimated at $10 billion, and the export potential of the service sector is another $10 billion. The medium-term goal is to increase the volume of non-commodity exports to $41 billion by 2025» [7]. The development of foreign trade of the Republic of Kazakhstan is aimed at transforming the country's trading system in such a way that foreign markets are provided and saturated with high-quality competitive products. Such a system makes it possible to strengthen the position of the state in foreign trade relations. Interaction with partner countries within the framework of integration associations such as the WTO or the EAEU, the growth in the number of Kazakhstani producers participating in foreign economic activity stimulates the economic growth of Kazakhstan [8].

In order to support exporters by the state, the following is carried out:

- assistance in obtaining financing,
- lending to exporters and guaranteeing loans to exporters,
- bank guarantees to them,
- pre-export financing,
- sale and purchase of their equipment on lease,

- collateral financing in case of shortage of assets,
- reimbursement of labor productivity costs,
- subsidizing the remuneration rate for exporters,
- financing of exporters through conditional refunds,
- export analytics and consulting,
- ensuring access of exporters to international standards and standards of foreign states,
- support of projects of exporters,
- establishing international business relations,
- improving the competence of exporters,
- representation and protection of their interests,
- issuance of certificates of origin of goods to exporters,
- assistance in working with foreign enterprises,
- search for foreign buyers,
- training and support for exporters,
- export acceleration,
- bringing exporters to e-platforms,
- ensuring the operation of a single export portal.

Despite this, it is necessary to develop it, first of all, taking into account the global situation, as well as the needs of both existing and potential exporters. In order for domestic products to be competitive in foreign markets, it is necessary to take into account changes in global trends.

Globalization has a strong impact on product exports as it empowers companies to find new markets and customers outside their own country. This can be especially important for companies that specialize in niche products or have a limited domestic market. However, there is serious competition in the world market, which can be a challenge for countries, especially those who are not ready to compete with other producers from other countries. In addition, exchange rate fluctuations, political instability, tariffs and barriers to foreign trade can affect the export of products.

In this regard, states and companies must take into account economic, political, social and environmental factors that are consistent with the conditions of the world market. For example, a company can study market requirements by consuming its products for certain countries, reducing production costs and improving product quality in order to remain cost-effective in the global market.

Thus, export in the context of globalization is of great importance for the economic development of countries. Globalization provides companies with opportunities to access markets, which can contribute to additional growth in the production and export of goods and services. However, globalization also contributes to increased competition in the world market, and many countries are not always ready for this. In addition, exports may be affected by consumer preferences, including changes in the final currency, political instability, tariffs and barriers to foreign trade, and changes in consumer preferences.

In general, exports are an important factor in global growth, which can have both positive and negative effects. This is inevitably linked to an export strategy, given all the risks and rewards associated with international trade. Globalization may provide additional opportunities for export businesses. With the right strategy and approach, companies can successfully export their products and services to the global market, which in turn can help them grow and develop in a globalized world. States, including Kazakhstan, need to take this into account to develop their export activities.

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DECENTRALIZATION AS THE BASIS OF LOCAL SELF-GOVERNMENT

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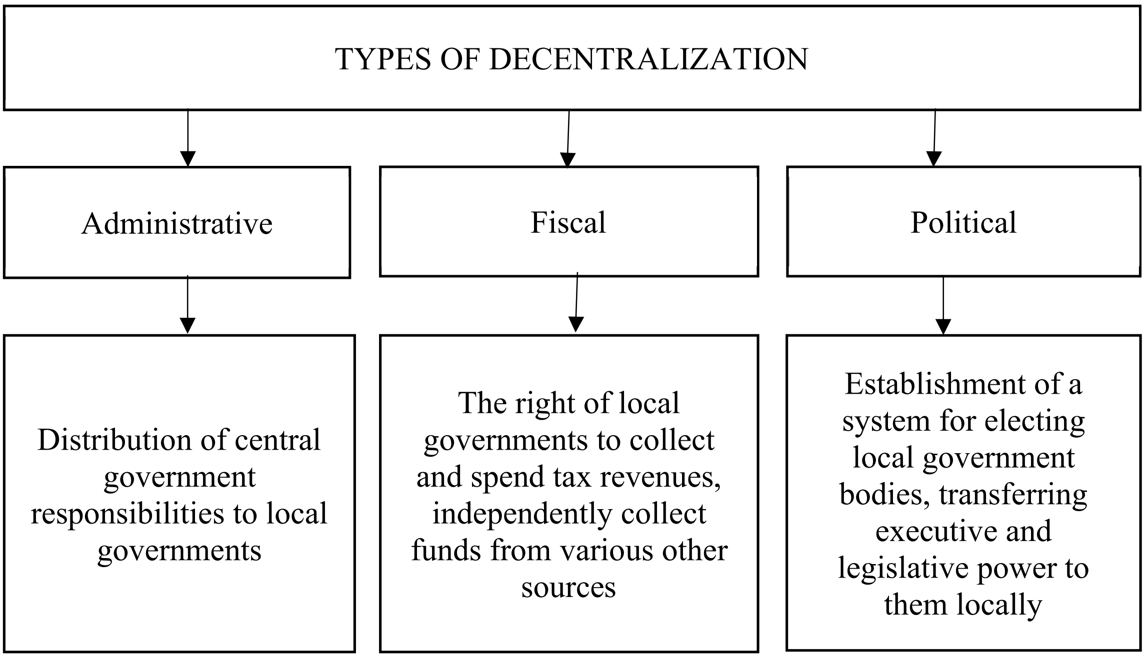
Abstract.
Since gaining independence, large-scale socio-economic and political transformations have been taking place in Kazakhstan, the decentralization of public administration and the development of local self-government institutions have been implemented. In this article, the author considers the types of decentralization and the reasons for its implementation. The main approaches to decentralization are described. In addition, the author analyzed the features of decentralization in the Republic of Kazakhstan, its positive and negative consequences, as well as the impact on the development of local self-government.
Keywords: decentralization, local self-government, public administration, democracy, state, society.

The Republic of Kazakhstan is implementing a large-scale reform of public administration, which began in 1991 from the moment of gaining independence and acquiring sovereignty. It is focused on the rejection of a rigidly centralized system of state administration, as well as the transition to a market economy. The President of Kazakhstan in his speeches constantly notes the relevance of this issue, the need to distinguish between the state and institutions of local self-government.

The main goals of decentralization in Kazakhstan are the development of democracy, the formation of a «hearing state» focused on the needs of the people, the creation of conditions for the effective implementation by the state of its functions at the appropriate levels of government in solving both current issues and long-term tasks of the country's socio-economic development.

However, decentralization is a complex phenomenon. It has many types. The main ones are shown in Figure 1.

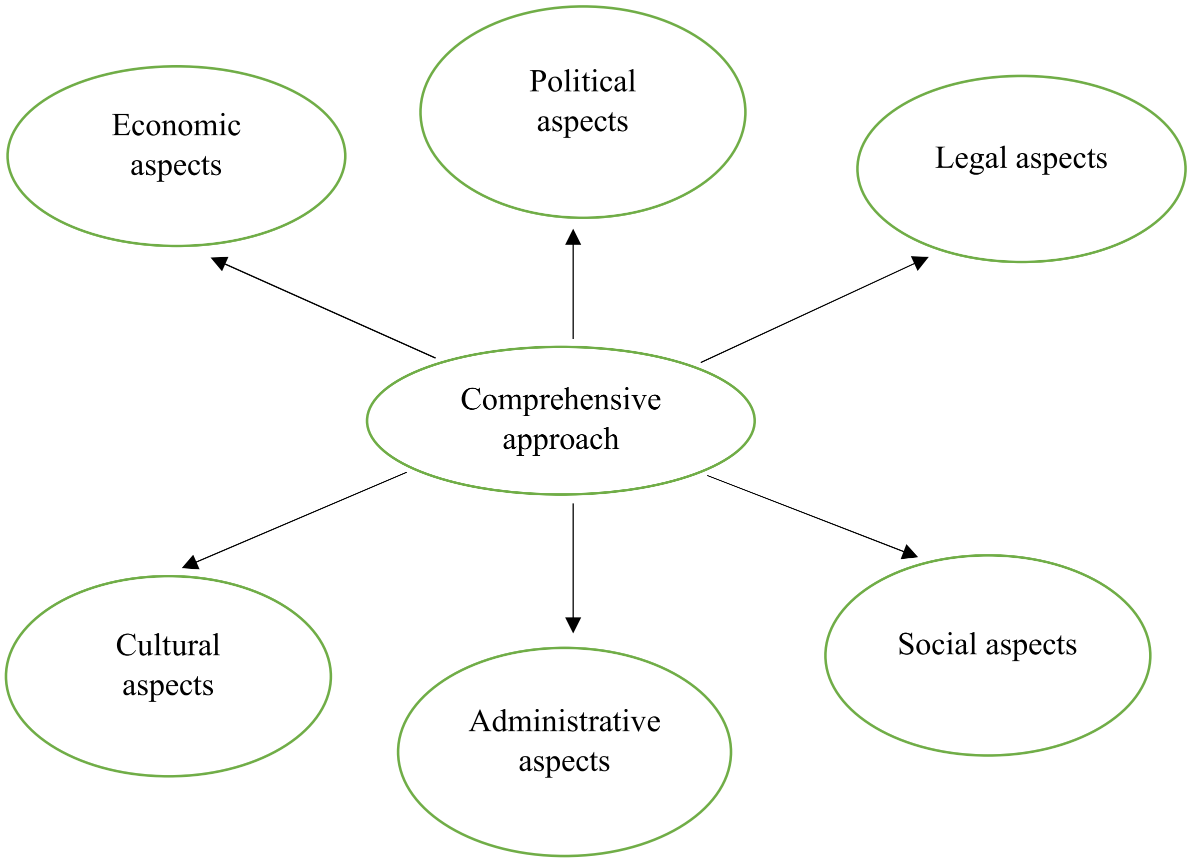
Figure 1 – Main types of decentralization



Compiled by the author based on [1, 2]

Decentralization carried out in Kazakhstan is based on the experience of reforms in various countries of the world, to a greater extent on the experience of Western Europe, where decentralization plays an important role in the process of democratization and transformation of the economy and society. As noted above, this is a complex process that involves an integrated approach to this phenomenon, requiring a correct understanding of the essence of decentralization, thoughtfulness and balance of actions, as it affects various aspects of society (Figure 2).

Figure 2 – Comprehensive approach to decentralization



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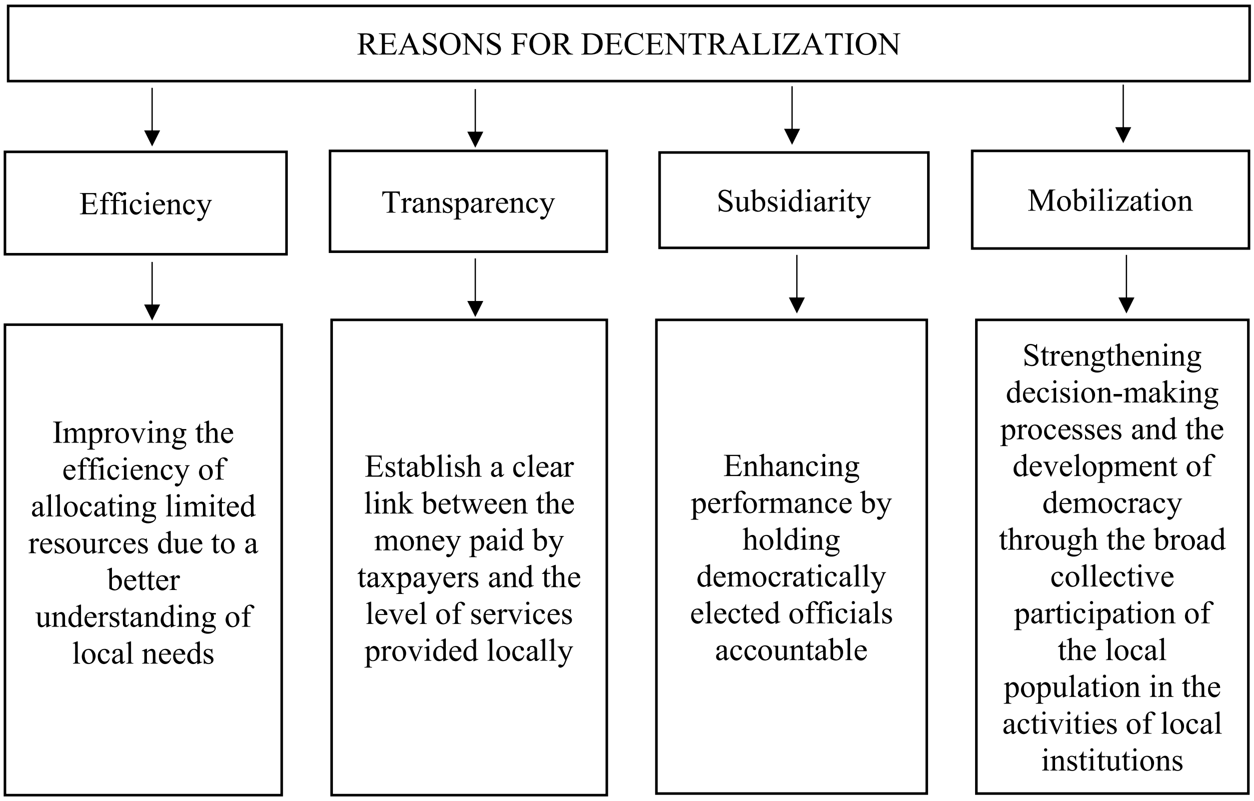
Kazakhstan has ratified the European Charter of Local Self-Government adopted in 1985 and oriented towards decentralization policy. The United Nations Development Program actively supports decentralization policies around the world, explaining that «decentralization of power… allows people to directly participate in governance processes and can help empower people previously excluded from decision-making… Closer contact between government officials and local communities and organizations also facilitates the exchange of information that can be used to design development programs that are tailored to local needs and priorities and therefore more efficient and sustainable» [3].

Decentralization is directly related to local self-government. The European Charter of Local Self-Government notes: «Local self-government is understood as the right and real ability of local self-government bodies to regulate a significant part of state affairs and manage it, acting within the framework of the law, under their own responsibility and in the interests of the local population» [4]. Based on the main provisions of this charter, local self-government should be created in all areas of compact residence of the population, that is, in all settlements - cities, regional centers, rural districts, villages, towns, auls, etc. This is how it is formed in Kazakhstan.

There are many reasons for decentralization. The main ones are shown in Figure 3.

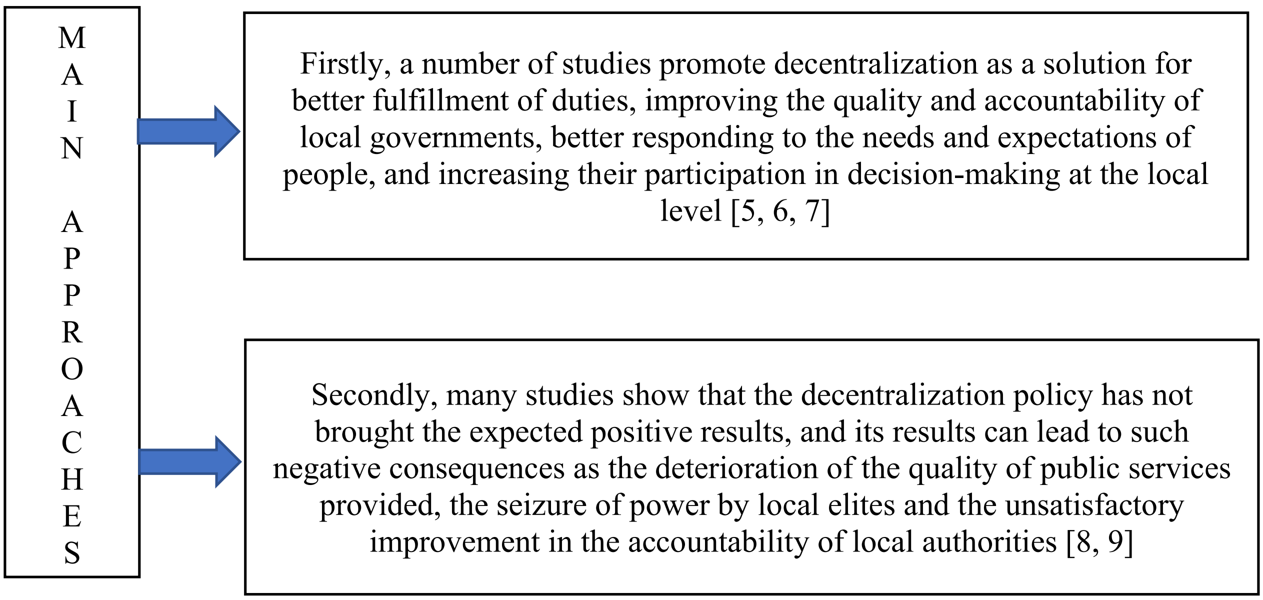
Figure 3 – Main reasons for decentralization



Compiled by the author

All these reasons justify the objective need for decentralization. Despite this, there are both its supporters and opponents. In view of this, the whole set of approaches to decentralization can be divided into two main groups.

Figure 4 – Main approaches to decentralization



Compiled by the author based on [5, 6, 7, 8, 9]

Thus, decentralization does not always lead to positive consequences. However, it directly affects the formation of institutions of local self-government. In general, the system of local self-government in Kazakhstan is a system of democratically elected local authorities that manage within a certain territory (both urban and rural), taking into account the interests of the population and on the basis of laws that determine its legal status, economic foundations, functional powers, measures of legal and political responsibility.

At the same time, the reform of decentralization in Kazakhstan, which directly affects the development of local self-government, has a number of obstacles. The main ones are shown in Figure 5.

Figure 5 – The main obstacles to decentralization in the Republic of Kazakhstan

MAIN OBSTACLES

The financial dependence of local authorities on the central ones, which weakens cooperation, responsiveness to the needs of local residents, responsibility to them, and also causes low interest in attracting local funds [10]. If in 2000 the share of transfers from the state budget to local budgets ranged from 6.3% to a maximum of 43.4%, then by 2019 this figure was 17%, and by the end of 2021 and 2022 – 21%.

Administrative dependence of local authorities on appointments from central authorities, which reduces their accountability to local residents and leads to complete dependence on central authorities [11].

The transfer of a certain number of administrative and fiscal functions from central authorities to local authorities without ensuring strict accountability of local governments has led to a decrease in the level of responsibility both to higher authorities and to citizens of the respective territories [12]. In particular, Kazakhstan ranks high 101 out of 180 countries in the Corruption Perceptions Index 2022[13].

The creation of maslikhats (local representative bodies) with direct elections of their members by local residents does not increase the accountability of local authorities. In addition, the power granted to local maslikhats remains rather vague, and the functions of regional, city and district maslikhats are similar and not differentiated from each other, which leads to de facto subordination to local authorities and the adoption of all their decisions without significant discussions [14]. The mechanism for the participation of local civil society and individuals in the activities of maslikhats, as well as interaction with local authorities, has not been fully developed.

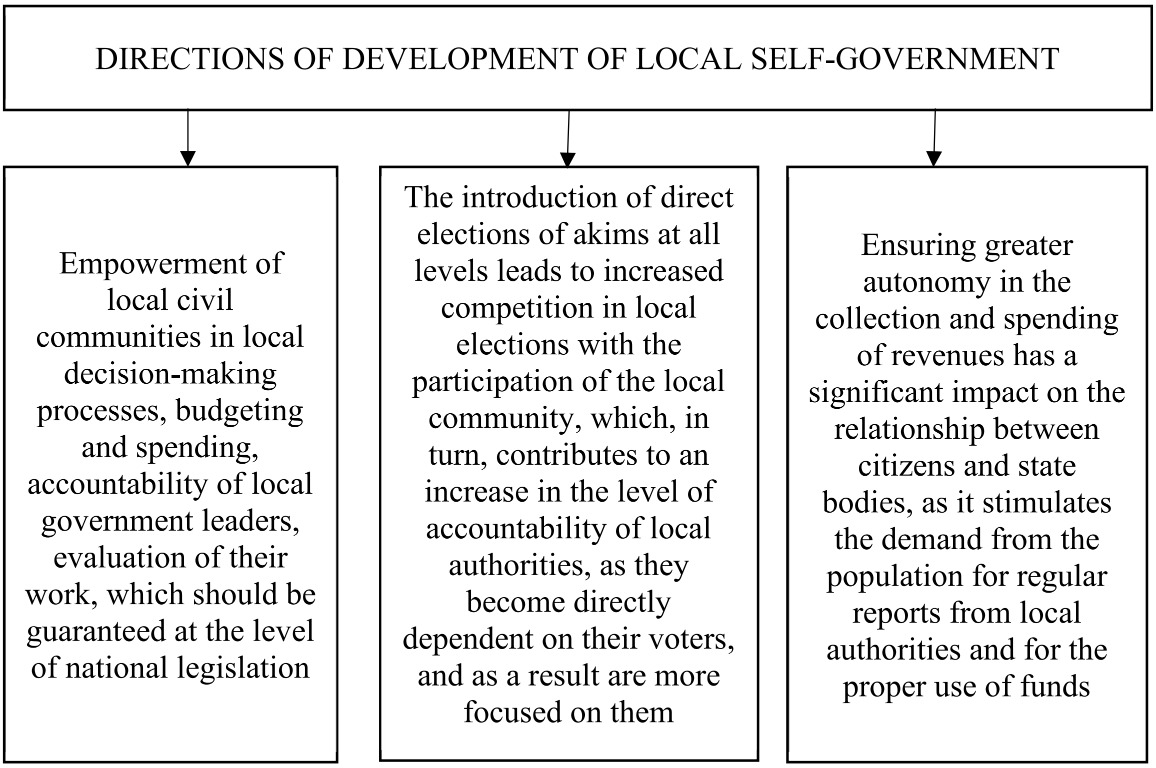
Compiled by the author based on [10, 11, 12, 13, 14]

Thus, there are difficulties of both administrative and fiscal and economic plan, which have yet to be solved. In this regard, the issue of the accountability of local authorities to the population, the lack of central funding, and the involvement of citizens in local self-government remain particularly relevant.

The Constitution of the Republic of Kazakhstan stipulates that: «Local self-government is carried out by the population directly, as well as through maslikhats and other local self-government bodies in local communities covering territories where population groups live compactly» [15]. The Law «On Local Government and Self-Government of the Republic of Kazakhstan» specifies that: «Local self-government is carried out by members of the local community directly, as well as through maslikhats and other local self-government bodies. Akim of the region, district, city, district in the city, rural district, township and village that is not part of the rural district, along with the functions of state administration, performs the functions of local governments. The form of activity of the local community is the gathering of the local community and the meeting of the local community» [16].

ocal self-government contributes to the development of democracy, more effective solution of local problems, removal of social tension and discontent of the population. In this system, it is the person who acts as the subject of local politics. For the development of local self-government, appropriate financial and economic foundations are needed to ensure its effective functioning. In addition, we need a regulatory and legislative framework that ensures the protection of the interests of local self-government and creates conditions for the success of its activities. The political culture of the population is also one of the foundations of its functioning, since it is the citizens and the level of their participation that determine the success of this process.

Figure 6 – The main directions for the development of local self-government and improving the accountability of local authorities in the Republic of Kazakhstan



Compiled by the author

or the first area of improvement, the ex-communist Republic of Poland, which successfully implemented a decentralization reform with the support of local civil society, can serve as an example [17]. As for the election of akims, the Organization for Economic Cooperation and Development proposes «to establish fixed mandates for akims at all levels of local government and consider setting deadlines for all akims to be elected» [18]. An example of holding large-scale local elections, competition between different parties and the involvement of local communities is another post-communist republic – Bulgaria. The independence of local governments in revenue generation through tax collection «can create greater accountability and increase efficiency in a healthy institutional and regulatory environment», as evidenced by the experience of countries such as Poland, Hungary and the Baltic countries [19].

Thus, public administration in the Republic of Kazakhstan is focused on decentralization. The democratic processes carried out in most post-Soviet countries contribute to the development of local self-government and, as a result, increase the accountability of local authorities. However, these processes are hampered by a number of obstacles, and the policy implemented at the state level does not always lead to the planned results. The issues of inequality of socio-economic development of regions, insufficient financial self-sufficiency of local budgets, insufficient consideration of the opinion of local residents and their problems remain topical. They can be solved by a wider and more active involvement of local communities and individual citizens in participation in local self-government, the introduction of direct elections of local authorities at all levels, as well as additional opportunities for collecting and spending local revenues.

Decentralization is a complex phenomenon, including political, economic, legal, social, administrative, and cultural aspects. At the moment, the creation of the necessary regulatory and legal framework for the local self-government system, the creation of local representative bodies elected directly by the population, the introduction of direct election of akims, their accountability to the population, as well as the begun fiscal decentralization are the main achievements of this policy in Kazakhstan. However, the centralization of power still retains significant proportions in public administration. In view of this, it is necessary to further stimulate decentralization reforms and the development of local self-government in Kazakhstan, which requires significant political, administrative and financial resources.

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Georgia's foreign trade: situation, challenges, opportunities

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Annotation
The paper shows that foreign trade plays a major role in the active involvement and deepening of Georgia's integration processes. The state and dynamics of the country's foreign trade turnover are characterized. It is emphasized that one of the main indicators of the effectiveness of foreign trade is the country's foreign trade balance, which is chronically deficient in post-Soviet Georgia. Based on the analysis and evaluation of the deficit of the trade balance of modern Georgia, the main ways of overcoming it have been developed: raising the domestic and international competitiveness of the country and thereby increasing the domestic and foreign demand for it, i.e. more: export, diversification, optimization, re-export, reasonable import. In addition, the proposed recipe for improving the trade balance needs to be adjusted taking into account the specifics of each partner country. According to the author, as a result of all this, the negative balance will gradually decrease and we will get a positive trade balance.
Keywords: trade balance; trade balance deficit; export promotion; export optimization; export diversification; import substitution; re-export.

Main text of the article

Based on international practice, foreign trade plays a major role in the active involvement and deepening of the integration processes of the country, which today accounts for 80 percent of the economic turnover. One of the main indicators of the effectiveness of foreign trade is the country's foreign trade balance. That is why scientists and economists of the world have many works on foreign trade and its separate aspects. [1-6]. Nevertheless, in Georgia, these problems, complex and taking into account the conditions and peculiarities of the country, are still considered a less studied field. The present study is one of the modest attempts to fill this void.

It is recognized that foreign trade is a specific technology for converting exports into imports, but only if exports are equal to or greater than imports. Also, it is logical that foreign trade, i.e. the openness of the country contributes to economic growth, employment and raising the standard of living. This is when export balances or exceeds import. In Georgia, import exceeds export by 2.5 times. Such an imbalance in the trade balance, i.e. a chronic deficit, on the one hand, indicates the predominantly one-sided economic integration of Georgia with the outside world and, on the other hand, that the Georgian economy is highly dependent on imports, because the country consumes much more than it produces, that is, Georgia is not based on production, but mainly A consumption oriented country. Over the years, the growth of the import-oriented economy is facilitated by the stimulation of consumption and not production, which is mostly provided by the export of labor force, direct foreign investments, international tourists, foreign grants, aid, strength of the GEL, etc.

Foreign trade is the earliest and most massive form of international economic relations. That is why the question arises - what does the dynamics of foreign trade turnover in Georgia look like in 2018-2023? see table

Dynamics of foreign trade turnover as of 2018-2023 (million dollars)

million US dollars	2018	2019	2020	2021	2022	January-July 2023*
Foreign trade turnover	12 740.9	13 316.4	11 389.7	14 341.1	19 042.9	12 105.5
growth %	18%	5%	-14%	26%	33%	18%
Registered export of goods (FOB)	3 379.7	3 798.0	3 340.7	4 242.5	5 592.8	3 583.4
growth %	23%	12%	-12%	27%	32%	15.9%
Registered import of goods (CIF)	9 361.2	9 518.3	8 049.0	10 098.6	13 450.1	8 522.1
growth %	16%	2%	-15%	25%	33%	19%
Foreign trade balance	-5 981.6	-5 720.3	-4 708.3	-5 856.1	-7 857.2	-4 938.5
growth %	13%	-4%	-18%	24%	41.3%	40.8%
Export without re-export	2 221.6	2 317.8	2 408.0	3 127.5	3 704.2	1 728.2
growth %	11%	4%	4%	30%	11.3%	-22%

Source: GEOSTAT.GE

It can be seen from the table that in 2022, the foreign trade turnover with goods in Georgia will reach 19,042.9 million. USD, which is 33% more compared to the corresponding period of the previous year. Exports increased by 32% and reached 5,592.8 million. It was defined in US dollars, while imports increased by 33% and reached 13,450.1 million. amounted to US dollars. Georgia's negative trade balance in 2022, 7 857.2 mln. equaled the US dollar, which is 41.3 percent of foreign trade turnover. It can be seen from the table that the foreign trade turnover of Georgia in 2018-2022 (excluding 2019) is characterized by an increasing trend, which is a positive event. The negative balance of the trade balance is also characterized by a decreasing trend, which should also be evaluated positively. The high growth rate of Georgia's exports was mainly caused by local exports and re-exports.

Local exports (exports without re-exports) increased by 11.3% compared to the corresponding period of the previous year, 3 704.2 million. equaled the US dollar and made up 66.2% of the total export. This increase was realized mainly at the expense of the following positions: copper ores and concentrates - 1,024 million. USD (26% increase); Nitrogen fertilizers - 281 million. USD (135% increase); Wine - 252 mln. USD (growth 6%); Electricity - 84.3 million USD

(437% increase); Precious metal ores - 84.5 mln. USD (92% growth); Gold - 81.5 million USD (27% growth); Sweet carbonated drinks - 82.4 million. USD (43% increase); Knitted products - 74.2 million. USD (18% growth); fruits - 36.1 million USD (13% growth); Cattle - 58 million USD (75% increase).

Re-export increased by 69%, 1 886 million. USD amounted to 34% of the total export. The growth was mainly realized at the expense of the following positions: passenger cars - 904 million. USD (98% growth); Medicines - 88.0 million USD (9% growth); Trucks - 33 mln. USD (66% growth); Petroleum products - 51.0 mln. USD (increase 4 times); Medical devices - 30.0 million. USD (8% growth).

In 2022, the share of the ten largest export partner countries in the total export of Georgia amounted to 78.6 percent. The top three exporters were formed as follows: China (US$ 736.8 million), Azerbaijan (US$ 672.6 million) and Russia (US$ 651.6 million). In 2022, copper ores and concentrates took the first place in the ten export commodity groups, 1,024.3 million. in US dollars, which is 18.3 percent of all exports. The second place is occupied by passenger cars with 903.8 million. in US dollars (16.2 percent of total exports), and ferroalloys are in third place with 459.8 million. in US dollars (8.2 percent). As we can see, mainly resources, i.e. low value-added products and imported light vehicles, flow out as exports, and not finished products.

As already mentioned, Georgian imports were also characterized by a growing trend. In 2022, the share of the ten largest import partner countries in the total import of Georgia amounted to 67.5 percent. The top three countries include: Turkey (2,370.9 million US dollars), Russia (1,835.4 million US dollars) and China (1,126.0 million US dollars).

The largest import commodity group in 2022 was presented in the form of light vehicles, the import of which amounted to 1 618.8 million. US dollars and amounted to 12.0 percent of all imports. The second place was occupied by oil and oil products, 1,336.4 million. in US dollars (9.9 percent of imports), and the third place is copper ores and concentrates 775.3 million. in US dollars (5.8 percent of imports).

The largest import commodity group in January-July 2023 was also presented in the form of light vehicles, the import of which amounted to 1,620.1 million. USD and made 19.0 percent of all imports. In Georgia, the government will prohibit customs clearance of cars produced until 2013, which will likely increase the price of cars imported into the country and limit re-exports. Oil and oil products took the second place with 608.5 million. in US dollars (7.1 percent of imports), and the third place is packaged medicinal products worth 307.7 million. in US dollars (3.6 percent of imports). As we can see, mainly finished products - products with high added value, and not resources, are imported as imports.

What does Georgia-EU foreign trade turnover look like? In 2022, the turnover with the European Union increased by 29%, 3 912 million. USD amounted to 21% of the total turnover (2021 - 21%). Exports increased by 20%, 863 million. amounted to US dollars and accounted for 15% of Georgia's total export (2021-17%). Imports from the European Union increased by 32% and amounted to 3,049 million. USD amounted to 23% of the total import of Georgia (23% in 2021). Local exports to the European Union increased by 16%, 741 million. amounted to US dollars and accounted for 86% of Georgia's total exports to the European Union. As we can see, import exceeds export by 3.5 times, which indicates Georgia's focus on consumption. (geostat.ge, 2023).

Along with the war in Ukraine, Georgia's foreign trade with two strategic partners, the European Union and the United States of America, decreased. Along with the decline in exports to the EU and America, the share of exports to the CIS and economic dependence on Russia is increasing.

What does the foreign trade turnover of Georgia - CIS look like? In 2022, the trade turnover with the CIS countries increased by 32%, 6 405 million. USD amounted to 34% of the total turnover

(2021- 34%). Exports increased by 33%, 2 693 million. USD and accounted for 48% of total exports (2021-48%). Imports increased by 32% and reached 3,712 million. USD amounted to 28% of total imports (2021-28%). Local exports in the CIS decreased by 1% to 1104 mln. amounted to US dollars and accounted for 43% of the total export of Georgia to the CIS. As we can see, import exceeds export by 1.4 times, which is 2.5 times less than the corresponding indicator of the European Union.

Share of groups of countries in total exports in January-June 2023*: EU countries 13%; CIS countries 63%; Other countries 24%. CIS countries are replacing European countries in the top ten largest export partners of Georgia. The share of the largest exporting countries in total exports in January-June 2023*: Armenia 14.4%; Azerbaijan 13.5%; Russia 11.3%; Kazakhstan 9.8%; Kyrgyzstan 9.2%, other countries 41.7% (geostat.ge, 2023)

The Russian Federation is the second trading partner of Georgia. In January-April 2023, the trade turnover reached 848 million dollars, which is 51% more than the previous year. As a result of this growth, Russia overtook China and became the second largest trading partner after Turkey. [7]

In 6 months of 2023, Georgia's exports to the European Union decreased. In the first half of the year, the volume of goods exported to the EU was $398 million, while last year it exceeded $432 million. As a result, a situation was created when Georgia's exports to the entire European Union are less than to neighboring Armenia, where $440 million worth of goods went this year. The increase in the direction of Armenia is 122%. [8]

Georgia's exports to the European Union have decreased because the competitiveness of Georgian products on export markets is quite low. Logistics, transportation is the biggest problem for Georgia, despite the fact that the country has a favorable geographical location. The share of transportation costs in the final price of the product has increased, and delivery has become difficult, especially in the direction of Western countries, because it has to cross the Black Sea, where Russia-Ukraine hostilities are now taking place. This region is a conflict zone, and in this regard, the supply of products to the EU markets has become even more difficult. This has already been reflected in the cost structure of Georgian exporters. The second problem is that Georgian products are more competitive in the East than in Western Europe. Accordingly, the concentration is even more on the CIS markets, which increases its share in the Georgian production. All this makes the problems of diversification of markets even more difficult.

Exports to the EU are hindered by the fact that most Georgian companies (99.7%) are small in size. Even such small enterprises cannot produce the amount of product that would satisfy the demand of EU retailers or manufacturers. Export of small and medium-sized enterprises to the EU market is complicated by: lack of partners among EU member states; lack of information about export procedures in the EU single market; small production volume, which cannot ensure export efficiency; lack of resources in order to produce products of sufficient volume for export; Not having the necessary quality certificate for export to the European Union.

Accordingly, international organizations and state subsidies (grant, preferential credit, etc.) should help small businesses to increase the scale of production and to establish international services for issuing quality certificates necessary for export to the European Union. In addition, the state subsidy (grant, preferential credit, etc.) should not be given to a business that increases economic dependence on Russia.

Many Georgian manufacturers maintain close relations with Eastern markets. Closer engagement with the East does not mean trade ties with the West should disappear. Both directions must be target directions. This is because maintaining trade links with eastern markets provides an increase in income, which can then be used as an investment to enter western markets. It is true that gaining access to the Western market and establishing a place requires more time and resources, but if successful, the benefits are as much as those obtained from the

East. The main difference is that the Western market is larger, stable, predictable and standardized. Consequently, product recalls or embargoes do not occur as often as they do in eastern markets. If you establish a place in the western market, the success is long/permanent!

Despite Russia's instability and unreliability, what drives Georgian entrepreneurs to the Russian market? Despite the existing political risks, entrepreneurs are attracted to the Russian market by the knowledge of the Russian language, similar mentality, geographical proximity, sound infrastructure, greater competitiveness of products and minimal marketing costs. In contrast, entering the market of developed countries requires knowledge of the English language, a large amount of investment, marketing skills and financial resources.[9]

The Russian-speaking market remains close due to cultural and linguistic factors. Marketing cost is also minimal. The importer can take the products directly from the factory. At this time, it is difficult to cross the Chinese border and find a partner there. Advance payment is also an important factor. Russia operates quite actively on the principle of advance payment. And from the European Union, any importer requires a delay of 30, 60, 90 days until the products arrive at the site. The Georgian company often does not have the necessary free funds for this. A solution to the existing problems is the creation of an export credit agency, which provides exporting companies with access to short-term, cheap working capital. In this case, trade in developed markets would increase significantly.

