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DAYANIQLI İNKİŞAF ÜÇÜN BƏRPA OLUNAN ENERJİNİN YENİ NƏSİL MALİYYƏLƏŞDİRMƏ MEXANİZMLƏRİ

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ABSTRACT

This article emphasizes the importance of the joint contribution of all parties (public, private, national, international) in securing the necessary finance to combat climate change. The use of renewable energy sources to achieve the goals of sustainable development, goal 7 and goal 13, and their financing mechanisms are investigated. The introductory part of the study provides information on the importance of renewable energy sources and the Paris Agreement. Also, the second part of the study examines new generation financing mechanisms used in the financing of renewable energy investments. The third part of the study examines in detail crowdfunding, green bond and green credit, the existing financing mechanisms used in renewable energy investments in recent years. The fourth part of the study shows the conclusion and discussion.

Keywords: Renewable energy, sustainable development, renewable energy financing, crowdfunding, financial mechanism, green bond, green credit.

JEL code: Q01, F64, F65, G21

XÜLASƏ

Bu məqalədə iqlim dəyişikliyi ilə mübarizə üçün lazımı maliyyənin təmin edilməsində bütün tərəflərin (dövlət, özəl, milli, beynəlxalq) birgə töhfəsinin vacibliyi vurğulanır. Bərpa olunan enerji mənbələrinin dayanıqlı inkişaf məqsədlərindən məqsəd 7 və məqsəd 13ə nail olunması üçün istifadəsi və onların maliyyələşdirilməli mexanizmləri araşdırılır. Tədqiqatın giriş hissəsində bərpa olunan enerji mənbələrinin əhəmiyyəti, Paris razılaşması haqqında məlumat verilir. Həmçinin tədqiqatın ikinci hissəsində bərpa olunan enerji investisiyalarının maliyyələşdirilməsində istifadə edilən yeni nəsil maliyyələşdirmə mexanizmləri araşdırılır. Araşdırmanın üçüncü hissəsində son illərdə bərpa olunan enerji investisiyalarında istifadə edilən mövcud maliyyələşdirmə mexanizmləri olan kraudfandinq, yaşıl istiqraz və yaşıl kredit ətraflı şəkildə araşdırılır. Tədqiqatın dördüncü hissəsi nəticə və müzakirə göstərilir.

Açar sözlər: Bərpa olunan enerji, dayanıqlı inkişaf, bərpa olunan enerjinin maliyyələşdirilməsi, kütləvi maliyyələşdirmə, maliyyə mexanizmi, yaşıl istiqraz, yaşıl kredit.

JEL code: Q01, F64, F65, G21

Giriş

Hazırda bərpa olunan enerji mənbələri (RES) vasitəsilə elektrik enerjisi istehsalı mineral enerji mənbələri ilə rəqabət edə biləcək səviyyəyə çatmışdır ki, bunun da əsas səbəbi istehsalın maya dəyərini azalmasıdır. Hazırda bərpa olunan enerji mənbələri aşağı karbonlu iqtisadiyyata keçiddə istifadə edilə bilən mühüm layihələrdən, vasitələrdən birinə çevrilib. Bu resurslardan istifadənin artması ilə Paris Sazişinin qlobal istiləşməni 2C° -dən aşağı saxlamaq məqsədinə əhəmiyyətli dərəcədə dəstək verilə bilər. Son illərdə bərpa olunan enerji mənbələri

investisiyalarının artması bu investisiyaların maliyyələşdirilməsində müxtəlif mexanizmlərin işlənilməsinə səbəb olmuşdur. Bərpa olunan enerji mənbələri investisiyalarının maliyyələşdirilməsində istifadə olunan yeni maliyyə mexanizmləri olan kraudfanding (kütləvi maliyyələşdirmə), yaşıl istiqraz və yaşıl kredit maliyyələşdirmə mexanizmlərinin istifadəsi son illərdə artmaqdadır. Son illərdə bu maliyyə mexanizmlərindən istifadə artmaqdadır və bərpa olunan enerji mənbələri investisiyaları bu alətlərdən istifadə etməklə maliyyələşdirilir. Yeni nəsil maliyyələşdirmə mexanizmlərinin tətbiqi ilə bərpa olunan enerji mənbələri investisiyalarının maliyyələşdirmə imkanları şaxələndirilmişdir. Bərpa olunan enerji investisiyalarında kraudfandingdən istifadəni artırmaq üçün bu sahəyə xas olan kraudfanding platformaları yaradılmalıdır. Yaşıl kreditlər üçün mövcud imkanlarla yanaşı, vergi güzəştləri də təmin edilməlidir.

Bütün cəmiyyətlərin əsas ehtiyaclarını ödəmək və istehsal proseslərini davam etdirmək üçün enerjiyə ehtiyacı var. Sosial-iqtisadi inkişafa nail olmaq, insanların rifahını və sağlamlığını yaxşılaşdırmaq üçün enerji ilə əlaqəli xidmətlərə tələbat artır. Qlobal enerji tələbatının ödənilməsində qalıq (mineral) yanacaqların üstün mövqeyi səbəbindən CO2 emissiyalarında sürətli artım müşahidə edilmişdir. [7]

Qalıq yanacaqlar tükənən enerji mənbələri olduğu üçün bu resursların artan istifadəsi ilə baş verən qlobal istiləşmə və iqlim dəyişikliyi kimi hadisələr dünyada bərpa olunan enerji mənbələrindən istifadəni artırmışdır.

Cari iqtisadi fəaliyyətlər və həyata keçirilən siyasətlər nəzərə alındıqda, CO2 emissiyasının həcmində artacağı və 2040-cı ildə 42,5 Gt səviyyəsinə çatacağı təxmin edilir. Bu ölçü davamlı inkişaf ssenarisində 17,6 Gt-dan təxminən 2,42 dəfə çoxdur. Eynilə, yeni siyasətlər baxımından CO2 emissiyasının həcmində təxminən 2,04 dəfə yüksək olacağı proqnozlaşdırılır. Bütün dayanıqlı inkişaf ssenarilərində mineral yanacaqların çəkisinin 2040-cı ilə qədər azalacağı və davamlı inkişaf baxımından 60% səviyyəsində olacağı təxmin edilir. Eynilə, enerji mənbəyinə görə, ən maraqlı vəziyyət dayanıqlı inkişaf ssenarisi ilə bağlıdır. Bu ssenaridə ümumi enerji istehlakının 2025-ci ilə nisbətən 2040-cı ildə təxminən 3% azalacağı təxmin edilir. [3, s.7]

Bərpa olunan enerji mənbələrinin istehsal xərclərinin azalması və bərpa olunan enerjiyə keçidi təşviq edən siyasətlərin tətbiqi nəticəsində bərpa olunan enerji mənbələri ilə elektrik enerjisi istehsalında sürətli artım qeydə alınmışdır.

Ölkəmizdə aşağı karbonlu enerji transformasiyasına elektrik enerjisi istehsalında bərpa olunan enerjiden istifadənin artırılması ilə nail olmaq olar. Beləliklə, ölkənin Paris razılaşması ilə müəyyən edilən qlobal temperatur artımı dəyərini 2 °C-nin altında tutmaq kimi iqlim hədəfinə töhfəsi artacaq və iqtisadi, texnoloji və ətraf mühit baxımından bir çox faydalar əldə ediləcək.

Paris Sazişində istixana qazları emissiyalarının azaldılması üçün milli töhfələrin müəyyən edilməsi ilə yanaşı, 2C° hədəfinə nail olmaq üçün bütün ölkələr tərəfindən görülməli tədbirlərin maliyyələşdirilməsi də vurğulanır. Paris sazişinin müəyyən etdiyi hədəflərə çatmaq üçün maliyyə resursları lazımdır. Sazişin üç uzunmüddətli məqsədlərindən biri olan Maddə 2.1c “Aşağı istixana qazı emissiyalarına və iqlimə davamlı inkişaf əlaqəli maliyyə axını təmin etmək”dir.

Razılaşmanın tərəfi olan hökumətlər müxtəlif başlıqlar altında edəcəkləri tənzimləmə və təcrübələrlə Paris Sazişinin hədəflədiyi maliyyə axını təmin edə bilirlər. Bu qaydalar və təcrübələr arasında yaşıl istiqrazlar da daxil olmaqla könüllü əsaslı alətlər var.

Paris razılaşması ilə müəyyən edilmiş 2C° hədəfinə çatmaq üçün 2035-ci ilə qədər enerji sahəsinə 53 trilyon dollarlıq investisiya qoyulmalıdır. Bu kontekstdə bu məqsədə çatmaq üçün dövlət və özəl sektorun resurslarından istifadə edəcək bir çox maliyyə mexanizmlərinə ehtiyac var. Son

İllərdə yaşıl istiqrazlar özəl sektorun resurslarından istifadə etməklə yaşıl layihələrin maliyyələşdirilməsində istifadə olunan maliyyə alətlərindən birinə çevrilmişdir. Yüksək investisiya xərcləri olan bu layihələrin maliyyələşdirilməsinin müxtəlif variantları mövcuddur. İqlim dəyişikliyinə qarşısının alınması səyləri yaşıl maliyyə konsepsiyasına marağı artırır. Qrantlar, bank kreditləri, lizinq, ixrac krediti, bərpa olunan enerji təchizatı müqavilələri bu variantlardan bəziləridir. Kraudfandinq, yaşıl istiqrazlar və yaşıl kredit mexanizmləri son illərdə ön plana çıxan digər mühüm maliyyələşdirmə variantlarıdır.

Bərpa Olunan Enerji Investisiyalarının Maliyyələşdirmə Metodları

Bərpa olunan enerji investisiyalarının xarici maliyyə ehtiyacı müxtəlif maliyyə alətlərindən istifadə etməklə həyata keçirilir.

Bərpa olunan enerji mənbələrində istifadə olunan maliyyə alətləri aşağıda göstərilmişdir:

1. Kreditlər:

1.1 Bank kreditləri

1.2 Yaşıl kreditlər

1.3 İxrac kreditləri

1. Qrantlar;
2. Bərpa olunan enerji tədarükü müqavilələri;
3. Maliyyə icarəsi (Lizinq);
4. Kütləvi maliyyələşdirmə (Kraudfandinq);
5. Bərc qiymətli kağızları;

6.1 Yaşıl sukuk;

6.2 Yaşıl istiqraz;

1.1 **Kredit** – fiziki və hüquqi şəxslərin ehtiyaclarını qarşılamaq məqsədi ilə bankdan təmin etdiyi vəsaitdir.

1.2. **Yaşıl kreditlər;** Bunlar, ümumiyyətlə bərpa olunan enerji, enerji səmərəliliyi və ətraf mühit sahələrində sosial, iqtisadi, mədəni və ekoloji deqradasiyalardan birini azaltmaq öhdəliyi götürən beynəlxalq inkişaf təşkilatları tərəfindən hazırlanmış layihələrə təklif olunan xüsusi inkişaf kreditləridir.

1.3 **İxrac krediti** – Valyuta gəlirləri əldə etmək üçün və ya ixrac əməliyyatları həyata keçirən kiçik və orta sahibkarlıq subyektlərinə verilən kredit növüdür.

2. Qrantlar – Bunlar layihə çərçivəsində kiçik və orta sahibkarlıq üçün beynəlxalq təşkilatlar və dövlət qurumları tərəfindən verilən qarşılıqsız vəsaitlərdir. Bərpa olunan enerji investisiyalarında istifadə edilən qrantlarla layihənin amortizasiya müddətini qısaltmaqla layihənin ümumi maliyyə xərclərini azaltmaq hədəflənir. [12]

3. Bərpa olunan enerji tədarükü müqavilələri – Bu, bərpa olunan enerji mənbələri layihələrinin maliyyələşdirmə modellərinin şaxələndirilməsinə imkan verən yeni maliyyələşdirmə üsuludur. Orta və uzunmüddətli enerji tədarükü müqaviləsi xüsusiyyətlərini daşıyan bu mexanizmdə elektrik enerjisində olan tələbatı bərpa olunan enerji mənbələri hesabına ödəmək istəyən təşkilat, bərpa olunan enerji mənbələri ilə elektrik enerjisi istehsal edən enerjisi istehsalı şirkəti ilə enerji tədarükünə dair müqavilə bağlayır. Bu mexanizm yeni qurulacaq obyektlərin

maliyyələşdirilməsini asanlaşdıran və müəssisələrdəki obyektlər üçün uzunmüddətli müntəzəm gəlir axını təmin edən alternativ elektrik enerjisi təchizatı mexanizmdir.

4. Maliyyə lizinqi – Alətlər və ya ağır maşın avadanlıqlarının istifadəsi və alınması üçün istifadə edilən uzun və orta müddətli investisiya kreditidir. Maliyyə lizinqində bir çox avadanlıq və maşınlarla 1% dərəcədə ƏDV tətbiq edilir.

5. Kraudfandinq – internetdən istifadə edərək heç bir maliyyə alətidən istifadə etmədən digər icmaların və ya təşkilatların layihələri üçün lazım olan pulu toplamaq və bu layihələr üçün lazımı maliyyəni təmin etmək üçün kütlələrin birgə səyidir. Kraudfandinqin dörd modeli var: borc əsaslı, ianə əsaslı, mükafat (hədiyyə) əsaslı və pay əsaslı. [6]

6.1 Yaşıl sukuk; bərpa olunan enerji və davamlı və ekoloji cəhətdən faydalı layihələri maliyyələşdirmək üçün faizsiz maliyyələşdirmə modelidir. [10]

6.2 Yaşıl istiqrazlar; enerji səmərəliliyi, biomüxtəlifliyin qorunması, təmiz nəqliyyat, bərpa olunan enerji, davamlı su idarəçiliyi, çirklənmənin qarşısının alınması və nəzarət kimi yaşıl layihələr konsepsiyasına daxil olan ekoloji cəhətdən faydalı təşəbbüslərə kapital ayırmaq üçün istifadə edilən faizli borc qiymətli kağızlarıdır. [8]

3. Bərpa Olunan Enerji Investisiyalarının Maliyyələşdirilməsində İstifadə Olunan Yeni Nəsil Maliyyələşdirmə Mexanizmləri

3.1 Kraudfandinq – Kütləvi maliyyələşdirmə

Kraudfandinq – Bu, sahibkarların banklar əvəzinə onlayn platformalardan investorlar taparaq birbaşa öz vəsaitlərini tapdıqları bir maliyyə modelidir. Bu maliyyələşdirmə mexanizminin dörd fərqli növü var.

- İanəyə əsaslanan kraudfandinq – Bu, yalnız bağışlanan, verilən pulun geri qaytarılmadığı qeyri-kommersiya layihələrində istifadə edilən maliyyə növüdür.
- Mükafat (hədiyyə) əsaslı kraudfandinq – Günümüzdə ən çox istifadə edilən maliyyələşdirmə növü olan bunda sahibkarın investorun verdiyi maliyyə məbləğində investora hədiyyə və ya təklif etdiyi xidmətdir.
- Səhmlərə əsaslanan kraudfandinq – Bu, investorun layihədə payçı kimi iştirak etdiyi və sahibkara maliyyə dəstəyi verdiyi maliyyə növüdür.
- Borc əsaslı kraudfandinq – Sahibkarların banklardan kredit kimi qaytarmaq şərti ilə kredit şəklində etdikləri maliyyələşdirmə növüdür.
- Bunlardan başqa hibrid modellər də var. Hibrid model eyni layihə çərçivəsində birdən çox kraudfandinq növünün birgə mövcud olduğu və investorun istədiyi modeli seçib vəsait təmin etdiyi bir modeldir. [5]

Kraudfandinq qeyri-ənənəvi maliyyələşdirmə üsuludur və o, internet vasitəsilə kütlələri bir araya gətirir. Kraudfandinq-də internet platformalarından istifadə əməliyyat xərclərini azaldır. Texnoloji inkişaf və sosial medianın geniş yayılması kütlələrin gücünü daha da artırır. Müasir dövrdə internet dünyanın təxminən üçdə birinə çatır. Buna görə də kraudfandinq mexanizmi konkret coğrafi regionla məhdudlaşmır. Adi maliyyələşdirmə modellərində az sayda peşəkar investorlar (məsələn, banklar) layihələrə böyük məbləğdə maliyyə vəsaiti təqdim edirlər. Digər tərəfdən, kraudfandinqdə böyük icmalar öz kiçik töhfələri ilə bir çox kiçik və irimiqyaslı layihələri maliyyələşdirir. Hətta bankların maliyyələşdirə bilmədiyi kiçik layihələr də kraudfandinqlə

maliyyələşdirilə bilər. Çünki kraudfanding yerli icmaları maliyyələşdirmə proseslərinə cəlb etməklə, iqtisadi faydalarla yanaşı, bir çox sosial və ekoloji faydalar da təmin edir. Kraudfanding bazarı böyüməyə davam edir. 2010-cu ildə 53 milyon dollar həcmində olan bu bazar, 2014-cü ildə 16 milyard dollarlıq bazar həcminə çatıb. [9]

Kraudfanding mexanizmi iqlim dəyişikliyi ilə mübarizədə mühüm rol oynayan enerji mənbələri layihələrinin maliyyələşdirilməsində istifadə oluna bilən potensial mexanizmdir. 2009-cu ildən etibarən bərpa olunan enerji layihələrinə fokuslanan mühüm kraudfanding platformaları meydana çıxmağa başladı. “TrillionFund” platforması 2011-ci ildə bərpa olunan enerji mənbələri layihələrinə təqribən 122 milyon ABŞ dolları məbləğində maliyyə ayırıb. Bu rəqəm bərpa olunan enerji mənbələri layihələri üçün kraudfanding mexanizminin potensialını göstərir. [9]

Cədvəl 1-də bərpa olunan enerji sahəsində Kraudfanding növlərinin istifadə dərəcələrini göstərilmişdir.

Cədvəl 1. Bərpa olunan enerji sahəsində Kraudfanding növlərindən istifadə dərəcələri.

Kraudfanding növü	İstifadə dərəcəsi
Mükafat (hədiyyə) əsaslı	24,2%
Borca əsaslanan	56%
Səhm əsaslı	9,7%
Hibrid əsaslı	10,1%

Mənbə: Candelise, C. (2016, October). Smart financing and empowerment: the use of Kraudfanding in the energy sector. In the 57th Annual Conference for Italian Economic Association. [4]

Azərbaycanda qanunvericiliyin bu sahədə inkişaf etməməsi, Xaricdən ianələrə dair məhdudiyətlər, Potensial respientlərin, sahibkarların, donorların, investorların bu alətlər barədə az məlumatlılığı, İnternet şərtləri və imkanları, və s. səbəblərə görə kraudfanding maliyyələşmə alətlərinin inkişaf etdirilməsi hazırda mürəkkəb proses kimi qarşıda duran problemlərdəndir. [11, s.25]

3.2 Yaşıl istiqrazlar

Bunlar yaşıl layihələr adı altında toplanan layihələri maliyyələşdirmək üçün istifadə olunan resursları təmin edən istiqrazlardır. Yaşıl istiqrazlardan əldə olunan gəlir əsasən bərpa olunan enerji, enerji səmərəliliyi, təmiz nəqliyyat, təbii ehtiyatların davamlı idarə edilməsi, biomüxtəlifliyin qorunması, çirklənmənin qarşısının alınması kimi sahələri əhatə edən yaşıl layihələrdə istifadə olunur. Ümumilikdə yaşıl istiqrazlardan əldə edilən vəsaitin 75%-i enerji səmərəliliyi və bərpa olunan enerji sahəsində istifadə olunur.

Yaşıl istiqraz prinsipləri dörd əsas hissədən ibarətdir. Birinci mövzu yaşıl layihələr olaraq təyin olunan layihələr üçün 'gəlir istifadəsi' təmin etməkdir. Daha sonra yaşıl kateqoriyaya görə qiymətləndiriləcək layihə üçün 'layihənin qiymətləndirilməsi və seçim prosesi' baş verir. Üçüncü hissədə, yalnız yaşıl layihələri maliyyələşdirmək üçün yaşıl istiqrazlardan əldə olunan vəsaitlərin “gəlir idarəçiliyi”nin təmin edilməsidir. Nəhayət, emitentlərdən illik hesabatlarda bütün yaşıl layihənin vəziyyəti haqqında “hesabat” vermələri tələb olunur.

Həmçinin yaşıl istiqrazlar bazarını böyütmək və investorların etibarını qazanmaq üçün yaşıl istiqraz sertifikatları verilir. Sertifikatlaşdırmada vahid standart yoxdur. Daha çox “Yaşıl İstiqraz Prinsipləri” bu sertifikatlaşdırma sistemlərində istifadə olunur.

Bazar həcmi 90 trilyon dollar olan qlobal istiqraz bazarında 2017-ci ildə yaşıl istiqrazların həcmi təxminən 100 milyard dollar olubdur. İntestorların yaşıl istiqrazlar bazarına marağını artırmaq üçün yüksək etibarlılığa malik vahid sertifikatlaşdırma sistemi hazırlanmalıdır.

3.3 Yaşıl kreditlər

Yaşıl kredit anlayışı Çində 2007-ci ildə Çin Xalq Respublikasının Ətraf Mühit Nazirliyi, Çin Xalq Bankı və Çin Banklar Assosiasiyasının Tənzimləmə Şurasının bir araya gəlməsi ilə ortaya çıxdı.

Bu təşkilatlar, şirkətlərin güzəştli şərtlərlə layihələr hazırlamaq şərti ilə Çindəki bütün bankların öz vəsaitlərini təbii və enerji resurslarını həddindən artıq istehlak edən və ya ətraf mühitin çirklənməsinə səbəb olan şirkətlərə istifadə etməsini diktə edən yaşıl kredit siyasətini dərc ediblər.

[1]

Yaşıl kredit – beynəlxalq inkişaf təşkilatları tərəfindən hazırlanmış və xüsusi olaraq ətraf mühit, bərpa olunan enerji və enerji səmərəliliyi sahələri üçün təqdim edilən inkişaf kreditləridir. Yaşıl kreditin məqsədi; kredit təşkilatının tələb etdiyi mədəni, sosial, ekoloji və iqtisadi sahələrdəki pisləşmələrdən birini azaltmağı öhdəsinə götürən layihələrə vəsait təmin etməkdir. Bu xüsusiyyəti ilə digər kredit növlərindən fərqlənən bir kredit növüdür. Yaşıl kreditlərdə borcalana enerjiyə qənaət və enerji səmərəliliyi kimi yaşıl sahələrdə fəaliyyətini qiymətləndirərək aşağı faiz dərəcələri ilə uzunmüddətli sərfəli ödəmə variantı təklif edilir. [13]

3.4 Yaşıl sukuk

Yaşıl sukuk - İndoneziya 2018-ci ildə bundan bərpa olunan enerji, ekoloji cəhətdən təmiz və davamlı layihələri maliyyələşdirmək üçün faizsiz maliyyələşdirmə modeli kimi istifadə etməyə başlayıb. [2]

İqlim fəlakətlərinin tez-tez baş verməsi səbəbindən ekoloji cəhətdən təmiz layihələrə önəm verən Malayziya yaşıl sukukun inkişafında ön sıralardadır. Yaşıl sukukun ən fərqli xüsusiyyəti onun yaşıl istiqrazlarla eyni şərtlərə malik olması və faizsiz olmasıdır.