Conclusion and recommendations

Based on the conducted analysis, we can conclude that in order to overcome the negative trade balance (deficit) of Georgia, it is appropriate to increase the domestic and international competitiveness of the domestic products and thereby increase the domestic and foreign demand for it.

Specifically, in order to overcome the deficit of modern Georgia's trade balance, it is necessary to stimulate export growth, optimization and diversification. At the same time, following the "rules of the international game", it is advisable to replace unreasonable imports by promoting local production (especially since, during the devaluation of the national currency, imports are more expensive than local production of import-substitute products). Reasonable import substitution can bring a lot of good to Georgia: new businesses will be created, jobs and export opportunities will increase, imports and demand for foreign currency will decrease, the mentality of preferring domestic products over imported ones will be formed in the population, innovative approaches and technologies will be encouraged. Also, re-export should be used judiciously. In order to promote re-exports, it is necessary to make reasonable use of Georgia's favorable geographical location, transit conditions and legislative environment. Georgia with a trade deficit should also have international currency reserves, at least three times the amount of one month's imports, which will be used if necessary.

In order to minimize economic dependence on Russia, Georgia should work more actively on diversifying export markets, especially in the direction of wine exports; local production of wheat and diversification of wheat imports should be promoted as much as possible; Subsidies from the state budget (grant, preferential credit, etc.) should not be given to such businesses that increase economic dependence on Russia; Unlike previous years, the target market for attracting tourists should not be Russia. The resources allocated for marketing activities should be directed more actively towards other countries, including the countries that import high-budget tourists.

This recipe for improving the trade balance should be adjusted taking into account the specifics of each partner country. As a result of all this, we think that the negative balance will gradually decrease and we will get a positive trade balance.

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ANALYSIS OF COMESA MACROECONOMIC CONVERGENCE CRITERIA

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Abstract:
This paper shed lights on the issue of macroeconomic convergence criteria through the analysis of its drawbacks due to overlapping membership found in many African countries. This paper wants to provide information to policy makers in many African countries with the same dilemma by explaining, first why multiple memberships is a hindrance to development and then criticizes the actual approach of regional economic community rationalization. The main results show that despite the difficulty of following different criteria many countries continue to be member of more than one Regional Economic Community.
Keywords: Macroeconomic convergence criteria, Multiple memberships, Regional Economic Community, Regional integration, COMESA

INTRODUCTION

In 1976, at the 27th ordinary session of the Council of Ministers, resolution CM/Res. 464(XXVI) in its paragraph 2(a) decided that Africa is divided into five (05) regions, namely North, West, Central, East and South. The Lagos Final Act and the Abuja Treaty (Article 6, 2(a)) provided for the strengthening of existing Regional Economic Communities (REC) and the creation of new REC where none exist, to cover the entire continent. In 1986, at the 44th ordinary session of the Council of Ministers, resolution CM/Res. 1043 (XLIV) in paragraph 7 requested the OAU Secretary General to examine practical and operational modalities for harmonizing and coordinating the activities and programs of existing REC.

In 1987, at the 23th ordinary session of the Heads of State and Government, resolution AHG/Res.161 (XXIII) in its paragraph 7 requested the Secretary General of the Organization of African Unity (OAU), the Executive Secretary of the Economic Commission for Africa (ECA) and the heads of the REC, in particular the Economic Community of West African States (ECOWAS), the Preferential Trade Area (PTA) and the Southern African Development Community (SADC) to take the necessary measures to coordinate, harmonize and rationalize the activities, projects and programs of the regional organizations in their respective regions, in order to avoid multiple memberships which are a source of conflict and wasted energy and resources.

In terms of the timetable for achieving these objectives, Africa is way behind schedule. Indeed, African leaders have agreed on six (06) stages in the construction of the African Economic Community. This involves forming five (05) REC from the existing 14 - a real headache for African leaders. The idea of rationalizing the REC is not new, as numerous African Union resolutions demonstrate. The need to rationalize the REC began in West Africa, when thirty (30) intergovernmental organizations and three (03) REC coexisted. Attempts to regroup the REC were made from 1983 until 1994. A new attempt using new approaches was made between 1995 and 2001. Unfortunately, these experiments were not crowned with success. In June 2001, to speed up the integration process, the Organization of African Unity was transformed into the African

Union, with the aim of creating an African common market. The process will take 34 years to complete, in six stages of varying length (Kouassi, 2007)

Table n°1 Stages in the creation of the CEA

1st stage	1994-1999	A period devoted to strengthening existing CERs and creating new ones where none exists
2nd stage	1999–2007	Tariff and non-tariff barriers, door duties and internal taxes to be reduced to their May 1994 levels. Progressive harmonization of multinational policies and programs in agriculture, industry, transport, communications and energy to be completed.
3rd stage	2007–2017	The emphasis is on consolidating FTAs and customs unions through the progressive elimination of all barriers to trade. At the end of this stage, a Common External Tariff (CET) is to be adopted and implemented.
4th stage	2017–2019	The free movement of people and the application of the rights of residence and establishment, as well as the coordination and harmonization of policies and programs in the trade and other sectors, must be completed in view of the full realization of the African Common Market.
5th stage	2019–2023	This stage is devoted to consolidating the African Common Market at continental level.
6th stage	2023–2028	This final stage will see the creation of the African Economic Community and the achievement of economic, political, social and cultural integration. The African Central Bank, the single African currency and the Pan-African Parliament will reflect this integration.

Source: Kouassi, 2007.

Midway through the process, when it became clear that we'd never be able to meet this timetable, we decided to create the African Continental Free Trade Area (ACFTA), scheduled to come into being in 2063.

The degree of integration varies from one regional arrangement to another. For example, there are enormous differences between the European Union and the North American Free Trade Agreement (NAFTA). The former engages the sovereignty of member states in a common economic and political enterprise, while the latter is essentially concerned with the free movement of goods and capital. The macroeconomic policies of the member countries of these communities are subject to constraints before they can join this monetary union. These constraints are known as "*macroeconomic convergence criteria*". Within the European Union, this is known as the "*Stability Pact*".

In Africa, complying with two macroeconomic convergence criteria raises a number of questions, including (i) how does multiple membership undermine the integration process? and (ii) how credible are economic policies that follow different convergence criteria? These questions are worth raising to explain how Africa can achieve economic and political integration. Research into African economic integration is focusing less and less on the problems of multiple regional affiliations. However, little of this work has been devoted to the analysis of macroeconomic policies as factors to be taken into account in a diagnosis to define or discuss the relevance of African monetary integration. This article therefore proposes a diagnostic analysis of COMESA's macroeconomic convergence criteria, in order to identify the constraints to achieving monetary union. For the sake of clarity, we will first review the theoretical foundations of integration. We will then analyze the SADC convergence criteria. In the final section, we offer some recommendations and food for thought.

Methodology

This paper is based on data gathered from field missions carried out by the African Union's Trade and Regional Integration Division, and on theoretical research. As far as regionalization is concerned, it has to be said that information from the Economic Commission for Africa (ECA) is the most reliable. The Commission has drawn up two sets of questionnaires, one for a number of African countries and the other for the REC. Two internal and consultative consultations with the African Union (AU) were also deemed necessary. The questionnaire proposed for African countries covers: (i) compliance with financial commitments to the REC, (ii) integration of REC objectives into national budgets, plans and programs; (iii) implementation of selected programs, (iv) legal issues relating to integration, (v) costs and benefits of integration and (iv) relations with civil society and the private sector in terms of regional integration.

Responses to this country-level survey are needed to refine the data in the questionnaire for the REC of which these countries are members. The questionnaire for REC has been designed to cover issues relating to multiple membership and covers: (i) general information and legal status, (ii) efficiency of human and financial resources, competitiveness and internal management, (iii) level of efficiency in achieving the ultimate objectives of the AU and regional integration, (iv) harmonization of mandates and duplication of programs, (v) the coordination of RECs within the same region and the lack of coordination at continental level, and (vi) measures taken in the past and recommendations for streamlining the REC. It should be stressed that the scientific community, the private sector, key players in regional integration, the AU, REC member countries and other institutions were also consulted.

Following the consultations, field missions were carried out by the Trade and Regional Integration Division to the 14 REC: the Arab Maghreb Union (UMA), the Economic and Monetary Community of Central Africa (CEMAC), the Common Market for Eastern and Southern Africa (COMESA), the Community of Sahel-Saharan States (CENSAD), the East African Community (EAC), the Economic Community of Central African States (ECCAS), the Economic Community of the Great Lakes Countries (CEPGL), the Economic Community of West African States (ECOWAS), the Indian Ocean Commission (IOC), the Intergovernmental Authority on Development (IGAD), the Mano River Union (MRU), the Southern African Customs Union (SACU), the Southern African Development Community (SADC) and the West African Economic and Monetary Union (UEMOA). Officially, of the 14 existing REC, the African Union recognizes only eight: ECOWAS: 15 members; headquarters: Abuja, Nigeria; COMESA: 20 members; headquarters: Lusaka, Zambia; ECCAS: 11 members; headquarters: Libreville, Gabon; SADC: 14 members; headquarters: Gaborone, (Botswana); UMA: 5 members; headquarters: Rabat, (Morocco); IGAD: 7 members; headquarters: Djibouti; CEN-SAD: 18 members; headquarters: Tripoli, (Libya); EAC: 3 members; headquarters: Arusha (Tanzania).

The Trade and Regional Integration Division also visited 26 African countries to gather the views and opinions of REC officials and development partners. The Division visited Benin, Botswana, Burkina Faso, Cameroon, Central African Republic, Congo, Democratic Republic of Congo, Djibouti, Egypt, Gabon, Ghana, Kenya, Libya, Mali, Mauritania, Morocco, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Tunisia and Zambia.

Literature review

With over 200 regional organizations, Africa is the continent with the largest number of Regional Economic Communities (REC). Depending on their degree of integration, according to Bala Balassa (1961), REC take four (04) basic forms: free trade area, customs union, common market and economic and monetary union.

Table n°2: Stages of regional integration

Mechanism type	Free exchange between members	Common trade policy	Free flow of factors	Common monetary and budget policies	Single government
Preferential trade Area	No	No	No	No	No
Free Trade Area	yes	No	No	No	No
Customs union	Yes	Yes	No	No	No
Common market	Yes	Yes	Yes	No	No
Economic union	Yes	Yes	Yes	Yes	No
Political union	yes	Yes	Yes	Yes	yes

Source: El-Agraa, 1997.

In a Free Trade Area (FTA*),* the partners remove barriers to the free movement of goods and services, without adopting a common trade policy towards countries outside the zone. Each member country sets its own tariff with third countries. The free-trade zone is the simplest form of integration. Organizing countries eliminate tariffs and quantitative restrictions that hinder the free movement of goods and, where applicable, non-financial services.

A customs union is similar to a FTA, but is also characterized by the adoption of common trade regulations vis-à-vis third countries. In particular, the countries forming a customs union apply a common external tariff to the products of non-members. In this way, two or more customs territories are replaced by a single customs territory.

A common market requires the free movement of people, goods, services and capital. The common market, also known as the single market, is a much more complex way of organizing economic relations, as it adds three elements to the customs union: free movement of workers, free movement of capital and freedom of establishment for companies throughout the territory of the common market.

It therefore considerably increases the links between economies, since not only goods markets but also those for capital, financial services and people are unified.

Economic and Monetary Union is the most elaborate form of integration. In fact, it adds to the "three freedoms" established by the common market, the implementation of common macro-economic policies. Today, the European Union's economic and monetary union represents the most perfect example of monetary integration.

The theoretical framework of monetary integration generally refers to the theory of Optimal Monetary Zones (OMZ) initiated by Mundell (1961). The theory studies the conditions necessary for a monetary union to be stable, sustainable and beneficial (by comparing advantages and losses) for the member states. A key question is: Is a currency zone formed by a few countries an optimal currency zone? Pioneering theories attempt to determine the conditions for optimality. They focus mainly on assessing the macroeconomic costs of losing the exchange rate instrument, and try to propose alternative measures. Mundell (1961) proposes labor mobility, while McKinnon (1963) suggests trade openness and Kenen (1969) diversification of production structures.

However, there are other criteria that enrich the theory of optimal currency areas, relating to fiscal federalism (Johnson, 1970), financial integration (Ingram, 1969), zero inflation differentials (Harberler 1970; Fleming, 1971; Magnifico, 1972) and the degree of asymmetry of macroeconomic shocks and adjustment factors that can replace the exchange rate. The theory of MZs identifies the study of asymmetric shocks as one of the determinants of the net advantage of currency unions. The greater the asymmetric shocks, the less desirable a union would be between a group of countries. In the context of monetary integration in Southern Africa, the evaluation of asymmetric shocks is crucial in determining the relevance of the monetary union project.

Monetary integration is an essential component of economic integration. It must be strong if integration is to evolve beyond free-trade zones and customs unions towards a genuine common market (Eichengreen 1998). When countries adopt an advanced form of cooperation, such as a single currency, trade develops remarkably (Rose 1999; Glick and Rose 2001; Bun and Klaassen 2002). The same applies to economic performance and individual production in the countries concerned (Frankel and Rose 2000).

The macroeconomic policies of these countries must obey constraints that change according to the level of monetary integration. Fixing exchange rate parity by reference to a currency is the most common example. However, the various mechanisms for fixing the currency offer neither the same advantages nor the same flexibility.

A monetary union is an area with a single monetary policy, within which a common currency or perfectly interchangeable currencies circulate freely (Masson and Pattillo, 2001). Setting up a common currency or a single currency is a challenge for each regional community, but its realization implies the imposition of certain conditions to compensate for its role as an instrument for adjusting the fixed exchange rate, since each member country relinquishes the autonomy of its monetary policy.

With conventional mechanisms that provide for a fluctuation band, it can be said that the monetary authorities' decision to realign the currency follows no rules. However, with more restrictive systems, realigning the currency is more laborious and costly due to legal and institutional obstacles. Authors such as Obstfeld and Rogoff (1995) believe that states should choose between a flexible exchange rate and a more binding form of pegging. Currency unions, among others, are among the binding forms of pegging. According to Honohan and Lane (2001), the successful launch of the Euro shows that these unions can be an external factor of fiscal rigor at national level.

Complying with precise macroeconomic convergence criteria, and obliging countries to create a macroeconomic environment conducive to international competition, leads to good economic outcomes, such as low inflation, low deficits and constant exchange rates (Noah Mutoti and David Kihangire, 2006). By deciding to join only one REC, a government reinforces the credibility of its commitment to macroeconomic stabilization. This has a positive impact on growth. On the other hand, belonging to several REC removes this credibility, especially if there is no system of harmonization between them. As a result, we can only agree on the importance of harmonizing REC policies.

Regional integration can give greater credibility to the economic and political reforms of member states and ensure their continuity, as its mechanisms play a moderating role and provide a framework for coordinating policies and regulations (Fernandez and Portes, 1998). In a nutshell, the potential risks are: (i) the existence of rivalry between groups with the same objectives (customs union, single currency, etc.); (ii) the dispersal of financial and human resources from countries that have to contribute to the running costs and funding of REC projects and programs; and (iii) the inability to meet (all) their obligations, by favoring one REC over another and avoiding sprinkling, waste and dispersion, and concentrating efforts in REC with high growth potential.

Results and discussion

For some economists, marked by very liberal philosophies in which the market is the main regulatory mechanism, a common market is sufficient, and need only be supplemented by actions designed to maintain or strengthen competitive mechanisms, such as a common competition policy (Rollet Philippe and Huart Florence 1995). For others, advocates of deeper integration, we need to go further, because a single market is insufficient in that it ignores three elements: (i) the fact, firstly, that the conditions of competition can be distorted by the numerous interventions of the state in the economy, and requires coordination and sometimes unification of economic policies; (ii) the fact, secondly, that in a common market the interdependence of economies is very high, with the consequence that purely national economic policies are less effective; (iii) the fact, thirdly, that investment policies can be distorted by exchange rate instability. So, at the very least, we need to ensure exchange rate stability between member countries, or even go further by introducing a single currency. These three arguments are often invoked to recommend the implementation of a monetary union.

Setting up a monetary union

In practice, setting up a monetary union requires:

• Definition of the objectives, rules of action, responsibilities and degree of independence of the common central bank vis-à-vis governments;

• The division of tasks concerning bank supervision;

• The creation of mechanisms and procedures to adapt national policies to the objectives of monetary union.

A successful monetary union requires countries to adopt prudent policies. As already noted, the effects of monetary unions on fiscal policy are twofold. By accentuating budgetary rigor, the loss of the benefits of the monetary strike induces a degree of fiscal discipline. However, the elimination of the risk of currency devaluation reduces the cost of issuing debt instruments and encourages greater indebtedness to finance public spending. Given this ambiguity, it is vital to adopt a system of fiscal policy guidelines. In this respect, the adoption of rules governing budgetary policies is useful. These can be stipulated in terms of ceilings on a country's deficits and debt. Sanctions can be imposed on countries that fail to comply. In short, there can be no common currency without precise convergence criteria.

Macroeconomic convergence criteria

Generally defined in terms of upper and lower limits for macroeconomic variables, convergence criteria are intended to guide the economic policies of future member states during the transition period. Only those that meet these criteria can join the monetary union.

Before the official start of the union, the macroeconomic convergence criteria ensure that all candidate countries maintain low inflation and prudent fiscal policies. This is to avoid the distorting effects that could be induced by the participation of countries whose policy stance and macroeconomic fundamentals are not in line with the monetary objectives of the common central bank. The variables taken into account for this purpose are generally inflation, budget deficit and outstanding public debt.

In order to achieve low inflation, the countries concerned must apply rigorous anti-inflationary policies. Their commitment to monetary stability is measured by their willingness to bear the real costs. Budget and debt requirements oblige governments to adjust their fiscal policies to maintain an overall balance between expenditure and revenue. These adjustments can also be significant and costly (spending cuts, tax increases). Governments that do so demonstrate their commitment to rational budget management.

COMESA and SADC are among the REC aspiring to monetary union. To this end, they consider it essential that their member states first move towards monetary harmonization, with a view to achieving macroeconomic convergence. To assess progress, they have formulated a number of criteria to measure member states' progress in implementing the program. Only member states that have achieved macroeconomic convergence can move on to the next stage.

COMESA macroeconomic convergence criteria

The Common Market for Eastern and Southern Africa, a regional grouping of twenty members, is the most structured and advanced in the process of economic integration in Africa. The establishment of the FTA in 2000, seven years after the group's creation, demonstrates this commitment to integration. The organization is currently moving towards a customs union. On the financial side, COMESA's operating budget is financed by contributions from member states. The budget increases by 7 to 9% per year. Contributions from external partners to the REC are three times the operating budget. Contributors include the EU, USAID, ADB, IFD, the World Bank and GTZ. However, according to visits to the RECs, there do not appear to be any insurmountable problems with the payment of contributions by states with dual or multiple membership. As far as statutory obligations are concerned, on average a third of member countries fail to meet them, and in some REC the figure is as high as 50%. Only 25% declare that they will not be able to meet their future obligations. In 2003, only 68.5% of contributions had been paid. In 2004, 36% of African countries had not yet fulfilled their obligations due to a lack of resources. When it comes to implementing national programs, 23% say that multiple memberships are causing them definite problems. Low attendance at meetings and similar and/or contradictory programs are also due to multiple membership. The criteria are divided into two categories: primary and secondary.

Primary criteria:

1) The ratio of budget deficit to Gross Domestic Product (GDP), excluding grants, must not exceed 5%.
2) The inflation rate considered tolerable must not exceed 5%.
3) Central bank financing of the budget deficit is limited to a maximum of 20% of the previous year's public revenues.
4) The applicant country must build up a foreign exchange reserve equal to or greater than four months' imports.

Secondary criteria :

1) Achieve and maintain real exchange rate stability
2) Establish and maintain positive interest rates through the market;
3) Achieve a sustained growth rate of over 7 per cent;
4) Reduction of the debt-to-GDP ratio to a sustainable level;
5) Increase tax revenues to 20% of GDP
6) Reduction of the current account deficit in relation to GDP (excluding grants) to a sustainable level; and
7) Achieve and maintain a public investment rate of at least 20%.

In the literature on regional integration, COMESA is often compared with SADC. Analysis and comparison of these two RECs shows that COMESA's convergence criteria are more numerous and more detailed than those of SADC. But there is also a similarity, with the exception of the criterion relating to the current account. It should be pointed out that Madagascar and eight other COMESA member countries are also members of SADC.

The aim of this section is to look at the economic situation of member countries through the prism of the COMESA convergence criteria. As we know, the COMESA macroeconomic indicators are divided into primary and secondary criteria.

Primary criteria analysis:

- Most COMESA member countries met the first criterion relating to the ratio of budget deficit to GDP. In fact, 40% of COMESA members improved their fiscal situation. Only the Democratic Republic of Congo, Djibouti, Kenya and Swaziland were able to meet the 5% target. Harmonization of fiscal policies within COMESA is therefore not imminent, with only Angola, Comoros, Djibouti and Sudan showing any sign of convergence. To advance to a higher level of integration, many of

the member countries will have to make efforts, as only those who reach an acceptable level of convergence will be able to continue on their way.
- Despite the fact that a process of disinflation is underway in the region, many countries have failed to reach the 5% inflation target. However, significant convergence has been recorded in the following group of countries: Burundi, Djibouti, Egypt, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan and Uganda. With a single-digit inflation rate, Madagascar is one of the countries that have managed to maintain an inflation rate in line with the 5 percent target. These are Uganda, Egypt, Ethiopia, Comoros, Djibouti and Seychelles. The poor performers are Angola, DR Congo and Zimbabwe, all of which are experiencing triple-digit inflation.
We stay in this second criterion, but this time in terms of monetary growth. Almost all member countries have halved their money supply growth. In Madagascar, as in Burundi, Egypt, Mauritius and Zambia, growth has been stable.

Table n°3: COMESA - Country convergence index

Country	Budget practices	Indebtment risk	Trade integration	Mean
Angola	-	-	-	-
Burundi	Low (3)	High (3)	Slow (3)	3
Comoros	-	High (3)	Slow (3)	3
R. D. Congo	-	Moderate (2)	Average (2)	2
Djibouti	Low (3)	Moderate (2)	Average (2)	2,3
Égypt	-	-	Fast (1)	-
Érythrea	Low (3)	-	-	-
Éthiopia	Low (3)	Moderate (2)	Average (2)	2,3
Kenya	High (1)	Low (1)	Fast (1)	1
Madagascar	Low (3)	-	Average (2)	2,5
Malawi	Average (2)	Moderate (2)	Average (2)	2
Mauritius	High(1)	Low (1)	Average (2)	1,3
Rwanda	Average (2)	Moderate (2)	Average (2)	2
Seychelles	Low (3)	High (3)	Slow (3)	3
Soudan	-	High (3)	Average (2)	2,5
Swaziland	Average (2)	Low (1)	-	1,5
Ouganda	Average (2)	Low (1)	Fast (1)	1,3
Zambie	Average (2)	Moderate (2)	Average (2)	2
Zimbabwe	-	-	-	High (3)

Source : IIRA 2019

The situation within COMESA is summarized in the table above. The data show that countries follow different paths and speeds of integration. Many countries are below the regional average.
- The third convergence criterion stipulates that central bank financing of the budget deficit is limited to a maximum of 20% of government revenue. This criterion has not been met by several members of the organization, as deficit financing by the banking system is well in excess of 20%. The dynamism of financing by the non-banking system continued in most members
- Many of the region's countries were unable to meet the fourth criterion, which requires a foreign exchange reserve capable of covering four months' imports. Only Mauritius, Comoros, Uganda

and Ethiopia managed to amass enough foreign exchange to meet this criterion. However, some countries, such as Madagascar, with a reserve of around 2.9 months' imports, are still a long way off the mark.

Analysis of secondary criteria

- Along with DR Congo, Malawi and Uganda, Madagascar is one of the countries adopting the floating exchange rate system. This means that the exchange rate criterion is only half-fulfilled, since in addition to its implementation, a certain degree of stability must also be maintained. This is not always the case in Madagascar.
- Establishing and maintaining positive interest rates through the market is the second secondary criterion. As in Uganda, Egypt and Mauritius, real interest rates have been positive in Madagascar. Better still, rates in Madagascar are above the rate of inflation, and this situation looks set to continue.
- The third secondary criterion calls for a sustained growth rate of over 7%. While Uganda, Mauritius, Rwanda and Madagascar have achieved this threshold, they have not been able to sustain this performance. Angola is the exception, with two consecutive years of growth at around 7%.
- What about the debt-to-GDP ratio? The situation in the region is mixed. The ratio has fallen in some countries (DRC, Angola, Egypt, Ethiopia, Kenya, Mauritius, Madagascar, Sudan, Zambia and Zimbabwe) and risen in others (Malawi, Uganda, Burundi, Rwanda, Comoros, Djibouti, Eritrea, Seychelles and Swaziland).
- Ten countries (Angola, Burundi, Egypt, Kenya, Malawi, Zimbabwe, Djibouti, Eritrea, Seychelles and Swaziland) have achieved the target of a tax burden of 20% or more. To the best of an economist's memory, such a rate has not been recorded in Madagascar since the 1980s. The tax burden rate was 10.7% in 2006 (versus 10.1% in 2005), with domestic and foreign trade-related tax revenues contributing equally.
- According to World Bank and IMF standards, a current account deficit/GDP ratio of 12% is considered sustainable. With a ratio of 11%, Madagascar, along with DR Congo, Comoros, Angola, Egypt, Ethiopia, Kenya, Mauritius, Sudan, Swaziland and Zimbabwe, have all reached a respectable level.
- In terms of public investment, five countries are the best performers in COMESA. Madagascar, Uganda, Mauritius, Seychelles and Zambia have all well exceeded the 20 percent target set by the COMESA Technical Committee on Macroeconomic Convergence. Egypt, Ethiopia, Sudan, Rwanda, Eritrea and Swaziland are slightly below this target.

Conclusion

In this paper, we have attempted to analyze the COMESA macroeconomic convergence criteria. At the end of our analysis, it emerges that the poor appreciation of costs means that many member countries of more than one REC are not very enthusiastic, or even reluctant, to the idea of withdrawing from one REC in favor of another. The "short-termist" vision of African leaders has once again gained the upper hand, and the advent of the African common market will suffer even more as a result. The repeated failures of grouping attempts show that the political will is lacking. This is not to say that the process should be halted. The difficulties of fulfilling or following various macroeconomic convergence criteria are slowing down the advent of the true African Union. We believe that rationalization through merger and absorption is painful for many countries that have a certain sense of membership.

There is another reason to believe that integration efforts will not bear fruit until the interests of states and peoples are taken into account instead of decrees. Civil society and trade unions must be given the opportunity to express their views, as they too have something to say about the

advancement of regionalism. We need to put aside integration "from *above*", driven by leaders meeting at summits, in favor of integration "from *below*", the product of the will of social partners and economic agents. Today, the entire African scientific community is being called upon to meet the imperatives of the continent's economic interests.
Another important point in the study of macroeconomic convergence criteria is whether, beyond these constraints, the member countries of the monetary union are achieving *convergence in living standards* or *real convergence*. Real convergence is defined as the reduction in income disparities between the various nations making up the union. The analysis of real convergence is very useful when the unequal level of structural development of the various countries constitutes a non-negligible limit to the realization of the monetary union project.

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Appendix

Table : Commercial integration within the COMESA

Country	Speed
Angola	--
Burundi	Slow (3)
Comores	Slow (3)
R. D. Congo	Average (2)
Djibouti	Average (2)
Égypte	Fast (1)
Érythrea	--
Éthiopia	Average (2)
Kenya	Speed (1)
Madagascar	Average (2)
Malawi	Average (2)
Mauritius Island	Average (2)
Rwanda	Average (2)
Seychelles	Slow (3)
Soudan	Average (2)
Swaziland	--
Ouganda	fast (1)
Zambia	Average (2)
Zimbabwe	--

Source : IRRA, 2014

Table: Country ranking according to their integration evolution

REC	Fast integration countries	Average integration countries	Slow integration countries
COMESA	Égypt	R.D Congo	Comoros
	Kenya	Djibouti	Seychelles
	Ouganda	Éthiopia	
		Libya	
		Madagascar	
		Malawi	
		Mauritius	
		Rwanda	
		Soudan	
		Zambia	
		Zimbabwe	
		Burundi	

Source : IIRA, 2014

Assessing the risks of imported inflation in the SADC region: case study of Madagascar

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Abstract

SADC member countries seeking macroeconomic convergence need to study how their domestic markets respond to price shocks in the markets of other member countries. This paper shows that this crucial question deserves to be asked. It is important to know which country represents the greatest risk of inflation transmission. The empirical literature on the analysis of the extent of inflation transmission remains very mixed. The aim of this article is to answer this question, taking the case of Madagascar within the SADC. The results show that countries with a high trade intensity with Madagascar present the greatest risk. Inflation transmission is also explained by countries' inflation histories. Price rises within the Regional Economic Community (REC) are more rapidly transmitted to domestic prices than price falls. At the end of this analysis, another question merits consideration: does inter-regional trade alone explain imported inflation?

Keywords: Inter-regional trade, Imported inflation, Madagascar. SADC

INTRODUCTION

Inflation is a fairly recent word, although the phenomenon has been around for centuries. Historically, it first appeared in the third century, during a political and economic crisis linked to the depreciation of the Roman currency. It is defined as an abusive increase in the quantity of money, but its current meaning is a general, sustained and sustained rise in price levels. Etymologically, the term inflation derives from the Latin words "*inflatio*" and "*inflare*", meaning "to swell" and "to inflate" respectively. In fact, this rise affects all goods and services and tends to spread throughout the economic circuit. It also reflects a malfunctioning market economy.

Complying with precise macroeconomic convergence criteria, and obliging countries to create a macroeconomic environment conducive to regional and international competition, leads to good economic results, such as limited inflation, low deficits and constant exchange rates. In the case of our study, the Southern African Development Community (SADC), there are five (5) such criteria, namely (i) a single-digit inflation rate, (ii) a budget deficit to GDP ratio not exceeding 5%, (iii) a debt to GDP ratio not exceeding 60%, (iv) a current account deficit to GDP ratio of less than 9%; and (v) a sustained growth rate of over 7%. In the remainder of our study, we focus on the first criterion, inflation. The various causes of inflation are money inflation, demand inflation, cost inflation and imported inflation.

Firstly, because of the perennial nature of inflation and money, early economists explained with monetarist thinking that the price of goods increases in monetary terms. All inflation is monetary in origin.

Secondly, in a competitive market, rising prices mean an excess of demand over supply. The increase in demand does not come from an acceleration in the velocity of money circulation, but can come from a new product to be consumed, or from a change in the price level, or from many other factors. However, prices will only rise if the factors of production, used at full capacity, are not sufficient to produce goods in proportion to the growth in the money supply.

Thirdly, inflation is caused by rising production costs. In fact, inflation stems from an increase in the remuneration of factors of production in line with productivity growth. Inflation is transmitted by wage increases in one sector affecting another, and so on. In a cascade effect, companies raise the prices of these products to maintain their profit levels.

Fourth, inflation is explained by imports. The process can be explained as follows: a country's trade balance is in deficit, i.e. exports are lower than imports. This will result in a depreciation of the local currency, with higher import costs being passed on to all sectors of the economy, leading to higher import costs and inflation.

The current literature overlooks the influence of importation on the inflation spillover in a country member of an Economic Regional Community. This study fulfills this gap and tries to answer the overwhelming question of which country present the most risk in terms of imported inflation? We have chosen Madagascar as our case study. The paper is organized as follows. Section 1 provides a review of the literature. Section 2 describes the methodology. Section 3 presents the results as well as their economic explanations. And finally the last section, section 4 provides concluding remarks with some policy recommendations.

Theoretical review of inflation

Monetarists are the theorists we have in mind when we talk about inflation. Richard Cantillon differs from other monetarists in that he notes several origins of money creation, which do not all have the same effect on prices. Rising prices are caused by demand, which is created by increasing the quantity of money in circulation. In this theory, money performs real actions on the economy; it is no longer neutral. Monetarists have always believed that money has no effect on the real economy. Inflation is caused by an imbalance between supply and demand in a market, and the adjustment to this imbalance is made by raising prices.

Irving Fisher's formula explains the phenomenon: MV=PT where M denotes the money supply in circulation, V the velocity of money circulation, P the general price level and the volume of transactions. The quantitative theory of money can be summed up in two propositions: (i) the first is that the general price level is a function of the quantity of money in circulation, and (ii) the second is that the rate of growth of the money supply is the cause of inflation. According to this analysis, money is neutral, a mere intermediary to facilitate trade.

John Maynard Keynes, for his part, highlighted the notion of the inflationary gap in a war economy. This economy causes incomes to rise, but not at the same rate as production, resulting in an inflationary gap and higher prices. According to Keynes, the state alone is responsible for inflation.

The Phillips curve shows the inverse relationship between the rate of change in nominal wages and the unemployment rate. However, this approach does not provide a relationship between wage increases and prices. Lipsey extends the analysis by showing that wage increases are the main cause of inflation. He concludes that there is an inverse relationship between unemployment and inflation. This extension confirms Keynes' analysis that money creation and excess demand will only be inflationary if production capacity is fully utilized. This is the famous inflation through rising production costs.

Empirical review of inflation and regional trade

Monacelli and Sala (2009) and Mumtaz et al. (2011) investigate the contribution of international factors and movement to the dynamics of inflation and conclude that international movements within regions contributed most of the fluctuations in inflation after World War II. In the past decade, the synchronization of inflation across different countries has attracted the attention of policymakers. Common monetary policies conducted in many monetary unions (Tiwari et al. 2016) is, among other things, considered to be important factor for international spillover of inflation. Therefore, analyzing the issue of inflation spillover is an interesting topic in the macroeconomic convergence literature. As a matter of fact, without a good understating and a proper knowledge about the mechanism of inflation spillover, countries may overestimate domestic development (Ciccarelli and Mojon 2010).

Grosman and Helpman (1991) demonstrate that trade openness enables countries to increase the level of domestic imports of goods and services between two countries. Numerous studies show that the characteristics of trade, its structure and a country's trade policy regime influence how exchange rates affect trade. Kyriacou and Papageorghiou (2010) examined their country's experience in the run-up to joining the euro. In their view, a small, open, import-intensive economy like Cyprus has no interest in allowing its exchange rate to depreciate. Because of the inelastic structure of imports, exchange rate depreciations can only lead to inflation and a loss of market share rather than a gain.

Neely and Rapach (2011) decompose the inflation rates of 64 countries and find that 16% of the annual inflation variability could be explained by the regional across countries members of monetary union which conduct common monetary policies. In the same vein, Yang et al (2006) analyze the inflation spillover among the G7 countries over the period (1973-2003). They find that the United States are protected from the inflation of other countries because of the monetary policy of the Federal Reserve to control domestic inflation. The findings of those later two studies are of a keen interest to our paper since we propose to analyze the inflation transmission mechanism at the region (SADC) not at the world level.

Methodology

Two methodologies are widely used in the recent spillover literature. It's all started when in 2006, Yang et al. applied variance decomposition approach to a VAR model to investigate the inflation spillover in the G7 countries (1973-2003). Though the impulse response analysis of that approach is a handy tool for spillover analyses (Alam and Istiak 2020), the impulse responses may vary according to the order of the VAR. Then come Diebold and Yilmaz (2012) with a better methodology because their method is based on a generalized VAR model in which spillover results are generated from several responses. And finally, Barunik and Krehlik (2018) come with a much better approach by decomposing the inflation spillover at different time frequencies. No wonder then to find that the Spillover Index Framework of those researchers is the most common index to study inflation spillover.

The analysis of transmitted inflation phenomena will lead us to two research stages. Firstly, locating external inflationary pressures should enable us to identify the specific causes of this form of inflation. Secondly, a study of the propagation mechanisms of these tensions will explain how externally-induced inflation is transmitted to the local market. The data used in this article come

from the national accounts of SADC member countries, the SADC Secretariat, statistics from the African Development Bank and the World Bank, as well as recent studies carried out by the Economic Commission for Africa (ECA).
For the econometric analysis and tests, the two models mentioned above were chosen for their reliability and robustness in responding to our problem. Our methodological approach can therefore be summarized as follows: Review of theoretical literature on inflation and regional trade. A review of the empirical literature on regional trade and the transmission of inflation. The aim of these first two stages is to identify potential indicators that could be taken into consideration to address our problem.

Results and discussion

The summary statistics of the inflation rate indices are presented in table 1. The highest disinflation was found in Mauritius Island and Seychelles (Min = 0.001) and the highest inflation was found in Zimbabwe (Max = 0.098). The average inflation was the highest in South Africa and in Zimbabwe (Mean = 0.004). Inflation was the most consistent in the Zimbabwe (S.D. = 0.07).

Table 1: Summary statistics of the inflation rate of SADC countries,1991-2020.