4. Nəticə

Bərpa olunan enerjiyə investisiyaların maliyyələşdirilməsi üçün istifadə edilən bir çox maliyyə mexanizmləri mövcuddur. Kraudfandinq xüsusilə Avropa və Amerika məkanında maliyyəyə çıxışı asanlaşdıraraq müəssisələri və onlara yatırılan investisiyaları artırmışdır. Kraudfandinq-i digər maliyyələşdirmə növlərindən fərqləndirən ən fərqli cəhət sosial şəbəkə vasitəsilə məsafə problemini aradan qaldıraraq investorun layihə tapmasını, sahibkarın isə maliyyə tapmasını asanlaşdırmasıdır.

Yaşıl investisiyalar çox sürətlə inkişaf edən maliyyə mexanizminə çevrilib. Yaşıl istiqrazlarda yaşıl layihələr konsepsiyasına daxil olan bərpa olunan enerji sahəsinə xas bir təşviq tətbiqi yoxdur. Dünyada son illərdə istifadəsi artan yaşıl istiqrazlar inkişaf etməkdə olan bir bazar olduğu üçün onun inkişafına mane olmamaq məqsədilə hüquqi cəhətdən heç bir məcburiyyət tətbiq edilmir.

Hazırda ən əsas İEOÖ-də diqqəti bərpa olunan enerji mənbələrinə yönəldən enerji siyasəti yürüdülməlidir. Kraudfandinq, yaşıl istiqraz və yaşıl kredit mexanizmlərindən istifadə etməklə onun zəngin bərpa olunan enerji mənbələri potensialından istifadə dərəcələrini artırmaq olar.

İEOÖ-də borc və pay əsaslı kraudfanding modelləri ilə bağlı hüquqi tənzimləmələr aparılmalıdır. Bu, bərpa olunan enerji mənbələri investisiyalarında kraudfandingin payının artmasına səbəb olacaq. Kraudfanding sahəsində vizual və yazılı media vasitələrindən istifadə edilməli, tanıtım məqsədi ilə maarifləndirici tədbirlər təşkil edilməlidir. Kraudfanding platformaları yalnız bərpa olunan enerji sahəsində yaradılmalı, ona görə də bərpa olunan enerjiyə keçid sürətləndirilməlidir. Yaşıl istiqraz emitentlərinin və investorların tələbinə uyğun olaraq idarə və ya təşkilatların tərkibində həyata keçirilən maliyyələşdirmə mexanizmidir. Bu səbəbdən BƏRPA OLUNAN ENERJİ MƏNBƏLƏRİ investisiyalarının artırılması üçün dövlət və özəl sektor əməkdaşlığının və qeyri-hökumət təşkilatlarının dəstəyi ilə birgə araşdırmalar aparılmalıdır. İnvestorun yaşıl istiqrazlara etimadını qazanmaq üçün 'xarici rəy' bələdçilərini məcbur etməklə nəzarət qurumları və ya məcburi məsləhət firmaları yaradılmalıdır. Bu maliyyə alətini əhatə edən hüquqi bazanın dərc edilməsi yaşıl istiqrazlara investisiyaların və emissiyaların artmasına səbəb ola bilər. Yaşıl kreditlər texniki yardım dəstəyi, vergi güzəştləri və vergi endirimləri ilə təşviq edilməlidir. Bu yolla, yaşıl və davamlı maliyyə təmin etməklə bərpa olunan enerjiyə investisiyalar artırıla bilər. İctimaiyyət bərpa olunan enerji mənbələri ilə elektrik enerjisi istehsalını təşviq etməyə davam etməlidir; Özəl sektorun təşəbbüsləri karbon vergisi və emissiya ticarəti kimi təcrübələrlə dəstəklənməlidir.

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NEXT GENERATION FINANCING MECHANISMS OF RENEWABLE ENERGY FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT

This article emphasizes the importance of the joint contribution of all parties (public, private, national, international) in securing the necessary finance to combat climate change. The use of renewable energy sources to achieve the goals of sustainable development, goal 7 and goal 13, and their financing mechanisms are investigated. The introductory part of the study provides information on the importance of renewable energy sources and the Paris Agreement. Also, the second part of the study examines new generation financing mechanisms used in the financing of renewable energy investments. The third part of the study examines in detail crowdfunding, green bond and green credit, the existing financing mechanisms used in renewable energy investments in recent years. The fourth part of the study shows the conclusion and discussion.

Keywords: Renewable energy, sustainable development, renewable energy financing, crowdfunding, financial mechanism, green bond, green credit.

ANALYSIS AND TRENDS OF THE LEVEL OF ECONOMIC DEVELOPMENT OF AZERBAIJAN

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ABSTRACT

Azerbaijan has been constantly strengthening and developing rapidly since independence. Successful economic policy supply, stability in the macroeconomic development of Azerbaijan was ensured, economic growth rates were achieved, which for a long time could not be achieved by many developing countries. Today, as a result of breakthrough development and numerous achievements in the economy, Azerbaijan has entered a qualitatively new economic stage - the era of modernization.

The path to such economic development was not easy. In the first years of its independence, the Azerbaijani state faced many political and economic crises. Only after the return to power of the great leader Heydar Aliyev did a turning point come in the development of the country. Thus, since Azerbaijan was part of the Soviet Union for a long time, the economy of Azerbaijan developed within the framework of a single space. With the collapse of the Soviet Union, processes of disintegration began between the union republics, which worked together in a planned socialist system. In the countries that gained state independence, including Azerbaijan, the foundation was laid for a new historical stage - the transition period. Our article mainly reflects the stages of development of the Azerbaijani economy in this transitional period and in the subsequent period. Economic development was studied and analyzed in stages. At the same time, this analysis was compared in the form of statistical indicators and reflected in the article. It is also clear from research and analysis that the economy of Azerbaijan developed rapidly after gaining independence.

Keywords: Azerbaijan, economy, indicator, oil, economic growth, GDP, social, banking, interest.

XÜLASƏ

Azərbaycan müstəqillik əldə etdiyi illərdən davamlı olaraq güclənir və sürətlə inkişaf edir. Aparılan uğurlu iqtisadi siyasət sayəsində Azərbaycanın makroiqtisadi inkişafında dayanıqlıq təmin edilib və bir çox inkişafda olan dövlətlərin uzun müddət ərzində əldə edə bilmədiyi iqtisadi yüksəliş tempinə nail olunub. Bu gün iqtisadiyyatda əldə edilmiş sıçrayışlı inkişafın və çoxsaylı nailiyyətlərin nəticəsi olaraq Azərbaycan keyfiyyətə yeni bir iqtisadi mərhələyə - modernləşmə dövrünə qədəm qədəm qoyub.

Bu iqtisadi inkişafa aparılan yol heç də asanlıqla meydana gəlməyib. Müstəqilliyinin ilk illərində Azərbaycan dövləti bir çox siyasi və iqtisadi böhranlarla üzləşib. Yalnız ulu öndər Heydər Əliyevin hakimiyyətə yenidən qayıdışından sonra ölkənin inkişafında dönüş yarandı. Belə ki, uzun müddət ərzində Sovetlər birliyinin tərkibində olduğundan Azərbaycan iqtisadiyyatı vahid məkan çərçivəsində inkişaf edirdi. Sovetlər ittifaqının dağılması ilə planlı sosialist sistemində birgə fəaliyyət göstərmiş müttəfiq respublikalar arasında dezintegrasiya prosesləri başlandı. Dövlət müstəqilliyini əldə etmiş ölkələrdə, o cümlədən Azərbaycanda yeni bir tarixi mərhələnin - keçid dövrünün əsası qoyuldu. Məqaləmizdə də əsasən bu keçidin və sonrakı dövrdə Azərbaycan

iqtisadiyyatının inkişaf mərhələlərini əks etdirir. İqtisadi inkişaf mərhələlərlə öyrənilmiş və təhlil edilmişdir. Eyni zamanda, bu təhlil statistik göstəricilər şəklində müqayisə edilmiş və məqalədə öz əksini tapmışdır. Araşdırma və təhlillərdən də aydın olur ki, Azərbaycan müstəqillik əldə etdikdən sonra iqtisadiyyatı sürətlə inkişaf edib.

Açar sözlər: Azərbaycan, iqtisadiyyat, göstərici, neft, iqtisadi artım, ÜDM, sosial, bank işi, faiz.

The economy of Azerbaijan is a part of the world economic system. It is impossible to stay out of the economic processes taking place in the world. Although it was managed to do so this isolated economy cannot succeed in developing the national economy without using advanced techniques and production experience created in the world. A state that has achieved economic independence is considered to be a state that has formed and developed its national economy. Because the basis of every state is its national economy. State politics, diplomacy, science, education, healthcare, culture, art and other elements of the superstructure rise above it. It is impossible to achieve achievements in the upper level management without developing the country's economy.

Thus, on the basis of mutual conditioning and assistance of the base and superstructure, a healthy national economy of each state, including Azerbaijan, is formed, developed and conditions are created for economic independence.

- The nation becomes the owner of the natural wealth created and bestowed upon it by nature during a certain period of time throughout history;
- A society under an independent state has the power to sustain itself by meeting its needs, relying on historical realities and its own capabilities, determines the form of organization of production according to national interests;
- It has qualities such as establishing foreign economic relations without hesitation, taking into account independent and national interests, gaining free access to the world market, being competitive in foreign markets, and protecting against economic threats.
- Each state, which is independent in making economic decisions, has its own power to implement independent financial, monetary and credit, customs, and price policies.

Although the conditions and factors mentioned above indicate independence, they are not enough to achieve economic growth. Although the above is important for achieving independence, the following conditions must also be met during the transition to the market economy:

- to establish a mature national market that meets the conditions of the market economy as an independent state and a structure that meets the requirements of this advanced market;
- It should be able to ensure sustainable development by itself and have the ability to reproduce itself
- an independent, stable currency, stable financial, credit, and banking system should operate;
- Have production, market and social infrastructures formed according to the current era;
- It should have a more equitable, adequate economic mechanism and state management traditions, and at the same time it should have the power to preserve these traditions [1, s-11].

The Republic of Azerbaijan, which regained its independence on November 18, 1991, completed the transition period that lasted until 2010 and consisted of various stages (On November 2, during the speech at the 90th anniversary of Baku State University, İlham Aliyev mentioned that Azerbaijan has completed the period of transition in the economic sphere). In the early years of

the transition period, the war with Armenia, Russia's transport embargo on Azerbaijan and the inability to use two important oil pipelines due to the Chechen war, political and military problems had a negative impact on the economic situation. Thus, 1991-1994 was a period in the post-independence period when the country was faced with all economic problems, social and political problems turned into a crisis, there was a war, and there were serious abuses in the work done in connection with the transition to a free market economy. The most acute situation in the observed course of negative situations in economic processes was revealed in 1992. In 1992-94, GDP more than halved and was equal to 48% of the 1991 GDP. During these years, the GDP decreased by 13-20% and in 1994 it was 16293.3 million dollars. Compared to 1990, in 1994 GDP decreased by 53%, industry by 62%, agriculture by 44%, consumption by 75% and tax production by 45%. These indicators manifested themselves in a 3.6 times decrease in the standard of living of the people, and an 80% decrease in the real average wage level. The wrong economic policies surrounding those periods caused serious problems in the banking and financial system and foreign trade (Azərbaycan iqtisadiyyatı Prof. Dr. Haydar BAŞ Bakı-2016 s-13). The ratio of the budget deficit to gross domestic product increased from 0.1% in 1991 to 13% in 1994, and the budget deficit was financed entirely by the National Bank. In 1992-1994, the volume of foreign trade turnover decreased by 42%, until 1994, not a single manat was invested in the country's economy. In 1994, the discount rate of the National Bank reached 250%. In fact, the country's economy became unmanageable [2].

The Law on Private Property in the Republic of Azerbaijan was adopted in June 1991 [9]. As a continuation of the process, at the beginning of 1992, prices were liberalized, and in January of that year, a transition was made to the introduction of Value Added Tax [3]. The Foreign Investment Law came into force in April, and the National Bank Law came into force in August, and the manat became a currency in the money market. In 1992, the inflation level increased by 4.9 times compared to the previous year and amounted to 1012.3%, and in 1994 it reached its highest limit, the hyperinflation stage - 1763.5%. In 1993-94, due to the impact of the 1st Karabakh war, there was a slowdown in the implementation of economic reforms. In January 1993, a law on the privatization of small-scale enterprises came into force, and in January 1994, it was decided that the manat would be the only currency unit as the country's domestic currency. As a result of the signing of the armistice with Armenia in May, the transition period in the modern market economy gained speed again, in June the Bankruptcy Law was adopted, and the process of bank consolidation began. In general, between 1991 and 1994, while the economic transition period was quite slow, attempts were made in various ways to implement economic reforms that would include trade and market liberalization. Only after National Leader Heydar Aliyev came to power in the independent Republic of Azerbaijan in June 1993 at the insistence of the people, political stability was achieved in the country, a ceasefire was reached, and large-scale economic reforms were started. As a result of these economic reforms, the financial situation in the country stabilized, the volume of investments involved in the country's economy increased rapidly year by year, and the standard of living of the people began to improve. In those years, while the economic reforms program was being prepared to prevent the negative trend in the economy, economic models were tried to be developed to achieve strategic economic development. In accordance with the requirements of the environment of those years, the formation of the free market system in the economy, the development of privatization and private entrepreneurship, the reconstruction of the new economic structure, the customs, tax and financial system according to the free market system, the liberalization of trade, the implementation of land

and agricultural reforms, the social opportunities of the people various laws have been passed that are important for creating the necessary legal infrastructure for increasing education and health conditions. Efforts to respond to the free market conditions of the economy, steps taken in the direction of liberalization of prices, foreign trade and exchange rates, in turn, the inflation level began to decrease significantly, and budget deficits were reduced to a minimum. As a result of the implemented economic reforms, the privatization of small enterprises was completed, the service sector was given over to private entrepreneurship, the next step was the privatization of medium and large enterprises, relatively macroeconomic stability was achieved, the period of stagnation in the economy ended and a new period of development was carried out, land reform was carried out was transferred to private ownership, the property of collective farms and state farms was privatized, it was decided not to collect other taxes from the agricultural sector except for land tax for 5 years, and tax debts were written off, fuel and energy sales were provided to these enterprises on preferential terms. The laws "On the Basics of Agrarian Reform", "On the Reform of State Farms and Collective Farms" and "On Land Reform" adopted in 1995-1996 established the forms of state, municipal and private ownership of land, the formation of modern agribusiness, interest in the results of economic activity and created conditions for the increase of responsibility, as well as the development of cooperation in the prospective period [4]. The signing of the "Contract of the Century" in 1994 and the adoption of the constitution on November 12, 1995 gave impetus to the acceleration of the legal and regulatory structure of the market economy. With this, a large amount of foreign investment began to enter the country. The most important step in the reconstruction of the economic system according to the modern market economy was the adoption of the first independent constitution of Azerbaijan as the beginning of a new era in the social, political and economic life of the country from a strategic point of view. With the adoption of the Constitution, the legal basis for the integration of private property and private entrepreneurship into the world economic system was determined. As can be seen from the above, 1995 can be accepted as the starting year of economic reforms and economic regulations in Azerbaijan in a broad sense. After these years, with the achievement of a ceasefire at the front and stability at home, it was time to implement economic reforms. Starting from 1994, strict economic measures were prepared in the country, with close cooperation with the IMF and strict monetary policy with the start of implementation of IMF programs, normalization of the general economic balance was achieved in a short period of time, inflation was brought to a manageable state and GDP was prevented from falling rapidly. As a result of the measures taken, since 1996, the rapid decline in Azerbaijan's economy began to slow down relatively. The created new economic mechanism and development model began to produce real results. Thus, during the last five years of economic reforms, the GDP increased by 26.3%, the welfare level of the population improved twice, the share of the private sector in the economy increased from 29% to 68%. Between 1994 and 2000, approximately 3.4 billion dollars were invested by the companies participating in the agreements concluded for the purpose of joint production of oil fields. The total volume of foreign investment between 1994 and 2000 was 15.9 billion dollars. 22.8% of this amount was in the form of financial loans, 56.3% in the oil industry, and 20.9% in other sectors. The economy of Azerbaijan has become one of the fastest growing economies in the former USSR as a result of large amounts of foreign investment in the oil sector. The GDP growth rate was 10% in 1998 and 7.2% in 1999. This growth in the economy of Azerbaijan is derived from the oil sector and construction activities related to the oil sector, communication areas and a small amount from the agricultural sector. Looking at it from another aspect, the GDP at the end of

2000 was 2 times lower than in 1990, in this context, production in the industrial sector was 3.3 times lower, and in the agricultural sector 2.4 times lower²⁸. Until 1996, the investment volume decreased by 2.3 times, but as a result of the increase in the subsequent period, the investment volume increased by 55% compared to 1989 at the end of 2000. On the other hand, the exchange rate and monetary policies applied during this period prevented high price increases, and the local currency, the manat, achieved a stable situation against other monetary units. Inflation, which rose to 1763% in 1994, fell to 1.8% in 2000. Foreign direct investments have played a key role in the economic revival of Azerbaijan. The main part of foreign direct investments was spent in the field of oil production and extraction. Between 1995 and 1998, there was a 59.1% increase in investment. The share of fixed investment in GDP in 1998 was twice its share in 1995 and was 40.6%. The amount of foreign investment spent on the agricultural sector, which is the second most important sector that has a share in GDP, which is the most important source of employment in Azerbaijan, was less than 0.5%. Foreign investors were reluctant to invest in the manufacturing industry. As a result, the production volume of the sector has decreased significantly. Since 2000, economic relations have been established with 122 countries, the total volume of trade relations has exceeded 2.9 billion dollars. This amount was 2.2 times more than in 1993. An important point to be taken into account in the economic development of the country is this transition and development; that 20% of its lands are occupied by Armenia, as a result of which a large part (1/5) of its production potential is deprived, 300,000 jobs have been lost, and the people who previously lived on these lands (about 12% of the population) are forced to move is achieved under extremely difficult conditions: Armenia's occupation of 20% of Azerbaijan's lands forced 290 thousand families from the region, in other words, more than 1 million people to leave their homeland [5, p-17].

During the last 10 years, Azerbaijan's economy has entered a new stage in terms of quality as one of the countries with the highest economic growth rate in the world. During this period, the economic policy carried out in the country made it possible to significantly expand the size of the economy, increase the social well-being of the population, and completely modernize the socio-economic infrastructure. During 2004-2015, an average economic growth of 10.6 percent was observed in real terms, and the nominal volume of GDP increased by 7.6 times. (State Statistics Committee) During the period, there was a 6.5 times increase in GDP per capita, which raised Azerbaijan from 134th place to 79th place among the countries of the world. according to the report), the social well-being of the population has improved significantly. The poverty rate decreased from 40.2 percent in 2004 to 4.9 percent. The successful implementation of the oil strategy, which was founded by national leader Heydar Aliyev, was accompanied by an increase in the country's oil revenues, and the obtained financial opportunities enabled the financing of rapid economic growth. During the years 2004-2015, the economic growth model realized by using oil revenues created the basis for the realization of the goals set for the period, being characterized by "active investment in the main capital". The economic reforms implemented in Azerbaijan were also accompanied by a significant increase in the country's global rating indicators. It is no coincidence that according to the "Doing Business" report of the World Bank, Azerbaijan was rated as the "leading reforming state" in the world in 2009. According to the "2016-2017 Global Competitiveness Report" of the World Economic Forum, Azerbaijan moved up 27 places compared to 2006 and ranked 37th among 138 countries. According to that report, Azerbaijan ranks 39th in the world in terms of the quality of the macroeconomic environment,

26th in terms of the efficiency of the labor market, 37th in terms of the ratio of national income to GDP, and 55th in terms of the quality of infrastructure.

Since the end of 2014, the sharp drop in the price of energy carriers in the world commodity markets has been accompanied by a decrease in foreign exchange earnings of Azerbaijan, which has limited the possibilities of financing the economic growth model realized in the last 10 years. The decline in oil revenues, in turn, has reinforced the need to transform to a new approach to economic growth.

Both factors once again show that the current economic growth model has successfully completed its life cycle and enabled the achievement of the set goals. The most important strategic challenge of the new era is to ensure the transition from the "capital accumulation" based model to the "productivity (efficiency)" based growth model. This requires further improvement of the quality of the institutional environment, accessible funding sources, proper segmentation and specialization of business, modernization of macroeconomic policy based on new challenges, and most importantly, intensive preparation of highly qualified human capital.

Stages of economic growth in Azerbaijan [6]

- **Decline period (1991-1994):** This period coincided with the first years of the restoration of state independence, Azerbaijan was in a state of war, faced with the problems of more than one million refugees and internally displaced persons as a result of the military aggression of Armenia, and the weakening of trade relations between the former Union republics, as a result can be characterized by a sharp deterioration of the socio-economic situation. In that period, regional instability, incompetence in economic management, complete inefficiency of existing economic institutions deepened the economic crisis in Azerbaijan. According to the reports of the International Monetary Fund, during this period, Azerbaijan lost 60 percent of its economic potential, the existing production infrastructure was significantly destroyed, hyperinflation was observed against the background of a sharp increase in unemployment. During 1991-1994, the real GDP of Azerbaijan decreased by 17 percent per year on average, the financing of the state budget was realized mainly at the expense of emission channels, and the national currency in circulation was sharply depreciated.
- **Deep economic reforms, transition and recovery period (1995-2003):** This period after the return of the national leader Heydar Aliyev to political power, first of all, the implementation of strategic economic reforms that will ensure the restoration of political stability in the country, the transition to a market economy and efficient economic relations as a result, it can be characterized by forming the ground for high-quality economic growth. Implementation of important reforms such as large-scale land reforms and privatization of state property coincides with this period. One of the other important features of the period is that it was during this period that the foundation of the oil strategy, which ensured the rapid development of Azerbaijan, was laid. In 1994, the "Contract of the Century" signed by the national leader Heydar Aliyev on the development of Azeri-Chirag-Guneshli oil fields with an international consortium of 13 companies began to show its initial economic effect. During this period, by providing economic growth, the lost potential was restored, the stability of the national currency and prices, and a significant reduction of unemployment were achieved. Strategic foreign currency

reserves of the country were formed, confidence in the banking system was restored, and stable financing sources of the state budget were provided.

- **Period of economic development and progress (2004-2014):** The economic growth model implemented during this period has made the economy of Azerbaijan one of the fastest growing economies in the world. As a result of actively investing a part of the obtained oil revenues in the country's economy, Azerbaijan has become a high-medium income country in a short period of time, the socio-economic infrastructure has been completely renewed, and it has ranked 37th in the world in terms of global competitiveness. (According to the "2016-2017 Global Competitiveness Report" of the World Economic Forum) The measures taken and the increase in the price of natural resources laid the foundation for the breakthrough development phase of the country's economy, and during the period 2004-2010, the GDP increased by an average of 16.9 percent per year. . The increase in the volume and price of oil and gas production also contributed to the attraction of foreign direct investment (FDI) in the oil sector. In 2006, the Baku-Tbilisi-Ceyhan pipeline was officially opened, and Azerbaijan improved economic relations at the global level and ensured the continuity of oil and gas production and trade. Over the years, oil revenues have brought progress to the country by paving the way for the development of several other sectors such as construction, services, public administration, defense and social security. Thanks to the economic growth model, which allows us to successfully realize an important stage of the economic growth process, the economy has grown 6 times, and the national income per capita has increased more than 5 times. (The State Statistics Committee) During this period, price stability was maintained in the country, as a result of the significant increase in foreign currency income, large strategic currency reserves were formed, and international competitiveness was maintained by preventing excessive strengthening of the exchange rate of the national currency. During the period, activity in the banking sector increased, the volume of deposits increased 11 times, and the volume of loans increased 19 times. One of the points to pay attention to in this period is the decrease in the economic growth rate after 2011. Despite the increase of investments in the economy during the period, the weakening of economic activity was observed. The model of active capital accumulation has reached its "saturation" level after this period.
- **The period of low oil prices:** the negative effects of the sharp drop in the price of oil in the world commodity markets since the end of 2014 began to be observed in the economy of Azerbaijan from the second half of 2015. The negative impact was transmitted, first of all, to the balance of payments, and then to economic activity through financing channels of economic growth. The exchange rate of the US dollar has almost doubled against the national currency, a number of risks have been formed in terms of ensuring financial stability, and the fiscal burden on paying the public debt has increased. In order to restore economic activity, the government of Azerbaijan has taken many measures in the direction of further improvement of economic policy and acceleration of institutional reforms.