	South Africa	Mauritius	Seychelles	Mozambique	Tanzania	Zimbabwe	Madagascar
Minimum	−0.014	−0.010	−0.001	−0.004	−0.012	-0.016	−0.019
Maximum	0.022	0.032	0.012	0.014	0.063	0.098	0.004
Median	0.001	0.0028	0.0018	0.014	0.07	0.003	0.001
Mean	0.004	0.0010	0.0012	0.021	0.014	0.004	0.002
Standard Dev.	0.005	0.0012	0.014	0.0048	0.037	0.07	0.003
Jarque-Bera Value	100.8	683.0	52.4	627.8	557.5	2185.3	417.2
Observations	235	235	235	235	235	235	235

The time-domain inflation spillovers estimated by the methodology of Diebold and Yilmaz (2012) are shown in table 2. In column, we can see the contribution of one country's inflation to the forecast error variance in the other country's inflation. In row, we can read the contribution of the inflation of all other economies to the forecast error variance in a particular economy's inflation. The total spillover index (SI) is found to be 33.67%. This indicates that less than one-third of the global forecast error variance in inflation for SADC countries comes from spillover. The index indicates a close interconnectedness of this group of countries in terms of inflation spillover.

Table 2 : Time-domain inflation spillover

Contribution From (→) To (	South Africa	Mauritius	Seychelles	Mozambique	Tanzania	Zimbabwe	Madagascar	Contribution from Others
South Africa	67.51003	2.2799	2.1497	4.172	8.631	3.3201	11.9301	32,48
Mauritius	6.44	61.9402	4.34*	1.827	13.272	4.1601	8.0199	38,08
Seychelles	1.97001	6.8299	70.399	4.102	5.537	5.9003	5.2703	29,61
Mozambique	7.94003	2.0797	5.81	47.04	18.172	6.0802	12.88	52,99
Tanzania	2.06997	1.9502	8.2901	5.908	70.77	6.2097	4.83	29,26
Zimbabwe	4.51003	2.4199	4.2399	3.92	16.023	57.3902	11.5003	42,63
Madagascar	5.56997	1.3503	3.5301	3.857	7.847	3.5301	74.298	25,99
Contribution to own and others	29,1	15,99	29,35	23,81	70,54	29,2	51,64	∑(Contribution to others) = ∑(Contribution from others) = 240.34
Contribution to own and others	91.0100	78.8501	95.7588	70.826	130.251	82.590	118.7236	∑(Contribution to own and others) = 713
Net inflation spillover	−3.9914	−21.14	−1.232	−29.22	40.222	−13.412	-28.728	

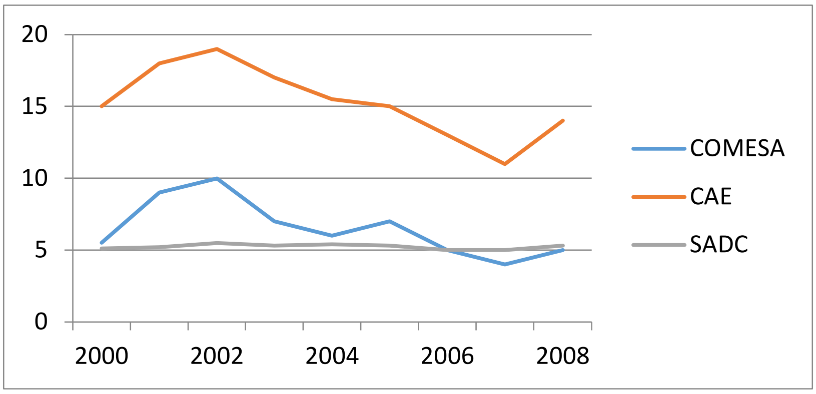
Spillover Index (SI) = (240.34/713) x 100 = 33.67

The figures in the row and column represent the proportion of the forecast error variance in inflation contributed from/contributed to other countries. For example, * indicates that Mauritius' inflation contributes to 4.34% of the forecast error variance in the inflation of Seychelles. Similarly, the number also indicates that 4.34% of the forecast error variance in the inflation of Seychelles is contributed by the inflation of Mauritius. A negative number in the net inflation spillover row indicates that the country is a net receiver of inflation.

Data from National Statistics from SADC countries allow us to deepen the analysis about inflation in the region. The reported annual inflation rates for August 2020 of SADC Member States indicate that four Member States have recorded highest double-digit inflation rates as follows: Angola (23.3%), DRC (15.5%), Zambia (19.2%) and Zimbabwe (782.4%) whilst Seychelles registered lowest inflation rate of 0.6%. The annual inflation rates for the rest of the other Member States were as follows: Botswana (1.5%), Eswatini (4.2%), Lesotho (2.6%), Madagascar (5.1%), Malawi (7.9%), Mozambique (2.7%), Namibia (3.2%), South Africa (4.6%) and Tanzania (3.3%). Compared to the SADC regional annual average inflation rate of 49.2% for August 2020, fourteen SADC Member States recorded annual rates below the regional average whilst one Member States namely Zimbabwe registered rate higher than the regional average.

As stated in the methodology, one of our aims is to show whether the intensity of foreign trade can explain the inflation transmission mechanism. To this end, we have used the Intra-Regional Trade Openness (IRTO), which refers to the ratio of a country's trade with other members of the REC to its GDP. By its very nature, this measure serves as an indicator of the degree of trade openness. Its calculation is based on the ratio of intra-regional trade to GDP at the end of the year. The integration indices above demonstrate that, in general, the institutional integration framework, comprising the free trade area and the customs union, has not been conducive to intra-regional trade and integration within SADC.

Graph 1 : Degree of intra-regional trade for COMESA, EAC and SADC



Source : IIRA, 2019

The external relations in question relate in particular to the trade balance situation, i.e. the difference between exports and imports. It is important to note that the trade balance deficit has steadily worsened over the period from 2000 to 2015, rising from -398.82 to -3026.38 billion Ariary. This is due to the fact that imports grew faster (13.11%) than exports (11.91%) over the period. However, as our analysis focuses on Madagascar's foreign trade, we feel it is important to discuss this trade in relation to the RECs of which Madagascar is a member.

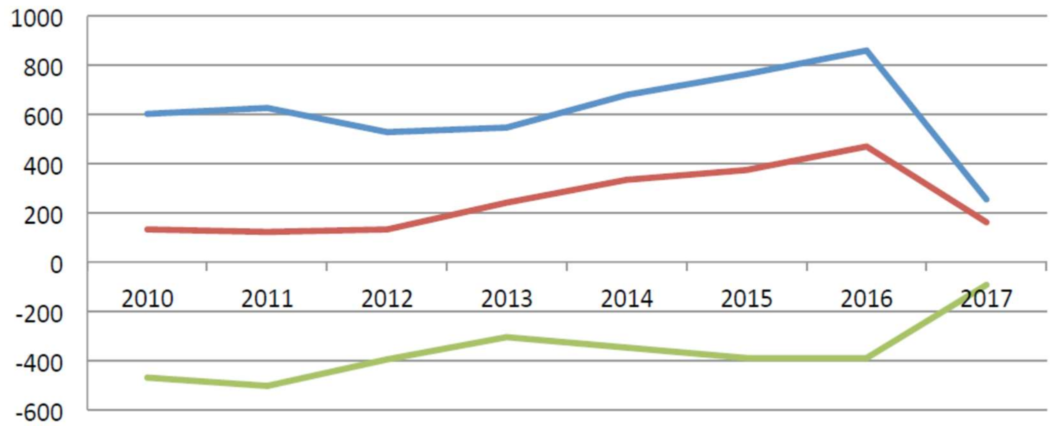
Table 3: Trade figures of Madagascar within the REC (in billions of Ariary)

Year	Export to blocks	% total export	Import from blocks	% total import	Balance of trade
2012	200.2	7.6%	648.6	11.9%	-448.3
2013	332.3	9.2%	625.5	10.5%	-293.2
2014	456.7	8.5%	820.9	10.2%	-364.2
2015	506.0	8.1%	923.1	10.7%	-417.1
2016	593.0	8.2%	1091.4	11.6%	-498.4
2017	656.8	7.4%	1340.2	11.8%	-683.4

Source: DES/INSTAT; Authors' calculations (CREAM)

In the literature, a balance of trade deficit leads to a loss in the purchasing power of money, defined as the fall in the quantity of goods that can be purchased with one unit of money, and is one of the main consequences of inflation on the monetary sector. Normally, changes in the purchasing power of money are estimated by purchasing power parity indicators. In the banking sector, inflation prompts bankers to raise lending rates. The main aim is to encourage customers to place their money with banks, in order to limit the money supply in circulation. From 2010-2017, in relation to Madagascar's trade with the rest of the world, the share of exports to regional bloc countries varied from 7% to 9% and did not exceed 10%. On the other hand, imports from block countries vary from 10% to 12%, which are also insignificant in relation to the country's total imports. As the figures in the table above show, the highest rate is for 2012. This is not to say that Madagascar should not be concerned about imported inflation vis-à-vis regional blocs. The answer to this question lies in analyzing the composition of Madagascar's imports from the Rest of the World and from regional blocs. In fact, the basket of goods that goes to make up the Consumer Price Index is decisive in the analysis of inflation.

Graph 2: Trade (in billions of Ariary): Madagascar-SADC from 2010-2017



In bleu: Import of Madagascar from SADC
In red: Export of Madagascar to SADC
In green : Trade balance
Source : DES/INSTAT ; 2018

South Africa and Mauritius are Madagascar's main SADC partners. In terms of Madagascar's exports, goods are generally sent to South Africa, which receives 58.7% of Malagasy exports. Mauritius is the second-largest trading partner, purchasing 30% of goods exported to SADC countries. Three groups of goods are mainly exported to SADC member countries. They include: (i) textile products in the form of yarns, cotton fabrics and clothing articles, (ii) vanilla and (iii) petroleum products and derivatives.

Among the products exported by Madagascar to the SADC, textiles account for 39.4% of total exports, followed by vanilla (11.7%) and petroleum products (8.2%). But other products such as cloves, dried peas, frozen fish, shellfish and many others also feature in the list of items exported to SADC countries, albeit at lower percentages than the first three groups.

Imported goods include: food preparations, including sugar and pasta; textile products in the form of cotton and other fabrics; and coal. Other goods imported by SADC member countries include plastics and various machines and appliances. Analysis of the baskets of goods used to calculate Madagascar's CPI shows that most of these imports are part of this basket. This means that the sustained and continuous increase in the prices of these imported goods will lead to imported inflation in Madagascar.

Research limitations and prospects

In this section, as announced in the introduction, we present the limitations of our paper and also what should be analyzed as further study. The research method used in this study has some limitations and therefore some uncertainty may be involved in the applied analysis. First, the paper does not analyze inflation spillovers at the short, medium, and long-term inflation. Second, some variables may affect spillover in the SADC countries; nevertheless, analysis of those variables is outside of the scope of the current paper. As far as further research is concerned, a possible extension of this study could be investigating the effect of the current rationalization of Economic Regional Integration (ZLCAF) can affect the spillover of inflation of the 52 African countries.

Conclusion

The aim of this paper is to evaluate inflation transmission mechanisms in a country that has chosen to join a regional economic community (Madagascar). The focus was on external factors likely to have an impact on the degree of transmission. The hypothesis to be tested was whether the role of foreign trade is the real means of transmission of imported inflation. This hypothesis assumes that the intensity of inter-regional trade accentuates the transmission of inflation. In our case study, answering this question boils down to saying which SADC country presents the greatest risk to Madagascar in terms of imported inflation. To test this hypothesis, we used data supplied by the various ministries and national statistics institutes of the SADC member countries.

Using data from the SADC Secretariat for the period from 1991 to December 2020 and applying the methodology approaches of Diebold and Yilmaz (2012) and of Barunik and Krehlik (2018), the main finding of this paper is that there is significant evidence of inflation spillover among SADC countries. After estimating and analyzing the results, our study shows that Madagascar is more likely to experience imported inflation with Mauritius and South Africa, given the intensity of its trade with these countries. Zimbabwe, even with its history of inflation, does not present a real risk for Madagascar. This in no way means that Madagascar must moderate its trade with this country for fear of imported inflation. The Malagasy government simply needs to respect market principles and the law of supply and demand, so as not to further disrupt inflationary pressures and, at the same time, contribute to a more optimal functioning of the domestic market, leading to less transmission of inflation generated by foreign trade.

With regard to the theoretical contribution of our study, we can confirm that contagion through imported inflation is a problem not to be neglected. Indeed, even if a common currency zone could have -positive macroeconomic effects -on a region, it would require a very high level of coordination and convergence of economic policies. -Standard -macroeconomic theory -describes the J-curve effects of exchange rate depreciations, usually in sufficient detail to establish that the real effects of nominal exchange rate changes will depend on a complex set of variables that will or will not induce domestic firms to increase their exports, or domestic consumers to increase their imports. These variables include the extent of imported inflation, whether exporting firms are price-takers or price-makers, and firms' pricing mechanisms.

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Appendix

Table: Comparison of Madagascar's inflation rates with the rest of the world

Year	M/car	EU	USA	World
2020	4,20 %	0,50 %	1,23 %	1,92 %
2019	5,61 %	1,63 %	1,81 %	2,19 %
2018	8,59 %	1,74 %	2,44 %	2,44 %
2017	8,61 %	1,43 %	2,13 %	2,19 %
2016	6,04 %	0,18 %	1,26 %	1,55 %
2015	7,40 %	-0,06 %	0,12 %	1,43 %
2014	6,08 %	0,20 %	1,62 %	2,35 %
2013	5,83 %	1,22 %	1,46 %	2,62 %
2012	5,71 %	2,66 %	2,07 %	3,73 %
2011	9,48 %	3,29 %	3,16 %	4,82 %
2010	9,25 %	1,53 %	1,64 %	3,35 %
2009	8,95 %	0,84 %	-0,36 %	2,94 %
2008	9,30 %	4,16 %	3,84 %	8,95 %
2007	10,29 %	2,51 %	2,85 %	4,82 %
2006	10,77 %	2,67 %	3,23 %	4,28 %
2005	18,36 %	2,49 %	3,39 %	4,11 %

Source: International Monetary Fund, World Bank and OECD, CPI indicator inflation 2021 (NB: Madagascar joined the SADC in 2005)

Table : Madagascar's trade balance (2000-2015)

Year	Export	Import	Trade balance
2000	1 630,67	2 029,09	-398.42
2001	1725.36	2152.87	-427.51
2002	958.61	1500.42	-541.81
2003	1455.74	2405.73	-949.99
2004	2855.42	4317.18	-1461.77
2005	2847.71	4598.02	-1750.31
2006	3512.92	5408.33	-1895.41
2007	4172.45	7164.30	-2991.85
2008	4268.09	9151.39	-4883.31
2009	3741.56	8635.32	-4893.76
2010	4556.56	7854.27	-3297.72
2011	5357.62	8481.08	-3123.45
2012	6316.51	9573.14	-3256.63
2013	7042.58	10068.96	-3026.38

Source : INSTAT 2015

Tableau 2 : Madagascar's exports to SADC member countries (2010-2017) in millions of Ariary

Country	2010	2011	2012	2013	2014	2015	2016	2017	Total
Africa	55697,7	68716,5	79993,8	161257,	233922,	251817,	250825,	56082,3	1158313,
Mauritius	51762,3	35973,8	36905,2	51984,6	76294,9	85245,1	157679,	95566,7	591412,3
Seychelles	11162,9	8297,86	9904,10	11989,6	7263,61	13510,4	23401,7	2086,38	87616,63
Mozambi	655,32	222,86	471,54	10802,0	6539,84	12463,2	28771,1	3021,34	62947,29
Tanzania	7360,54	3945,63	5013,39	4051,84	7314,81	9275,22	8964,90	4495,61	50421,94
Zimbabwe	104,95	438,58	13,53	806,68	1640,86	1465,09	129,49	1782,91	6382,08
Botswana	2542,21	95,88	683,41	330,21	305,80	170,38	2,21	3,40	4133,49
D.R	2687,89	140,18	175,73	48,46	127,11	746,48	82,29	n.a	4008,14
Swaziland	186,70	2862,07	n.a	n.a	238,53	94,56	198,41	n.a	3580,27
Zambia	131,53	1114,82	165,66	144,35	33,41	94,83	320,48	n.a	2005,08
Malawi	n.a	784,65	365,54	n.a	401,32	n.a	11,98	n.a	1563,50
Angola	95,61	385,14	n.a	n.a	33,75	419,74	n.a	n.a	934,24
Namibia	84,55	0,28	n.a	167,90	20,24	5,01	30,02	n.a	308,00
Lesotho	5,87	n.a	n.a	86,11	n.a	n.a	n.a	n.a	91,98
Total	132478,	122978,	133691,	241668,	334136,	375307,	470417,	163038,	1973718,

Source : DES/INSTAT; Authors' calculations (CREAM)

Transformation structurelle et réduction de la pauvreté : Essais d'analyse sur le rôle de la productivité agricole. Cas de Madagascar

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Résumé :
L'objectif de cet article consiste à évaluer la contribution de la productivité agricole à l'amélioration du secteur industriel, et aussi pour la réduction de la pauvreté à Madagascar au cours de la période de 1990 à 2020. En suivant les trois étapes distinctes, dont le test de racine unitaire, le test de cointegration de Johansen et le test de causalité au sens de Granger, Le résultat ne justifie pas la théorie de Lewis, le coefficient négatif de variable valeur ajoutée industriel signifie que, pour le cas de Madagascar, la croissance agricole joue un rôle passif à la croissance industrielle. D'une autre manière, la croissance agricole au cours de la période n'est pas suffisamment forte, soutenue, pour créer un choc de transformation structurelle rapide. Toutefois, le coefficient de variable revenu par habitant est positif, l'amélioration de rendement agricole contribue favorablement à la hausse du revenu par habitant. Nous pouvons dire que la croissance agricole joue un rôle actif à la réduction de la pauvreté à Madagascar.
Mots clés : Productivité agricole, Secteur industriel, Pauvreté, Test de cointegration de Johansen

Abstract :
The objective of this article is to assess the contribution of agricultural productivity to the improvement of the industrial sector, and also for the reduction of poverty in Madagascar during the period from 1990 to 2020. Following the three distinct stages, including the unit root test, Johansen's cointegration test and Granger's causality test, The result does not justify Lewis's theory, the negative coefficient of industrial value added variable means that, for the case of Madagascar, agricultural growth plays a passive role to industrial growth. Alternatively, agricultural growth over the period is not strong enough, sustained enough, to create a rapid structural transformation shock. However, the per capita income variable coefficient is positive, the improvement in agricultural yield contributes favorably to the increase in per capita income. We can say that agricultural growth plays an active role in poverty reduction in Madagascar.
Keywords: Agricultural productivity, Industrial sector, Poverty, Johansen cointegration test

Introduction

Le poids du secteur agricole dans l'économie Malagasy continue de diminuer au cours de vingt dernières années. Selon l'étude de la Banque Mondiale, en 2021, l'agriculture représente 23% du PIB, pourtant, paradoxalement, le secteur continue d'absorber de nouveaux entrants sur le marché de travail. Ce phénomène suscite les débats et les questions ouvertes tant sur le plan théorique que pratique, notamment sur le rôle de l'agriculture sur la croissance économique. Dans le plan de processus de croissance économique, la productivité agricole joue un rôle important, Lewis (1956) affirme que l'amélioration de la productivité dans l'agriculture profite à l'industrie.

De travaux de recherche sur l'Afrique soutiennent l'importance de la croissance agricole pour réduire l'extrême pauvreté et l'insécurité alimentaire. A ce propos, Marie- Chantal. U et Al (2023) propose, pour le cas de Madagascar, d'augmenter la productivité agricole, tout en favorisant la création d'emplois dans l'industrie et les services à forte valeur ajoutée. La forte croissance de la productivité agricole (rendement par ha), s'est accompagnée d'une croissance moyenne de 6% du secteur industriel d'entre 2003 à 2007. En termes d'utilisation des facteurs de production (superficie cultivée, main d'œuvre), la superficie cultivée reste inchangée d'environ 3 000 000 ha, la part d'emploi dans l'agriculture varie de 70 à 80% depuis 1960 (Banque mondiale,2022.

Dans ce contexte, il est intéressant d'évaluer la contribution de la productivité agricole à l'amélioration du secteur industriel. Il s'agit d'examiner dans quelle mesure elle pourrait affecter la croissance industrielle, et la réduction de la pauvreté. Notre travail de recherche essaie, d'une certaine manière aussi, d'apporter une réponse à la problématique de défis liés à l'utilisation des facteurs de production, face à la paupérisation des exploitations agricoles à Madagascar. L'existence de relation de cointegration, celle-ci va nous permettre d'estimer l'impact des facteurs de production sur le long terme.

Méthodologie

Nous utilisons l'économétrie des séries temporelles pour analyser le dynamique de long terme entre les variables productivité agricole, revenu par habitant et la valeur ajoutée industrielle. Le démarche se déroule en trois étapes : test de racine unitaire, test de cointegration de Johansen et le test de causalité au sens de Granger.

Présentation du modèle

Le test de cointegration de Johansen (1988) a été construit sur la base des modèles VAR. On parle de modèle VAR cointegrés (CVAR), appelé aussi VECM qui permettent à la fois d'analyser les dynamiques de court terme et long terme. Johansen (1988) propose deux (02) tests de cointegration, dont le test de trace et le test de la valeur propre maximale.

Considérons un vecteur Y_t contenant k variables I(1) . la représentation VAR(p) de Y_t est :

$$\underset{(k \times 1)}{Y_t} = \underset{(k \times k)(k \times 1)}{A_1 Y_{t-1}} + \underset{(k \times k)\ (k \times 1)}{A_2 Y_{t-2}} + \ldots + \ldots + \underset{(k \times k)(k \times 1)}{A_p Y_{t-p}} + \underset{(k \times 1)}{U_t}$$

On peut réécrire le VAR sous la forme VECM :

$$\Delta Y_t = \pi Y_t + \sum_{i=1}^{p-1} \tau \Delta Y_{t-i} + u_t$$

Les rélations de cointegration se determinent par la matrice π qui décrit l'ajustement vers l'équilibre à la suite de choc exogène.

La statistique de trace est donnée par :

$$\Lambda_{Trace} = -T \sum_{i=r+1}^{n} \ln(1 - \widetilde{\gamma_i})$$

La statistique maximale est donnée par :

$$\Lambda_{max} = -T. \ln\ (1 - \widetilde{\gamma_{r+1}} - \widetilde{\gamma_{r+2}} - \ldots - \widetilde{\gamma_n})$$

Où T est le nombre d'observation, n est le nombre de variables endogènes, r est le nombre de rélation de cointégration et $\widetilde{\gamma_i}$ est le i-ème valeur propre estimée de la matrice des résidus de la régression VAR.

Par ailleurs, la méthodologie développée par Granger,nous permet d'évaluer si la causalité entre productivité agricole, la superfice de terre cultivée, le revenu par habitant et valeur ajoutée industrielle. Le test de causalité de Granger (Granger, 1969) suppose que X_t cause Y_t si la prévision de Y_t basée sur l'information passée de X_t . En d'autres termes, on peut simplement dire que X_t a un pouvoir predicatif sur Y_t .

$$X_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{i=1}^{p} \beta_i \Delta Y_{t-j} + \varepsilon_t$$

L'hypothèse nulle que X_t ne cause pas Y_t consiste à tester la nulleté jointe des paramètres :
H_O : β_i= 0 , i=1,2,.....p

Présentation et source des variables

Toutes les variables sont annuelles et couvrent la période allant de 1984 à 2020, obtenues dans la base des données de la Banque mondiale sur les indicateurs de développement dans le monde. Aucune modification n'a été effectuée. L'indicateur productivité du travail est obtenu par le rapport entre valeur ajoutée de l'agriculture et l'effectif employé.

Tableau 1 : Description des variables d'analyse

Variables explicatives	Description
Productivité agricole (LOGPRODAGRICOLE)	Rendement par hectare pour capter la productivité de surface cultivé ; Productivité du travail pour la productivité de facteur production main d'œuvre employé.
Revenu par habitant, méthode atlas (LOGRNB)	Il s'agit d'un indicateur pour capter le niveau de vie de la population.
Valeur ajouté industrielle (LOGINDVA)	Pour capter l'évolution dans la transformation structurelle, et de la compétitivité.

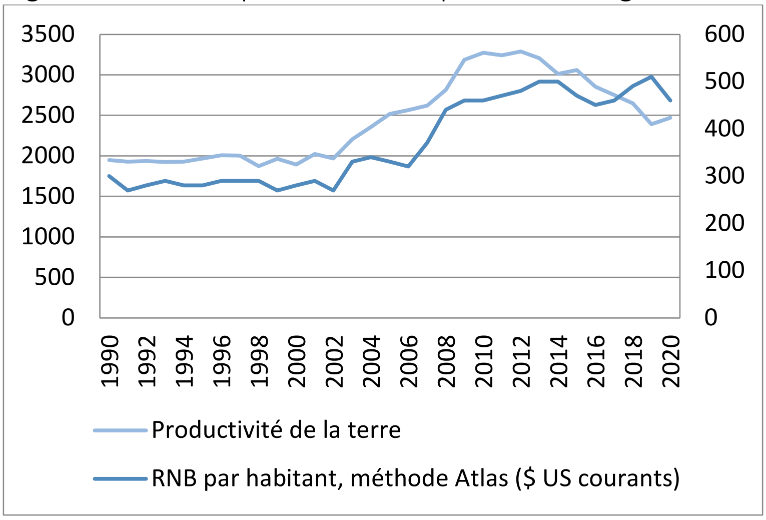
Source : auteur, 2023

Les résultats

Analyse graphique

Les figures 1,2 suivants résultent de l'analyse de l'évolution de la productivité agricole et le revenu par habitant. La productivité agricole, rendement de la terre,entretient une trajectoire similaire à l'évolution du revenu par habitant (Figure 2). Ce qui pourrait dire qu'elle est très utile à la stratégie de réduction de pauvreté à Madagascar, en améliorant le revenu des ménages agricoles. Cela n'est pas le cas pour la productivité du travail de l'agriculture (Figure 3). Toutefois, pour toutes les périodes, on assiste à une croissance très légère, peu semblable, de l'utilisation de deux facteurs.

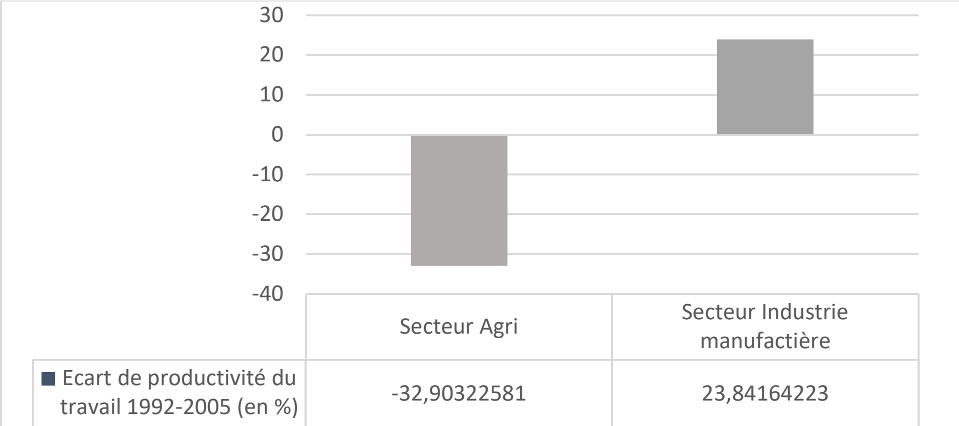
Figure 1 : Revenu par habitant et productivité agricole au Madagascar



Source : auteur , 2023. Etablie à partir des données de la Banque Mondiale

D'après l'évolution de la figure 1, toute augmentation de rendement par hectare affecte positivement le revenu par habitant. La forte croissance de période 2003 à 2008 pourrait s'expliquer par le soutien du secteur à l'industrie agro-alimentaire, celle-ci, au cours de cette période, a connu une croissance moyenne de sa valeur ajoutée de 6.96%. Puis, la longue crise socio-politique depuis 2008, favorise la forte récession de la production.

Figure 2 : Ecart de productivité du travail 1992-2005 (en %)



Source : auteur , 2023. Etablie à partir des données de la Banque Mondiale

Le secteur agricole continue d'absorber de nouveaux entrants sur le marché de travail, pourtant en terme de performance au travail, l'écart continue de se creuser en comparaison à d'autres secteurs d'activités. La productivité du travail a baissé de 32,90% en 2005 par rapport à 1992. Selon une étude de la Banque mondiale(2021), la production annuelle dans les secteurs non agricole a augmenté de presque 4,5 fois plus que celle de l'agriculture. Madagascar suit un vitesse très lent dans la transformation structurelle.

Test de cointégration

Avant d'effectuer le test de cointégration de Johansen, il est nécessaire d'effectuer le test de stationnarité des variables. Les résultats de test de racine unitaire par l' ADF(Augment Dickey-Fuller) montrent que les variables sont stationnaires en différence primaire. En choisissant par la suite, le retard optimal égal à 3, le test de cointégration de Johansen réalisé à partir du logiciel Eviews donne les résultats suivants :

Tableau 2 : Cointegration test de Johansen

Sample (adjusted): 1987 2020
Included observations: 34 after adjustments
Trend assumption: Quadratic deterministic trend
Series: LOGPRODAGRI LOGREVENU LOGVAIND
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.452024	37.10745	35.01090	0.0294
At most 1	0.327963	16.65563	18.39771	0.0862
At most 2	0.088287	3.142618	3.841466	0.0763

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source : calcul de l'auteur, sous Eviews

Le test de trace indique la presence d'une relation de cointegration. En suite, la stratégie sequentielle nous a permis de choisir le modèle optimal, en effet la presence de tendance lineaire aussi bien dans les données que dans la relation de cointegration. Le résultat ci-dessous montre que les paramètres sont tous significatifs à 10%.

Vector Error Correction Estimates :
Sample (adjusted): 1987 2020
Included observations: 34 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LOGPRODAGRI(-1)	1.000000
LOGREVENU(-1)	-4.275280
	[-3.98641]
LOGVAIND(-1)	5.144542
	[3.78525]
@TREND(84)	0.042230
	[1.75655]
C	2.516109

Source : calcul de l'auteur, sous Eviews

Causalité au sens de Granger

La méthodologie développée par Granger nous permet d'évaluer si la causalité entre productivité agricole, valeur ajoutée de l'industrie et revenu par habitant au cours de la période de 1984 à 2020.

Tableau 4 : Test de causalité de Granger

Null Hypothesis:	Obs	F-Statistic	Prob.
LOGREVENU does not Granger Cause LOGPRODAGRI	35	2.17148	0.1316
LOGPRODAGRI does not Granger Cause LOGREVENU		4.74767	0.0162
LOGVAIND does not Granger Cause LOGPRODAGRI	35	1.14082	0.3330
LOGPRODAGRI does not Granger Cause LOGVAIND		6.76389	0.0038
LOGVAIND does not Granger Cause LOGREVENU	35	0.93357	0.4043
LOGREVENU does not Granger Cause LOGVAIND		1.89616	0.1677

Source : calcul de l'auteur, sous Eviews

Le seuil fixé est de 5 %. Si la probabilité est supérieure à 5 %, l'hypothèse nulle est acceptée. Nous constatons que la productivité agricole cause unidirectionnel le revenu national par habitant et la valeur ajouté industriel, au sens de Granger. Car, les probabilités sont, respectivement, de 1, 62% et 3,8% inférieurs à 5%. Ce qui corrobore au résultat de test de cointegration de Johansen.

Discussion et conclusion

Le résultat ne justifie pas la théorie de Lewis (1956), le coefficient négatif de variable valeur ajoutée industriel signifie que, pour le cas de Madagascar, la croissance agricole joue un rôle passif à la croissance industrielle. L'hypothèse de Lewis selon laquelle la productivité agricole élevée conduit nécessairement à la croissance industrielle n'est pas été confirmée. D'une autre manière, la croissance agricole au cours de la période n'est pas suffisamment élevée, soutenue, pour créer un choc de transformation rapide vers la transformation structurelle. L'amélioration du capital humain, de cadre d'affaire, et l'adoption d'une nouvelle technologie sont des éléments qui pourraient amener la forte croissance de la productivité agricole. Favorisant par la suite le transfert de « surplus de travail » vers les autres secteurs plus productif, selon la théorie de Lewis (1953) et Rami et Fei (1961).

Toutefois, le coefficient de variable revenu par habitant est positif, l'amélioration de rendement agricole contribue favorablement à la hausse du revenu par habitant. Nous pouvons dire que la croissance agricole joue un rôle actif à la réduction de la pauvreté à Madagascar. Ce qui est confirmé par les auteurs tels que Brescini et Valdés (2007, en identifiant trois canaux par lesquels la croissance agricole agit sur la pauvreté, dont le marché de travail, le revenu agricole et les prix alimentaires. Thirtle (2003) ajoute que le progrès technique dans le secteur agricole génère un rendement élevé en Afrique et en Asie, avec large réduction de la pauvreté dans ces régions. Dans son ensemble, la performance agricole peut faire baisser l'insécurité alimentaire, et réduit par conséquent la pauvreté.

Cette étude a permis d'évaluer l'effet de la productivité agricole sur la croissance industrielle. La vérification de l'hypothèse de cointégration suivant le modèle VECM de Johansen (1988) permet d'accepter l'existence d'une relation positive de long terme entre productivité agricole et le revenu par habitant, par contre une relation négative pour la valeur ajoutée industrielle. Le test de causalité de Granger a montré le même résultat : une causalité unidirectionnelle au sens de Granger, entre la productivité agricole et, respectivement, la valeur ajoutée industrielle et le revenu par habitant .

Au vu de ces résultats, des politiques visant à améliorer la productivité agricole pourraient être d'une priorité publique à Madagascar. Des systèmes « land intensives », afin de mobiliser beaucoup de surface à des fins de productions végétales ou animales, pourraient soutenir vite l'augmentation de la valeur ajoutée agricole, et accélérer ainsi la transformation structurelle de notre économie. Toute élévation de la productivité agricole serait traduite par une amélioration du revenu par habitant, d'où l'importance d'identifier les déterminants de la productivité agricole à Madagascar, ce qui n'est démontré dans la démarche de cet article. Il convient de souligner, compte tenu de nombre d'observation n=35 , ceci pourrait être la limite de cette étude.

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Geographic Sciences

«Қазақстанның туризм және өлкетану географиясы». 9-10-сыныптарға арналған авторлық арнайы курсы

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АҢДАТПА

«Қазақстанның туризм және өлкетану географиясы» атты авторлық арнайы курсы бағдарламасы 9-10-сынып оқушыларын география пәнінен туризм және өлкетану бағыттында дайындауға арналған. Ұсынылып отырған «Қазақстанның туризм және өлкетану географиясы» бағдарламасындағы география және туризм географиясы пәндері бойынша білім алушылардың өлкетанушылық функционалдық сауаттылығын арттыру және Қазақстанның туристік-рекреациялық ресурстарының инфрақұрылымымен жан-жақты таныстыру, өлкенің туризм саласының экономикалық аспектідегі қазіргі кездегі және болашақта тұрақты дамуына ықпал ететін туристік - рекреациялық ресурстарының мүмкіндіктері мен әлеуетін ғылыми тұрғыда түсіндіру, өлкені тану үдерісінде олардың географиялық біліктілігін дамыту оқушылар мен мұғалімдер үшін маңызы зор. Бағдарлама мектеп мұғалімдеріне арналған.

Түйін сөздер: география, өлкетану, туризм, өлке, аймақ, саяхат, рекреация.

КІРІСПЕ

Заманауи өлкетану зерттеулерінде ең басты орынды аймақтың табиғатын зерттеу және қорғау болып табылады. Есте қалатын оқиғалардың фактілерін анықтауға, адамдардың еңбек және әскери ерліктері, тарихи құжаттарды, өткен материалдық мәдениеттердің объектілерін іздеуге және т.б. айналысады.

Өлкетану мен туризм бір-бірімен өте тығыз байланысты. Өлкетану туралы сенімді және алуан түрлі мәліметтер болмаса, экскурсия мен туристік маршруттарды әзірлеу мүмкін емес. Сондықтан туризмнің негіздерін және өлкетану жұмыстарын білу болашақ туризм менеджерлерін даярлаудың ажырамас бөлігі болып табылады.

Өлкетану бұл жан-жақтылықты ғылыми негізіндегі территориясын білу. Әлеуметтік-экономикалық, саяси, тарихи және мәдени ауыл, қала, район, облыстық дамуы осы объектілерді білу болып келеді. Өз өлкесінің тарихи, археологиялық, этнографиялық, георафиялық, геологиялық зерттеулерін жүргізу.

Бағыттың мақсаты - оқушыларды өлкетану негіздерімен таныстыру, оларды өз өлкесін танып білуге үйрету. Осы термин «Туған өлке» танып білуге сабақ кезінде және экскурсияда танып білінеді. «Туған өлке» түсінігі административтік район, ауыл, қала ретіндегі қалалық аудан, жасыл аймақ. «Туған өлке» деген термин бұл өзінің облысының аумағы, онымен танысуы және өлкетану әдебиетімен, картографиялық мәліметтермен, сонымен қатар экскурсия кезіндегі зерттеуі.

Курстың міндеті тарихи архивтік құжаттармен, мемуарлармен, географиялық және тарихи карта, туристік карта, периодикалық басылым бойынша білімдерді алу. Рекреация және туристік экскурсиятану мәселесі бойынша ақпарат дайындауды үйрену. Өлкетану және мұражай ақпаратты туристік экскурсиялық жұмысқа дамыту. Оқушыларда өлкетану географиялық жұмысты методикалык жүйемен үйымдастыру және қалыптастыру, өлкетану материалдарын практика немесе басқа оқу барысында жүзеге асыру.