During the years 2004-2010, Azerbaijan achieved high economic growth as a result of directing a part of the obtained oil revenues to the economy. The average growth rate of the economy for the period was 16.9 percent, which is 12.9 percentage points higher than the similar indicator worldwide, 10.6 percentage points higher than the corresponding indicator for developing countries, and 12.6 percentage points higher than the corresponding indicator for CIS countries.

[7]. Average annual economic growth in the oil sector was 24.9 percent, and 11.7 percent in the non-oil sector. The noteworthy point is that large-scale investments in the non-oil sector have allowed the sector to grow significantly. Since 2010, the main driving factor of economic growth in the country has been the transformation from the oil sector to the non-oil sector. While the oil sector declined by 2.9 percent during 2010-2014, the non-oil sector grew by 8.8 percent, a total of 3 percent. economic growth has been achieved. High-tempo economic growth has made it possible to further strengthen macroeconomic stability. According to the report of the World Economic Forum, in 2014, among 144 countries, Azerbaijan moved up 36 places compared to 2008 and ranked 9th among 144 countries, and moved up 16 places to 15th place according to the ratio of the state budget balance to GDP. it is ranked 9th in terms of the ratio of income to GDP, and 12th in terms of the ratio of total public debt to GDP.

The analysis of economic growth shows that the influence of the oil factor on the achieved macroeconomic stability and prosperity is still significant. In the era of high oil prices, pro-cyclical economic policy increased the dependence of economic growth on government demand. As one of the main challenges, the transformation of economic growth from state demand to sustainable private demand remains relevant. The implemented breakthrough economic growth model was actively characterized by "capital accumulation", as a result, a large-scale and modern socio-economic infrastructure was built in the country. During this period, Azerbaijan used the "state capitalism" development model implemented in the rapidly developing Southeast Asian countries of the world. Fiscal policy was the most active wing of "state capitalism" macroeconomic policy. The investment costs of the state budget have acted as the main channel for directing large-scale oil revenues to the economy by the state. Although the main driver of economic growth until 2010 was the traditional oil sector, the main contribution to growth in 2010-2014 was made by non-oil sectors.

Another effect of active state capitalism in the structure of the economy is manifested in the fact that it is not profitable for the private sector to compete with the investment activity of the state. As a result of this, private entrepreneurship is shrinking. In this sense, if we do not take into account the contribution of the Azerbaijan International Operating Company to the economy, increasing the share of the private sector in the economy remains an important challenge. The Gini index for Azerbaijan (a qualitative measure of income distribution in the country: 0 represents complete equality and 1 represents inequality) reflects low income inequality relative to the average assessment of the compared countries. The Palma ratio (determined by dividing the share of gross national income of the richest 10 percent of the population by the share of the poorest 40 percent) also showed less income inequality than the average for comparable countries. In fact, several important indicators clearly reflect the rising standard of living of citizens in Azerbaijan. Thus, the specific weight of the population living at the poverty level decreased six times in ten years, from 29.3 percent in 2005 to 5 percent in 2014. During these years, as a result of increasing the social protection and security expenses of the state, pension and benefit payments to the population have increased 6.7 times. The minimum wage, which is another social indicator, increased more than 3 times from 30 manats per month in 2005 to 105 manats per month in 2014 [8].

In 2003-2018, Azerbaijan was included in the list of rapidly developing countries. The economy of Azerbaijan increased by 3.2 times, the non-oil sector by 2.8 times, industrial production by 2.6 times, agriculture by 1.7 times, and non-oil exports by 1.4 times. Azerbaijan's foreign exchange reserves increased from 1.8 billion dollars to 46 billion dollars. In 2003-2018, 250 billion dollars

were invested in the country's economy. Azerbaijan's economy ranked 35th in the world in terms of competitiveness, and 26th in terms of overall infrastructure development. Azerbaijan ranked third among 80 developing countries in the "inclusive development index" annual report of the form. In the "Doing Business 2019" report published by the World Bank, Azerbaijan was included in the list of the 10 most reforming countries and declared the most reforming country [10].

As a continuation of these processes, today the diversification of the country's economy continues successfully. Millions of manat concessional loans are allocated for the financing of investment projects of business entities through the state line. The agricultural sector has developed widely and Azerbaijan is now one of the rare countries that ensures its own food security. Concretely, it can be said that in the future, sustainable economic growth will be achieved by developing the economy, maintaining macroeconomic stability, carrying out economic reforms, supporting the non-oil sector and entrepreneurship, further strengthening the industrial potential, increasing exports, developing the agro-industrial complex and regions, ensuring food security, keeping the level of unemployment and poverty to a minimum level, etc. are considered as the main priority areas of the government's activities.

As can be seen from the mentioned statistical indicators, the economy of Azerbaijan has developed rapidly since independence. This development was due to the oil sector until the 2000s. However, in recent times, the share of the non-oil sector in this development has gradually increased. The analyzed indicators are a clear example that Azerbaijan's economy has entered a new stage with a high economic growth rate during the last 10 years. The economic policy implemented in the country since the years of Azerbaijan's independence has enabled the significant expansion of the economy, the improvement of the social welfare of the population, and the adjustment of the socio-economic infrastructure to the requirements of the modern era. At the same time, the economic growth model realized in recent years has created fertile conditions for the formation of large-scale foreign exchange reserves in the country, which can play an important role in the absorption of potential risks that the country's economy will face in the future, and at the same time, it can play an important role in the financing of future economic development.

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AZƏRBAYCANIN İQTİSADI İNKİŞAFINDA QIDA SƏNAYESİNİN YERİ VƏ ROLU

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ABSTRACT

For the development of the food industry, raw materials should be taken into account first. The raw material base of agricultural products is the economic regions of Azerbaijan, and with the availability of sufficient products, it is important to develop the processing industry in this area in the regions. Our republic has a number of advantages related to the development of the food industry. For this purpose, the main and main issue arising from the State Programs is to provide each citizen of the country with food products in accordance with the accepted norms for a healthy, productive lifestyle.

In order to achieve this, the fulfillment of certain tasks has been set as an important goal and maximum measures have been taken. In the field of food production, favorable conditions have been created in different regions of the republic, and dozens of factories have been put into operation and serve to meet the country's food demand.

For the economic development of Oka, effective work has been done for the health and natural nutrition of the society. During the period of activity of the food production and processing plants, in addition to satisfying the needs of the people for these products, they also export the final products to foreign markets. Sufficient products have been produced in the food industry, which is one of the main leading areas of the processing industry, in the production of food, beverages, and tobacco products.

The result of the conducted research is that the production of food industry products in our country has increased by 2 times in the last 5 years in terms of food and beverage production, and by 10 times in the production of tobacco products. The main reason for this is the provision of state support to the non-oil industry.

The analysis of the current level of production of food industry products by different types shows that there has been an increase in the production of some products, and a decrease in others.

The application of the existing management system of large corporations in developed market economy countries in the largest joint-stock companies operating in the food industry of our country has a positive effect on the development of this field. In 2020, 5613.8 million manats of the 9065.3 million manats directed to the fixed capital of the entire industry were directed to the oil and gas extraction industry, 2610.5 million manats to the processing industry, and a small part of 225.1 million manats was directed to the production of food products.

Modern techniques and technologies applied in food industries create favorable conditions for more efficient use of raw materials and resources.

Ensuring the development of the non-oil industry in the country, in order to increase both the ecological quality and quantity of food products, the regular monitoring of work in the field by the relevant institutions increases the production of safer and natural products in the food sector.

Keywords: food industry, processing industry, food products, agriculture, quality of products, modernization of enterprises, export.

XÜLASƏ

Yeyinti sənayesinin inkişafı üçün ilk növbədə xammal ehtiyatları nəzərə alınmalıdır. Kənd təsərrüfatı məhsullarının xammal bazası, Azərbaycanın iqtisadi rayonlarıdır və yetərincə məhsulların mövcudluğu ilə, regionlarda bu sahə üzrə emal sənayesinin inkişaf etdirilməsi vacibdir. Respublikamızın yeyinti sənayesinin inkişaf etdirilməsilə əlaqədar bir sıra üstünlükləri vardır. Bu məqsədlə Dövlət Proqramlarından irəli gələn əsas və başlıca məsələ, ölkənin hər bir vətəndaşının sağlam, məhsuldar həyat tərzini üçün onun qəbul edilmiş normalara uyğun ərzaq məhsulları ilə təmin etməkdir.

Buna nail olmaq üçün, müəyyən vəzifələrin yerinə yetirilməsi vacib məsələ kimi qarşıya məqsəd olaraq qoyulmuş bə maksimum tədbirlər görülmüşdür. Qida məhsullarının istehsalı sahəsində respublikanın müxtəlif rayonlarında əlverişli şərait yaradılaraq, yezlərlə zavodlar fəaliyyətə gətirilmiş və ölkənin qida tələbatının ödənilməsinə xidmət edirlər.

Ölkənin iqtisadi inkişafı üçün cəmiyyətin sağlam olması və təbii qidalanması üçün səmərəli işlər görülmüşdür. Yeyinti istehsal və emal zavodlarının fəaliyyəti dövründə, yetərincə xalqın bu məhsullara olan tələbatlarını ödəməklə yanaşı, xarici bazarlara da son məhsullar ixrac edirlər. Emal sənayesinin əsas aparıcı sahələrindən olan yeyinti sənayesində, qida, içki, tütün məmulatları istehsalı üzrə yetərincə məhsul istehsal olunmuşdur.

Aparılan araşdırmadan belə nəticə əldə olunur ki, ölkəmizdə yeyinti sənayesi məhsullarının istehsalı son 5 ildə qida və içki istehsalı üzrə 2 dəfə, tütün məmulatları istehsalı üzrə isə 10 dəfəyə qədər artmışdır. Buna əsas səbəb qeyri-neft sənayesinə dövlət dəstəyinin göstərilməsidir.

Yeyinti sənayesi məhsullarının istehsalının müxtəlif növlər üzrə mövcud səviyyəsinin təhlili göstərir ki, bəzi məhsulların istehsalında artım, bəzilərinə isə azalma olmuşdur

İnkişaf etmiş bazar iqtisadiyyatı ölkələrində iri korporasiyaların mövcud idarəetmə sisteminin ölkəmizin yeyinti sənayesində fəaliyyət göstərən ən iri səhmdar cəmiyyətlərində tətbiq edilməsi, bu sahənin inkişafına müsbət təsir göstərir. 2020-ci ildə bütün sənaye üzrə əsas kapitalla yönəldilmiş 9065,3 milyon manat investisiyanın 5613,8 milyon manatı neft-qaz çıxarma sənayesinə, emal sənayesinə 2610,5 milyon manat, az hissəsi 225,1 milyon manat qida məhsulları istehsalına yönəldilmişdir.

Son illərdə Azərbaycanda kənd təsərrüfatı məhsullarının uzun müddətə saxlanması üçün soyuducu anbar komplekslərinin tikintisinə xüsusi diqqət yetirilir.

Yeyinti sənaye sahələrində tətbiq edilən müasir texnika və texnologiya, xammal və resurslardan daha səmərəli istifadə edilməsinə əlverişli şərait yaradır.