Пән сипаттамасы оқушылар саяхаттаудың маршрутын білу керек, топты жинақтау, снарядтарды дайындау, бірінші кажеттілікті қамтамасыз ету. Мектептік және өлкетанудағы құрамы мен практикалық жұмысты дайындау керек. Географиялық және тарихи карта, туристік карта, периодикалық басылым және тарихи архивтік ақпараттармен дұрыс қолдану. Өлкетану, мұражайтану ақпаратты практикалық жұмыста дайындап білу.

ЗЕРТТЕУ МАТЕРИАЛДАРЫ МЕН ӘДІСТЕРІ

Бірде – бір ұлт өз елінің тарихын, мәдениетін силамайынша, өз өлкесінің тарихи және рухани мұрасын қайта қалыптастырып өркендетпейінше, азаматтық және рухани тәрбие жүргізбейінше дамып, өмір сүруі мүмкін емес.

Өлкетану ұғымы М.В.Ломоносовтың кезінде пайда болып еліміздің тарихымен бірге ұзақ даму жолын жүріп өтті, соның негізінде оның өміршеңдігі қоғамымыз бен халыққа қажеттілігі дәлелденді.

Өлкетанудың негізіне, тәлім – тәрбиелік мәніне, білімдік мазмұнына Қорқыт – ата, М. Қашқари, Әл–Фараби, Ж. Баласағұни, А.Иассауи, А. Науаи және т.б ғұламалардың еңбектерінде ерекше мән берілсе, қазақ даласының төл перзенттері, ақын – жазушылар А.Құнанбаев, Ы. Алтынсарин, Ш. Уәлиханов, М. Жұмабаев, А.Байтұрсынов, Ж. Аймауытов шығармаларында өлкетану мәселесі кеңінен қарастырылады.

Өз өлкесін тану идеясы мен педагогикалық процесте өлкетану материалдарын қолдану, ұлы ағартушылар Я.А.Коменский, Ж.Ж.Руссо, К.Д. Ушинский, А.Я.Герд және басқалардың еңбектерінде негізі қалыптасқан болатын.

Өлкетану ғылымының негізін салушы К.Д.Ушинский оның туған тілге және адамгершілікке тәрбиелеудегі маңызын көрсетіп, жергілікті өлкені танудың педагогикалық мәнін айқындады. Ғылымның бұл саласын К.Д.Ушинский «Отантану» деп анықтама берді.

К.Д.Ушинскийдің идеялары мен көзқарастары XIX ғасырдың ІІ-і жартысында педагог - әдіскерлердің А.Я. Гердтің (ең алғаш практикаға экскурсияны оқыту әдісі ретінде кіргізді), В.П.Вехтеревтің (балаларды табиғатта белсенді оқытуға шақырып, олардың өзіндік ғылыми іс - әрекеттерін қалыптастыруды), Л.С.Севруктің (табиғат туралы ұғымның біртұтастығын негіздеп енгізген) еңбектерінде жалғасын тапты.

Өлкетану ғылымының дамуына көптеген педагог - ғалымдар П.П.Блонский, Н.К.Крупская, А.В.Луначарский, А.П.Пинкевич, С.Т.Щацкий өз үлестерін қосты, олардың еңбектері барлық даму кезеңдерінде тәрбиелік және білім беруде үлкен маңызы болды.

Қазіргі кезде педагогикалық өлкетанудың әртүрлі жақтарына арналған ғылыми жұмыстар бар. Өлкетануды оқу - тәрбие процесінде қолдану мәселесін, әртүрлі жылдарда бірқатар И.И.Бескоровайный, П.В.Иванов, Д.В.Коцюба және т.б. ғалымдардың назарын аударды.

Д.В.Коцюба мен В.Дихтерев өлкетануды оқушылар ұжымын тәрбиелеудің құралы ретінде қарастырса, П.Р.Атутов, М.Н.Скаткин, К.А.Иванович және т.б. өлкетануды оқушыларды еңбекке тәрбиелеу мақсатында қарастырған. Қазіргі кезде өлкетану және туризм бағытында еліміздің бір топ ғалымдары: О.Мазбаев, Б. Асубаев, Е. Тоқпанов. Туризм және өлкетану негіздері: оқу құралы.- Астана : Фалиант, 2013 – 152 б; сонымен қатар, А.Жакуповтың Өлкетану. Оқу құралы. Алматы: «Лантар-Трейд» ЖШС баспасы, 2021. – 105 беттен тұратын бірнеше еңбектері жарық көрген.

Өлкетану дегеніміз-белгілі бір аумақты, ауданды, қаланы, селоны, облысты, регионды мемлекет территориясының жеке бөліктерін жан жақты зерттеумен және оқып танумен айналысатын қоғамдық құбылыс. Өлкетану пәні қазіргі таңда қажетті піндердің бірі. Ол бірнеше ғылымдармен тығыз байланысты соның ішінде туризм саласымен тығыз байланыста. Мәселен, туризм және өлкетанудың жақын келетін жақтары біріншіден, екеуінде де тәрбие , білім беру құралы ретінде қарастыруға болады. Екіншіден, кейбір жұмыс істеу құралдары ортақ (экскурсия, жорықтар) .

Өлкетану дегеніміз - көлемі жағынан шағын, белгілі бір аумақтарды(аудандар, облыстар,өлкелер т.б. жан жақты оқып білумен, зерттеумен айналысатын жұмыстардың жиынтығы екені белгілі.

Өлкетанудың зерттеу нысандарын, жалпы өлкетануды кешенді бір-бірімен байланысты дүние ретінде қараған жөн. Өлкетану бойынша жүргізілетін зерттеулер мен бақылаулар шаруашылықтық, ғылыми. әлеуметтік тағы да басқа арнайы тапсырыстар түрінде болуы мүмкін және сол жер үшін тікелей практикалық маңыздылыққа ие болады.

Өлкетану зерттеу нысандарын салыстырмалы түрде 4 топқа бөліп қарауға болады:

1. Өлкені табиғатын, табиғи ерекшеліктерін,жеке табиғат компаненттерін (геология,жер бедері, рельеф, гидрографиясы, климат немесе ауа-райы, топырақ және өсімдік жамылғылары, жануарлар дүниесі) , олардың қоғамы әсерінен өзгеру деңгейі мен сипатын және табиғатта жүретін басқа да үрдістерді зерттеу.
2. Өлкенің шаруашылығын, онда тұрып жатқан халықтардың кәсіптік ерекшеліктерін анықтау.
3. Өлкенің және онда тұрып жатқан халықтардың тарихы жайлы, тарихи оқиғалар жайлы деректер, экспонаттар жинау, өлке территориясындағы археологиялық орындарды, тарихи ескерткіштерді,олардың ерекшеліктерін оқып тану және оларды халық тарихымен , тарихи кезеңдерімен байланыстыру
4. Халықтың этнографиялық немесе ұлттық ерекшеліктеріне олардың тілі, діні, салт дәстүрі, фольклоры, халықтың өнері т.б жатады.

Өлкетанудың жеке түрлері бойынша зерттеу немесе бақылау мақсаты әр түрлі болады. Мемлекеттік және қоғамдық өлкетану бойынша зерттеу көбінесе практикалық, нақты мақсаттар үшін жүргізіледі және бұл өлкетану үшін қолданылатын жұмыс формалары. Негізінен экспедициялар және мұражай жұмыстары болып табылады.

Кейбір мұрағаттарға сүйенсек революцияға дейінде Қазақстанда мектеп өлкетану элементтерінің болғанын байқауға болады. Қазақстанда өлкетанулық зерттеулерді жүргізу XIX ғасырдың аяғында оған орыс география қоғамы, академиясы, орыс археологтың шығыс бөлігі және антропология және этнография қоғамдары үлес қосты.

Өлкетану пәнінің жалпы мақсаты: белгілі бір өлкенің табиғаты, тарихы, орналасқан жері, аумағы, шаруашылығы, тарихи жерлері, тарихи ескерткіштері т.б. жерлерін көру және зерттеу мақсаттарында ұйымдастырылады.

Туристік өлкетану пәнінің негізгі міндеттері: негізгі рекреациялық ресурстар болу үшін ішкі және халықаралық туризмді нығайту болып табылады. Өлкетану пәнінің негізгі әдісі: табиғи ресурстар, материалдық, мәдени ескерткіштері туралы ақпаратты анықтау және жүйелеу.

Жалпы өлкетану дегеніміз - көлемі жағынан шағын, белгілі бір аумақтарды (аудандар, облыстар,өлкелер т.б.) жан жақты оқып білумен, зерттеумен айналысатын жұмыстардың жиынтығы екені белгілі.

Өлкетанудың зерттеу нысандарын, жалпы өлкетануды кешенді бір-бірімен байланысты дүние ретінде қараған жөн. Өлкетану бойынша жүргізілетін зерттеулер мен бақылаулар шаруашылықтық, ғылыми. әлеуметтік тағы да басқа арнайы тапсырыстар түрінде болуы мүмкін.

Өлкетану пәнінің жалпы мақсаты: белгілі бір өлкенің табиғаты, тарихы, орналасқан жері, аумағы, шаруашылығы, тарихи жерлері, тарихи ескерткіштері т.б. жерлерін көру және зерттеу мақсаттарында ұйымдастырылады.

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Жалпы, Қазақстанның әрбір өлкесі сұлу әрі көркем. Әрбір өлкені одан әрі дамыту үшін, біз, аянбай еңбек етіп, болашақ ұрпаққа тапсыруымыз қажет. Өлкені дамыту арқылы туризм саласын Қазақстан елінде қарыштап дамуына үлесімізді қосуымыз қажет

НӘТИЖЕЛЕР ЖӘНЕ ОЛАРДЫ ТАЛҚЫЛАУ

Қазіргі таңда Қазақстанның танылуы әлем картасында айқын байқалды. Мұны растау үшін бірқатар ірі шетелдік ақпараттық басылымдар біздің елімізді саяхаттаудың ең жақсы бағыттарының бірі деп таныды. Туризм индустриясында жаһандық өзгерістер болып жатқаны, республиканың экономикалық өсуіне ықпал ететін дамудың жаңа перспективалары пайда болатыны анық. Инженерлік-коммуникациялық және ілеспе инфрақұрылымды жетілдіру ҚР туристік саласын дамытудың 2025 жылға дейінгі тұжырымдамасына сәйкес жүзеге асырылады.

Авторлық бағдарлама оқушылардың елімізге қажетті туризм саласында қызмет атқаратын мамандықты таңдап алуларына баулиды және көмектеседі.

Бағдарламаның **жаңалығы** оқушылар авторлық арнайы курс арқылы туризмдерді басқару, ұйымдастыру, оның құрылымын, тарихын, дайындық кезеңін біліп ғана қоймай, өз өлкесіне саяхаттайды, соның арқасында Қазақстанның басқа өңірлеріне де саяхат маршруттарын ұйымдастырады.

Педагогикалық мақсаттылығы – оқушылар тиімді маршруттарды құрастыру арқылы мұражайларға, табиғи көрікті жерлерге, маңызды өндірістік нысандарға, тарихи және рухани ескерткіштерге жоспарлы түрде барып көру арқылы тарих, география, биология, әдебиет, информатика, орыс тілі, ағылшын тілі сабақтарында алған теориялық білімдерін практика жүзінде кеңінен қолдануларына жол ашады, аталған пәндерге деген қызығушылықтарын арттырады.

Авторлық бағдарламаның қысқаша сипаттамасы: «Қазақстандағы туризмнің жағдайы мен даму тенденциясы» курсын оқитын оқушы отандық және әлемдік деңгейде тәжірибелі маман ретінде мейрамхана ісі мен бизнесінде қолданылатын білімді меңгеруге мүмкіндік беретін курс.

Авторлық бағдарламаның мақсаты: Қазақстан Республикасындағы туризм индустриясының қазіргі жағдайын зерттеп, туризм нарығының даму перспективасын қарастыра отырып, Қазақстандағы туризм индустриясының проблемалары және оны шешу жолдары білу

Курс мынадай міндеттерді қамтиды: ел экономикасында туризм саласының орнын анықтау; Қазақстан аумағындағы туристік-индустриалдық жағдайын зерттеу; еліміздегі туристік қызметтер түрлерінің даму болашағын көрсету.

Күтілетін нәтижелері:

- туризмологияның теориялық негіздерін біледі;
- дүниежүзінің туризм дамыған елдел экономикасында туризмнің алатын орынын біледі;
- өз өлкесінің табиғи және тарихи нысандарын, ерекшеліктерін біледі;
- Қазақстанның басқа өңірлеріне де саяхат маршруттарын ұйымдастыруды үйренеді;

Оларды тексеру әдістері:

- туризмологияның теориялық негіздері бойынша тест алу;
- өз өлкесінің табиғи және тарихи нысандарын, ерекшеліктеріне презентация жасау арқылы қорғайды;
- Қазақстанның басқа өңірлеріне де саяхат маршруттарын ұйымдастыруды презентация арқылы қорғайды.

ҚОРЫТЫНДЫ.

Өлкетану пәнінің қазіргі таңдағы ең маңызды пән екенін түсідіргім келді. Бұл пән туризм мамандығымен тығыз байланыста екенін, осы пән арқылы көптеген өлкенің тарихымен, табиғи ескеткіштерімен, әсем табиғатымен өз көзімізбен танысуға болатынын айтқым келді.

«Қазақстандағы туризмнің жағдайы мен даму тенденциясы» авторлық курс бағдарламасы, лицей сыныптарының 9-10 сыныптарына арнайы бағытталып құрастырылған. Аптасына1 сағаттан оқытылатын болады.

Сондықтан, Қазақстан географиясы пәндерінен білім алушыларға арналған «Қазақстандағы туризмнің жағдайы мен даму тенденциясы» курсын заман талабына сай географиялық өлкетанушылық мақсатта толыққанды оқытудың маңызы зор. Өйткені қазіргі кезде, жалпы орта білім беретін мектепте география пәндерін оқыту барысында географиялық өлкетану бойынша зерттеу мәселесі сырт көзге толық сияқты көрінгенімен, жеткіліксіз. Әсіресе, Қазақстанның қарқынды дамып келе жатқан туризм саласы бойынша жергілікті географиялық өлкетану материалдарын пайдалану әдістемесі жоқтың қасы. Осы олқылықты жетілдіру үшін аталған сыныпқа арнайы авторлық курс ұсынылып отыр. Бағдарлама құрылымы кіріспеден, оқу тақырыптық жоспардан, оқушыларға қойылатын талаптардан, әдебиеттер тізімінен тұрады.

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Leveraging Conservation Agriculture for Coping with Drought Stress in Crops

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INTRODUCTION

Global food production, already strained, must double by 2050 to alleviate hunger, necessitating a strong focus on food security. This complexity stems from the interplay of climate and non-climate stressors, acting independently or in combination, requiring tailored solutions. Climate change compounds this stress, influencing agriculture and food production both directly through altered agro-ecological conditions and indirectly by impacting income distribution and demand for agricultural goods. As a significant hurdle in sustainable agriculture, climate change encompasses any long-term climate shift due to natural variability and/or human activity (1). Agriculture contributes to climate change via greenhouse gas emissions, while also grappling with its consequences. Key climate change elements revolve around heightened water uncertainty due to more frequent droughts and excess water events, causing uneven water availability. Drought, defined as the lack of rainfall or irrigation leading to soil moisture depletion and plant harm, is a recurring aspect of many climates. The USDA denotes drought as annual precipitation dropping to 75 percent of normal or monthly precipitation to 60 percent of normal. Drought stress arises when plant water loss surpasses root water absorption capacity, hindering normal plant functions.

Drought periods yield notable ecological, farming, economic, and societal repercussions. The impacts are contingent on the vulnerability of the agro-climatic region facing drought stress. Water quality can diminish due to decreased water flows intensifying pollution and tainting surviving water bodies. Post-drought, plant recovery of root systems and growth capacity can span months to years. Drought stands as a pivotal restraint on crop yield. Enhancing drought resistance is intricate due to the intricate mechanisms at play.

Varieties of Drought

1. Meteorological drought emerges from prolonged periods of below-average precipitation, often preceding other drought types.

2. Agricultural droughts impact crop growth and ecosystem health, stemming either from inadequate precipitation or mismanaged agricultural practices that reduce water availability. In traditional cases, prolonged low rainfall triggers this type of drought.

3. Hydrological drought occurs when water reservoirs like aquifers, lakes, and reservoirs drop below statistical norms, manifesting gradually due to dwindling stored water. Unlike agricultural droughts, hydrological droughts result from various factors beyond rainfall scarcity.

Origin of Drought

Rainfall generally depends on the quantity of water vapor in the local atmosphere, combined with air temperature's dew point and the upward movement of the air mass. When these factors don't facilitate sufficient surface-reaching precipitation, drought occurs. This can be initiated by factors like high albedo, elevated high-pressure systems, continental air mass winds (low water content), and behaviors of high-pressure ridges hindering rainfall or thunderstorm development in a specific region. Climatic cycles like El Niño-Southern Oscillation (ENSO) contribute to recurring drought patterns.

Categorization of Mechanisms for Drought Resistance

Drought resistance denotes a plant's capacity to maintain optimal physiological functions even in dehydrated conditions. Plants manage drought through either delaying desiccation (maintaining tissue hydration) or desiccation tolerance. In previous literature, the term "drought avoidance" was sometimes used interchangeably with drought tolerance, though this is misleading as drought is endured by surviving plants but not escaped. Some plants that complete their lifecycle before drought onset are true examples of drought escape. Drought tolerance is typically highest in early seedling stages and diminishes as plants progress, particularly after flowering. Another group, known as "desiccation postponers," defers drought symptoms and conserves water for later stages of their lifecycle.

Impact of Drought on Crops

A vital aspect of ensuring adequate water for irrigation in India's crops lies in the favorable southwest summer monsoon. Monsoon failure in certain regions leads to water scarcity, yielding subpar crop outputs. This holds particularly true for drought-prone areas like southern and eastern Maharashtra, northern Karnataka, Andhra Pradesh, Orissa, Gujarat, and Rajasthan. Soil water deficit detrimentally affects crop yield through three key mechanisms: (i) reduced canopy absorption of photosynthetically active radiation, (ii) diminished radiation-use efficiency, and (iii) lowered harvest index (2).

The consequences of drought on crop growth and yield hinge on stress severity, duration, and the developmental stage of the plant. Cereal panicle development and flowering, as well as the period before and during flowering in legumes, generally prove most vulnerable to drought stress. The effects of drought stress on plants encompass various aspects:

Crop Growth and Yield

Water is a crucial element in plant cells, supporting growth processes. Drought's primary impact is hindered germination and poor establishment (3). Drought stress notably decreases germination and seedling stand (4). Vegetative-stage drought severely curtails plant growth and development. Growth involves complex interactions of genetic, physiological, ecological, and morphological factors, all influenced by water deficit. Among these, cell growth is highly sensitive due to turgor pressure reduction (5). Severe water deficiency can hinder cell elongation due to interrupted water flow to elongating cells (6), resulting in diminished plant height, leaf area, and crop growth.

Numerous yield-determining processes in plants are impacted by water stress, with yield reflecting their intricate interplay. Pre-anthesis water stress accelerates anthesis, while post-anthesis stress shortens grain filling. Grain yield reduction results from fewer tillers, spikes, grains per plant, and individual grain weight. Post-anthesis drought consistently harms grain yield, irrespective of stress severity (7). Flowering drought often leads to barrenness, often due to insufficient assimilate supply (8). Prevailing drought curtails growth and development, hindering flower production and grain filling, ultimately yielding smaller, fewer grains. Grain filling reduction is tied to decreased assimilate partitioning and activities of sucrose and starch synthesis enzymes.

Photosynthesis

Biological processes, like photosynthesis, significantly decline without adequate water due to reduced leaf expansion, impaired photosynthetic machinery, premature leaf aging, and decreased food production (9). Reduced photosynthesis means diminished plant and root growth. Drought affects photosynthesis through pathway regulation by stomatal closure, reducing CO2 flow into mesophyll (10), or by directly impairing metabolism (11). Initially, reduced stomatal conductance primarily causes photosynthesis decline during early drought stress (12). In later stages, increasing drought severity causes tissue dehydration, leading to metabolic impairment. Recent studies attribute photosynthesis decline to both stomatal closure and nonstomatal factors like chloroplast oxidative damage under drought stress (13).

Water stress in plants commonly leads to reduced photosynthesis rates, primarily due to limitations in both stomatal conductance and metabolic processes. This reduction involves various factors, including constrained CO2 diffusion in leaves, decreased levels of photosynthetic pigments, and reduced activity of photosynthetic enzymes within the chloroplasts, affecting both light and dark reactions. Prolonged water stress further results in decreased chlorophyll content in leaves, which is linked to the inhibition of de novo chlorophyll synthesis. This inhibition occurs at multiple stages of chlorophyll synthesis, encompassing the formation of 5-aminolevulinic acid (ALA) from glutamic acid, ALA condensation into porphobilinogen and primary tetrapyrrol, light-dependent conversion of protochlorophyllide into chlorophyllide, and the synthesis of chlorophyll a and b, including their integration into photosynthetic pigment-protein complexes (14).

Conversely, water stress prompts an increase in xanthophyll pigments, as certain intermediates of the xanthophyll cycle play a role in curbing the production of reactive oxygen species (ROS), which tend to increase during abiotic stress. Water stress also leads to a decline in ATP and NADPH, crucial intermediates required for the dark reactions of photosynthesis. This decline is directly linked to the negative impact of water stress on both cyclic and noncyclic electron transport chains during the light reaction, disrupting photophosphorylation as a whole. The reduction in ATP synthase during water stress is also well-established.

Moreover, water stress leads to a rapid decrease in the levels of RuBisCO, a key enzyme in the reductive CO2 assimilation pathway, along with a decrease in its activity. While CO2 diffusion is a contributing factor, the primary limitation for CO2 assimilation in stressed leaves stems from the inhibition of ribulose-1,5-bisphosphate (RuBP) synthesis. This is a result of reduced ATP production due to impairments in the electron transport chains during the light reaction. Notably, other enzymes involved in the reductive CO2 assimilation pathway, including NADP-dependent glyceraldehyde-3-phosphate dehydrogenase, PEP carboxylase, phosphoribulose kinase, NAD-dependent malate dehydrogenase, and fructose-1,6-bisphosphatase, are also adversely affected by water stress, leading to decreased enzymatic activity.

Membrane Stability

Cell membranes are key targets of environmental stress. Alterations in lipid composition help maintain membrane integrity and cellular compartmentalization during water stress (15). Severe water deficit disrupts the interplay between membrane lipids and proteins, reducing enzyme activity and bilayer transport capacity. Changes in lipid composition involve heightened fatty acid unsaturation and shifts between two galactolipid classes: monogalactosyl-diacylglycerol (MGDG) and digalactosyl-diacylglycerol (DGDG). An increase in fatty acids with fewer than 16 carbons and lipid peroxidation is a recognized effect of water stress in plants. Lipolytic activities are consistently higher in sensitive cultivars compared to resistant ones.

Mineral Nutrition

Effective plant nutrient management can enhance drought tolerance. Improved plant nutrition mitigates the adverse effects of drought through various mechanisms. Drought leads to increased reactive oxygen species (ROS) generation due to energy accumulation in stressed plants, leading to photo-oxidative damage to chloroplast membranes. The application of macronutrients such as N, K, and Ca can reduce ROS toxicity by increasing the concentration of antioxidants like superoxide dismutase (SOD), catalase (CAT), and peroxidase (POD) within plant cells. These antioxidants scavenge ROS, reducing photo-oxidation and preserving the chloroplast membrane's integrity, ultimately boosting the photosynthetic rate in crop plants (9). Similarly, the application of certain micronutrients like Zn and Si can also increase antioxidant concentrations and enhance drought tolerance in plants. Additionally, nutrients like P, K, Mg, and Zn can improve root growth, which subsequently increases water uptake, aiding stomatal regulation and enhancing drought tolerance. Nutrient application, such as Potassium and Calcium, can help maintain high tissue water potential during drought conditions, improving drought tolerance through osmotic adjustment. Micronutrients like Cu and B can indirectly alleviate the adverse effects of drought by activating physiological, biochemical, and metabolic processes in plants. Growing evidence underscores the pivotal role of mineral-nutrient status in boosting plant resistance to environmental stress factors.

Nitrogen - Nitrogen uptake and utilization by plants under water stress significantly impact growth and productivity. Nitrogen influences carbon partitioning, leading to the accumulation of soluble sugars and starch, which, in turn, improves leaf growth. Exogenous nitrogen application enhances antioxidative defense mechanisms, reducing photo-oxidation of chloroplast pigments and leaf senescence. Water stress has a direct negative impact on Nitrate reductase (NR), the first enzyme in the nitrogen assimilation pathway, contributing to growth inhibition under water deficit (16). Drought-induced nitrogen deficiency significantly affects leaf size by decreasing both cell number and size (17). Inorganic fertilizer application has been shown to mitigate the adverse effects of water stress on crop growth and development.

Calcium - A major regulator of plant metabolism and development, Calcium mediates stress responses during injury, recovery from injury, and stress acclimation (18). It is vital for structural and functional integrity of plant membranes and other structures. As part of calcium pectate in plant cell walls, Calcium maintains cell structure. It activates the plasma membrane enzyme ATPase, which restores nutrients lost due to membrane damage caused by calcium deficiency, aiding plant recovery from injury. Calcium also functions within calmodulin, controlling plant metabolic activities and enhancing growth under drought conditions. (Fig 1).

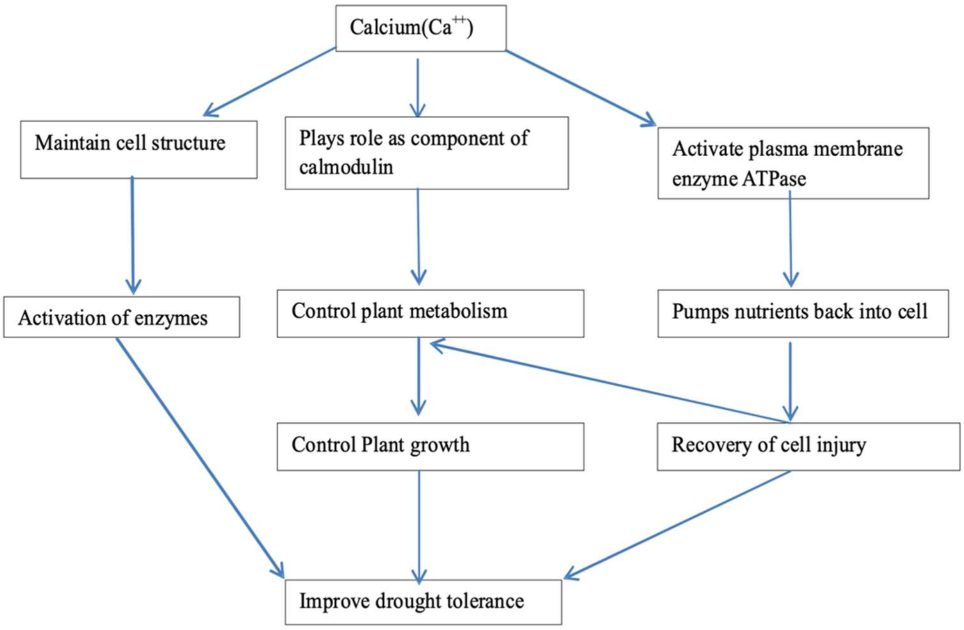

Figure 1. Potential ways in which calcium supplementation can assist plants in reducing the adverse impacts of drought have been outlined (19).

Potassium's Multifaceted Role in Plant Survival

Potassium (K), traditionally recognized for its role in stomatal regulation, serves a diverse purpose in plant resilience to environmental stresses. K is vital for physiological functions including photosynthesis, translocation of photosynthates, turgor maintenance, enzyme activation, and mitigating excess ion uptake (20). Under stress, particularly drought, plants have an escalated internal demand for K due to heightened oxidative stress caused by reactive oxygen species (ROS) formation during photosynthesis. Drought-induced stomatal closure diminishes photosynthetic rates, increasing the requirement for K to counteract ROS production. Additionally, K deficiency exacerbates ROS generation and chloroplast K loss, intensifying oxidative damage (21), thus highlighting the growing need for K to safeguard photosynthesis and chloroplasts.

Assimilate Redistribution

Effective assimilate translocation to reproductive sinks is pivotal for seed development. Drought frequently diverts dry matter to roots, enhancing water uptake (22). The rate of sucrose export hinges on photosynthetic rates and leaf sucrose concentration (23). Drought curtails photosynthesis, upsetting carbohydrate metabolism and sucrose levels, resulting in reduced export. Apart from source limitations, drought's impact on reproductive sink utilization also contributes to regulating reproductive success (24).

Respiration and Energy Expenditure

Drought resilience demands significant energy expenditure, with respiration's role determining metabolic efficiency (25). In wheat, over half of daily accumulated photosynthates may be respired, impacting overall efficiency (26). The alternative pathway, involving alternative oxidase, helps maintain metabolite levels and curbs ROS production during drought-induced oxidative stress.

Root-Mediated Water Absorption

During early crop growth, an extensive root system efficiently extracts water from shallow soil layers, mitigating evaporation losses. Delicate root hairs at the root system's extremities are responsible for water uptake, and their loss accelerates drought stress development. A confined root system, due to competing roots or compacted soil, exacerbates this vulnerability. Limited root systems induce shoot-adapting signals via xylem, involving factors like ABA, cytokinins, ethylene, and malate.

Water Relations

Plant water relations are governed by factors including relative water content (RWC), leaf water potential, stomatal resistance, transpiration rate, leaf and canopy temperature. Drought stress reduces leaf water potential, RWC, and transpiration rate. To survive water deficit, plants adopt strategies like escape, tolerance, and avoidance (27). Tolerant plants maintain cell turgor, involving osmotic adjustment and tissue elasticity. RWC signifies dehydration tolerance, and drought-induced RWC decline is widespread. Stomatal opening and closing are strongly affected, and leaf temperature may also influence water status. Drought-tolerant species enhance water-use efficiency but reduced growth also lowers efficiency.

Nutrient Availability and Uptake

Drought limits nutrient absorption and uptake, as water is crucial for these processes. Nutrient absorption, mostly as ions, relies on water transport. Drought decreases nutrient transport and absorption due to reduced diffusion, mass flow, and fine root activity driven by water potential.

Other Effects

Drought curtails shoot growth and cell division by affecting cyclin-dependent kinase activity. Leaf growth is more sensitive than root growth; reduced leaf expansion benefits water conservation. Drought leads to accelerated senescence and leaf loss, known as leaf area adjustment. Root growth enhancement aids water extraction from deeper soil layers. Drought stress heightens susceptibility to pests and diseases. Effects depend on soil type, environment, growth stage, and species.

Conservation Agriculture (CA) and Climate Change

Amid climate change concerns, conservation agriculture (CA) emerges as a solution. CA, rooted in permanent soil cover, minimal disturbance, and crop rotations, supports sustainable agriculture. The global adoption of no-tillage (124 million ha) shows CA's viability under varied conditions. CA combats soil degradation and enhances fertility, aligning with sustainable production goals. It mitigates climate change by sequestering $CO2$ and reducing emissions through improved efficiency (28).

Conservation Agriculture for Drought Management

Insufficient soil water is a leading cause of low rainfed crop production. Erratic rainfall and poor water use contribute. Soil moisture management is crucial for enhancing agriculture. More soil water leads to better yields, less drought risk, groundwater recharge, and stable water sources. Conservation Agriculture (CA) improves soil moisture by preserving cover, reducing erosion, and enhancing porosity. Reduced tillage prevents moisture loss and compaction, improving water movement and root development. CA fosters beneficial organisms, creating interconnected pores.

Crop rotation optimizes root networks, increasing water penetration and holding capacity. CA leads to productive soils that support crops through dry periods due to improved water storage, deep rooting, biological activity, and organic matter content.

Micro-Irrigation for Cereals

Micro-irrigation systems offer potential for cereals like rice and wheat. Recent studies show significant water and labor savings. Drip and sprinkler systems for direct-seeded rice cut irrigation by nearly 60% and 48% respectively, compared to flood puddled rice. Micro-irrigation enhances yields by around 19%. In wheat, it saves 42% of water and boosts yields by 28%. Direct-seeded rice reduces puddling, greenhouse gas emissions, water usage, and labor, while improving soil health and productivity.

Zero-Till Planting

Zero-till planting, especially in laser-leveled and bed-planted crops, results in up to 20-30% water and nutrient savings. Furrow-irrigated raised-bed (FIRB) planting in maize-wheat systems enhances maize yield by 19%, wheat yield by 7%, and water productivity. FIRB technology increases yield by 15-24% in legumes, 11-18% in vegetables, and 15% in maize while saving 13-25% irrigation water. It supports diversification and water productivity (29).

Other Drought Management Strategies

Several strategies aid drought management:

- Dams: Store water for drought periods.
- Watershed Management: Supports irrigation during drought.
- Cloud Seeding: Induces rainfall.
- Desalination: Converts sea water for irrigation.
- Drought Monitoring: Observing rainfall and moisture levels.
- Land Use: Planned crop rotation minimizes erosion.
- Mulching: Retains soil moisture.
- Water-Use Restrictions: Regulates outdoor water-intensive tasks.
- Rainwater Harvesting: Collects rainwater for use.
- Recycled Water: Treated wastewater for reuse.
- Transvasement: Redirects water sources.
- Paira or Utera Cropping: Utilizes residual water.
- PGRs and Osmo Protectants: Aids drought tolerance.
- Anti-Transpirants: Reduces transpiration rate.

CONCLUSION

To sum up, the adoption of Conservation Agriculture (CA) systems, including raised bed planting, provides avenues for crop diversification. When paired with well-designed cropping sequences, rotations, and agroforestry practices, CA can amplify natural ecological processes, bolstering system resilience and mitigating vulnerabilities to yield-reducing factors like diseases and pests. Limited research indicates the adaptability of various crops such as mustard, chickpea, pigeon pea, and sugarcane to these novel systems. Resource Conservation Technologies (RCTs) can be complemented by strategies like rainwater conservation, increased bund height, optimized irrigation scheduling, and land leveling, effectively conserving in-situ moisture and water. Additionally, agroforestry systems emerge as valuable tools to sustain production during drier years, a common occurrence in arid regions. In times of drought, the deep root systems of trees efficiently tap into water and nutrients, partially mitigating declining soil moisture and acting as a drought insurance measure (30).

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Integration of groundwater modeling into the effective administration of groundwater reserves with a focus on sustainability

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ABSTRACT

For over three decades, the Environment Agency and its forerunners have employed numerical groundwater models to gain insights into aquifer system behavior and to aid in the effective governance of groundwater resources. Recently, there has been an assessment of the historical application of distributed numerical models, aiming to enhance their use in the management of groundwater reservoirs. This becomes especially crucial due to forthcoming shifts in groundwater management strategies stemming from the new European Union Water Framework Directive. The evaluation has underscored several aspects necessitating change. Notably, these involve redefining the role and significance of the conceptual model, establishing a nationally coordinated modeling initiative, and advancing the Agency's internal modeling proficiency. As part of a Research and Development initiative, the Agency is presently formulating proposals addressing these facets and others.

The concept of 'groundwater modelling' is commonly associated with the construction of distributed numerical groundwater models. However, its scope extends further to encompass the entire process of conceptualizing a groundwater flow system, subsequently subjecting it to quantitative evaluation using various tools such as distributed numerical models, lumped water balance models, or analytical models. It's worth noting that a distributed numerical model might not always be a requisite or the most suitable choice in every scenario.

Distributed numerical models, crucial for resource estimation and groundwater management, are typically designed on a catchment scale or larger. These models serve to mirror the spatial and temporal variations of flows and groundwater levels in real-world systems. In the context of England and Wales, such models have played a pivotal role since the mid-1970s, providing valuable insights for effective groundwater resource management. Their application aims to address specific inquiries, such as optimal pumping rates from specific locations, potential impacts on neighboring water bodies or users, and the feasibility of alternative abstraction points. These questions fall under the jurisdiction of the Environment Agency in England and Wales, aligning with their mandate to ensure robust water resource management.

When deciding whether to utilize a distributed numerical model or opt for simpler tools in resource estimation, the choice should be aligned with the ongoing resource management strategies. Recently, the Environment Agency has unveiled new national water resources strategies, accompanied by corresponding regional strategies. These documents not only encapsulate the evolving stance on water resource management but also encompass recent developments like the formulation of Catchment Abstraction Management Strategies. These strategies reflect a comprehensive approach to water resource governance that encompasses a range of considerations and challenges.

From: Hiscock, K. M., Rivett, M. O., & Davison, R. M. (2002). *Sustainable groundwater development.* Geological Society, London, Special Publications, 193(1), 1-14.

MODELS AND RESOURCE MANAGEMENT
and the new European Union Water Framework Directive (European Parliament Directive 2000).

Structure for the Management of Groundwater Resources

The most significant recent transformation in water resources management is the enactment of the Water Framework Directive (European Parliament Directive 2000) on December 22, 2000. This directive revolutionizes water resource management by adopting the River Basin District as the primary management entity. The noteworthy impact on groundwater resource management is the integration of surface water and groundwater management within this River Basin District framework. The directive's definition of 'available groundwater resources' explicitly ties this integration together. This definition characterizes available groundwater resources as the long-term average recharge rate of groundwater minus the flow rate necessary to achieve ecological quality objectives for associated surface waters. This linkage, based on surface water ecology effects, strengthens the connection between groundwater and surface water, a departure from the previous approach. Additionally, the directive introduces the notion of a 'groundwater body,' defined as a distinct volume of groundwater within an aquifer.

In the context of groundwater resource management in England and Wales, the Water Framework Directive will institute three principal changes: groundwater and surface water will be jointly considered, with available groundwater resources defined in relation to ecological quality goals for linked surface waters; the River Basin District will serve as the unit for water resource management, defined by a surface water catchment, encompassing groundwater bodies tied to the associated surface water system; and systematic monitoring of both surface water and groundwater quality and quantity will be mandatory, with reporting obligations to the EU every 6 years.

The Agency has begun to fulfill the Directive's mandates by instituting Catchment Abstraction Management Strategies (CAMS). These strategies serve as groundwork for crafting River Basin Management Plans. Each CAMS necessitates a resource assessment to determine the resource availability status of the unit. The Agency is presently devising a resource assessment framework that ensures the uniform utilization of a range of tools (Environment Agency Research & Development (R&D) project W6-066: A unified framework for abstraction licensing and reporting water resource assessments for catchment abstraction management strategies).

Instruments for evaluating groundwater resource availability

The alterations in groundwater resources management have incited the Agency to reassess its tools for quantifying groundwater resources, with ongoing and planned Research and Development projects across various domains. A primary Directive-driven concern pertains to the delineation of groundwater bodies. Currently, aquifer management employs 'groundwater units', which will necessitate reevaluation due to the need for integrated surface and groundwater management. Consequently, the Agency is devising a transition plan from existing management units to align with the new groundwater body concept.

The Directive specifies the available resource as recharge minus the outflow essential to sustain the ecological vitality of linked surface waters. To ensure efficacy, the recharge calculation must encompass all inflows into the groundwater body, encompassing direct recharge, induced recharge, and drift leakage. This underscores the necessity for a more comprehensive comprehension of the water balance for each groundwater body, prompting ongoing Agency efforts to enhance methods for estimating recharge inputs into distributed numerical groundwater models.

An essential element in assessing the accessible resource is establishing ecologically acceptable flows and levels in the interconnected surface water. The Agency has explored diverse approaches, yet a viable resolution remains elusive, necessitating substantial forthcoming

Research and Development endeavors in this direction.

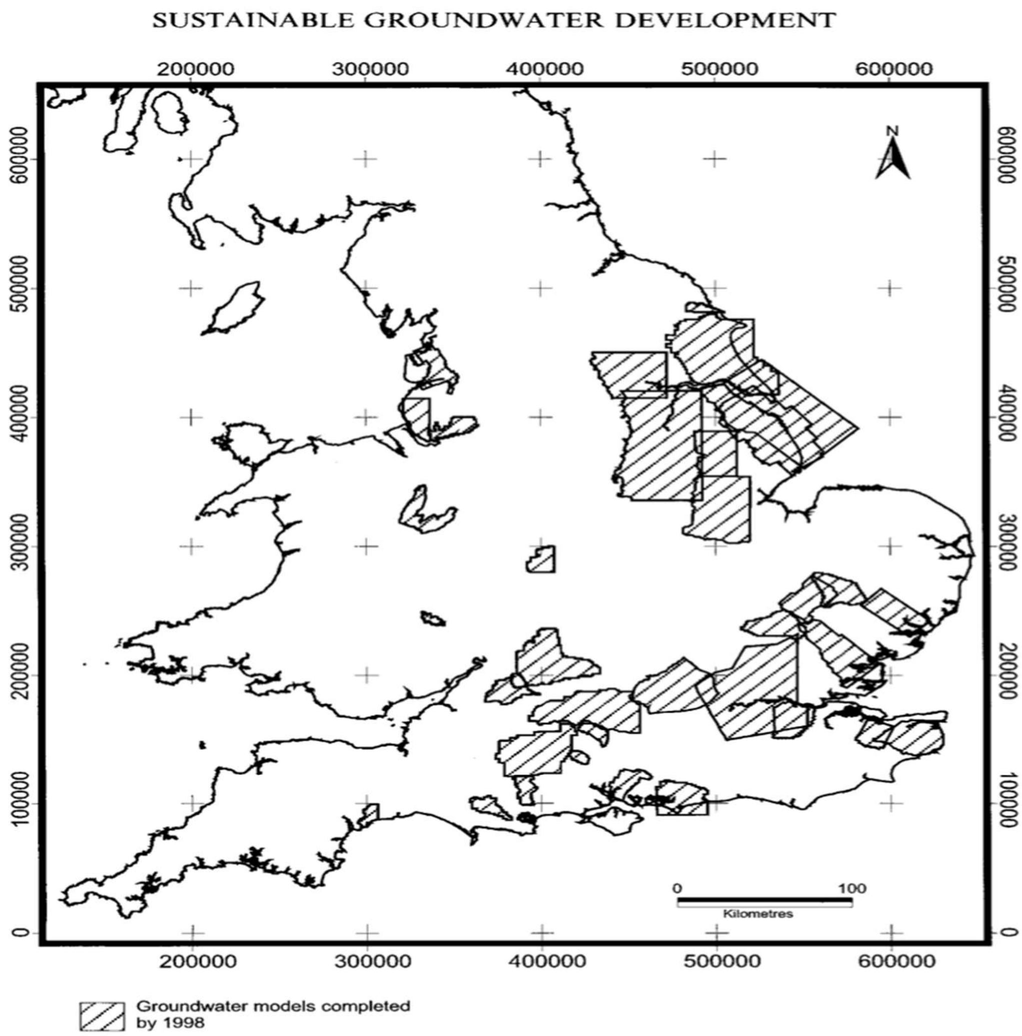

Fig. 1. Location of regional groundwater models developed for the Environment Agency and its predecessors (1975-1998).

To effectively choose and apply appropriate tools for evaluation, a solid conceptual grasp of the hydrological system under scrutiny is imperative. For instance, anticipating the impact of an abstraction on a nearby river flow necessitates a conceptual model detailing the aquifer-river interaction. Absence of such a model might lead to tool selection that wrongly assumes a perpetual hydraulic connection between the river and aquifer, disregarding instances where the river is perched, considerably diminishing aquifer inflow. The significance of this conceptual model was underscored in an Agency Research and Development (R&D) initiative aimed at enhancing the utilization of distributed numerical groundwater models (1). This project's central aim is to establish a consistent national framework for groundwater modeling as a resource management tool. By examining prior groundwater modeling projects against the backdrop of evolving groundwater resource management changes, the project empowers the Agency to recommend future modeling approaches.

Numerical groundwater modeling at a regional level within the Agency during the period from 1970 to 1998.

The utilization of regional numerical groundwater models by the Agency and its predecessors for groundwater resource management dates back to the early 1970s. Initial models were predominantly crafted through university research endeavors, particularly within the School of Civil Engineering at the University of Birmingham, UK (2). During the mid-1980s, as expertise in modeling grew and codes became more accessible, consultants began taking on model development. By 1998, the Agency had formulated and inherited 34 regional models, encompassing around 30% of major aquifers. The geographical distribution of these models is depicted in Figure 1.

In 1998, a comprehensive retrospective analysis of past modeling projects was conducted as part of a Research and Development initiative (1). One of the review's primary aims was to glean insights from prior experiences to enhance forthcoming projects. Each model had been tailored to address specific queries concerning optimal groundwater resource management strategies. Examples include exploring solutions to mitigate low river flows and declining groundwater levels, managing escalating groundwater levels, and addressing coastal saline intrusion concerns.

In nearly all of the scrutinized 34 models, these inquiries were effectively tackled. Moreover, findings from numerous models have since been leveraged to bolster management choices, such as shaping aquifer management regulations, facilitating abstraction reallocation, or redefining groundwater management zones. Certain models have served supplementary roles, like forming Source Protection Zones or evaluating the potential influence of climate shifts on groundwater resources. Yet, during the survey period, only five models were actively aiding ongoing managerial decisions. For the majority of the assessed models, updates hadn't extended beyond their initial project data. This can be attributed to several factors. Primarily, certain early models were designed to address immediate issues, as observed in some initial University of Birmingham models. Additionally, there existed a notion among Agency personnel that some models inadequately captured aquifer processes, indicating dissatisfaction with both the numerical model's behavior and the underlying conceptual comprehension. Lastly, the dearth of modeling capacity within the Agency and its predecessors hindered updates. This could be due to a lack of specialized modeling proficiency in an Agency Region or, more frequently, the dominance of operational priorities (1).

Prospects for the continuation of regional groundwater modeling within the Agency

Following additional efforts conducted under the R&D initiative (1) and in collaboration with the Agency's Regional Offices in England, as well as the Environment Agency in Wales, several aspects necessitating enhancement were identified. Among these, three critical domains stand out: the conceptual model, the modeling agenda, and the fostering of modeling proficiency within the Agency.

The conceptual model

Creating a conceptual understanding involves simplifying reality and pinpointing the pivotal processes influencing actual system behavior. Flawed execution of this step can undermine even the most sophisticated numerical models. A valuable conceptual model hinges on its accuracy in representing reality, which demands testing, often facilitated through numerical models. Both conceptual and numerical modeling enhance our grasp of real system behavior. Only when our conceptual understanding aligns with quantitative representation can meaningful predictions arise.

The Agency also underscores the autonomy of the conceptual model (3). It consolidates available data, elucidating hydrological system dynamics. A comprehensive conceptual model report yields practical resources like potentiometric surface maps, hydrogeological cross-sections, and preliminary lumped water balances.

Modelling programme

The Agency has initiated a 10 to 15-year groundwater modeling initiative, orchestrated through modeling strategies devised for each of its regional units. The overarching goal of this endeavor is to construct a network of conceptual models encompassing the primary and regionally significant aquifers in England and Wales. Distributed numerical models will be employed selectively, only when apt for evaluating our comprehension or forecasting aquifer system responses to possible modifications, like shifts in recharge or abstraction patterns. If a simpler approach can yield reliable results, it will be favored.

To facilitate this endeavor, major aquifers are categorized into Groundwater Resource Investigation Areas, delineated by the Regional Offices of the Environment Agency in England and Wales. These areas denote zones where water resource challenges are identified and require attention. Two examples are depicted: one for the Chalk in southeastern England (Fig. 2), and another for the Magnesian Limestone and Sherwood Sandstone in eastern England (Fig. 3).

Importantly, these boundaries serve as preliminary planning tools. They don't signify the full extent of a conceptual model, which inherently needs to consider areas beyond these borders. Nor do they indicate definitive limits for future numerical models; these delineations will materialize during conceptual model development. For instance, even though the Magnesian Limestone and Sherwood Sandstone are categorized as distinct investigation areas (Fig. 3), conceptual modeling might reveal their interconnection, suggesting a unified unit in certain zones.

To assist in planning, preliminary schedules are being devised to establish this network of quantitative conceptual models. A case in point is displayed in Figure 4, focusing on the Sherwood Sandstone and Magnesian Limestone in eastern England. It's important to note that these initiatives are currently provisional, subject to Agency priorities. Nevertheless, this initial planning provides insight into potential tasks for the upcoming decade. The intention is for all forthcoming models, both numerical and conceptual, to undergo regular updates. For numerical models, a provisional 3-year cycle is depicted in Figure 4. Conceptual models will be refreshed every 6 years, aligning with CAMS intervals (1).

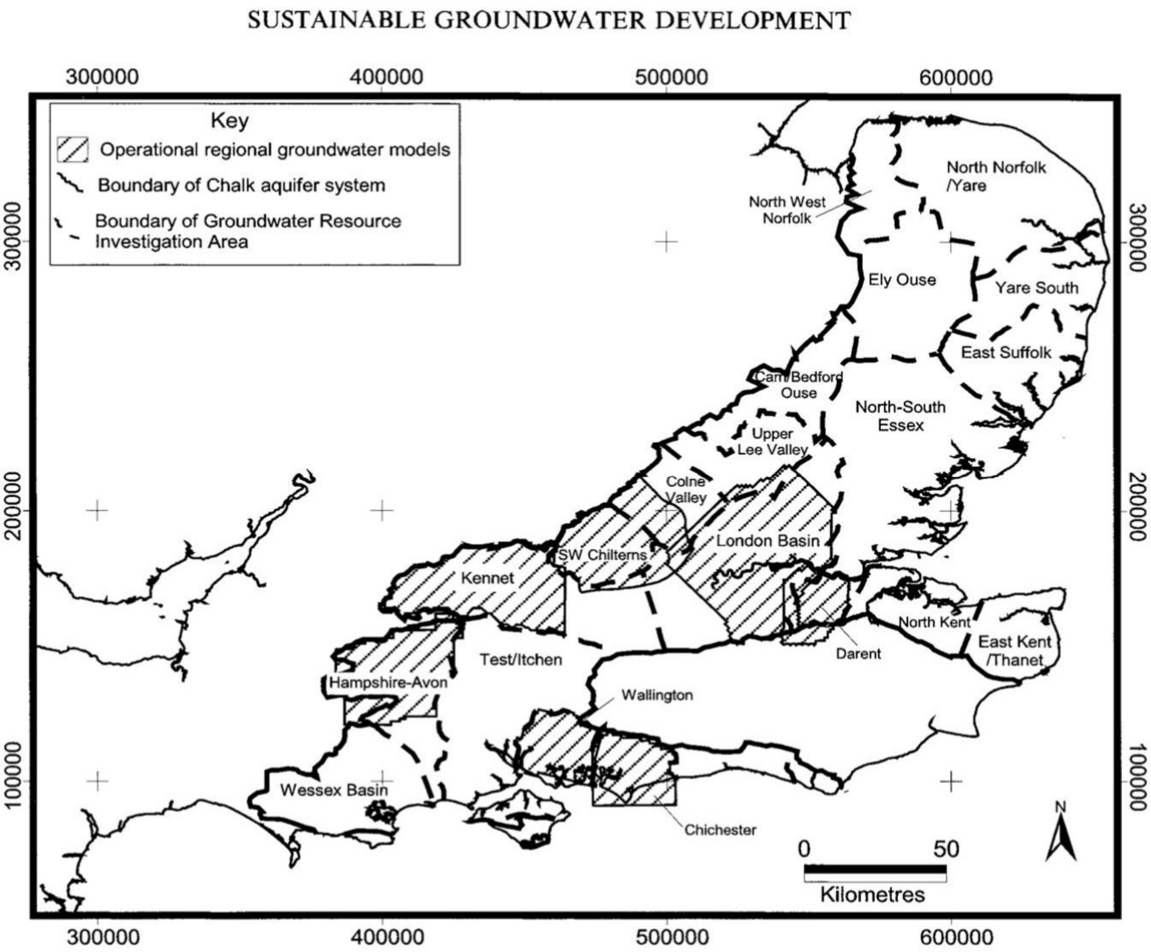

Fig. 2. Position of Groundwater Resource Investigation Areas situated on the Chalk formation in southeastern England.

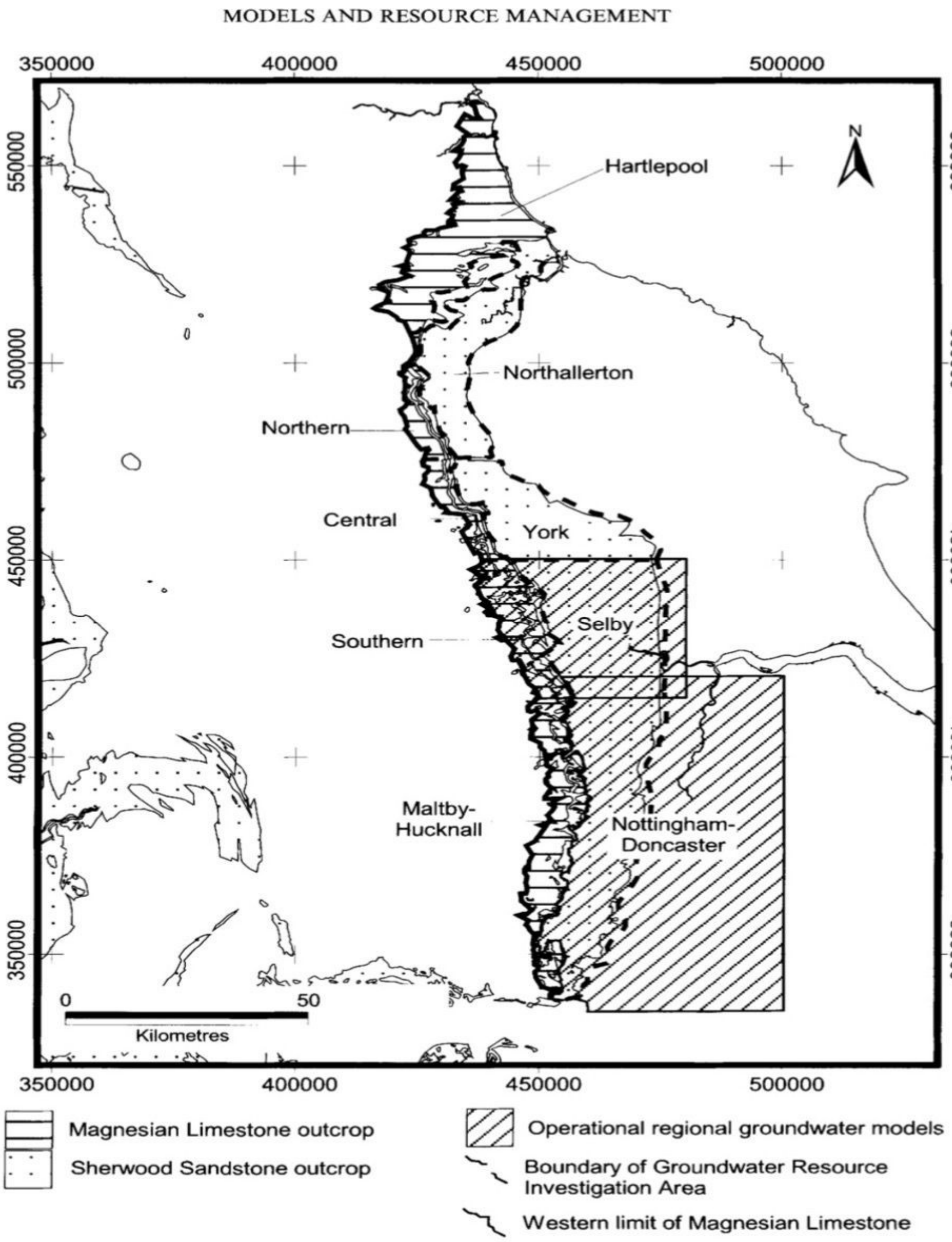

Fig.3. Placement of Groundwater Resource Investigation Areas within the eastern England Magnesian Limestone and Sherwood Sandstone regions.

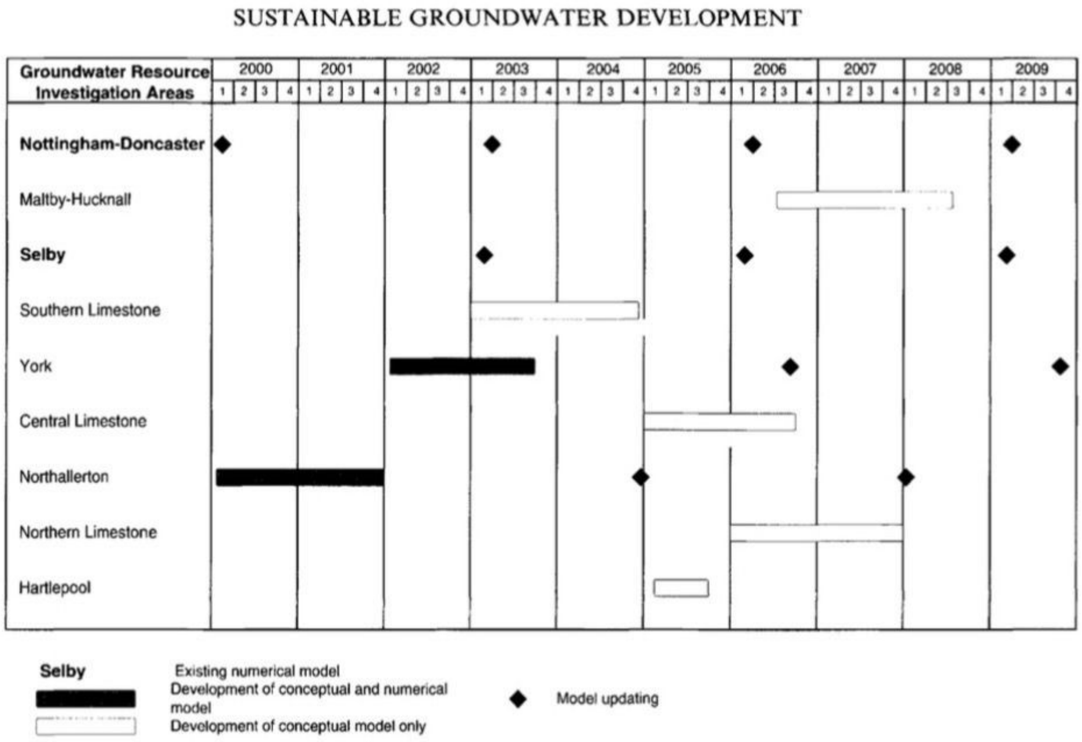

Fig. 4. An illustration depicting potential project durations for groundwater investigation zones in Eastern England.

In-house modelling capability

The Agency has acknowledged the necessity of enhancing its internal groundwater modeling proficiency and increasing staff involvement in modeling projects. Many personnel possess extensive experience with specific aquifers spanning a decade or two, rendering their inclusion in conceptual modeling teams essential.

Relying solely or predominantly on consultants for modeling endeavors is deemed ineffective. The insights and wisdom accrued from both conceptual and numerical modeling are too valuable to be confined to external contractors. The modeling process challenges us to decipher data, fathom the mechanics of real-world behavior, and question our assumptions. It's crucial for the Agency's own staff to gain from this experience, transferring insights into their operational hydrological management roles. Additionally, the Agency requires an in-house knowledge base and modeling capacity to update groundwater models and address new queries with predictive scenarios.

The extent of staff development hinges on modeling demands within each Region. While some Agency Regions lean more heavily on numerical groundwater models for operational or predictive tasks, all are likely to use numerical modeling in some capacity, whether for refining conceptual models or prediction.

To cultivate the Agency's groundwater modeling prowess in tandem with these requisites, several options are under consideration: fostering collaboration between Agency and consultancy staff in technical teams shaping conceptual and numerical models; promoting inter-regional cooperation; internal model updates instead of external reliance; and deploying specialized modellers from the Agency's National Groundwater and Contaminated Land Centre as a versatile resource available to Regions at pivotal stages.

To gauge present expertise and anticipate future needs, Agency Regions are evaluating their in-house modeling capabilities based on their decade-long modeling agendas (1).

SUMMARY

The Environment Agency is revising and enhancing tools to assist in groundwater resource management in anticipation of the incorporation of the European Union Water Framework Directive into the legislative framework for water resource management in England and Wales. As part of this endeavor, the Agency conducted a review of groundwater modeling, identifying areas necessitating changes, including: increased investment in well-documented and thoroughly tested conceptual models; the requirement for a planned national conceptual modeling program, along with regional numerical modeling projects where applicable; and further enhancement of the Agency's internal groundwater modeling capacity to better harness the benefits for its staff.

This analysis is being conducted through an Agency Research and Development project (1). A preliminary nationwide modeling scheme has been formulated and is presently undergoing assessment by Regional teams. Additional enhancements concerning modeling methodology and the Agency's in-house modeling capability have also been suggested.

The perspectives shared in this paper belong to the authors and may not necessarily reflect those of the Environment Agency (1, 4)

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Natural disasters characteristic of Georgia

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Key words: Georgia, Shovi, climate change, natural disaster, prevention, environmental education, sustainable development.

What happened in the show?

Shovi is a climatic and balneological resort of republican importance in Oni municipality of Racha-Lechkhumi and Kvemo Svaneti region in Georgia. It is located in the valley of the Chanchakhi River (the left tributary of the Rioni River).

There were sanatoriums, holiday homes, boarding houses, tourist resorts and others in Shovi. The holiday season lasts from June to October.

On August 3, 2023, in Georgia, in Racha-Lechkhumi-Kvemo Svaneti area, near the village of Shov, in the valley of the Bubistskali River, there were natural geological and hydrometeorological events - intense melting of the glacier, precipitation in the form of rain, rock avalanches in the headwaters, landslide-erosive processes and the passage of mudslides - convergence, which led to the formation of an extreme mudflow.

The mentioned process was facilitated by the increased air temperature in the recent period, intense melting of glaciers caused by climate change and subsequent atmospheric precipitations.

The rocky material and part of the glacial mass that came into the dynamics transformed into a glacial mudflow in the upper part of the valley. In the middle and lower part of the valley, the flow of the river bed washed away the base of the slopes along both slopes and the so-called caused the formation and activation of coastal landslide bodies.

22 , more than 30 people lost their lives in the tragedy. The search for the missing is still ongoing.

Why did natural disasters become active?

At the turn of the 20th-21st centuries, for the largest part of the population of our planet, protecting the population from natural disasters, safe operation of agricultural and engineering facilities and ensuring a sustainable state of the environment became the most important socio-economic, political and ecological problem. Therefore, the population of the earth is facing many and difficult problems.

Today it is already defined what is the difference between a natural event and a natural disaster. A natural event is considered a disaster when it is characterized by large-scale negative consequences for humans: for example, an earthquake, which is a natural phenomenon, regardless of its strength, if it occurred in an uninhabited place and was therefore harmless to people and infrastructure, is not considered a natural disaster. A natural disaster is a serious destruction/disruption/disruption of the functioning of a community or society, which causes large-scale human, material, economic and ecological losses and which exceeds the ability of the affected society to cope with its own resources. The result of a disaster can be human casualties or health damage, economic and ecological losses, disruption of social infrastructure.

It should be noted that global climate change is the main and most important cause of disasters caused by frequent natural hazards on earth.

There are many areas in the world where there is a threat of one or more types of natural disasters. As a rule, a natural disaster is expected in places where several factors converge, when the natural and socio-economic environment is vulnerable to the threat of a natural disaster. Just in case you find a place like this.

The number and impact of natural disasters and disasters caused by them is rapidly increasing, which negatively affects the population, socio-economic and natural environment.

Georgia and natural disasters

Georgia is significantly vulnerable to natural disasters due to the complexity of its geological structure, diversity of geomorphological, hydroclimatic and geobotanical conditions. Because of this, earthquakes, landslides, floods, and other natural events that cause human casualties and economic losses are frequent in our country. According to various data, in the last period, economic losses caused by natural disasters exceeded 3.5 billion GEL.

The territory of Georgia (69,700 sq. km) is spread over 5,000 m above sea level, while 46.1% of the territory is located above sea level to 1,000 m, 39.7% - from 1,000 to 2,200 m, 14.2% - above 2,200 m. The high degree of relief fragmentation is due to strong tectonic movement and intense erosion processes in the Caucasus region, which together with climatic conditions, causes landslides, mudslides, snow avalanches, etc. It contributes to the development of natural events.

Rocks of different composition, age and stability are spread on the territory of Georgia, which create various structures and lead to the formation of various geological processes dangerous to humans. On the slopes built with dense rocky rocks, rock avalanches and rock falls are distinguished by their predominant development. Landslides and flood processes are relatively less in such places. On the other hand, in areas where less dense, easily deformable rocks are spread, mainly landslides and landslides occur.

Climatic conditions play an important role in provoking dangerous natural events in the territory of Georgia. Torrential and long rains are frequent (especially in western Georgia). In late winter and early spring, rapid temperature rise and intensive melting of snow cover and/or long and heavy rains contribute to the occurrence and activation of floods, mudslides, landslides and other natural processes. Snow avalanches are a frequent phenomenon in the western central part of the Caucasus, as well as in the territory of mountainous Adjara, which is related to heavy snowfall and/or temperature changes at the end of winter and beginning of spring .

One of the important factors in the development of dangerous natural processes is the unintentionally conducted agricultural activities by Adamiani (deforestation, grazing of pastures, construction of various infrastructural facilities at the bottom of river valleys, cutting of steep slopes, etc.), which leads to provoking and activating natural disasters in a number of places.

During the 70-year existence of the Soviet Union, the development of Georgia's infrastructure often took place without taking into account the local environmental conditions. The local population practically did not participate in the management of natural resources and agriculture. During these years, the knowledge and experience of sustainable management of resources established in the community over the centuries was lost.

The economic crisis that developed in the country after the collapse of the Soviet Union pushed the population to uncontrolled and unplanned use of local resources, which became the cause of new and intensified natural disasters in a few years.

Risk management and prevention of natural disasters

The most important challenges in the modern world are those that threaten the first human right and value - life, and that is the increase and intensification of disasters in time and space.

"Life is an inviolable human right and it is protected by the law (Constitution of Georgia - Article 10).

Everyone has the right to timely receive complete and objective information about the state of the environment (Constitution of Georgia - Article 29).

Unfortunately, most natural disasters are almost impossible to completely prevent or stop the threat. That is why it is necessary to take appropriate mitigating and warning measures, which significantly reduce the risk of occurrence of such disasters and the damage caused by them.

Anyone can become a victim of a disaster. The damage and large-scale economic losses caused by disasters can be avoided, turning the threat into a disaster by studying the risks, raising awareness and ensuring the resilience of the population, as well as by developing and implementing appropriate measures in all phases of disaster management (before, during and after the event).

Natural disasters can be prevented or reduced by involving stakeholders in the implementation of disaster risk reduction strategies. Based on this, the issue of reducing the risk of natural disasters is a priority all over the world and should be done through the joint implementation of structural and non-structural measures.

In this process, a great role is assigned to raising awareness and practical training of the population, especially pupils and students. Therefore, it is necessary to introduce these issues in training programs and curricula in this direction.

Used literature:

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https://ourworldindata.org/natural-disasters
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Legal Sciences

Political Transitions: Young Europeans' Migration to Asia for Unique Life Paths and Global Engagement

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Abstract

This article explores the phenomenon of young Europeans migrating to major cities in Asia for work, which is seen as a consequence of the ideal citizen concept promoted by European bureaucrats. Through qualitative interviews with well-educated European millennials employed in Singapore and Tokyo, the study reveals that these individuals have adopted mobility as a normal lifestyle. They believe that international experience enhances their career prospects and personal growth, considering the absence of such exposure a personal shortcoming. Their decision to move to culturally distant Asian cities is driven by the desire to set themselves apart, while also benefiting from promising job opportunities and a high standard of living, especially as Europe's economic influence wanes.

The argument made here is that these migrants employ their mobility to Asia as a strategy for maintaining their middle-class status. By relocating to locations where they anticipate that the cultural and social capital gained from previous international experiences will be more appreciated, they avoid the limitations on their cosmopolitan and professional ambitions that they might face in their home countries. The article's longitudinal research design reveals that the fear of being tied down in their home countries discourages many of these 'ideal' young Europeans from returning home, motivating them to continue seeking geographical mobility.

The article concludes by critically examining the glorification of mobility in discussions about Europeanization and higher education. It also reflects on the broader implications of this emerging pattern of mobility, pointing out its complexities and potential downsides.

Introduction

In a time when news headlines frequently highlight migrants' desperate attempts to reach Europe, the assertion "Europe is my home and I don't think that will change. Europe as a place to be – I am not sure" might seem misplaced. However, Lena, the young European who expressed this sentiment, held firm to her beliefs. And Lena's viewpoint is not an isolated one. This paper focuses on the experiences of 70 young Europeans who made the decision to relocate to two prominent Asian global cities, Singapore and Tokyo. The author Helena Hof conducted multiple interviews with them and engaged in extensive ethnographic observations between 2014 and 2018. While the numerical scale of this migratory trend is small, it signifies a significant emigration pattern among well-educated, young Europeans. This movement to Asia reflects one possible outcome of the ideal European citizen concept propagated by European bureaucrats.

Before the global financial turmoil triggered by the Lehman Brothers collapse and its far-reaching economic repercussions, Adrian Favell (2008) introduced the term 'Eurostars' to describe highly educated Europeans who dispersed across the continent to work in Europe's cultural, political, and economic hubs. Favell contended that despite these professionals' apparent ease in relocating and their desire to adopt attractive 'Eurocities' as their homes, their mixed feelings about the mobility they chose to pursue indicated the drawbacks of this lifestyle. Even these relatively privileged Europeans grappled with impediments to their mobility, such as non-transferable pension systems and challenges associated with aging. Favell concluded that the ambivalence the Eurostars felt about their mobility highlighted the reality that most Europeans lacked incentives to migrate. This ambivalence regarding mobility has also been evident in recent years, underscoring the difficulties Eurostars face in forming social connections and navigating various life stages. As they raise families and advance in their careers, their ties to their home country weaken, making a return less likely.

In the borderless Europe of the 21st century, labor migration to Asia presents an opportunity for the next generation of middle-class millennial Europeans to pursue goals similar to those of the Eurostars. This includes escaping binding networks and institutions in favor of an assertive and creatively oriented lifestyle. This, in turn, facilitates the reproduction of the middle class, especially amid constrained labor market conditions in their home countries. Aligned with research on the international mobility of privileged students from economically advanced regions, the author Helena Hof argues that the young Europeans under scrutiny in this study seek to establish themselves as distinct through their mobility. However, their approach differs from middle-class students who return home to secure improved positions in the domestic job market or more lifestyle-oriented travelers who seek distinction by adapting to unfamiliar surroundings.

The Europeans examined in this study came of age during a critical period characterized by heightened online connectivity, European Union integration, the elimination of inner borders, and the enlargement of the EU's membership through the addition of new states. These developments led to increased geographic and occupational mobility, accompanied by the emergence of diverse career models and lifestyles. The author Helena Hof contends that while the middle class has historically sought avenues for differentiation, examining the practices of extended inter-regional labor mobility among highly educated EU millennials through a generational lens provides a valuable perspective.

This generation enjoyed a relatively peaceful upbringing in the prosperous Europe of the 1990s. However, as they transitioned into adulthood and embarked on their initial professional experiences, they encountered the aftermath of the post-Lehman economic crisis, juxtaposed with the celebratory discourse surrounding internationalization and the supposed invaluable skills gained through overseas study or work. In this context, these European millennials viewed living abroad as a means to enhance both their individuality and employability. Nurtured with the concept of a cosmopolitan, boundary-free Europe and global citizenship, and driven by the pursuit of competitive high-level career opportunities, they perceive vibrant Asian cities as attractive living destinations and aspire to build international careers, without a fixed plan for returning home.

This paper demonstrates how adopting a generational perspective within the framework of a borderless EU offers a fresh angle for studying the interplay between distinction achieved through mobility and the connection between mobility, often facilitated by higher education, and employment prospects. After outlining the author's research methodology and data collection, she proceed to develop my argument concerning the common attributes and motivations of these migrating Europeans. she then concludes by reflecting on the significance and ramifications of this migratory phenomenon.

Mobile millennials and the quest for distinction

Sociologist Mannheim (1923/1952) highlighted the importance of events during a generation's formative years. Edmunds and Turner (2005, 566) later expanded this concept by introducing 'mediated experience' to acknowledge the significant impact of media and modern technology on shaping the worldview of contemporary young individuals. This shared and mediated experience plays a crucial role in the transition to adulthood for a generation, contributing to the distinctive traits of each generational cohort. In this study, the focus is on European millennials, who are often characterized by their affinity for new technologies and global interconnectedness (Edmunds and Turner 2005; Pew Research Center 2010).

Despite the potential oversimplification of labeling all individuals within a generation as "millennials," this label holds theoretical value for the study. The experiences of European millennials are shaped by the diverse spatial, cultural, and economic landscape of the modern European Union (EU). However, there's a gap in understanding how the European middle class navigates between distinguishing themselves through mobility beyond Europe and the EU's promotion of international educational mobility.

The term "millennials" generally refers to those born between 1980 and the mid-1990s or those who came of age in the 2000s (Ng, Lyons, and Schweitzer 2012). The European millennials in this study were in their mid-twenties to mid-thirties when first encountered, and most entered the job market after the Lehman shock. They witnessed the rise of the internet during their school years and the ubiquity of smartphones during their university education. Consequently, they became accustomed to using technology as they transitioned into the workforce.

The EU's Europeanisation policies prioritize youth exchange and mobility within Europe, but these have been criticized for favoring privileged individuals (Findlay et al. 2012). Notably, the Erasmus program, established in 1987, supports European students in studying and interning abroad. Despite its expansion, only a small percentage of European youth can participate. Mobility has become a normative concept in the discourse of young middle-class Europeans, but not all can realize it physically.

Research on Western middle-class youth reveals that overseas study and work experiences are influenced by a quest for distinction. Mobility is seen as a way of life, and some individuals seek to establish themselves as permanent residents in their host countries. However, many are driven by the aspiration for upward mobility through foreign educational experiences that ideally lead to successful employment in their home countries.