Ölkədə qeyri-neft sənayesinin inkişafının təminatı, yeyinti məhsullarının həm ekoloji cəhətdən keyfiyyətli, həm də cəmiyyətinin yüksəldilməsi məqsədilə, aidiyyəti qurumlar tərəfindən sahə üzrə işlərin mütəmadi nəzarətdə saxlanması, qida sektorunda daha təhlükəsiz və təbii məhsul istehsalını artırır.

Açar sözlər: yeyinti sənayesi, emal sənayesi, ərzaq məhsulları, kənd təsərrüfatı, məhsulların keyfiyyəti, müəssisələrin modernləşdirilməsi, ixrac.

Azərbaycanın əlverişli iqlim-şəraiti, yeraltı və yerüstü təbii sərvətlərlə zəngin bir dövlət olaraq, 1995-ci ildən iqtisadiyyatın bazar münasibətləri əsasında qurulması ilə əlaqədar aqrar islahatlar

həyata keçirilməyə başlamışdır. Dövlət mülkiyyətində olan kənd təsərrüfatı məhsullarının istehsalı və emalı ilə məşğul olan sənaye müəssisələrinin özəlləşdirilməsinə 1993-cü ildən start verilməsilə, sahibkarlıq fəaliyyətinin inkişaf tempi, ilbəl artmaqda davam edir. “1995-1999-cu illərdə dövlət mülkiyyətinin özəlləşdirilməsinin Dövlət Proqramı”na əsasən Kənd Təsərrüfatı Nazirliyinin tabeliyində olan emal-yeyinti sənaye müəssisələri özəlləşdirilmək üçün Dövlət Əmlakı Komitəsinin sərəncamına verilmişdir.

Yeyinti sənayesinin inkişafı üçün ilk növbədə xammal ehtiyatları nəzərə alınır və bunun üçün sözü gedən sahələrin inkişaf mənbəyini kənd təsərrüfatı məhsullarının xammal bazaları təşkil edir. Azərbaycanın iqtisadi rayonlarının meyvə, tərəvəz, süd, ət və s. kənd təsərrüfatı məhsulları ilə mövcudluğu, regionların bu sahə üzrə emal sənayesinin inkişaf etdirilməsinə əsas verir. Qeyd etmək lazımdır ki, Apşeron, Aran, Yuxarı Qarabağ, Kəlbəcər-Laçın, Dağlıq Şirvan, Quba-Xaçmaz, Gəncə-Qazax, Şəki-Zaqatala, Lənkəran və Naxçıvan iqtisadi rayonlarının hər birinin müxtəlif adda məhsullarla zəngin olması, ölkədə ərzaq təhlükəsizliyinin təminatına qarant olaraq, onun daha da genişləndirilməsinə diqqət artırılır.

Respublikamızın yeyinti sənayesinin inkişaf etdirilməsilə əlaqədar bir sıra üstünlükləri vardır:

Yeyinti sənayesinin tarixi ənənələri;

- Yeyinti sənayesinin istehsalı üçün zəngin xammal bazası;
- Ölkəmizdə yetişdirilən meyvə-tərəvəz məhsullarının bir çoxunun dünyada analoqunun olmaması;
- Bir sıra istehsalatların respublikanın kiçik və orta şəhərlərində yerləşdirilməsi imkanı və ərazi ehtiyatı;
- Nəqliyyat daşımaları baxımından əlverişli iqtisadi-coğrafi mövqe;
- Potensial ixrac bazarlarına yaxın olması.

Sahənin inkişaf etdirilməsi məqsədilə həm daxili bazarın təmin edilməsi, həm də xarici bazar üçün məhsul istehsalı və artırılması əsas məsələlərdəndir. Bunun üçün də, ilk növbədə əsaslı vəsaitlər fəaliyyətdə olan müəssisələrin yenidən qurulmasına, genişləndirilməsinə və texniki cəhətdən silahlandırılmasına yönəldilməlidir. Xarici investisiyaların, ekspertlərin, texnologiyaların cəlb edilməsi, partnyorlarla əməkdaşlıq və kooperasiya əlaqələrinin qurulması da zamanın tələbidir. Emal-yeyinti sənayesinin inkişafı üçün xammal mənbəyi hesab edilən kənd təsərrüfatı məhsullarının bölgələr üzrə inkişafına diqqəti artırmaqla nail olmaq mümkündür.

Azərbaycan Respublikası Prezidentinin Fərmanları ilə təsdiq edilmiş “Azərbaycan Respublikası regionlarının sosial-iqtisadi inkişafı Dövlət Proqramlarında” Azərbaycan Respublikasının regionlarında qida sənayesinin inkişafı üzrə önəmli tədbirlər nəzərdə tutulmuş və bu tədbirlər icra edilməkdə davam eddir. Proqramların icrası nəticəsində regionlarda çoxsaylı sənaye müəssisələri fəaliyyətə başlamış, bəzi sənaye müəssisələrinin fəaliyyəti isə yenidən qurulmuşdur.

"2008-2015-ci illərdə Azərbaycan Respublikasında əhalinin ərzaq məhsulları ilə etibarlı təminatına dair Dövlət Proqramı"nın təsdiq edilməsi ölkəmizdə qida sənayesində yeni və uğurlu bir səhifə açmışdır.

Dövlət Proqramının əsas və başlıca məqsədi ölkənin hər bir vətəndaşının sağlam, məhsuldar həyat tərzini üçün onun qəbul edilmiş normalara uyğun ərzaq məhsulları ilə tam təmin edilməsinə nail olmaqdır.

Bu məqsədə nail olmaq üçün Dövlət Proqramı çərçivəsində müəyyən vəzifələrin yerinə yetirilməsi nəzərdə tutulmuşdur:

- ölkədə ərzaq məhsulları istehsalını artırmaq;
- əhalini təhlükəsiz və keyfiyyətli ərzaq məhsulları ilə təmin etmək;

- ərzaq təminatı sahəsində risklərin idarə olunmasını təmin etmək;
- ərzaq təminatı sisteminin institusional inkişafını həyata keçirmək və sahibkarlıq mühitini yaxşılaşdırmaq.

Ölkədə kənd təsərrüfatı məhsullarının emal sənayesini inkişaf etdirmək imkanları yüksəkdir və qida sektorunun inkişafı baxımından bu amil önəmli rol oynayır. Xüsusilə, heyvandarlıq kompleksində ağırtı məhsullarının alınması ilə MDB və Avropa bazarına daha məqsədyünlü çıxmaq mümkündür.

Dövlətimiz qida sektorunun günbəgün inkişafı üçün, əsas vəzifə olaraq, yeyinti məhsulları ilə daxili bazarı təmin etdikdən sonra, xarici bazarlara çıxmaq perspektivlərinin genişləndirilməsinin vacib amillərini vurğulayır:

- yeyinti məhsullarının rəqabətqabiliyyətliliyinin təmin edilməsi üçün ilk növbədə bioloji komponentlərlə zəngin yerli xammaldan istifadə etməklə məhsulların mənimsənilməsi;
- məhsulun bioloji dəyərliliyinin və dad keyfiyyətinin təmin edilməsi;
- məhsulun qablaşdırılması ucun tara və avadanlıqlarla təminatın gücləndirilməsi, məhsulların sterilləşdirilməsi metodlarının tətbiqi;
- xammalın emala daxil olmasından başlayaraq hazır məhsulun qablaşdırılmasına qədər bütün proseslərin mexanikləşdirilməsi və avtomatlaşdırılması;
- məhsulun saxlanması, nəqli və emalı zamanı itkilərin azaldılması, xammalın kompleks istifadəsi, təkrar xammal resurslarının emalı və əlavə yeyinti məhsullarının alınması;
- istehsal edilən məhsulların keyfiyyətinin beynəlxalq standartların tələblərinə uyğunlaşdırılması;
- yeyinti sənayesi müəssisələrinin modernləşdirilməsi və yenidən qurulması ucun investisiya qoyuluşlarının həcmi artırılması.

Bu illər ərzində qeyd olunan vəzifələrin yerinə yetirilməsi, bu sahədə həyata keçirilən tədbirlər nəticəsində, ölkədə sabit və adekvat ərzaq təklifi formalaşdırılmış, səmərəli istehsal və satış infrastrukturunu yaradılmış, ərzaq məhsullarının keyfiyyətinə nəzarət sistemi gücləndirilmiş və hər bir vətəndaşın ərzaq məhsullarına çıxışı təmin olunmuşdur.

Qida məhsullarının istehsalı sahəsində Ağcabədi rayonunda “Gilan” MMC-nin süd emalı zavodu, Samuxda “NAA Aqrotara” MMC-nin meyvə qurudulması və emalı müəssisəsi, Tovuz rayonunda süd emalı zavodu, Ağcabədidə “Atena” süd məhsulları kombinatı və süd emalı zavodu, İmişli rayonunda “Azərsun Holding” şirkətinin “Green Land” yem fabriki, “Gilan Qəbələ Konserv Zavodu” MMC-nin Qəbələ limonad zavodu, “Aqroinvestkom” MMC-nin Şəki şərab zavodu, Oğuz şəhərində qarğıdalı emalı və qlükoza istehsalı müəssisəsi, Ağsuda “Az-Granata” MMC-nin şirə və şərab emalı və çörək zavodu fəaliyyətə başlamaqla, ölkənin qida tələbatının ödənilməsinə xidmət edirlər.

Tərtər rayonunda “Gilan” MMC tərəfindən inşa olunan süd emalı zavodu, Gəncədəki “Jardin Royal” şokolad fabriki, Qəbələdə meyvə-tərəvəz saxlamaq üçün soyuducu anbar və meyvəçəşidləmə sexi, Abşeron rayonunun Masazır qəsəbəsində yodlaşdırılmış və rafinadlaşdırılmış qida duzu zavodu, “Cəlilabad Şərab-2” Açıq Səhmdar Cəmiyyətinin şərab zavodu, “Azərsun” Holdingin “Natural Green Land” kənd təsərrüfatı müəssisəsinin və konserv zavodu, Qəbələdəki “Gilan” konserv zavodunda yaradılan yeni istehsal sahələri, Zaqatalada “İntertobakko” MMC-nin tütün emalı zavodu, Zaqatala süd emalı zavodu, İsmayilli rayonunun Hacıhətəmli kəndində fəaliyyət göstərən 200 ton illik istehsal gücünə malik “Monolit” MMC-nin “İsmayilli şərab-2” ASC, “Aqrovest” MMC tərəfindən Zaqatalada fındıq istehsalı zavodu da fəaliyyətləri dövründə, yetərincə xalqın bu məhsullara olan tələbatlarını ödəməklə yanaşı, xarici bazarlara da son məhsullar ixrac edirlər.

Goranboyda “Gilan ənd Knauf Gipso-karton” MMC-nin zavodu, Lənkəranda çay fabriki, Naxçıvan şəhərində “Badamlı” mineral su zavodu, Samuxda süd emalı müəssisələri də istismara verilməklə, ölkənin iqtisadi inkişafı üçün cəmiyyətin sağlam olması və təbii qidalanması üçün səmərəli işlər görülmüşdür.

Ölkədə qeyri-neft sənayesinin inkişafının təminatı, yeyinti məhsullarının həm ekoloji cəhətdən keyfiyyətli, həm də kəmiyyətinin yüksəldilməsi məqsədilə, aidiyyəti qurumlar tərəfindən sahə üzrə işlərin mütəmadi nəzarətdə saxlanması, qida sektorunda daha təhlükəsiz və təbii məhsul istehsalını artırmışdır.

Müstəqil ölkəmizdə qida sənayesində iri və kiçik müəssisələrin fəaliyyəti üçün, dövlət tərəfindən xüsusi dəstək göstərilir. Qeyd etmək lazımdır ki, güclü istehsal potensialına malik, fəaliyyət göstərən müəssisələr qida sektorunda, Azərbaycanı həm istehsalçı həm də ixracatçı ölkə halına gəlməsində böyük rol oynayırlar. Geniş ixracat şəbəkəsinə sahib olan bəzi şirkətlər ölkənin qida sənayesinin flaqmanıdır.