While previous research sheds light on these dynamics, it lacks an understanding of labor mobility from Western countries to Asia and the specific rationale of Europe's "cosmopolitan" middle class. This class has been encouraged to embrace intra-European mobility within the EU (European Commission 2018; Papatsiba 2006). Notably absent are considerations of Asian destinations, which offer high living standards and advanced labor markets and are part of the Global North. To bridge this gap, it's essential to examine regional contexts and unique conditions in both home and host countries' labor markets concerning European millennials' pursuit of distinction and middle-class status.

Do-it-yourself biographies in the age of mobility

Prior research extensively discussed the movement of skilled labor within Europe, both as a way to take advantage of wage differences between nations and as a strategy to evade economic downturns and underemployment for graduates (Recchi 2015; Csedő 2010; Krings et al. 2013). While post-Lehman shock youth migration has been a notable aspect (Lafleur and Stanek 2017; Tazzioli and DeGenova 2016; Cairns 2012), scholars have emphasized the importance of recognizing non-economic incentives for migration (Krings et al. 2013), including lifestyle preferences (O'Reilly 2007), romantic interests (King 2002), language acquisition (Burrell 2010), and personal growth (Kennedy 2010). Beyond traditional economic factors like salary and career progression, there are intrinsic elements such as creativity, self-development, and adaptability, as well as desires for expanding professional networks, international work exposure, and better working conditions (Doherty, Dickmann, and Mills 2011; Harvey 2011).

The European Union's borderless regions have notably facilitated work-related mobility, taking forms like cross-border commuting and circular movement (Ralph 2015; Huber and Nowotny 2013; Van der Klis and Karsten 2009; Ryan and Mulholland 2014a). However, Ralph (2015) underscores the intricate relationships between upward and downward social mobility and spatial movements. Persistent challenges include social inequalities, barriers for individuals from former communist countries, and wage gaps, even within the EU (Black et al. 2010; Recchi 2015; Csedő 2010; Favell 2008).

The diverse types of mobility and motivations for migration mentioned earlier highlight the choices available to EU millennials regarding their initial job's nature and location. Growing up during the 2000s, they were influenced by the cosmopolitan, border-free values of the EU. This especially holds true for the educated middle class, whose families – and later themselves – had the means to benefit from the right to move freely and from EU policies like Erasmus. Nonetheless, these privileged millennials encountered difficulties securing stable employment. While the situation varied across countries and industries, this challenge affected even university graduates in wealthier EU nations. Unlike graduates from the 1980s and 1990s who expected permanent positions, the term "Generation Praktikum" emerged in Germany around 2006, describing a phenomenon where university graduates increasingly relied on precarious, short-term internships (Zerahn 2007).

Within the discourse on international experience and employability, the decision to become mobile or remain in place significantly impacts one's career and future (Gerhards and Hans 2013; Parey and Waldinger 2007; Amit 2010). However, this avenue disadvantages those unable to relocate, exacerbating inequality (Netz and Finger 2016). This study aims to explore why certain graduates permanently leave the EU, delving into critical perspectives on the positive idea of international youth mobility, in order to provide a foundation for interpreting the trend of early-career professionals moving to Asia.

Despite claims of better employability for graduates with foreign experience and the financial gains from such an "international investment," doubts persist. While proponents of overseas education programs are common among officials and university staff, empirical evidence supporting their assertions is limited (Waibel et al. 2017; Petzold 2017). Wiers-Jenssen (2011) challenges the presumed career benefits of international student mobility, suggesting that re-entering the domestic job market might be harder after an extended stay abroad due to the lack of necessary cultural and social capital in their home countries (see also Saarikallio-Torp and Wiers-Jenssen 2010). Among upwardly mobile middle-class professionals, the path to maintaining or advancing their status doesn't necessarily involve moving abroad. While "partial exit strategies" can aid mid- to upper-level European managers in career advancement, they value their European networks to avoid becoming disconnected (Andreotti, Le Gals, and Moreno Fuentes 2010).

Despite uncertain proof of international mobility's career benefits, research indicates that students considering this option have internalized the positive discourse surrounding it (seen in essays in Feyen and Krzaklewska 2013). Many view foreign experiences, language skills, and intercultural competence as advantageous if not essential for their careers. This belief reflects a commitment to self-improvement and skill enhancement as important investments in their future, driven by the pressure to secure their socio-economic standing amidst a volatile political and economic landscape (Sennett 1998, 2006; Hoffmann 2008; Lane 2011). It also aligns with the argument from globalization scholars that modern generations can no longer take for granted the institutions that once defined and structured their lives (Giddens 1991).

While globalization has expanded opportunities and individual agency in shaping lives, individuals have also become more responsible for the consequences of their choices (Giddens 1991). In this context, Beck and Beck-Gernsheim (2002) propose the concept of the "do-it-yourself biography." In reflexive modernity, individuals use the absence of stable life paths to craft their unique life projects. "How one lives becomes a biographical solution to systemic contradictions" (Beck, quoted in Bauman 2002). Two contradictions faced by European millennials are crucial for this study. Firstly, the pressure to gain skills abroad and then use them in domestic job markets. Going abroad reduces one's local cultural and social capital, posing a significant challenge that intensifies the longer one stays away (Wiers-Jenssen 2011). Secondly, middle-class individuals engage in mobile practices to distinguish themselves, but what happens when international educational mobility becomes the norm? How can one stand out when numerous graduates possess international skills?

Drawing on Beck's concept of the "do-it-yourself biography," she proposes that emigrating to Asia is a potential response to the need for differentiation. European graduates, particularly those in humanities and social sciences facing tough competition in domestic job markets, have absorbed the rhetoric of job flexibility, mobility, and diverse opportunities. Consequently, destinations beyond the Western world allow them to set themselves apart more effectively than within Europe. Language skills and international competencies gained during their studies position these young Europeans favorably in Asian job markets.

Methods and data

This study is based on her qualitative research of European millennials living in two major Asian cities, Singapore and Tokyo. These cities are known for their high quality of life, political stability, excellent infrastructure, and their roles as economic centers in the Asia-Pacific region (Chia 2015; Hu, Blakely, and Zhou 2013). The participants in her study were European Union citizens who held university degrees and came from middle-class backgrounds. While some could be considered upper-middle class in their home countries, what connected all 70 participants was their socio-economic status, which enabled them to afford higher education and take advantage of Europeanization policies like Erasmus. However, they faced challenges in the job market due to the European Union's financial crisis, leading to increased competition in the labor markets of Europe during the late 2000s and early 2010s.

Between 2014 and 2018, she conducted semi-structured interviews with 70 individuals in Singapore and Tokyo. To select participants, she sought individuals who had work visas and full-time jobs and were independently mobile. This excluded company-assigned expatriates and other groups like dependents and part-time workers. While her sample isn't representative of all European labor migrants in Asia, it does shed light on the motivations of those who successfully secured work visas and jobs in these Asian cities despite strict migration regulations.

She gathered her sample from various sources including job portals like LinkedIn, online communities for foreigners, social circles, and personal and university networks. This approach aimed to avoid the biases inherent in purely relying on snowball sampling. The qualitative interviews, lasting from 60 to 150 minutes, were conducted in English or German based on the participant's preference. After obtaining consent, she recorded and transcribed the interviews for analysis using grounded theory principles. Major themes emerged, such as pre-employment mobility experiences, a desire for novel experiences, career development challenges, and the sense of 'Europeanness' among these millennials. Coding these themes guided her research focus as she continued her fieldwork.

Throughout this process, she identified higher-level concepts and connections between them. She maintained communication with most of the participants through second-round interviews, Skype calls, and emails to understand their evolving strategies during their time in Asia. The participants were fairly evenly split between Singapore and Tokyo, with slightly more male participants. Most were between 25 and early thirties upon migration and had lived in their host city for an average of about three to five years. They came from 18 different European countries, with a significant number holding degrees in humanities or social sciences. They worked in various fields including finance, architecture, engineering, consulting, human resources, and languages.

Globally connected EU millennials

Due to their early exposure to online technologies, millennials are well-informed about worldwide issues and are more knowledgeable about labor market situations abroad compared to previous generations (Edmunds and Turner 2005). For instance, she met Olaf, a Baltic individual, at a sports group in Tokyo. During his middle school years, Olaf started watching Japanese anime series on German TV channels. Later, he engaged in online blogs and fan communities, where he connected with peers from the US and Europe who shared his enthusiasm for Japanese culture. Some of these online acquaintances, facilitated by Olaf's use of English, a common second language among EU millennials, evolved into internet friendships. Olaf kept up with his friends' experiences in Japan through their stories and photos.

While at university, Olaf couldn't afford to participate in the Erasmus program. However, as graduation approached, he discovered a Japanese government scholarship online. He diligently prepared and succeeded in the required tests using language resources available on the internet. With the scholarship, Olaf went to Tokyo and his perception of Japan was largely shaped by the TV shows and online content he had been consuming for years. After completing his graduate studies in Tokyo, Olaf returned to Europe but pursued job opportunities in Japan through online channels, eventually landing a job there.

The participants in Singapore had a distinct perception of their destination. Nevertheless, like their counterparts in Tokyo, they viewed Europe and Asia as fundamentally different. They admired Singapore's tropical climate, its diverse ethnic makeup, and the unique cuisine. This led them to construct an idealized image of the city-state, influenced by both European media and the travel industry, similar to Tokyo's case.

Olaf's experience vividly illustrates how mediated images, online communication tools, and the prevalence of English as a global language can serve several functions: (1) spark initial interest in a potential migration location, (2) gradually nurture a fascination with the imagined place, (3) provide information and preparation resources, and (4) accompany the migrant throughout the actual relocation. In essence, connectivity acts as a wellspring of motivation, a migration enabler, and a support mechanism throughout the entire migration process, even for geographically and culturally distant destinations. This interconnected relationship would have been far more challenging to establish with the limited connectivity faced by the prior generation, including the Eurostars mentioned by Favell, underscoring the differing worldview of millennials. With regards to the worldview of European millennials, the subsequent section explores how student mobility and other youth-related movements foster their cosmopolitan, global perspective rather than one centered solely on Europe.

Beyond student migration: European millennials' inter-regional mobility

The Erasmus program has played a pivotal role in the globalization of European higher education, even though there's been an increase in other forms of mobility like backpacking and au pair stays (Frändberg 2014). According to Van Mol (2013), Erasmus students already hold a pro-European sentiment before they go abroad for studies. This might partially explain why a significant number of those who study abroad and later work in foreign countries stay within Europe after graduation (Parey and Waldinger 2007). Nevertheless, it's important to note that one-third of former Erasmus students who find employment abroad are choosing destinations outside Europe, implying a growing trend of emigration.

Although comprehensive migration data is hard to come by within Europe (Nowak, Kupiszewska, and Poulain 2006; Poulain 2008; Eurostat 2018), qualitative research and news reports (Hof 2018; Knowles 2015; Fechter 2016; Debnár 2016; Coconut Daily 2015; Marlow 2013; Moutet 2013) support the author's assertion of a rising trend of skilled European professionals moving to places beyond Europe. Based on various micro-studies, it's evident that there is a growing number of young Europeans in Asian global cities, amounting to tens of thousands of individuals (Hof 2019, 12–14).

While national identity remains significant (Vertovec 2009), Jensen (2015) reveals how young middle-class Danes comfortably embrace both their Danish nationality and a sense of being European. Erasmus participation has been linked to stronger identification with the EU (Mitchell 2012), often due to interactions with international students rather than extensive engagement with locals in the host country (Stoeckel 2016). The author's data supports the idea that pre-employment international mobility contributes to labor migration and a growing sense of belonging to a broader European or global community.

For many individuals, leaving Europe was a gradual process marked by incremental experiences of mobility. Their initial exposure to extended spatial movement often occurred during university, with about one-third engaging in the Erasmus exchange program or pursuing internships and graduate studies in different European or English-speaking destinations. Interestingly, some interviewees left Europe precisely because they lacked international experience. They regretted missing out on opportunities for learning and personal growth that come with going abroad.

Among these millennial graduates, some took the direct route to Asia. For example, René, a French engineering graduate, started with an internship in Mexico and then transitioned to a conventional career. After three years of working in France, he felt a restlessness that led him to an opportunity in a newly opened Singaporean branch of a US-based startup, despite visa limitations.

While these graduates followed diverse paths across and out of Europe, they shared a common upbringing that normalized mobility. They took advantage of opportunities abroad to expand their networks and eventually settled in Asia. This mirrors the concept of skill and experience acquisition leading to migration (Kõu et al. 2015, 1647). The desire to move beyond Europe developed gradually for most interviewees, with migration timing and destination choice often influenced by contingencies rather than well-defined long-term plans.

Another significant group within the sample, constituting about two-thirds of those interviewed in Tokyo (23 out of 35), explicitly chose Japan due to its cultural allure. This underscores how migration decisions and pathways are closely intertwined with the socio-cultural context of the destination. Unlike Singapore where English is prevalent, the intricate nature of the Japanese language with its Chinese characters prompted many to enroll in Japanese universities as exchange students or even full-time to become familiar with the language and culture (Hof 2018). Their yearning for something perceived as unattainable in Europe is explored further in the subsequent section.

How to be different in a mobile world

The establishment of pan-European university exchange programs not only legitimized studying abroad but also positioned international experiences and foreign language proficiency as highly esteemed skills on a person's resume (Waibel et al. 2017; Ralph 2015). Some of her sources even portrayed a lack of overseas experience as a personal shortcoming. Data supports the notion that 'Erasmus is not a program for everyone' (Feyen and Krzaklewska 2013, 10), but young students surrounded by those who have participated come to view extended mobility – whether for studies, work, or volunteer service – as the norm.

Particularly, the stories of those who have returned from abroad spark a desire among those still at home to live abroad as well. Olaf's account highlights the perceived norm of going abroad, but it also underscores the financial limitations some face. He couldn't afford the Erasmus program and decided to go somewhere far away after graduation. Interestingly, despite its high educational costs, studying in Japan turned out to be more feasible for Olaf due to subsidized government programs that make Japanese universities appealing for international students. These students, like Olaf, increasingly find employment in Japan after graduation if they achieve a high level of proficiency in Japanese. This illustrates the tension between conforming to a 'cosmopolitan norm' and the desire to set oneself apart from the mainstream.

Ironically, Olaf couldn't afford Erasmus, yet he managed to study abroad in Japan. This contrasts with the mainstream idea that higher social classes aspire to greater achievements, a concept ingrained in these millennials' families. Unlike the Eurostars, these young individuals grew up in an environment lacking security and stability. They contrast the stagnant economies of many European countries with the dynamic business landscapes of emerging Asian markets. Despite the global economic crisis affecting Asia, these migrants perceive Asian cities as economic powerhouses and are attracted by the potential for 'great opportunities' and 'fascinating experiences' in the region.

For these young Europeans, the goal is not just mobility within the EU or traditional Western countries like the US and Australia, but rather distinguishing themselves by moving to less conventional destinations. Their upbringing has taught them that mobility benefits their careers and personal development, which leads them to view moving to Asia as exciting rather than intimidating. The decision lies not in whether to move, but where. Asian destinations like Singapore and Tokyo offer solid employment prospects and a relatively high standard of living, making them appealing paths that deviate from the traditional middle-class trajectory of settling down and following a linear career.

The way Asia is perceived as 'exotic' has its roots in European colonialism and travel narratives, which have contributed to the mystique surrounding the region. European media, travel industry, and tourists continue to perpetuate these stereotypes, presenting Asia as a place of mystery and allure. Despite this, the millennials' fascination with Asia stems from their initial experiences as tourists or students, where they had the time to appreciate the unfamiliar. They saw Asia as radically different from the West, with countries like Japan embodying the ultimate degree of difference. This attraction is vital for understanding their idealized images of Asia.

Each migrant's perception of Asia varies based on their destination. Singapore, for example, is often seen as 'Asia for dummies' due to its English-speaking environment and Western influences. On the other hand, Japan, especially Tokyo, stands out for its unique language, non-colonial history, and isolation. This degree of difference attracts many European millennials, offering them both distinctiveness and a chance to follow relatively conventional career paths. Their migration allows them to break from traditional role models while maintaining a middle-class professional lifestyle.

Migration to high-wage, safe, and convenient destinations like Singapore and Tokyo facilitates an individual narrative that deviates from the norm while offering a comfortable middle-class existence. This desire for distinction and improvement, ingrained in their middle-class upbringing and 'cosmopolitan' identity, drives them to seek new horizons. This constant pursuit of 'something new and better' is a common thread, motivating many to keep moving and exploring. The hope for a fulfilling life outside Europe's boundaries, combined with the promise of personal growth and professional advancement, keeps these millennials abroad for extended periods.

Turning adult in the wake of the financial crisis

To comprehend the evolving mobility patterns of young Europeans, it would be overly simplistic to attribute them solely to individualization, orientalist aspirations, or lifestyle choices. Recent economic shifts within the EU have constrained the access of university graduates to stable, full-time employment (Eichhorst, Hinte, and Rinne 2013; Grühn and Hecht 2007). This circumstance has triggered waves of emigration, primarily within the EU but sometimes extending beyond it. Educated young Europeans aren't typically compelled to leave due to direct experiences of unemployment; instead, they are driven by the desire to avoid precarious jobs, uncertain career advancement, or inadequate wages that no longer sustain a middle-class standard of living due to high taxes and rising living costs. Scholars and journalists have highlighted instances of European graduates relocating to Latin America (Tazzioli and DeGenova 2016; Johanson 2014) or Asia (Knowles 2015; Moutet 2013; Hof 2018).

A feeling of instability predominantly affects individuals from countries hit hardest by the economic crisis, like Italians and Portuguese (Lafleur and Stanek 2017). However, the decision to migrate is usually not solely economically driven. For example, Marcos, a young Portuguese man, was encouraged by his parents to seek opportunities abroad, even though he faced challenges due to limited Japanese proficiency after completing his graduate studies in Japan. With Portugal grappling with economic crisis and a lack of job prospects, Marcos struggled to find work in his field:

"The situation in Europe and the world was difficult, especially for an architect. So she applied for various jobs in Portugal, including in shipping because of my proficiency in Japanese, English, Spanish, Portuguese, and French. She was getting desperate as she was still living with my mother."

Despite attempting to secure employment in other European nations, Marcos remained unemployed for ten months. Upon hearing about architectural projects in Singapore, he seized the opportunity and eventually found success, being promoted after three months: "I just needed a chance to prove myself, and that's what Singapore offered." Driven by desperation, Marcos and others ventured to more promising economies far from their home countries. Even though most could have relied on their parents in dire situations, they chose to accept lower-skilled jobs, as seen in Marcos' experience in the shipping industry.

These young Europeans are accustomed to achievements, having graduated from prestigious educational institutions and received scholarships for overseas study. Desperation arises when, despite these accomplishments, they can't secure suitable employment. Their inability to succeed despite their impressive credentials leads to self-blame and feelings of inadequacy (Sennett 1998; Giddens 1991). This makes pride and a desire for validation crucial in understanding their decision to migrate. While a few temporarily returned home or took short-term jobs outside their field, most, like Marcos, felt discomfort and humiliation doing so. The key to regaining self-esteem for them is reclaiming independence and finding meaningful work within their profession.

Some Western Europeans also question prospects for career growth at home and doubt their countries' ability to ensure retirement. They criticize the high social security taxes in European nations. A French law school graduate residing in Singapore expressed, "In terms of career advancement, Europe doesn't seem like the right place... We pay substantial taxes, and there's uncertainty about our retirement. So, for me, it's too uncertain."

These concerns are prevalent in European public discourse, evident in terms like "generation internship" or reports on unemployed young academics in Europe (Zerahn 2007; Eichhorst, Hinte, and Rinne 2013). In contrast, Singapore, as a hub for Southeast Asia, and Tokyo, as a financial and sophisticated labor market, align better with these Europeans' aspirations: career prospects, high living standards, recognition, cultural richness, or a tropical climate. Moreover, the impact of the UK's Brexit vote has shaped their views on professional opportunities in Europe. Having established lives abroad and being aware of the EU's political and economic challenges, many are reluctant to return. However, Europe's economic situation makes the decision to relocate to geographically and culturally distant countries somewhat risky.

Conclusion

In her opinion she applied a generational perspective to elucidate the meaning of young Europeans' emigration to Asia. Despite the admittedly large political, cultural and economic differences that exist between EU member states, the frame of the millennial generation reveals commonalities across countries in the behaviour and decisions of highly educated middle-class Europeans graduating in the late 2000s and early 2010s. These young Europeans grew up in an integrated EU, take mobility for granted and envision themselves as cosmopolitan, open-minded global citizens.

She considers hey perceive international experience as beneficial for their career and the lack of it as a deficiency, or even a personal failure.For these Europeans whose citizenship guarantees them considerable freedom of movement, intra-European short-term mobility alone does not suffice to distinguish them and does not ensure upward social mobility in the increasingly competitive EU labour market. Rather than embracing short-term study abroad or prolonged backpacking as a means of standing out, they have chosen a non-mainstream path for their early professional life: not just a one-time overseas experience like those provided by the Erasmus programme but rather a long-term, work-related emigration outside the EU. This migratory phenomenon has profound implications for the European labour market.

She says these millennial Europeans' mobility choices can fruitfully be interpreted as the outcome of a constant tension between the desire for and the perceived necessity of distinguishing oneself, the aspiration for a cosmopolitan lifestyle and the pressure to secure a professional career that enables a middle-class living standard. Following the Lehman shock and the resulting precariousness of career opportunities in the EU even for well-educated new graduates, these young adults' emigration also underscores the changing power dynamics in today's globalised world as reflectedby the discourse on the rise of Asia and the decline of the West (Lee 2017; West 2018).

Asia, then, becomes a new labour market option for those who follow a do-it-yourself approachtowards establishing a promising career and a mobile but middle-class lifestyle. She mentions that we should interpret mobility here first and foremost in a spatial sense, but also in an organisational and sometimes an occupational sense. Asian global cities offer a pathway to decent employment and sometimes to rapid career advancement. The fact that only a minority of my European informantsmoved mainly for their job, as a means to avoid constraints in their home country labour markets, accentuates the diversity within the group and the multi-faceted nature of migration. Even in those cases marked by growing professional desperation, earlier experiences in Asia and the concomitantly accumulated cultural and social capital in the host societies facilitated their labour migration as young 12 H. HOFadults. She wrote: This pattern demonstrates the intersections of different forms of mobility as well as the complex motivations for migration, in which economic and non-economic concerns often overlap.

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Philosophical Science

УДОСКОНАЛЕННЯ ЛЮДИНОЗНАВСТВА НА ОСНОВІ ПОЄДНАННЯ НООНАУК І СВІТОГЛЯДУ В. ВЕРНАДСЬКОГО, Г. КОЧУРА ТА ІНШИХ УКРАЇНСЬКИХ КОРИФЕЇВ (СТАТТЯ-1)

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Анотація. Досягнувши свого інтелектуального АКМЕ, автор насмілюється запропонувати власне бачення «Інтегрованого наукового людинознавства (ІНЛ)» на базі сотень власних праць з десятків секторів природничих і гуманітарних знань й залучених уявлень про сутність індивідуального Homo та його різноманітних об'єднань, що виявилась відомою з всього інформаційного оточення. У цій Статті-1 викладений варіант «Людинознавства-ХХ», створений наприкінці 1990-х років, який оперує загальною інформацією з акцентуванням досягнень природничих наук і містить авторські відповіді на частину тих найбільш складних і загальних запитань, які з долітописних часів і пізніше формулювали відомі нам лідери мислення і мудрості.

Ключові слова: людина «подвійно розумна», мислення, діяльність, навчання і виховання молоді, точні та гуманітарні науки.

ВСТУП

Наша велика стаття з двох частин — цілковито унікальна з багатьох причин.

Її маленька незвичайність полягає у відмові від виконання канцелярсько-адміністративних нормативів щодо обов'язковості довгої кілька-секційної вступної частини, що включає опис сьогодення всіх Homo і окремих груп, світових і локальних трендів, досягнень науковців-попередників з наведенням 30-50 прізвищ, залишених ними «білих плям», а також формулювання актуальності, новизни, мети, завдань, використаних джерел і методів разом з акцентуванням результатів.

Аномально великим є не стільки обсяг статті, як *зухвалий* авторський намір запропонувати читачам грандіозне "Ноолюдинознавство-XXI". Це спроба через залучення даних з майбутнього надати зручні для використання відповіді одразу мало не на всі глобально-вічні запитання й вказати реальний і єдино можливий шлях не тільки до світового лідерства Вітчизни, а й до усунення загроз для всього людства й реалізації заповітів В.І. Вернадського щодо ноосимбіозу з вилікуваною біосферою.

Виділений курсивом прикметник не є випадковим, а засвідчує логічний результат природної еволюції першого авторського псевдо "Зух", отриманого у процесі початку справжньої соціумізації в момент зумовленого законами Природи приєднання автора до згуртованого й активного місцево-територіального підліткового колективу. Воно було "присуджене" не за активність у змаганні за лідерство в групі, а за успішний силовий захист автономії аж до рівня категоричної відмови від активної участі в бійках з іншою групою на "кордоні розмежування". Глибинні причини цієї незвичайної поведінки автор виявив тільки при наближенні до пенсійного віку після ознайомлення з низкою відкриттів кількох дуже молодих наук.

Загалом авторський задум щодо ІНЛ буде реалізований через публікацію двох частин А і Б (стаття-1 і стаття-2), відділених одна від одної інтервалом часу більше чверті століття, впродовж якого обсяг відомої людству наукової й іншої інформації примножився приблизно у 250 разів. Перша датується другою половиною 1990-х років і є авторським варіантом інтегрованого "*Людинознавства-ХХ*", створеного на основі накопичених знань за першу половину життя, а друга пропонуватиме читачам найважливіші фрагменти "*Ноолюдинознавства-XXI*", що вдосконалюється й розширюється на основі потоку інформації з різноманітних сучасних джерел, серед яких ми найбільше цінуємо молоді ноонауки. Ці новітні ноознання надали пояснення основ авторської поведінки, зокрема, первинного прагнення шукати відповіді не стільки на стандартні запитання "Що? Де? Коли?", а на складніше і сакраментальніше "Чому?". Ця риса вельми здивувала перших роботодавців (керівників районної газети "Шлях Леніна"), адже автор, замість виконання поради використати більшість робочого часу на послідовне ознайомлення з текстами статей усіх 50 томів другого видання Великої радянської енциклопедії (ВРЕ), обрав джерелом інформації значні літературні та історичні твори з районної бібліотеки для дорослих. А імпульсом для такого вибору стало швидке виявлення відсутності в матеріалах ВРЕ відповідей на запитання "Чому?".

Частина А (Людинознавство-ХХ) була створена на прохання видавців молодого українського журналу "Персонал" — органу Міжрегіональної академії управління персоналом (МАУП), яка під управлінням групи ефективного менеджера й універсала-науковця Г.В. Щокіна через систему філій охопила всі терени України і стала не тільки найбільшим ЗВО, а й своєрідним "паралельним Міністерством науки та освіти". МАУП запросила автора до виконання "нестандартних завдань" ще у період початку своєї діяльності, і, схоже, залишилась задоволеною результатами (доказ — присудження статусу "Професора МАУП" та ін.).

Накопичення матеріалу для «Людинознавства-ХХ» відбувалося в радянських умовах домінування природничих наук, відносної доступності і зручності використання великої кількості друкованих джерел на кількох мовах. Це давало змогу уважно стежити за всіма головними науковими відкриттями і технологічними досягненнями; бути успішним лектором, винахідником і автором різноманітних творів різного обсягу; створити «Інтегроване природознавство» як хорошу заміну кількох предметів у старшій школі й виграти цим аж 5-річний конкурс в СРСР 1980-х років та ін. Непогана обізнаність в гуманітарній сфері у поєднанні з використанням досягнень точних наук зумовили появу подальшого тексту, який наведений без змін. Такий нестандартний варіант побудови всієї публікації став наслідком того, що схвальні вислови багатьох осіб щодо частини А засвідчували її непогану «досконалість та універсальність».

А. Основи "Людинознавства-ХХ" (стаття "Homo Sapiens: сутність і мотиви поведінки" в №6, 1998, "Персонал")

Від редакції: Чи не найважливіші для нашого життя знання – це знання про себе та інших людей. Виявляється, що в останні десятиліття виникли кілька експериментальних наук про людину – початок наукового людинознавства. Вони частково дають відповіді на «вічні» запитання: «Що відбувається в головах закоханих?», «Яка природа наших вчинків і поведінки?», «Коли людина дійсно думає, а коли лише виконує певну програму?», «Як правильно використовувати свій мозок і як слід його тренувати та розвивати?». Нижче автор обґрунтовує необхідність вивчення наукового людинознавства та використання його досягнень у педагогіці, роботі з персоналом, в оцінці своєї та чужої поведінки.

Homo Sapiens: сутність і мотиви поведінки
(Про зв'язок та відміни гуманітарних знань і наукового людинознавства)

Костянтин Корсак

Нижче викладено, поза всякими сумнівами, найважливіше з того, чим автор може поділитися з читачами, які міркують над фундаментальними проблемами сутності людини та суспільства. Їм судити про те, чи вдалося автору довести важливість об'єднання «океану» накопичених гуманітарними науками та мистецтвом знань про душу та сутність людини з невеликим «морем» надійно встановленої групою експериментальних наук інформації про природу та мотиви її емоцій, поведінки та мислення.

1. Трохи про термінологію

Може здатися дивним, але неможливо виконати короткий і точний за змістом і значенням переклад звичного нам поняття «гуманітарні науки» англійською. Перша перешкода – відмінність у розумінні слів «наука» в нас та його аналога «science» у розвинутих країнах Заходу. Читач, природно, чудово обізнаний про його значення в нас і не заперечує проти того, що науки бувають різні – природничі (фізика, хімія, біологія, геологія тощо), гуманітарні (літературознавство та критика, філософія, психологія й ін.), нарешті, головні "радянські" – науковий комунізм та історія Комуністичної партії.

На Заході про це, на жаль, не здогадуються і науками вважають тільки ті види систематизованих знань, які абсолютно вільні від будь-якого суб'єктивізму, де кожна крихта може бути перевірена і підтверджена будь-яким охочим на експерименті. Очевидно, що термін «science» у розвинених демократичних країнах відноситься виключно до природничих та точних наук.

Ту сукупність інформації, яку ми позначаємо терміном «гуманітарні науки» у країнах Заходу називають «arts», що автор може передати словом «мистецтва», попередивши читача у тому, що «arts» перекриває лише частину того, що охоплює настільки неосяжне поняття як «мистецтва». Отже, arts і гуманітарні науки мають точки дотику, але не збігаються. Головна причина – відмінність у розумінні терміна «гуманітарний» у нас та в них. У виданих в СРСР словниках термін «гуманітарні науки» передається англійською мовою словом «humanities», що далі від істини, ніж «arts».

Детальне пояснення цих тонкощів (чи «товстостей»?) надто складне і тривале, тому читачам потрібно звернутися до інших публікацій, наприклад, до статті А.О. Панича [1]. Хочемо лише виконати якесь узагальнення сказаного, чесно попередивши всіх, що словосполучення «humanity sciences» для англійця чи американця так само малозрозуміла річ, як «березовий чавун» для росіянина.

Тепер настала черга поняття «наукове людинознавство». Тут все цілком зрозуміло – такої науки немає і найближчим часом не передбачається. Його автор пропонує використовувати для загального позначення цілої групи з приблизно півдюжини нормальних природничих наук, що зухвало претендують на інструментально-приладові пошуки відповіді на ті радикальні питання сутності людини, що з доісторичного періоду були повною монополією мистецтв і гуманітарних наук. Логіка природного розвитку привела до виділення з найбільш загальних та старих окремих новіших наук – генетики етики, естетики та моралі; етології; нейро- та нейромолекулярної біології й інших, які поки що не мають усталеної назви.

За останні півстоліття вони дали світу чимало нобелівських лауреатів і досягли багато чого в поясненні природи відчуттів, почуттів та емоцій людини, причин появи, завдань та глобальних особливостей чоловічої та жіночої статі, а також багатьох інших проблем, які «завжди» були сферою досліджень гуманітарних наук.

Ці дуже міцні острівці нових наукових знань про людину не утворюють цілісної науки, але інформація в кожному з них (тим більше, в їх сукупності) має колосальне значення для кожного з нас для розуміння самого себе та інших, для педагогіки та психології, нарешті, для всіх, хто або сам є «персоналом», або щодня займається роботою з ним – контактами, обміном інформацією та емоційними станами, переконанням, організацією, примусом чи розрадою.

2. Зіставлення гуманітарної та наукової інформації

За тисячоліття у гуманітарній сфері працювали тисячі (мільйони?) вчених, дослідників та митців. Серед них були сотні (тисячі?) справжніх геніїв, десятки надгеніїв. Мистецтва та гуманітарні науки накопичили майже безмежний «океан» інформації про сутність та пристрасті людини.

На наших очах зростає важливість передачі необхідної частини цієї інформації молоді. Не тільки у нас, а й у розвинених країнах гуманізація (центрування виховання на дитині з урахуванням її прав) та гуманітаризація (розширення частки гуманітарних предметів у навчальних планах) стали не тимчасовою модою, а останньою надією у вирішенні лавини проблем у сфері відносин людей та націй, у підготовці нових поколінь до життя на забрудненій планеті під дамокловим мечем глобальних загроз їх існуванню.

Уважні та неупереджені вчені давно вже виявили грізні ознаки того, що людству загрожують незвичайні та несподівані напасті. Зокрема, вони переконані, що у частини людства, що «вирвалася вперед», цілком відчутно «їде дах» (наркоманія, культ «блакитних», агресивний фемінізм та ін.).

Ще помітніше наростання складнощів у вихованні та навчанні дітей та молоді. Процес передачі молоді найважливішої частини інформації з «гуманітарного океану» та її належної соціалізації зустрічає тим більше труднощів, чим далі віддалилося дане суспільство від стадо-племінної фази на шляху до «світлого майбутнього» під невизначеною назвою чи то «постіндустріального», чи то "інформаційного" суспільства.

Автор вважає, що значна частина проблем сучасного виховання та соціалізації до суспільства третього тисячоліття викликана кількома особливостями гуманітарної інформації та знань. Теми нашої розмови стосуються щонайменше три з них, що відрізняють її від наукових знань.

1) Кількість важливої для виховання та соціалізації гуманітарної інформації в бітах, літерах, словах, кілограмах книг або квадратних метрах художніх зображень набагато більша, ніж наукової.

2) Друковано-письмова або графічна форма зберігання гуманітарної інформації за відсутності внутрішнього логічного структурування та впорядкованості роблять її «важкою» для вивчення та для трансляції молоді. Майже все життя йде на те, щоб досягти вершин знань у будь-якій гуманітарній науці. Не дивно, що в кращих університетах світу немає завідувачів гуманітарних кафедр молодших 50-55 років, а от для природничих наук нерідкі випадки отримання світового визнання в молодшому віці.

Дуже складно передавати цю інформацію не лише дітям, а й молоді. Впродовж викладацької кар'єри автор не мав проблем з трансляцією формул математики та законів фізики, але зовсім іншою була ситуація при спробі передати набагато важливіші для самоствердження та соціалізації морально-етичні знання. Вони сприймалися молоддю не як об'єктивний і непорушний закон природи, а як сукупність суб'єктивних думок і підозрілонеобґрунтованих міркувань попередніх поколінь, які вчинили (це переконливо доводить історія) безліч помилок та малорозумних дій.

3) Але домінуючою ознакою «океану» гуманітарної інформації є відсутність у ньому засобів для відокремлення «зерна від полови», істини від сумлінної помилки або захоплюючо-логічних, але хибних, висновків та тверджень. Потрібні десятиліття вивчення вузького сектора гуманітарного океану для накопичення необхідного досвіду для напівінтуїтивної селекції тверджень, поглядів, теорій або вчень.

У сфері природничих наук бувають випадки помилкових висновків з погано проведених експериментів, чому недавніми прикладами було відкриття та вивчення «води-2» у СРСР та «холодного термоядерного синтезу» у США. Але властива науковій сфері висока захищеність від фантазій та суб'єктивізму робить подібні випадки курйозом, «дитячими помилками» окремих учених чи лабораторій.

Наприклад, «вода-2» конденсувалася зі звичайної в тонюсіньких капілярах, що розташовувалися в радянських лабораторіях з їх погано митим і спітнілим персоналом. Майже два роки, використовуючи детальні описи методики експериментів із капілярами в СРСР, американським ученим не вдавалося отримати «воду-2». Допоміг випадок – американець після спортивних занять побіг не в душ, а до «своїх» капілярів, повісивши на годину-другу спітнілий верхній одяг поряд з ними. Незабаром він отримав відмінну «воду-2», що виявилася сумішшю звичайної води та багатьох «людських ефірів». Про цей конфуз не люблять згадувати вчені з підмосковних науково-дослідних інститутів.

Кожен новий, незвичайний та просто цікавий експеримент обов'язково перевіряється та вдосконалюється в інших ще більш кваліфікованих колективах та лабораторіях. Отримані дані уточнюються, обговорюються і лише після підтвердження у багатьох лабораторіях вносяться до довідників та описуються у підручниках.

Немає нічого схожого на ці надійні правила відбору та селекції у «гуманітарному океані», інформація якого нескінченно далека від жорстких правил багаторазової перевірки істинності та об'єктивності, винайдених у сфері природничих наук. Не тільки картина, опера чи художня книга, а й колективна монографія чи підручник з гуманітарної науки є не збіркою непорушних законів природи, а суто суб'єктивним розумовим продуктом, що спирається на індивідуальну чи колективну думку або переконання (найчастіше – упередження).

Найпомітніше це негативне явище в тих галузях гуманітарних знань, що стосуються уявлень про формування людської індивідуальності, розумового процесу, почуттів та емоцій, мотивів вчинків людини тощо. Інтернаціоналізація та глобалізація соціально-економічних контактів не усунула, а посилила це явище, оскільки до десятків вітчизняних ідей та теорій додала (або зробила доступними для ознайомлення) сотні іноземних. Для молоді ускладнився вибір гідних запозичення зразків, знизилася ефективність всього процесу виховання та соціалізації. Незважаючи на розширення систем освіти постійно зростають масштаби відхилень від суспільно раціональних та корисних стереотипів індивідуальної та колективної поведінки. Ускладнилося індивідуальне планування майбутнього, вибір шляху саморозвитку та самореалізації.

3. Формулювання проблеми «наукове людинознавство та гуманітарні науки»

Автор статті не вважає себе вченим, що процвітає в галузі людинознавчих наук. Після здобуття непоганої природничої середньої та вищої освіти, забезпечення свого існування виконанням вимог щодо наукового ступеня тощо, довелося працювати на стику світів точних та гуманітарних наук. Чисто особисті мотиви стали причиною того, що більшість вільного часу йшла на вивчення іноземних мов та використання їх для ознайомлення з основними досягненнями природничих наук взагалі, а також у галузі дослідження природи та сутності людини, зокрема.

Вдалося, звичайно, ознайомитись лише з частиною досягнень людинознавчих наук, доступною за іноземними журналами із Центральної наукової бібліотеки НАН України, інших бібліотек Києва тощо. Але навіть ця напівфрагментарна інформація багато років вірою та правдою слугувала автору у випадках його «вторгнення» в гуманітарну сферу, спілкуючись із учнями шкіл, студентами вузів, колегами. Уроки та лекції ставали не просто цікавішими для слухачів – у багато разів підвищувався коефіцієнт їхнього виховного та орієнтуючого впливу на аудиторію.

Наприклад, одного разу три студенти самі зав'язали з автором розмову з метою подякувати за його давню півгодинну лекцію про емоцію кохання, про природу та важливість «стану Ромео та Джульєтти». Хоча їхнє резюме про те, що «Ці роки довели нам – Ваша лекція про кохання дала нам набагато більше, ніж півтора десятки уроків шкільного курсу з етики та естетики сімейного життя» сильно "віддає" юнацьким максималізмом, цей епізод був для автора ще одним доказом того, що виклад законів природи, які керують емоціями людини, є найкращим із відомих йому способів позитивного впливу на молодь, опорою для розуміння себе та інших, для правильного стратегічного планування життя та відносин з іншими людьми. Це факт, що у поєднанні з викладом інших досягнень нейромолекулярної біології ознайомлення дітей та підлітків з науковою теорією емоцій є ефективним засобом створення негативного імпресингу по відношенню до алкоголю, наркотиків та інших способів безглуздого пошкодження системи рекомпенсації (задоволення) у мозку людини, отже, реально ефективним і простим засобом запобігання алкоголізму, наркоманії та інших відхилень у поведінці.

Якщо зробити узагальнення, то останні два десятиліття принесли автору цієї статті масу доказів того, що відома йому інформація з людинознавчих наук є незамінним засобом відділення «зерна від полови» практично в усіх серйозних гуманітарних науках про людину – педагогіці, психології, соціології, політології, суспільствознавстві та ін. Підкреслимо, що досягнення цих наук жодною мірою не знецінили «гуманітарний океан», не принизили велич геніїв, які силою «голого інтелекту» відшукали і сформулювали «зерна істини» за десятки і сотні років до того, як генетик, етолог або нейробіолог повторили та підтвердили ці відкриття гуманітаріїв у дуже «полегшених» умовах, оскільки спиралися на експеримент і використовували всю інструментальну міць сучасних природничих наук.

Отже, читачі повинні знати, що людинознавчі точні науки вже перетворили помітну частину суб'єктивних здогадів гуманітаріїв на непорушні та об'єктивні закони природи, непідвладні дискусіям чи сумніву, розв'язній критиці чи запереченню, бо це не приватне враження чи випадкові міркування одного індивідуала.

Тож у чому полягає проблема, проголошена у назві? Чи не є вона особистою проблемою автора?

Ні звичайно ж. Особисті проблеми не варто похопливо виносити на загальний огляд і неконструктивно відволікати інших людей на їхнє сприйняття та обговорення (хоч багато представників мистецтв займається саме цим).

Мотиви написання цієї статті в тому, щоб звернути увагу шановних читачів як на факт існування «моря» природничо-наукової інформації про «душу» та сутність людини, так і на виняткову важливість та ефективність застосування її у навчанні та вихованні молоді, в її соціалізації, у саморозвитку та самовдосконаленні, у спілкуванні з іншими людьми тощо.

Для автора статті все поставлене перед собою та іншими завдання розпадається на дві проблеми. Менша проблема – успішне подолання незнання, напівзнання, скепсису та упереджень, поява у читачів інтересу чи переконання у необхідності витрат певного часу на самостійне ознайомлення з досить складною інформацією. На щастя, з кожним роком зробити це все легше та легше. Якщо в 60-70-х роках мова могла йти про наукові статті чи монографії нобелівських лауреатів чи відомих вчених, то зараз є публікації і російською мовою з доступним для всіх читачів «Персоналу» викладом. Приклад – зазначені у списку літератури праці з етології [2; 3] та одна (70-х років) – з генетики [4].

Велика проблема – об'єднання зусиль гуманітаріїв та природників для максимально повного та ефективного використання згаданих досягнень у дослідженні сутності людини у найрізноманітніших сферах – від дитячого садка до післяуніверситетської освіти, від навчання іноземної мови до роботи з персоналом, від сім'ї до Верховної Ради. Про надзвичайну складність реалізації цього плану свідчить і набутий особистий досвід.

Недовгий інтервал часу автор представляв Україну в Комітеті з освіти в Раді Європи. У процесі ознайомлення з реалізованими програмами та проектами у сфері вдосконалення навчання та виховання впала в очі вузькість теоретичної бази, опора лише на «західну» частину гуманітарної інформації, ігнорування досягнень «західних» природничих наук. Годинна лекція автора переконала колег у потенційній важливості наукової інформації про людину, але не призвела до будь-яких зрушень чи змін у проектах. По-перше, колеги з розвинених країн повідомили, що уявлення не мали про те, що пишуть їхні наукові журнали, оскільки вони їх не читали і не збираються це робити. Готуючись до роботи в гуманітарній сфері, у школі вони майже не вивчали природничі науки, тому навіть науково-популярні статті з генетики, нейробіології чи іншої науки їм незрозумілі та майже марні. По-друге, ініціатором серйозного нового проекту щодо використання досягнень згаданих наук у гуманітарній сфері не може бути одна людина або відділ Ради Європи, на це має право лише країна-учасниця цієї організації.

Ця малообіцяюча ситуація додатково обтяжується деякими елементами упередження частини західних учених щодо значення здобутків наукового людинознавства. Довелося навіть зіштовхуватися з ярликом «с'янтист», вживаним окремими гуманітаріями для узагальненого позначення тих нахабників, що з «амперметрами і пробірками» намагаються «розібратися» з піднесеними поривами творчих особистостей, грубо втрутитися у пояснення і трактування сприйняття, в емоції. Таке аксіоматичне відкидання нового обіцяє великі проблеми у дилемі «гуманітарні – наукові знання».

Автор бачить принаймні дві причини надзвичайної складності реалізації співпраці вчених із цих двох сфер та практиків із систем виховання та роботи з людьми.

Перша (і головна) випливає з того, що вчені-природознавці зазвичай є вузькими фахівцями, що досліджують, наприклад, вплив молекул певного типу на деякі зони нашого головного мозку. Вони друкують отримане в журналах, з якими знайомляться кілька десятків чи сотень колег з усього світу. Вчені-гуманітарії вчилися та формувалися на матеріалах своїх наук, тому їм складно (якщо не неможливо) повністю і без спотворень сприйняти та використовувати нову інформацію з людинознавчого «моря».

Друга перешкода більш суб'єктивного, хоча по-людськи і зрозумілого походження. Йдеться про те, що у разі досить повного сприйняття та розуміння гуманітаріями сенсу наукових відкриттів та досягнень у галузі пояснення сутності та мотивів дій людини, вони надто часто жахаються та прагнуть відкинути їх геть як породження зла чи виродженого диявола. Надто високої думки вони про людину, надто рідко замислюються над обґрунтованістю самопроголошення останньою своєї повної розумності (точніше – «двічі» розумності) при повному небажанні запитати когось про істинність цього!

Відкриття людинознавчих наук незаперечно свідчать про те, що багато широко розповсюджених, ретельно сформульованих і «дуже правильних» уявлень гуманітаріїв про сутність людини, мотиви її індивідуальних і суспільних вчинків та поведінки є міфами і помилками, дотримання яких ускладнює соціалізацію нових поколінь, створює труднощі і перешкоди в своїх та чужих реакціях та діях.

Відмінний приклад – ставлення гуманітаріїв до наукових здобутків австрійського етолога, лауреата Нобелівської премії Конрада Лоренца.

Як відомо, у перекладі з грецької мови «етологія» звучить майже як «вчинкознавство», «поведінкова наука». Це суто експериментальна «онука» біології, яка шукає та знаходить природні матеріальні пояснення реакцій та дій поведінкового (behavioural) характеру розвинених живих істот. Вона одна з перших зазіхнула на пошуки правильної відповіді на запитання «Коли ми, думаючи, що думаємо, мислимо насправді і наскільки саме, а коли всього лише використовуємо мозок для формального обґрунтування неусвідомлених програм і діємо як звичайні автомати ?».

Саме етологія людини викликала чи не рекордну ненависть у політичних керівників СРСР, а тому була категорично заборонена і невідома у своїх вищих здобутках аж до його повного та остаточного розвалу. Чесно кажучи, вона цілком заслужила на таке ставлення, оскільки ще в 70-х роках довела жахливу істину – для побудови ідеального комунізму з наявним людським матеріалом необхідно замінити мозок людини на мозок, наприклад, термітів. Очевидно, що саме цим так старанно і довго займалися в минулому Ленін, Сталін та Суслов «з товаришами».

Отже, поки К. Лоренц займався вивченням поведінки каченят, відкриттям явища імпринтингу та демонстрацією перед кінооператорами того, як весело «імпринтизовані» каченята бігають за ним у магазини та кінотеатри, вважаючи його своєю «натуральною мамою», його праці перекладалися і видавалися в СРСР. Перші прокляття від комуністів і західних «ліваків» він заслужив тоді, коли, виявивши різницю між нейтральними та емоційними реакціями живих істот на фактори навколишнього середовища, виключно невдало назвав останні «агресією» і досліджував їх значення у виживанні біологічних видів. Досі бідолаху Лоренца згадують як апологета війни та ненависті, співака та натхненника внутрішньої агресивності людини, вченого, який виправдовував насильство на підставі його «природності та корисності для виживання людського виду». Якби в останній пропозиції була хоч крихта правди, варто було б і подискутувати з критиками К. Лоренца. Насправді йдеться про вигадки та фантазії, що спираються (у кращому випадку) на лексичні промахи та невдалі приклади прояву закону емоційної реакції.

Але ще більші неприємності настали для К. Лоренца після відкриття ним (разом з М. Тінбергеном) закону природної (біосферної) моралі. У скороченому (і спрощеному) вигляді він виглядає так:

> мораль даного розвиненого біологічного виду прямо пропорційна «озброєності» кожного його представника.

Абсолютність зброї однозначно гарантує абсолютно якісну мораль як повну заборону використання цієї зброї під час будь-якої гарячої конкуренції за кормову територію або прихильність самиці. Слабкість чи відсутність смертельної зброї дуже погіршує мораль… аж до перетворення виду в «аморальний».

У результаті ідеальною мораллю відрізняються отруйні змії, добре озброєні великі хижаки тощо. Майже немає моралі в сімействі курячих та інших слабкоозброєних птахів і ссавців. Під час бійок практично відсутні правила, а той, хто програв, повинен тікати без зволікань, інакше він неминуче загине.

У людини К. Лоренц виділив подвійність видової моралі, близьку до видів зі слабким озброєнням особини. Щодо «своїх» людська мораль має помітні позитивні аспекти, бо і без попереднього навчання людина знає, що вдарити «свого» – поганий вчинок (хоча, на відміну від кобр чи гримучок, не має вродженої заборони на негативні дії по відношенню до «своїх»). Зате дуже погана мораль стосовно «чужих». Погані вчинки не тільки не заборонені генетично, людина ще й вихваляється ними перед «своїми», а «свої» керівники стада, племені, народу чи «держави» без жодних сумнівів проголошують убивцю «чужих» великим героєм і обвішують його нагородами.

Багатьох гуманітаріїв Заходу, особливо з франкомовних країн, де вершинним досягненням вчення про людину вважають погляди та ідеї Руссо, дуже шокували висновки із закону природної моралі у застосуванні до людини. З цього закону і низки досягнень генетики виплював більш ніж неприйнятний для гуманітаріїв висновок про те, що новонароджений зовсім не є «чистосторінковим янголятком», а «павіанчиком», що цілком сформувався, з вираженою програмою поганого ставлення до всіх, кого він відносить до «чужих». Напевно, образливе слівце «сьянтизм» було винайдено кимось із гуманітаріїв саме у цей період.

Подібне ставлення багатьох «західних» гуманітаріїв (втім, це стосується і «наших», хоча вони зовсім не знайомі з досягненнями природничих наук і лають їх, так би мовити, «про запас» [5]) до досягнень наукового людинознавства автор вважає необґрунтованим і помилковим а головне – неконструктивним. Повне їх заперечення унеможливить застосування інновацій у вихованні та соціалізації молоді, ускладнить боротьбу з наркоманією, самогубствами та масою інших проблем.

Підкреслимо, що завдання виховання та навчання полягають не у заповненні «руссоподібно-чистого» листа новонародженої людської душі правильними каракулями та фразами, а у подоланні (майже «стиранні») природних програм та заміні на інші, потрібні в наш час. Вроджена мораль майже ідеально пристосована для племінного суспільства, коли мало «своїх» і надто багато довкола «чужих». У ньому, і це доводять спостереження етнологів, мало проблем із вихованням та соціалізацією нових поколінь.

Сучасне наше буття ультимативно вимагає віднесення до «своїх» всіх і всяких, інакше не буде надій на виживання та стабільний розвиток всього людства. Автор вважає, що подолання природних та національно-патріотичних стереотипів у вихованні та навчанні, у формуванні придатних для життя в демократичному суспільстві комплексу цінностей та стандартів колективної поведінки може вельми сприяти взаємодія гуманітаріїв та «людинознавців»-природників. В індивідуальному плані досягнення етології, наук про мозок, генетики та інших дадуть зовсім іншу – міцну і перевірену – основу рефлексії, для тактичного і стратегічного планування своїх дій.

4. Деякі висновки

А чи може автор гарантувати успіх у подоланні всіх перерахованих (як і неназваних) проблем у разі згаданої, розрекламованої ним, але так і не викладеної систематично інформації?

Якщо відверто – не може. Тим більше, що вже були випадки більш менш «успішного» провалу застосування окремих наукових досягнень (приклад – прикладної психології до проблем виховання на початку XX ст. Втім, вона лише частково може бути віднесена до природничих наук).

Але, зрештою, лише практика ставить усе на місця і відокремлює корисне від помилкового. Ось уже понад 15 років автор використовує відомі йому фрагменти «моря» природничо-наукової інформації про людину і жодного разу не пошкодував про це, не виявив її марності чи надмірності. Особливо слід зазначити, що вона має ту методичну перевагу, що залишає кожного її власника перед особистим вибором – враховувати її чи ні. Переконавшись, що йдеться про закони природи, молодь ніколи не відкидає її, а в міру своїх здібностей та можливостей використовує як основу для рефлексії та дій.

Поки що автор залишає читача перед вибором – знайомитися з «науковим людинознавством» чи ні. У разі позитивної відповіді автор запрошує його пошукати рекомендовану літературу або зачекати на наступний випуск «Персоналу», де, можливо, буде продовжено цю тему.

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ВИСНОВКИ до частини А

Насамперед нагадаємо про те, що частина А була мало не безмежно універсальною і загальною. Аж до рівня ігнорування статі й інших не менш важливих характеристик Homo Sapiens Sapienses (HSS) що дало змогу пояснити цінність загальних досягнень молодих людинознавчих наук ХХ ст., але без акцентування конкретних порад для представників основних груп людства.

Та був інший великий недолік у нашому викладі «Людинознавства-ХХ», що полягав у незалученні великої кількості інформації з гуманітарної сфери знань, свідомому небажанні наведення міркувань представників різних держав і відмінних (часто - протилежних) наукових поглядів. В умовах перебування усередині «залізної завіси» упродовж навчання в середній школі, виробничого досвіду за верстатом і просто буденного життя доволі рано сформувалася упередженість у застосуванні слова «наука» не тільки до радянських ідеологічних штибів, а й до «Історії». Ось факт: упродовж одного навчального року нам спершу назвали імама Шаміля (1797-1871) ідеальним героєм визвольної боротьби народів Кавказу, потім двічі наводили «виявлені докази» його зловорожої продажності, але перед літніми канікулами радісно повідомили, що «згадані докази» були просто пізніми підробками, а не автентичними документами. Після такого навчального досвіду мимоволі відсунешся якомога далі від отримання професії в ідеологічно-гуманітарній сфері й обереш фізику чи астрономію, де горують Закони Природи, а не рішення чергового Пленуму ЦК Комуністичної партії СРСР.

Вказаного рішення ми дотримувались і в університеті на фізичному факультеті, і пізніше впродовж різноманітної фахової діяльності. З очевидною обережністю не тільки висловлювалися на власних лекціях і в оприлюднених творах, а й оминали пояснення студентам того, чому в СРСР всі африканські націоналісти вважалися позитивно-прогресивними особами, а от українські проголошувалися набагато чорнішими і небезпечнішими від рогатих чортяк і канібалів. У неминучих в роботі університетських викладачів ситуаціях потреби висловити власну думку щодо «гострих запитань» студентів щастило надати цілковито переконливі пояснення на основі звернення до вже достатньо відомих Законів Природи і правил логічно-критичного мислення.

Мети цієї статті безпосередньо стосується епізод з вересня 1972 року, коли один зі студентів запропонував нам негайно перейти з української мови на російську на підставі її «набагато вищої наукової розвиненості». Читач може поглянути на опис дій автора в створеній ним доволі вдалій статті з пропозицією «Української Ідеї-ХХІ» в органі НАН України з назвою «Світогляд» (URL: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mao.kiev.ua/biblio/jscans/svitoglia d/svit-2015-10-2/svitoglyad-2015-2-13-korsak.pdf). Студенти визнали безперечно вищу досконалість української мови й набагато вищу тривалість її існування й розвитку. Через 30 років наші припущення підтвердили прямими генетичними дослідженнями науковці РАН, але В. Путін заборонив поширювати ці нові факти в державних ЗМІ Росії. Там буяють цілковита брехня, міфи і фантазії. Не дивно, що держава є «раковою пухлиною».

Ми постійно цікавилися й накопичували факти про світоглядну, наукову і цивілізаційну діяльність всіх видатних українських мудрагелів, але змушені були рахуватися і з існуванням заборон на доступність багатьох творів, і з тенденційністю описів інших в радянській інформаційній сфері. Ми попереджали своїх студентів про те, що рекордно шкідливою для них є вся гігантська радянська серія книг з назвою «Жизнь замечательных людей», адже на базі цієї феноменальної ідеологічної брехні неможливо стати незалежною особистістю з критичним мисленням.

З усієї сфери нашого незнання чи часткового невігластва нас найбільше цікавили пошуки правди про справжнє походження всього нашого українського архетипу, причини його відмінностей не тільки від російського, а й від західноєвропейського (атлантичного), витоки цивілізаційного дива з назвою «Трипільська культура» і все подібне. Ми здогадувалися і про «видатні радянські обмеження» в сукупності інформації про великих українських геніїв — Г. Сковороду, Т. Шевченка, Г. Кочура, В. Вернадського, М. Грушевського й багатьох інших особистостей.

Тому в момент створення нами «Людинознавства-ХХ» не мали достатніх знань навіть для коротких фрагментів опису найвидатніших гуманітарно-наукових і світоглядних досягнень українських наукових, літературних, історичних й інших геніїв. Період відновленої незалежності Вітчизни і прискорений поступ світової науки дав нам у новому столітті багато різноманітної інформації й сприяв здійсненню багатьох різноманітних відкриттів (частина описана у Вікі-статті «Костянтин Корсак»).

№1 серед них — виявлення в 2000 р. рятівних для людства екологічно ідеальних ноотехнологій (ноосферних процесів), а от №2 ми вважаємо акумуляцію доказів того, що «повна історія» носіїв українських генів налічує 50 тис. років і відзначається кількома мегаподвигами пращурів, які кожного разу рятували всю популяцію Homo від смертельних загроз й забезпечили появу в сучасного людства його найбільш цивілізованих і високоморальних рис. Ось їх стислий опис: 1) перехід Homo від канібалізму до гуманізму та винайдення продуктивного с/г (Близький Схід, 15-8 тис. р. тому), 2) індоєвропейське одуховлення світу (Трипілля і Велике Трипілля, 7-4 тис. р. тому); 3) винайдення першої на планеті універсальної монотеїстичної релігії (Вел.Трип., Синташта, Заратуштра, 3700 р. тому); 4) план ноосуспільства (1922-1925, Париж, В. Вернадський). А у 2022 році Бог обрав нас для знищення останньої в історії людства «імперії ЗЛА». Додаткові пояснення будуть у Статті-2 (Ноолюдинознавство-XXI).

Geological and Mineralogical Sciences

TECHNOLOGY OF SATELLITE AND PHOTO IMAGES FREQUENCY-RESONANCE PROCESSING: ON PROSPECTS OF LARGE OIL AND GAS FIELD DISCOVERING WITHIN IRONBARK STRUCTURAL UPLIFT ON AUSTRALIAN OFFSHORE

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Annotation. The results of application of mobile direct-prospecting technology of frequency-resonance processing and interpretation of satellite images and photographs at the areas and sites of exploratory wells drilling on the Australia offshore and onshore are presented. Experimental research of a reconnaissance nature was carried out with the aim of demonstrating the efficiency, effectiveness and informativeness of direct-prospecting methods. During frequency-resonance processing a satellite image of the Ironbark-1 well location site at December, 2020, signals of oil, condensate, gas, and phosphorus (white) were recorded from the surface and on the hydrocarbon's synthesis surface of 57 km. Signals of the 7th group of sedimentary rocks (limestones) have been registered also. The root of the limestone-filled volcano was identified at a depth of 723 km. The migration of gas and phosphorus into the atmosphere was confirmed by instrumental measurements. Such results allow to conclude about high probability of hydrocarbon deposits detecting within the Ironbark-1 well drilling area. Unfortunately, the Ironbark-1 exploratory well drilled within the structure at the end of 2020 was declared empty. But the results of investigation at December, 2020 allowed the authors to conclude that the Ironbark-1 well has not been drilled to productive horizons (intervals)! On August 20, 2023, additional instrumental measurements were carried out at the drilling site with procedures of cross-section vertical sounding using. During cross-section scanning from 5630 m to 7000 m, step 5 cm, responses at oil frequencies were recorded from the following intervals: 1) 5634.5-5824 m, 2) 5843.5-6252 m, 3) 6368-6718 m. From the interval of 7-10 km, responses at the frequencies of oil were also recorded. Oil signals were recorded again at a depth of HC synthesis of 57 km! The results of scanning at the drilling site confirmed the authors assumption that the Ironbark-1 well was not drilled to productive intervals and suggest also that there is a major oil and gas deposit within the Ironbark structure! In this regard, it is advisable to continue further prospecting and the wells drilling within its limits. In order to demonstrate the additional possibilities of direct-prospecting methods, the results of a reconnaissance survey at the drilling sites of three more wells on the Australia offshore and onshore are presented in paper also. Reconnaissance studies carried out on the offshore and onshore of Australia indicate that mobile direct-prospecting methods can be used to assess the prospects of oil and gas potential (ore potential) of large prospecting blocks and local areas (including those put up for auction), the selection of optimal locations (sites) of exploratory and production wells, assessment of the prospects of oil and gas deposits discovering in the deep horizons of cross-section, searches and localization of deep channels for the migration of chemical elements, fluids and mineral matter into the upper horizons of cross-section. The use of mobile and low-cost technology will significantly speed up the geological exploration process for hydrocarbons, natural hydrogen, ore minerals, as well as reduce financial costs for its implementation.

Keywords: Australia, offshore, Ironbark uplift, onshore, wells drilling, oil, gas, limestones, migration of gases, abiogenic genesis, volcano, direct prospecting, deep structure, seismic section, amber, chemical elements, sounding of cross-section, remote sensing data processing.

Introduction

Starting from 2019, the super-mobile direct-prospecting technology of frequency-resonance processing and decoding of satellite images and photographs [1-2] is undergoing (and will continue to undergo) large-scale testing in various regions of the globe in order to study the possibilities of its practical application for the prompt solution of various geological and geophysical problems, searches for deposits of ore and combustible minerals, including [3-8]. The technology testing was carried out within large blocks and small exploratory areas for the purpose of an integral assessment of oil and gas potential prospects, in areas of volcanic complexes of various types location, as well as on some planets and satellites of Solar system.

To demonstrate the operability and efficiency of direct-prospecting technology, a purposeful survey of areas and local sites for drilling exploratory wells on land and shelf in various regions is carried out [9-15]. The survey of drilling exploratory wells areas is also carried out in order to develop and improve the methodology of instrumental measurements conducting, taking into account the peculiarities of the geological structure of blocks, local areas and drilling sites. In some areas of drilling, instrumental measurements are carried out additionally (repeatedly) if the results of the first stage of work differ significantly from the results of drilling.

This article presents the results of approbation of mobile direct-prospecting methods in the areas of several exploratory wells drilling on the shelf and land of Australia. The main goal of the authors of the experimental work is to draw the attention of specialists to the Ironbark structural uplift, within which there are prospects for discovering a large oil and gas field [16-18]. Unfortunately, the Ironbark-1 exploratory well drilled within the structure at the end of 2020 was declared empty [19-20]. However, the results of processing the satellite image of the drilling site allow us to draw a fairly reasonable conclusion that the Ironbark-1 well has not been drilled to the productive horizons of cross-section. Therefore, prospecting and drilling of wells within the Ironbark large structural uplift should be continued.

The problem of low efficiency of exploration work for oil and gas also analyzed and commented in the article.

Research methods

Experimental studies of a reconnaissance and detailed nature are purposefully carried out using mobile methods of satellite images and photographs frequency-resonance processing and decoding, vertical scanning (sounding) of cross-section in order to determine (estimate) the depths and thicknesses of various rock complexes and sought minerals, as well as methods an integral assessment of the prospects for oil and gas potential (ore content, water content) of local areas and large blocks [1-15]. Some methods of the technology used are based on the principles of the "substance" paradigm of geophysical research [21], the essence of which is to search for a specific (searchable in each individual case) substance – oil, gas, gas condensate, gold, iron, water, etc. The developed methods are based on the standing electric waves discovered by Nikola Tesla in 1899 in the deep horizons of the Earth [22-23]. Mobile technology as a whole, as well as its individual methods, are actively used in the testing mode to search for hydrocarbon accumulations at the initial stages of the geological exploration process, including for the integral assessment of the oil and gas potential of large and hard-to-reach blocks and areas, as well as local areas of prospecting and exploratory wells drilling.

In modified versions of the methods of satellite images and photographs frequency-resonance processing, as well as vertical sounding (scanning) of cross-section, bases (sets, collections) of chemical elements, minerals, rocks and minerals (specific samples) are used [1]. Thus, the collection of oil samples used in instrumental measurements includes 117 samples, gas condensate – 15 samples (Fig. 1) [1].

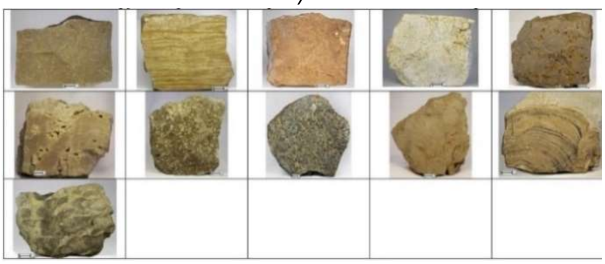
The set of photographs of sedimentary rocks consists of 11 groups: 1) psephites, monomineral conglomerates (22 samples, sample numbers in the set are 2-23); 2) psammites (18, 25-42); 3) silts, mudstones, clays (6, 44-49); 4) kaolinite mudstones (6, 51-57); 5) kaolinite clays (10, 59-68); 6) sedimentary-volcaniclastic rocks; tuff breccias (9, 70-78); 7) limestones (24, 80-103) (Fig. 2b); 8) dolomites (11, 105-115) (Fig. 2c); 9) marls (10, 117-126) (Fig. 2d); 10) siliceous rocks (13, 128-140), salt.

The database of photographs of igneous and metamorphic rocks includes 18 groups: 1) granites and rhyolites (29 samples, sample numbers in the database are 1-29); 2) granodiorites and dacites (7, 31-37); 3) syenites and trachytes (18, 39-56); 4) diorites and andesites (14, 58-71); 5) lamprophyres (14, 73-86); 6) gabbro and basalts (32, 88-119) (Fig. 2a); 7) non-feldspar ultramafic rocks (20, 121-140); 8) feldspathoid syenites and phonolites (23, 142-164); 9) feldspathoid gabbroids and basaltoids (6, 166-171); 10) feldspar-free ultramafic and mafic rocks (10, 173-182); 11) kimberlites and lamproites (20, 184-203); 12) non-silicate carbonatites (8, 205-212); 13) metamorphic granulites (10, 214-223); 14) metamorphic gneisses (26, 225-250); 15) metamorphic crystalline schists (44, 252-295); 16) metamorphic microcrystalline schists (phyllites) (11, 297-307); 17) metamorphosed slates, cleaved sandstone (1, 308); 18) metamorphosed slates, cleaved siltstone (1, 309).

Fig. 1. Photographs of oil and gas condensate samples.

a)

b)



c)

d).

Fig. 2. Photographs of rock samples whose resonant frequencies are used during images processing [24]: a) 6th group igneous rocks (gabbros and basalts); b) 7th group sedimentary rocks (limestones); c) 8th group sedimentary (dolomites); d) 9th group sedimentary rocks (marls).

Photos of the used sets of samples of sedimentary, metamorphic and igneous rocks are borrowed from the electronic document [24]. Let us add to this that in our publications the rock classification proposed by the authors of the document [24] is also used.

Materials of earlier experimental studies, obtained with the used set of mobile direct-prospecting methods, are presented in publications [1-15]. The same articles describe the methodological features of measurements during the satellite images and photographs processing using the developed technical means.

When conducting numerous studies using the described direct-prospecting methods in 2019-2023, the optimal procedure (processing graph, sequence of actions) was worked out (and constantly improved), which is used when carrying out work within the blocks and areas of survey. The used processing graph for a separate satellite image (or its local fragment) includes the following sequence of actions (steps).

1. Fixation from the surface of the presence (absence) of responses (signals) from the following set of minerals: oil, condensate, gas, amber, oil shale, argillic breccia, gas hydrates, ice, coal, anthracite, hydrogen, living water (deep), dead water, diamonds, brown coal, iron ore, potassium-magnesium salt, sodium chloride salt (hereinafter simply salt).

2. Registration of responses from the groups of sedimentary, metamorphic and igneous rocks that make up the cross-section.

3. Establishing the presence of deep channels (volcanoes) filled with various groups of rocks in the survey area; determination of the depths of the roots of volcanoes location.

5. Determination of groups of rocks (or individual samples of groups), from which signals are recorded at the frequencies of oil, condensate, gas and water (deep).

6. Establishing the presence (absence) of responses from oil, condensate and gas at the surface (depth) of 57 km - the boundary of hydrocarbon synthesis in deep channels (volcanoes), filled with certain groups of rocks.

7. Establishing the presence (absence) of responses from water (deep) on surfaces (depths) 59 km, 68 km, 69 km - the predicted boundaries of water synthesis in volcanoes of a certain type.

8. By scanning a cross-section with different steps from the surface up to 15 km, depth intervals are determined, within which responses are recorded at the resonant frequencies of oil, condensate, and gas. Refinement of the depths of location of the most promising for hydrocarbons intervals of cross-section during additional scanning with a finer step.

9. In case of detection of responses from the 6th group of igneous rocks (basalts) on the surveyed area, an assessment is made of the depth of the upper boundary (edge) of basalts, as well as the depths of the beginning of recording responses at resonant frequencies of hydrogen and living (healing) water from basalts.

10. When establishing the presence of signals from the 11th group of igneous rocks (kimberlites) in the survey area, the depth of the upper edge of the kimberlites is determined, as well as the depth interval within which responses are recorded at diamond frequencies.

Given the reconnaissance nature of the studies performed, the described set of separate procedures for satellite images processing in full was not implemented in all surveyed areas.

Once again, we focus on the distinctive feature of the direct-prospecting frequency-resonance methods being developed. Unlike classical geophysical methods, the methods used make it possible in each specific case to fill the cross-section under study with the complexes of sedimentary, metamorphic and igneous rocks present in it, as well as to determine in the first approximation (and refine at the stages of detailing) the intervals of cross-section that are promising for the detection of combustible and ore minerals, immediately, in the process of measurements (registration of signals) by the developed instrumentation and measuring devices (i.e. without additional stages of modeling and geological interpretation of the results of instrumental measurements). In this article, as well as in other published materials, the emphasis is mainly on the presentation of measurement results.

We also note that the developed technology uses the frequency-resonance principle of the useful signals' registration [21]. Satellite images or photographs of research objects, as well as photographs of rock samples, minerals and chemical elements, are, in principle, antinodes of standing electric waves, discovered by Nikola Tesla in 1899 in deep horizons of the Earth [22-23].

When carrying out instrumental measurements using the developed computerized complexes, the spectra of satellite or photographic images of objects studied are sequentially compared with the spectra of rock samples, the desired minerals and chemical elements. In the process of comparison, the measuring unit registers resonances (electromagnetic responses), which make it possible to draw a conclusion about the presence (absence) of specific rocks, the desired minerals and chemical elements in the cross-section of the object of study. Such features of the developed methods of satellite images processing and decoding are the basis for the use of the terms "frequency-resonance technology" ("frequency-resonance methods").

The processing of satellite images and photographs is carried out in laboratory conditions, without organizing and conducting field geological and geophysical studies. This provides an opportunity to quickly conduct research in any region of the globe, and, consequently, developing technology is super-mobile.

In addition to what was said in the previous paragraph, it is worth adding the following. As a result of testing and practical application of the developed measuring equipment in various regions of the world, numerous evidences (facts) have been obtained in favor of the "volcanic" model of the formation of many structural elements of the Earth (and other planets and satellites of the solar system), as well as deposits of combustible and ore minerals (hydrogen and water as well). Instrumental measurements established the existence of 10 types of volcanic complexes filled with various types of rocks. And what is characteristic, the roots of all volcanoes are almost always fixed by scanning the cross-section at the same depths, namely: 95-98 km, 214-218 km, 470 km, 723 km, 996 km.

It is quite natural that the depths of the roots of 470 km or 723 km of a salt or dolomite volcano cause rejection and skepticism among many experts. We also note that at the initial stages of the technology testing, such depths of roots were also surprising to the authors of the experiments. However, the ubiquitous repetition of such depth values during many hundreds of measurement experiments gives grounds for the assumption that such strictly predetermined values of the depths of the roots of various volcanic complexes are due to certain wave processes in the solar system and our galaxy.

In this regard, it is only regrettable that such skepticism in relation to the depths of the roots of volcanoes is automatically (without detailed consideration and analysis of materials) transferred to the results of instrumental measurements in the upper part of cross-section accessible for drilling.

Ironbark-1 well drilling site (offshore Australia)

The information about the Ironbark-1 well drilling on the Australian offshore (at stage of 460 m to the first target horizon) was received from document [16-18]. Figure 3 shows the position of the WA-359-P license block, within which the Ironbark-1 well is located, and Fig. 4 – contours of the Ironbark large structural uplift, as well as gas fields, located in this region.

The coordinates of the well (116°04'35.80"E, 19°09'34.01"S) are taken from the document [17]. The prepared satellite image of the drilling area is shown in Fig. 5.

At December, 2020, during frequency-resonance processing of a fragment of a satellite image (rectangular contour in Fig. 5) of the local drilling site of the Ironbark-1 well, **signals (responses) of oil, condensate, gas, and phosphorus (white) were recorded from the surface.**

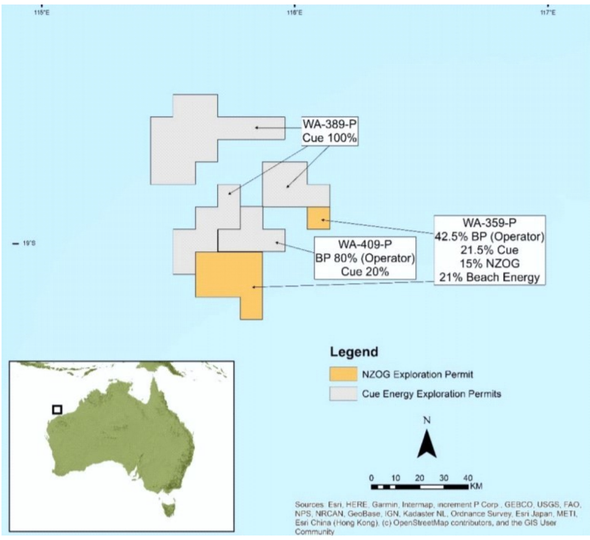


Fig. 3. Ironbark well location map [16].