Hazırda şirkətlərin məhsulları ABŞ, Almaniya, Türkiyə, BƏƏ, Litva, Polşa, İraq, İsrail, Çin, Rusiya Federasiyası, Ukrayna, Belarus Respublikası, Gürcüstan, Qazaxıstan, Türkmənistan, Tacikistan, Qırğızıstan, və Özbəkistana, uğurla ixrac olunmaqdadır. İxrac edilən məhsullar sırasına çay, konservləşdirilmiş məhsullar, yağ, duz, şəkər, fındıq və digər qida məhsulları daxildir.

Respublikamızda regionlar üzrə sənaye məhsulunun (işlərin, xidmətlərin) strukturuna nəzər salmaq. (cədvəl 1.1)

Cədvəl 1.1. Regionlar üzrə sənaye məhsulunda işlərin və xidmətlərin dəyəri, faktiki qiymətlərlə milyon manat.

İllər / Göstəricilər	2015	2016	2017	2018	2019	2020
Bakı şəhəri	22448,2	27468,7	34100,1	41373,9	39745,0	29662,1
Abşeron iqtisadi rayonu	626,9	980,9	1265,1	1499,7	2367,8	2731,6
Dağlıq - Şirvan iqtisadi rayonu	17,1	19,9	23,0	27,8	72,1	81,0
Gəncə - Daşkəsən iqtisadi rayonu	287,9	419,6	535,6	563,0	654,1	666,4
Qarabağ iqtisadi rayonu	44,7	57,1	85,8	97,5	125,6	114,7
Qazax - Tovuz iqtisadi rayonu	138,6	196,3	235,2	260,5	303,8	368,5
Quba - Xaçmaz iqtisadi rayonu	77,7	94,2	143,7	172,0	286,7	271,4
Lənkəran iqtisadi rayonu	75,3	102,2	129,2	148,0	176,2	192,0
Mərkəzi Aran iqtisadi rayonu	368,8	343,7	506,4	439,7	563,8	580,3
Mil - Muğan iqtisadi rayonu	150,3	370,6	325,3	293,5	463,9	438,3
Şəki - Zaqatala iqtisadi rayonu	109,0	193,1	243,7	262,3	423,4	441,0
Şərqi Zəngəzur iqtisadi rayonu	1,2	1,1	4,4	2,8	3,0	2,5
Şirvan - Salyan iqtisadi rayonu	341,7	402,9	593,9	756,8	798,7	679,5
Naxçıvan Muxtar Respublikası	91,7	94,3	96,7	99,0	101,5	104,0

Mənbə: stat.gov.az.(sənaye)

Cədvəl 1.1-dən göründüyü kimi, əsasən sənaye müəssisələrinin əksəriyyəti Bakı şəhərində yerləşdiyi üçün sənaye məhsulunun həcmində əsas hissəsi məhz Bakı şəhərində yerləşən sənaye müəssisələrində istehsal olunur. Statistik məlumatlara nəzər salsaq görərik ki, respublikamızda

regionlar üzrə iqtisadi rayonlarda sənaye məhsullarının həcmində artım müşahidə edilmişdir. Qeyd edək ki, məhsul istehsalının artımının üstün cəhətlərindən biri də daxili tələbatı ödəməklə bərabər ixrac məhsulunun artmasına da geniş imkanlar yaranır.(cədvəl 1.2)

Statistik məlumatlara nəzər salsaq görürük ki, emal sənayesi müəssisələrində 2015-ci ildə fəaliyyət göstərən müəssisələrin sayı - 1778 ədəd, 2019-cu ildə isə bu sahədə müəssisələrin sayı - 2330 ədəd olmuşdur. Rəqəmlərdən belə məlum olur ki, emal sənayesində müəssisələrin sayı artan xətt üzrə inkişaf edir.

Sənaye müəssisələrin mülkiyyət növlərinə tərkibinə nəzər saldıqda, cədvəl 1.2-dən göründüyü kimi, qarışıq mülkiyyətə əsaslanan müəssisələrin sayı 2015-ci ildə 75 ədəd olduğu halda, 2019-cu ildə artaraq 97-yə çatmışdır. Bunu da emal sənayesinə xarici investorların marağının yüksək olması və dövlətin bu sahəyə dəstəyinin nəticəsi kimi qəbul etmək olar.

Həmçinin sənaye müəssisələrin tərkibində mülkiyyət növlərinə görə xarici mülkiyyətə məxsus sənaye müəssisələrində yetərli sayda olması diqqəti cəlb edir. Belə ki, 2015-ci ildə bu tip müəssisələrin sayı 179 ədəd olduğu halda, 2019-cu ildə 276 ədəd olmuşdur. Statistik məlumatlara nəzər salsaq görürük ki, müstəqillik illərində sənaye istehsalının mülkiyyət formalarına görə strukturunda yeyinti sənayesinin xüsusi çəkisi ilbəl artmışdır.

Cədvəl 1.2. Fəaliyyət göstərən sənaye müəssisələrinin sayı, vahid

İllər Göstəricilər	2015	2016	2017	2018	2019	2020
Bütün mülkiyyət növləri üzrə	2583	2561	2582	2837	3169	3389
Dövlət mülkiyyəti	577	573	530	537	562	556
Qeyri - dövlət mülkiyyəti	2006	1988	2052	2300	2607	2833
Xüsusi mülkiyyət	1752	1734	1779	1975	2234	2435
Birgə mülkiyyət	75	73	78	92	97	115
Xarici mülkiyyət	179	181	195	233	276	283
Emal sənayesi	1778	1775	1826	2034	2330	2515
Oida məhsullarının istehsalı	382	391	361	393	449	487
İçki istehsalı	120	119	110	120	126	131
Tütün məmulatları istehsalı	7	7	9	10	11	13

Mənbə: stat.gov.az (sənaye)

Emal sənayesinin əsas tərkib hissələrindən sayılan ölkə əhalisinin əsas ərzaq və digər sənaye məhsulları ilə təmin olunmasında özünə məxsus rola malik olan qida sənayesində 2015-ci ildə müəssisələrin sayı 382 ədəd olduğu halda, 2019-cu ildə artaraq 449 ədəd olmuşdur. Mülkiyyət formasına nəzər salsaq görürük ki, istehsal əsasən qeyri - dövlət sektoru hesabına həyata keçirilir. Təbii ki, sənaye müəssisələrinin sayında əldə edilən bu artımlar ölkəmizdə sənaye məhsullarının həcmində artırılmasına öz müsbət təsirini göstərmişdir.

Cədvəl 1.3-dən göründüyü kimi respublikamızda sənaye istehsalının həcmində əsas yeri qeyri-dövlət sektoru tutur. Yəni bu sahədə istehsal olunan məhsulların həcmində əsas hissəsi qeyri-dövlət sektoruna məxsusdur.(cədvəl 1.3)

Cədvəl 1.3. Sənaye məhsulunda işlərin və xidmətlərin dəyəri, faktiki qiymətlərlə, milyon manat.

İllər Göstəricilər	2015	2016	2017	2018	2019	2020
Bütün sənaye	26369,4	32300,2	39892,5	47677,8	46999,2	37269,9
a) dövlət sektoru	6228,0	6328,4	7846,1	8085,4	8422,4	8101,7
b) qeyri - dövlət sektoru	20141,4	25971,8	32046,4	39591,6	38576,8	29168,2
Emal sənayesi	7880,4	8899,5	9723,5	10465,4	11793,8	11848,3
Qida məhsullarının istehsalı	2307,6	2964,7	2999,8	3050,8	3584,8	3884,3
İçki istehsalı	197,7	223,9	263,4	295,0	433,1	427,6
Tütün məmulatların istehsalı	27,2	41,5	39,2	56,1	248,9	436,0

Mənbə: stat.gov.az (sənaye)

İllər üzrə statistikaya diqqət yetirdikdə aydın olur ki, 2015-ci ildə sənaye məhsulunun ümumi həcmi 26369,4 milyon manat, 6228,0 milyon manat dövlət, 20141,4 milyon manat isə qeyri-dövlət sektorunun payına düşmüşdür. 2020-ci ildə bu rəqəm ümumi - 37269,9 milyon manat və 8101,7 milyon manat dövlət, 29168,2 milyon manat isə qeyri-dövlət sektorun payına məxsus olmuşdur. Ölkə əhalisinin əsas ərzaq və digər sənaye məhsulları ilə təmin olunmasında mühüm əhəmiyyətə malik olan yeyinti sənayesində məhsulun həcminə görə, istehsal əsasən qeyri-dövlət sektoru hesabına təmin olunur. Statistikaya nəzər salsaq görərik ki, emal sənayesində ümumilikdə 2015-ci ildə ümumi sənaye məhsulunun həcmi - 7880,4 milyon manat, 2020-ci ildə isə - 11848,3 milyon manat olmuşdur.

Emal sənayesinin əsas aparıcı sahələrindən olan yeyinti sənayesində, o cümlədən:

1. qida məhsullarının istehsalı üzrə 2015-ci ildə 2307,6 milyon manat, 2020-ci ildə 3884,3 milyon manat;
2. içki istehsalı üzrə 2015-ci ildə 197,7 milyon manat, 2020-ci ildə 427,6 milyon manat;
3. tütün məmulatları istehsalı üzrə tam olaraq 2015-ci ildə 27,2 milyon manat, 2020-ci ildə isə 436,0 milyon manat həcmində məhsul istehsal olunmuşdur.

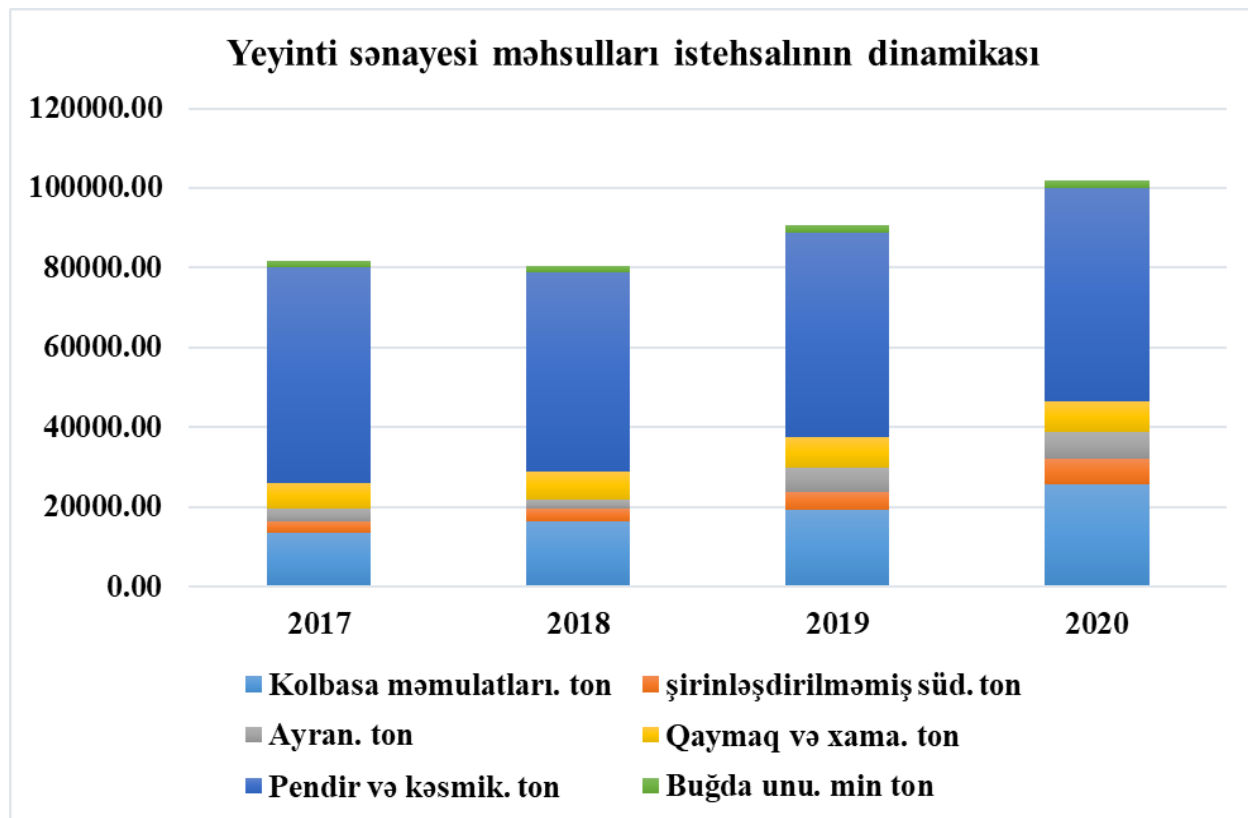
Aparılan araşdırmadan belə nəticə əldə olunur ki, ölkəmizdə yeyinti sənayesi məhsullarının istehsalı son 5 ildə qida və içki istehsalı üzrə 2 dəfə, tütün məmulatları istehsalı üzrə isə 10 dəfəyə qədər artmışdır. Buna əsas səbəb qeyri-neft sənayesinə dövlət dəstəyinin göstərilməsidir. Eyni zamanda 2019-cu ilə nisbətən 2020-ci ildə dövlət və qeyri-dövlət sektorunda, qida və içki məhsulları istehsalında azalmalar müşahidə olunmuşdur ki, bu da həmin dövrün məlum səbəbilə (pandemiya) əlaqədar idi. 2020-ci ildə sərt pandemiya tədbirlərinin tətbiqi, iaşə müəssisələrinin fəaliyyətinin dayandırılması, tətbiq olunan məhdudiyətlər məhsulların istehlakını azaltmışdır.