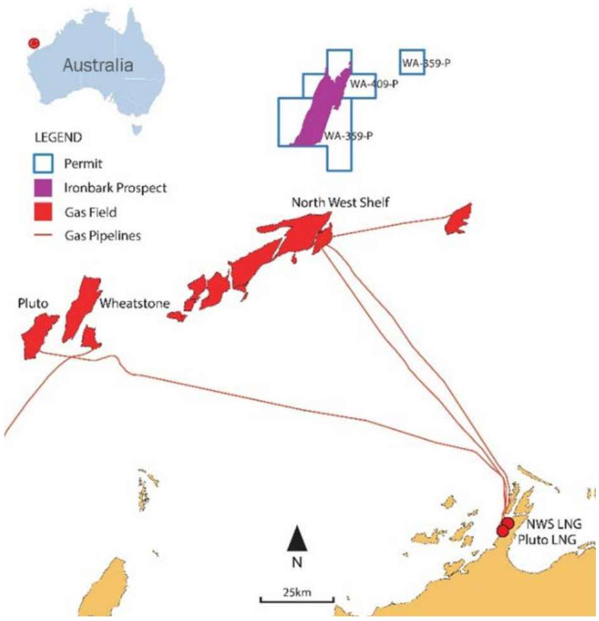


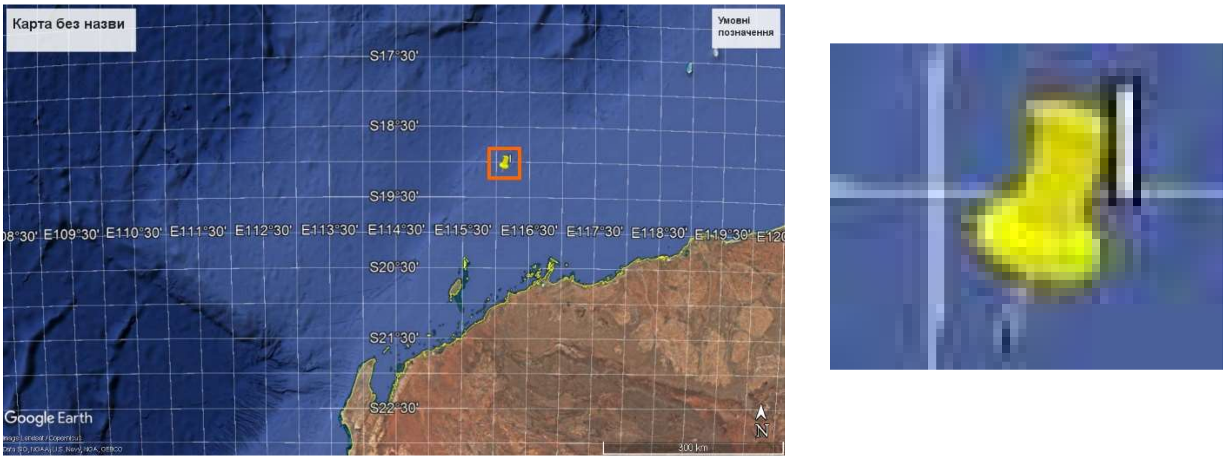
Fig. 4. WA-359-P location, Offshore Western Australia [18].

Signals of the 7th group of sedimentary rocks (limestones) have been registered also. The root of the limestone-filled volcano was identified at a depth of 723 km.

Signals of oil, condensate, gas, and phosphorus (white) were recorded on the HC synthesis surface of 57 km.

At the surface of 0 m from the upper part of cross-section, responses of gas and phosphorus were recorded, which indicates of their migration into the atmosphere.

The scanning (sounding) of cross-section at the drilling site was not carried out at December, 2020.



a) b)

Fig. 5. Satellite image of Australian offshore in the area of Ironbark-1 well drilling.

Main conclusion. The results of operationally conducted surveys of reconnaissance (estimation) nature indicate a high probability of hydrocarbon deposits detecting within the Ironbark-1 well drilling area.

Some comments. The above conclusions are made taking into account the following data (facts) obtained in the process of the mobile direct-prospecting methods testing.

1. In volcanic complexes filled with limestone, conditions for the synthesis of oil, condensate and gas at the boundary (depth) of 57 km are almost always created.

2. Signals (responses) at the frequencies of oil, condensate, gas, and phosphorus (white) were recorded without delay both at the synthesis boundary of 57 km and from the surface.

3. Instrumental measurements confirmed the migration of gas (methane) and phosphorus into the atmosphere. Let us add to this that the migration of gas into the atmosphere is almost always recorded by instrumental measurements within hydrocarbon fields.

Unfortunately, in December 2020, no sounding (scanning) of cross-section was carried out at the site in order to confirm the presence of hydrocarbon deposits in the deep horizons of cross-section by instrumental measurements.

For various reasons, the authors did not attempt to find information about results of the well drilling on Internet sites, and therefore the scanning of cross-section at the drilling site was not carried out at the beginning of 2021.

Additional Research at August 20, 2023. In August 2023, the authors began preparing an article based on the results of testing mobile direct-prospecting methods for frequency resonance processing of satellite images and photographs in Australia and New Zealand. In the process of analyzing the materials of the conducted instrumental measurements, it was decided to include in the article the results of a survey of the local drilling site of Ironbark-1 well, presented above in this chapter. In this regard, on August 19, 2023, information was found on the Internet sites [19, 20] that the Ironbark-1 well was empty!

The results of the survey of the drilling site in December 2020 presented above allowed the authors to conclude that the Ironbark-1 well has not been drilled to productive horizons (intervals)! To confirm this assumption, on August 20, 2023, additional instrumental measurements were carried out at the drilling site using procedures of vertical scanning (sounding) of cross-section. We note once again that cross-section was not scanned in December 2020 at the drilling site.

At this stage of the drilling site survey, the scanning of cross-section was carried out only using oil samples (Fig. 1).

At the initial stage of instrumental measurements, signals at oil frequencies were not recorded down to a depth of 5630 m during 3 minutes of measurements!

Further, when scanning cross-section from 5630 m to 7000 m, step 5 cm, responses at oil frequencies were recorded from the following intervals: 1) 5634.5-5824 m, 2) 5843.5-6252 m, 3) 6368-6718 m.

From the interval of 7-10 km, responses at the frequencies of oil were also recorded. Oil signals were recorded again at a depth of HC synthesis of 57 km!

Note. We focus on the fact that when carrying out instrumental measurements (including the cross-section scanning), the depth reading is carried out from the sea surface!

Main conclusions. Instrumental measurements at August 20, 2023 confirmed the assumption of the authors of experimental works that the Ironbark-1 well was not drilled to productive horizons (intervals)!!!

The results of the scanning at the drilling site also suggest that there is a major oil and gas deposit within the Ironbark structure! This conclusion (assumption) can be confirmed by additional studies of a detailed nature in the area of the structure location using mobile direct-prospecting methods!

From Fig. 4 it follows that the area of the mapped Ironbark Rise is quite large (comparable to the areas of gas fields located in this region). In this regard, it is advisable to continue further prospecting and the wells drilling within its limits.

Sites of wells drilling surveying on Australia offshore and onshore

We note once again that a limited number of measurement procedures of satellite images frequency-resonance processing were performed at the drilling site of Ironbark-1 well. In this regard, in order to demonstrate the additional possibilities of direct-prospecting methods, the results of a reconnaissance survey at the drilling sites of three more wells on the Australia offshore and onshore are presented below.

Bratwurst-1 well drilling site (offshore Australia). An Internet document [25] provides information on the detection of “significant” accumulations of gas and condensate in the Browse basin off the northwest coast of Western Australia. Hydrocarbon deposits were discovered using the Bratwurst-1 exploration well, which was successfully completed in 78 days. The coordinates of the Bratwurst-1 well - 12°52'18.385 "S, 124°24'50.050" E - were found on one of the Internet sites. This made it possible to carry out frequency-resonance processing of a satellite image of a local drilling site in order to further test the developed mobile direct-prospecting technology.

Using the well coordinates, a satellite image of a fragment of the Browse basin was prepared off the northwest coast of Western Australia (Fig. 6). The position of the well in the image is indicated by a marker, the local area of the frequency-resonance processing is indicated by a rectangular contour.

Note also that in the process of preparing the image, it was decided to conduct additionally an integrated assessment of the oil and gas prospects of a larger fragment of the Browse basin (see Fig. 6). In addition, the problem of detecting and identifying channels (volcanoes) of the migration of chemical elements, minerals and fluids, filled with rocks of various types, was additionally solved.

At the initial stage of the experimental work, a satellite image was processed of a local fragment of a well drilling site, indicated in Fig. 6 by rectangular outline. During the frequency-resonance processing of a fragment of the image in the region of the well from the surface, signals of condensate (weak), gas, water (weak), dead water (weak) were recorded; Responses of oil, amber, oil shale, gas hydrates, hydrogen, coal, anthracite, potassium magnesium salts and sodium chloride salts were not recorded.

Signals of the 7th group of sedimentary rocks (limestones) were recorded; no response was received from igneous rocks. By fixing the responses at various depths (50, 150, 250, 350, 450, 550, 650, 722, 723), the root of the channel (volcano), filled with carbonate rocks, was established at a depth of 723 km.

At a surface (depth) of 56 km, responses of condensate and gas were obtained from the lower and upper parts of the cross-section; there were no signals of oil. On the surface of 57 km, signals of condensate and gas were also received, and no responses were received from water (fresh) and “dead” water.

Fig. 6. Satellite image of a fragment of the Browse basin off the northwest coast of Western Australia. The marker indicates the position of the Bratwurst-1 well, a rectangular outline - the local site of frequency-resonance processing.

By a cross-section scanning from the surface, a step of 1 m, responses of gas were recorded from the following intervals of the cross-section: 1) 1830-2015 m; 2) 3400-3830 m; 3) 4585-5615 m; 4) 7550 -(stronger) (intensive-8450) - 8570 m (up to 10 km traced).

When processing an image of the entire survey block in Fig. 6 signals were received from the surface at the frequencies of oil, condensate, gas, amber, oil shale, argillite breccia, gas hydrate rocks, gas hydrates, ice, coal, anthracite, fresh water, dead water, brown coal, potassium magnesium salt, traditional salt; no response from hydrogen and iron ore.

Within the survey area, signals were received from 1, 2, 3, 4, 5, 6, and 7 groups of sedimentary rocks, as well as 1, 2, 4, 7, 8, 9, and 10 groups of igneous rocks.

By fixing the responses at various depths, the presence and roots of the following channels (volcanoes) were established and determined: 1) sedimentary rocks of 1-6 groups - 217 km; 2) sedimentary rocks of the 7th group - 723 km; igneous rocks of the 7th group - 470 km.

Signals of salt were obtained on a surface of 20 km only from the upper part of cross-section. From the potassium-magnesium salt, responses were recorded on the surface of 20 km from the upper and lower parts of cross-section, as well as at depths of 56 and 57 km, there were no signals on the surface of 57.1 km.

Sasanof-1 well drilling site (offshore Australia). Information about the results of the Sasanof-1 well drilling appeared on Internet sites on June 6, 2022 [26, 27]. Western Gas provides the following update on the drilling of the Sasanof-1 exploration well, approximately 207 km northwest of Onslow, Western Australia [27]:

• The Sasanof-1 exploration well has been drilled to a total depth of 2390 m RMDT by the Valaris MS-1 rig without incident.

• No commercial hydrocarbons were intersected.

• As planned, the well will now be plugged and permanently abandoned.

• De-mobilisation activities will then commence.

The position of the Sasanof structural uplift on the northwestern shelf of Australia is shown in Fig. 7. Coordinates of borehole location on offshore are following: 20°29'13".560S, 113°32'38".400E. Satellite images of well location area (Fig. 8) were prepared and processed at June 9, 2022.

During a fragment of a satellite image on Fig. 8b processing responses at frequencies of the 9th (marl) group of sedimentary rocks were registered. Signals of marls were recorded at depths of 1 km, 50 km, 99, 280, 480 and 723 km – the root of the marl volcano.

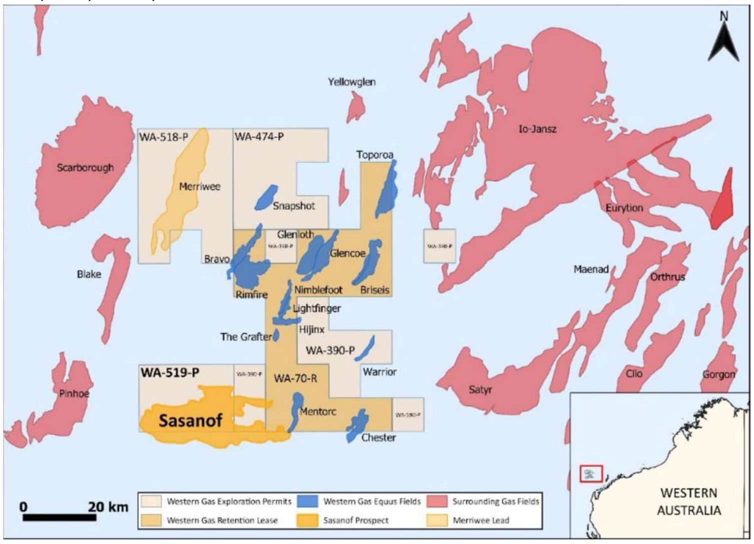


Fig. 7. Regional location of Sasanof Prospect and surrounding gas fields [27].

In volcanoes, filled with marl, there are no conditions for hydrocarbon synthesis, and responses at the frequencies of oil, condensate, and gas have never been recorded.

It is not advisable to drill a well in the contours of a marl volcano.

The results of drilling once again confirmed the established regularity!

a) *b)*

Fig. 8. Satellite images of the Sasanof-1 drilling site on Australia offshore.

Main results. At the location of the Sasanof-1 well, a satellite image of a relatively large area was processed. This allows us to conclude that the Sasanof structural uplift, mapped by seismic surveys, is formed by a volcanic structure filled with marls. In this regard, it is not advisable to carry out further prospecting work and drill wells within this structure.

Onshore drilling site of the Lockyer Deep-1 well in Australia. The document [28] provides information on the results of drilling a deep well on land in Australia, which also indicates three promising intervals for gas and oil: 4041-4067 m, 4172-4214 m, 3117-3165 m. Information on the depths of productive intervals provides an opportunity to conduct additional approbation (testing) of the method of cross-section vertical scanning in order to improve the methodology for its practical application. Using a photograph of the drilling site in Fig. 9 these intervals were examined by method of cross-section scanning.

Results of frequency-resonance processing. During processing a photograph of the drilling site (Fig. 9), responses at oil and gas frequencies were recorded from the surface, no signals were received of condensate.

By scanning the cross-section from 4000 m, step 10 cm, gas responses were obtained from the interval 4017-(4030-intensive)-(4049-intensive)-(4061-of weak intensity)-4067 m.

When scanning from 4150 m, step 10 cm, gas signals were obtained from the interval 4175-(4195-intensive to 4207 intensive)-4214 m. And during scanning from 4168 m, step 1 cm, gas responses began to be recorded from 4169.90 m.

Fig. 9. Photograph of the site of a productive well drilled in 2021 onshore in Australia [28].

At a depth of 4040 m, responses from gas (of low intensity) and oil were obtained from the upper part of cross-section. And on the surface of 3110 m from the upper part of cross-section, responses were received of the 8th group of sedimentary rocks (dolomites), there were no signals of oil and gas.

On the surface of 3110 m from the lower part of cross-section, signals were recorded from 1-6th groups of sedimentary rocks, oil, condensate, gas, amber, phosphorus (yellow), carbon dioxide, oil shale, gas hydrates, anthracite.

At the depth of hydrocarbon synthesis 57 km, responses from 1-6 groups of sedimentary rocks, oil, condensate, gas, amber, phosphorus (yellow), living water (of low intensity) were recorded. Responses from dead water and carbon dioxide were recorded at a depth of 59 km.

The root of volcano of 1-6th groups of sedimentary rocks was recorded at a depth of 723 km, and signals from granites were received from the interval of 723-996 km.

When scanning the cross-section from 3110 m, 10 cm step, the signals at oil frequencies were obtained from the interval 3118-3167 m; from 3163 m, step 1 cm – responses were fixed up to 3166 m.

When processing a photograph of a larger area with a well pad at a depth of 3110 m, signals from oil, gas, amber, carbon dioxide, phosphorus (yellow), 1-6th and 8th groups of sedimentary rocks were obtained from the upper part of cross-section.

When scanning the cross-section from the surface with steps of 50 cm, 1 m and 10 cm, the upper edge of the 2nd group of sedimentary rocks (psammites) was determined at a depth of 2798 m.

Further instrumental measurements at the well drilling site were not carried out.

Notes and some comments. The results of testing the Lockyer Deep-1 well for gas inflows are presented in the documents [29, 30].

Within the study area, a limited set of instrumental measurements was made.

Scanning of cross-section in order to determine the intervals of responses at the frequencies of oil and gas was carried out only in three promising intervals, identified by drilling results. It should be noted that when scanning with a large step (50 cm, 1 m and larger), only search intervals are determined. To determine the position of oil and gas bearing formations, it is necessary to scan cross-section with a step of 1 cm and smaller.

It may be interesting to survey the interval 4.2-15.0 km in order to search for oil and gas promising intervals in the deep horizons of cross-section.

New features of instrumental measurements

When conducting additional studies within the Ironbark structural uplift using the technology of frequency-resonance processing of satellite and photo images, additional (improved) methods of instrumental measurements can be used. In this regard, we focus attention on the following features.

In the process of conducting a survey of prospecting areas in a detailed mode, it is advisable to carry out instrumental measurements for hydrocarbons (oil, gas, condensate), taking into account a relatively long interval (more than three minutes) of time.

During investigation conducting, it is also necessary to carry out instrumental measurements in order to fix responses from hydrocarbons at different depths (up to 7-10 km) from the upper part of the cross-section. This procedure will determine (approximately) the interval of cross-section with hydrocarbons. And the subsequent procedure of this interval scanning with a small step (from bottom to top, or from top to bottom) will make it possible to determine the depths and thicknesses of oil and gas saturated reservoirs (including those with non-commercial hydrocarbon volumes).

Recently, experimental studies have been carried out to assess the possibility of additional use of seismic sections for frequency-resonance processing. For additional study of the information content of seismic sections, the processing of photographic images of seismic sections in Fig. 11 and 12 were carried out in the reconnaissance mode.

Seismic section through the Ngamia-1 well (Fig. 11) [31]. During frequency-resonance processing of the photo image, signals from oil, gas condensate, gas, yellow phosphorus, as well as the 7th (limestone) group of sedimentary rocks were recorded.

Photograph of the Ngamia-1 well drilling site (Fig. 10) [32]. During frequency-resonance processing of the photograph of the site, signals were recorded at the frequencies of oil, gas condensate, gas, methane-oxidizing bacteria, yellow phosphorus, as well as the 7th (limestone) group of sedimentary rocks.

Fig. 10. Ngamia-1 oil discovery in Kenya Rift Basin [32].

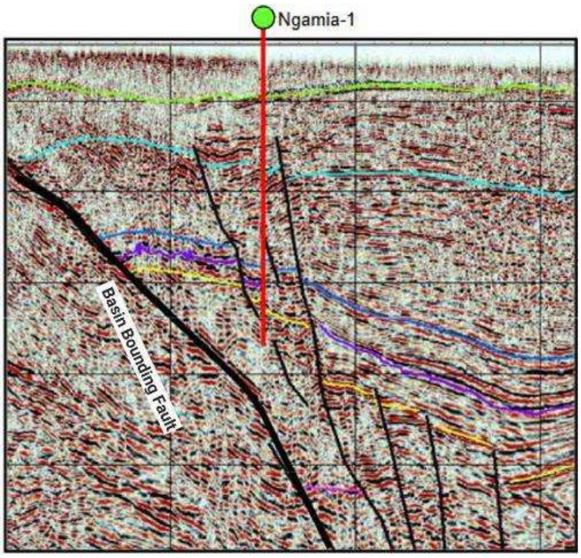


Fig. 11. Seismic cross-section through Ngamia-1 well [31].

Seismic section along one of profiles (Fig. 12) [31]. During the joint frequency-resonance processing of seismic section in Fig. 12 together with the groups of rocks used, common signals were obtained with the 9th (marl) group of sedimentary rocks, the 11th (kimberlites and lamproites) group of igneous rocks, as well as the 12th (carbonatites) and 13th (granulites) groups of metamorphic rocks. Such processing results indicate that some rocks from the listed groups are present in the cross-section along the profile.

Main conclusions. Seismic sections through prospective structures, correctly constructed and presented, are informative for frequency-resonance processing and can be used to additionally confirm the results of processing satellite images and photographs of survey areas.

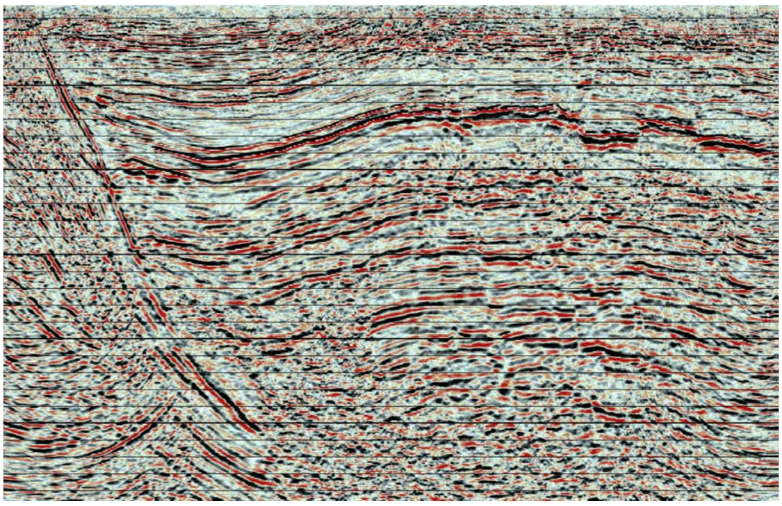


Fig. 12. Seismic section along one of profiles, received in 2023 [31].

About efficiency of geological-geophysical exploration for oil and gas: comments and suggestions.

In many publications, including [33], it is noted that the efficiency of prospecting and exploration for oil and gas does not exceed 25–30%. It is also stated here that the main reasons for this situation are "the dogma of the organic genesis of hydrocarbons and the orientation of deep drilling towards positive structural traps of the sedimentary cover, the fund of which is currently close to exhaustion" [33]. At the end of this article, the authors also draw "attention to the need for a mass transition to "direct" prospecting, which is important in the conditions of low success in hydrocarbon exploration" [33].

The authors of the monograph [34] in the introduction write (state) that in «the South Caspian Basin, the largest Western multinational companies and their consortium for period from 1995 to 2008, having drilled 28 exploratory wells with depths up to 7301 m on 21 highly promising structures, previously surveyed by high-resolution 3D seismic, did not discover a single commercially viable field, spending about $1 billion on their search» [34, p. 10]. We add to this fragment of the text that some results of direct-prospecting methods testing in the Caspian Sea, which testify in favor of the expediency of their use in the exploration process for oil and gas in combination with traditional geological and geophysical ones, are presented in published articles and abstracts of reports [9]. The publications [10-15] present materials of examination of sites for exploratory wells drilling in offshore areas in various regions of the globe.

The document on the website [35] provides the following information: "In the most recently updated resource accounts, the NPD estimates that there is a lot of oil and gas left on the Norwegian shelf. As of now, about 1,250 exploration wells have been drilled in the North Sea. Despite many discoveries, more than half of the wells are dry".

The above considerations in [33, 34] do not raise any objections from the authors of these comments. Moreover, they can be confirmed by the results of a large-scale (long-term) approbation of mobile direct-prospecting methods in various regions of the globe on large exploration blocks, local areas and drilling sites of exploration wells.

Comments and suggestions. Obtained during the testing process in 2019-2023 of super-mobile direct-prospecting methods new data can be characterized in the form of the following comments and suggestions.

New geological facts. As a result of a large volume of instrumental measurements, numerous facts (evidence) were obtained in favor of:

a) a volcanic model of the formation of the external appearance (surface), as well as the structural elements of the Earth, planets and satellites of the solar system;

b) a volcanic model of the formation of ore and combustible minerals, as well as water (mineralized, mineral, living, dead) in volcanic complexes of a certain type;

c) abiogenic (deep) synthesis of oil, gas and condensate in volcanic structures filled with some types of sedimentary and igneous rocks.

Reasons of low efficiency. Based on the results of studies conducted using direct-prospecting methods, the low efficiency of exploration for oil and gas can be summarized as follows.

1. Conducted experimental studies in various regions of the globe on Earth established the presence of 10 types of volcanic complexes filled with 1) salt; sedimentary rocks 2) 1-6th, 3) 7th (limestones), 4) 8th (dolomites), 5) 9th (marls) and 6) 10th (siliceous) groups, as well as igneous rocks 7) 1st (granites), 8) 6th (gabbro and basalts), 9) 7th (ultramafic) and 10) 11th (kimberlites) groups.

2. Numerous experiments have shown that the conditions for the synthesis of oil, condensate and gas at the boundary (surface) of 57 km are created only in 5 types of the 10 volcanic complexes listed above: 1) salt, 2) 1-6th groups sedimentary rocks, 3) limestone, 4) granite and 5) ultramafic. It should be noted that the conditions for HC synthesis do not arise in all volcanoes of the 5 listed types.

3. In the contours of volcanic structures, in which conditions are created for the synthesis of hydrocarbons at the boundary of 57 km, detailed studies fix vertical channels for the migration of hydrocarbons, fluids and mineral matter into the upper horizons of the cross-section. In the process of vertical migration, hydrocarbons fill reservoirs and form (and replenish) oil and gas deposits.

4. In the process of volcanic activity, the 10 types of volcanic complexes, listed above, can create anticlinal structures, which are quite confidently mapped by seismic methods. However, anticlinal traps in volcanic complexes, where there are no conditions for hydrocarbon synthesis, cannot be filled with oil and gas. Hydrocarbons can get into such traps only from adjacent volcanic structures, in which conditions for the synthesis of hydrocarbons and their migration to the upper horizons of the cross-section exist (and if such volcanoes are located nearby).

5. The results of the reconnaissance survey of the locations of "dry" drilled wells showed that almost all of them are located in the contours of volcanic complexes, in which there are no conditions for hydrocarbon synthesis! The low efficiency of prospecting for oil and gas is reasonably justified by the results of instrumental measurements by direct-prospecting methods. Such results should be considered weighty arguments in favor of the expediency of using direct-prospecting methods and technologies to search for hydrocarbon deposits, as well as ore minerals and water.

An additional survey of sites of exploratory wells drilling using direct-prospecting methods will significantly increase the drilling success rate. To assess the objectivity and information content of additional processing, a well-studied interval in an already drilled well can also be processed in parallel.

It should also be noted that a detailed survey by direct-prospecting methods of the structure, on which drilling of an exploratory well is planned, will provide additional information to assess the prospects for detecting hydrocarbon accumulations in industrial (commercial) volumes within the structure being drilled.

A detailed examination of the structure can reveal and localize a vertical channel of hydrocarbon migration from the synthesis boundary to the upper horizons of the cross-section, if the structure is located in the contours of a volcanic complex in which there are conditions for hydrocarbon synthesis (in the central part of the volcano). Drilling wells in the vicinity of such channels can help increase fluid inflows from prospective horizons.

6. When using the developed direct-prospecting methods, the criteria for the prospects of hydrocarbons detecting within of exploration areas are following:

a) fixation from the surface of anomalous responses at the frequencies of oil, condensate and gas;

b) registration of signals from the surface at the frequencies of methane-oxidizing bacteria (bacteria whose populations are analyzed in the method of microbiological exploration for oil and gas of MicroPro GmbH company);

c) establishing the presence of a volcanic structure in the survey area, in which there are conditions for hydrocarbon synthesis at a depth of 57 km; additional fixation of responses from oil, condensate and gas at this depth;

d) determination by the cross-section scanning of intervals (depths and thicknesses) of responses at the frequencies of oil, condensate and gas;

e) the listed criteria's have fully demonstrated their effectiveness and information content in the process of direct-prospecting methods testing in the areas (sites) of exploratory wells drilling on land and shelf in various regions of the globe.

Perspectives for efficiency improving. Above, the emphasis is on increasing the success rate of drilling exploratory wells. And the large-scale use of super-mobile technology of frequency-resonance processing and decoding of satellite images and photographs provides an opportunity to significantly increase the efficiency of geological exploration for oil and gas in general - to reduce the time and financial resources spent on its implementation. In this regard, let us pay attention to the following points.

1. Processing of satellite images and photographs of blocks and areas of study is carried out promptly in a laboratory mode without organizing and conducting field geological and geophysical work. The amount of time it takes to do this is very small.

2. The technology of integrated assessment of the prospects of discovering oil and gas deposits within the big blocks and local areas of study allows obtaining additional information with minimal time to make a decision on the feasibility of detailed work carrying out within a specific area (site).

Possible direction of direct-prospecting methods application. Let us briefly characterize a possible scenario for the mobile direct-prospecting technology using.

1. In some regions, licensed blocks (areas) are put up for auction (bidding) for geological exploration and subsequent development of discovered oil and gas deposits. At the same time, a certain amount of geological and geophysical work can already be performed on these blocks and areas.

2. Potential Investor (Subsoil User, Company) intends to take part in the auctions for some license areas.

3. For a more informed decision on the blocks of interest to the Investor, he can be offered to quickly assess the prospects of hydrocarbon deposits discovering in the required blocks by processing satellite images of these blocks in the integral mode. Prior to such an assessment, the performance and information content of the technology can be demonstrated to the Investor at promising intervals of 1-2 drilled wells, known to him.

4. After promptly carried out frequency-resonance processing of satellite images of licensed blocks, the Investor receives additional (and fairly objective) information to make an informed decision on which blocks to participate in the auction (including the block of First Priority, i.e., participation in the auction until victorious end). Let's add to the above that the information content of the processing materials for the priority block can be additionally confirmed by the results of the integral processing of the satellite image of the block known to the Investor, where hydrocarbons are already being produced.

5. After the Investor makes a decision on the Priority block, even before the auction, the satellite image of this block can be processed in a detailed mode to assess the prospects of commercial (industrial) hydrocarbon deposits detecting within it. If such local areas are found, within the most optimal site, a detailed cross-section scanning can be carried out to select the location of the exploratory well, as well as to prepare design documentation for its drilling.

6. And as soon as the Investor wins the auction for the Priority block, he immediately, without carrying out additional geophysical work within it, initiates actions to prepare for drilling and implements the drilling project itself. We also note that in case of loss at the auction, the Investor can sell the results of using direct-prospecting methods on the Primary block to the winning Competitor.

7. If the commercial volumes of oil or gas in the Priority block are confirmed by drilling, detailed studies can be carried out within it using direct-prospecting methods to assess the prospects of detecting hydrocarbon deposits in the deep horizons of the cross-section, detecting and localizing vertical channels of deep (abiogenic) hydrocarbons migration, as well as in local (promising) areas in other parts of the block. If a decision is made on the expediency of selling a block (or part of its cost) to another Investor (Company), 3D seismic surveys can be carried out on the area, where the block is located.

Note also that currently seismic surveys (in 3D modification in particular) are the main method of oil and gas prospecting. In this regard, when assets are sold, the availability of seismic data increases their value.

On the other hand, experts also note that even with a significant increase in the detail of 3D seismic methods, the drilling success rate does not increase significantly. And it is quite clear why - only the accuracy of mapping structures increases. But the seismic method is not direct-prospecting, and what the structure is filled with from seismic data is not determined with the required reliability.

Of course, the best option in this situation is the combination of seismic and direct-prospecting methods. But seismic specialists will not agree to this - they will not advertise super-mobile direct-prospecting technologies, their potential competitor.

Direct-prospecting technologies and management. The proposed strategy can work only if a management structure (body), interested in accelerating (increasing efficiency) the search and exploration process and increasing oil and gas production, takes up its implementation.

Hydrocarbons deposits, discovered during the implementation of such a strategy, can be transferred (sold) in the future to mining companies or private investors. And the management structure itself can be engaged in the implementation of projects of a similar nature in other promising areas and sites.

Theories of oil and gas genesis. It has already been noted above that the biogenic theory of oil and gas formation does not contribute to the increase of the efficiency of geological exploration for hydrocarbons - most oil and gas geologists are not supporters of abiogenic (deep) hydrocarbon synthesis.

The influence of the biogenic concept is most clearly manifested in the oil and gas shale basins of the world. In these basins, the development of deposits takes place mainly in shale plays, in the upper part of the cross-section.

A survey by direct-prospecting methods of some areas (sites), located within the shale basins, showed that most of them are located in the contours of volcanic structures, in which, at a depth of 57 km, there are conditions for the synthesis of oil, condensate and gas. When scanning the cross-section in these areas, the intervals of responses at the frequencies of oil and gas in the deep horizons of the cross-section are fixed. A detailed survey of sites in shale plays in horizons, promising for the hydrocarbon's detection, can determine the types of reservoir rocks and seals.

In general, the results of a direct reconnaissance survey of a number of areas in shale basins allow us to reasonably assert that in these basins the volumes of oil and gas in the deep horizons of the cross-section significantly exceed the volumes of hydrocarbons in shale reservoirs directly.

Purposeful application of direct-prospecting methods and technologies in shale basins will speed up the study and assessment of the oil and gas potential of the deep horizons of the cross-section and significantly increase the volume of oil and gas production.

Natural hydrogen searching. At present, the processes of transition to hydrogen energy are taking place on a large scale in the world. Unfortunately, in this direction, the emphasis is on the production of hydrogen, and not on the search for and extraction of natural hydrogen. One of the reasons for this state of affairs is the lack of proven methods for natural hydrogen accumulations searching.

In this regard, we note once again that direct-prospecting methods of satellite images and photographs frequency-resonance processing can move the problem of searching for and extracting natural hydrogen accumulations from a dead center. The reconnaissance survey of numerous zones of visible hydrogen degassing, as well as basalt volcanic structures in various regions of the world, testify to the huge volumes of natural hydrogen in the bowels of the Earth.

Financial costs for the natural hydrogen searching using direct-prospecting methods and its subsequent extraction will be significantly less than for its production.

Conclusion

In the process of large-scale testing in 2019-2023 of the super-mobile direct-prospecting technology of satellite images and photographs frequency-resonance processing [1-15] numerous facts (evidences) were obtained in favor of 1) deep (abiogenic) genesis of oil, condensate and gas in the process of hydrogen degassing of the Earth, 2) migration of gas (methane), carbon dioxide and hydrogen into the atmosphere of the Earth planet and 3) a "volcanic" model of the formation of structural elements and the appearance of the Earth, planets and satellites of the solar system, as well as deposits of hydrocarbons, ore minerals and water. The results of studies conducted in various regions of the globe showed also that the super-mobile technology used makes it possible to significantly speed up and optimize (cheapen) the exploration process for combustible and ore minerals, as well as water.

We also note that many researchers focus on the expediency of accelerating the exploration process for various types of minerals. In particular, the article [36] discusses and analyzes the paradigms of prospecting studies for oil and gas, and proposes a new model of prospecting works: “Faced with a challenging economic scenario and the need to prospect immense frontier areas that could provide new and rewarding exploratory opportunities, the oil and gas industry needs to adopt a new exploration model, focused on a faster, less expensive and more direct way of identifying and assessing prospective leads. New and emerging technologies are the key to achieving this change. Fortunately, several of these technologies are now available, and they have proven to be effective and compatible with the new exploration model proposed” [36, P. 140].

In the article [37] the breakthrough technologies for minerals prospecting are discussing. The author of this article [37] also notes the importance of using Earth remote sensing (ERS) data in the exploration process. We add to the above that modern technologies of remote sensing data processing and interpreting have made it possible to detect tens of thousands of volcanic structures of various types on Earth [38], Mars [39] and Venus [40], which significantly strengthens the position of the volcanic model of the formation of structural complexes of the Earth and planets and satellites of the Solar System.

The direct-prospecting technology as a whole, as well as its individual methods, should be used in various regions for a preliminary assessment of the prospects for oil and gas potential of poorly explored and unexplored exploration blocks and local areas. The use of this technology can bring a significant effect in the search for industrial accumulations of hydrocarbons in unconventional reservoirs (including areas of shale, coal-bearing formations, and crystalline rocks distribution). Additional surveys promptly carried out using direct-prospecting methods in local drilling areas of prospecting and exploratory wells will contribute to an increase in the drilling success rate (an increase in the number of wells with commercial hydrocarbon inflows). The laying of wells in the areas, where vertical fluid migration channels are located, can lead to an increase in hydrocarbon inflows. Mobile technology can also be successfully used during the exploration of poorly explored areas and blocks within known oil and gas fields.

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