Yeyinti sənayesi məhsullarının istehsalının ayrı-ayrı növlər üzrə mövcud səviyyəsinin təhlili göstərir ki, bəzi məhsulların istehsalında artım, bəzilərinə isə azalma olmuşdur.

Cədvəl 1.4. Yeyinti sənayesi məhsulları istehsalının dinamikası.

Məhsullar	2017	2018	2019	2020	2017-ci ilə nisbətən 2020-ci ildə, %-lə
Kolbasa məmulatları, ton	13504,2	16410,0	19333,4	25833,6	191,3
Qatılaşdırılmış, şirinləşdirilməmiş süd, ton	2771,9	3213,9	4430,1	6404,3	2,3 dəfə
Ayran, ton	3304,8	2267,2	6175,6	6488,9	196,3
Qaymaq və xama, ton	6541,2	6947,0	7620,2	7742,2	118,4
Pendir və kəsmik, ton	53974,4	50080,9	51346,0	53472,6	99,1
Buğda unu, min ton	1601,3	1602,9	1781,7	1842,9	115,1

Mənbə: stat.gov.az (sənaye)



Şəkil 1. Bəzi yeyinti sənayesi məhsulları istehsalının dinamikası.

Emal sənayesinin çoxşaxəli inkişaf etdirilməsi və aqrar sahədə istehsal olunan məhsulların dəyər zənciri üzrə son məhsula çevrilməsinə qədər emalın xüsusi sosial - iqtisadi əhəmiyyəti vardır. Yeyinti sənaye sahələrinin çoxşaxəli inkişaf etdirilməsinin əsas xarakterik cəhətləri ondan ibarətdir ki, ölkəmizdə olan xammal və resurslardan səmərəli istifadə və ölkəmizin xammal ixrac edən ölkədən hazır sənaye məhsulları ixrac edən ölkəyə çevrilməsində və ölkə əhalisinin işlə

təmin olunmasında xüsusi əhəmiyyətə malikdir.

Yeyinti sənayesinin inkişafında dövlət dəstəyi tədbirləri əhəmiyyətli rol oynayır. ABŞ təcrübəsində federal büdcədən federal şəbəkə vasitəsilə birbaşa maliyyələşdirmə ilə kiçik biznesə dövlət dəstəyi təmin edilir. Bundan əlavə, bu struktur bölmələr sahibkarlara informasiya xidmətləri göstərir, infrastruktur dəstəyini (texnoparklar, biznes inkubatorlar), habelə kiçik biznesin vəziyyətinin müstəqil qiymətləndirilməsini həyata keçirir. Bundan əlavə, ABŞ-da kiçik və orta biznesin dəstəklənməsinə yönəlmiş 40-a yaxın müxtəlif dövlət proqramları, o cümlədən təlim, konsaltinq, maliyyə dəstəyi, müqavilələrin yerləşdirilməsində yardım, innovativ proqramlar proqramlar mövcuddur.

Amerika iqtisadiyyatında innovasiyalara daim artan tələbat ölkə iqtisadiyyatının inkişafının əsas elementi kimi ilk növbədə kiçik biznesin inkişafına yönəlmiş müxtəlif məqsədyönlü proqramları dəstəkləmək və inkişaf etdirmək üçün güclü stimuldur. Yeyinti sənaye sahələrinin əlverişli kreditləşməyə ehtiyacı səbəbindən, ölkə üzrə yeddi mindən çox maliyyə şirkəti (banklar və innovativ şirkətlər) müxtəlif dəstək proqramlarında iştirak edir.

Almaniya və Fransa təcrübəsində nəzərə alaraq qeyd etmək lazımdır ki, yeyinti sənaye sahələrinə kiçik və orta sahibkarlığa dövlət dəstəyi sosial-iqtisadi modelinin əsası hesab olunur. Ümumilikdə, Avropa İttifaqında məşğulluğun 70%-ni və ümumi dövriyyənin 57%-ni təmin edən 23 milyona yaxın kiçik və orta sahibkarlıq subyekti fəaliyyət göstərir. Birliyin əksər ölkələrində kiçik biznesin inkişafına dəstək yeni müəssisələrin qeydiyyatı üçün ən sadələşdirilmiş prosedurlar, eləcə də bir sıra təhsil və konsaltinq dəstəyi proqramları ilə əldə edilir. Bir qayda olaraq, Avropa İttifaqının ərazisində dövlət satınalmaları sahəsində vahid qaydalar mövcuddur ki, bu qaydalar Aİ üzvlərinin qarşidan gələn dövlət satınalmaları barədə bir-birlərini vaxtında məlumatlandırmalarını və vahid direktivlərə riayət etmələrini tələb edir. Yeni müəssisələrin yaradılmasını, biznesin daha da uğurlu olmasını, kiçik müəssisələrin beynəlxalq səviyyəyə çıxmasını, yeni iş yerlərinin açılmasını stimullaşdırmağa imkan verən güzəştli vergi yükünə mühüm əhəmiyyət verilir. Avropa İttifaqının ərazisində kiçik müəssisələrin innovativ fəaliyyətinin dəstəklənməsi, onların ixrac imkanlarının inkişaf etdirilməsi, özünüməşğulluğun stimullaşdırılması məqsədilə elektron ticarət modellərinin genişmiqyaslı tətbiqi həyata keçirilir.

Cədvəl 1.5 Sənayedə əsas kapitalla yönəldilən investisiyalar (faktiki qiymətlə), milyon manat

Sahələr	İllər					
	2015	2016	2017	2018	2019	2020
Bütün - cəmi sənaye	8499,8	9949,8	10610,1	8447,2	9258,0	9065,3
Mədəncixarma sənayesi	7415,1	8576,7	8428,5	5702,3	5670,5	5613,8
Emal sənayesi	422,9	424,3	652,6	1431,9	2466,4	2610,5
Qida məhsulları istehsalı	87,9	63,6	125,5	196,6	140,4	225,1
O cümlədən Xarici investisiyalar	-	-	32,0	16,5	13,0	18,8
Daxili investisiyalar	87,9	63,6	93,3	180,1	127,4	206,3
İçki istehsalı	23,7	4,1	26,9	39,3	21,3	39,4
Tütün məmulatları	-	0,8	0,4	60,7	35,1	4,3

Mənbə: stat.gov.az (sənaye)

İnkişaf etmiş bazar iqtisadiyyatı ölkələrində iri korporasiyaların mövcud idarəetmə sisteminin ölkəmizin yeyinti sənayesində fəaliyyət göstərən ən iri səhmdar cəmiyyətlərində tətbiq edilməsi, bu sahənin inkişafına müsbət təsir göstərə bilər. Bu sahəyə yönəldilən investisiyaların tərkibinə nəzər salsaq, Cədvəl 1.4-dən göründüyü kimi 2015 - 2020-ci illərdə əsas kapitalla yönəldilən investisiyalar əsasən neft çıxarma sənayesinə yönəldilmişdir. 2020-ci ildə bütün sənaye üzrə əsas kapitalla yönəldilmiş 9065,3 milyon manat investisiyanın 5613,8 milyon manatı məhz neft-qaz çıxarma sənayesinə, emal sənayesinə isə 2610,5 milyon manat investisiya yönəldilmişdir ki, onun da az hissəsi 225,1 milyon manat qida məhsulları istehsalına yönəldilmişdir. Qida məhsulları istehsalına yönəlmiş investisiyanın 2015-ci ildən 2018-ci ilə qədər olan dövrdə artması (2015-ci ildə 87,9 milyon manat, 2018-ci ildə 196,6 mlyn.manat), 2019-cu ildə isə 140,4 mlyn.manat olmaqla azalması, 2020-ci ildə isə əvvəlki ilə nisbətən 84,7 milyon manat artaraq 225,1 milyon manata çatmışdır.

Yeyinti sənayesi müəssisələrində bütünlükdə sənaye müəssisələrində elmi cəhətdən yeni innovativ məhsul istehsalı məqsədilə texnoparklar, sənaye parkları, biznes-xətt inkubatorları və s. yaradılmışdır. Onların əsas məqsədi ən son texnoloji yeniliklərə nail olmaqla istehsalın rəqabətə davamlı və keyfiyyətə yüksək innovativ məhsul istehsal etməkdir. Eyni zamanda innovativ yeniliklərin istehsalata tətbiqi məhsulun keyfiyyətini yüksəltməklə yanaşı istehsalat itkilərini də minimuma endirir. Yeyinti müəssisələrində ərzaq məhsullarının xarab olmasının qarşısını almaqdan ötrü istehsalat prosesi zamanı temperatur dərəcələrinin normada tətbiqi vacibdir. Ərzaq məhsullarının saxlanması prosesində müəssisələrdə temperatur rejiminin düzgün tənzimlənməsi üçün, istehsal prosesində qurğularla tam və lazımi mexanizmlərin təchiz olunması, yüksək keyfiyyətli və rəqabətə davamlı məhsul istehsalının vacib şərtlərindəndir. Yeyinti sənaye müəssisələrinin ərzaq məhsullarını başqa ərəzilərə yararlılıq müddətini bitirmədən çatdırılması, nəqliyyat strukturu ilə yanaşı soyuducu anbar şəbəkələrinin yaradılmasını da tələb edir. Son illərdə Azərbaycanda kənd təsərrüfatı məhsullarının uzun müddətə saxlanması üçün soyuducu anbar komplekslərinin tikintisinə xüsusi diqqət yetirilir. Belə ki, anbarların tikintisinə Sahibkarlığa Kömək Milli Fondundan güzəştli kreditlər ayrılır və Hacıqabulda tutumu 2 min ton olan “Yurd El” MMC, Abşeronda tutumu 7 min ton olan “Zəhmət-Ruzi” MMC, Sumqayıtda tutumu 4 min ton olan “Delta Qrup C.O.” MMC, Salyanda tutumu 5 min olan “Sultan-O” MMC, Şabranda tutumu 2 min ton olan “Ələddin Fermer” MMC, Qubada tutumu 4 min ton olan “Zəm-Zəm” MMC, və s. soyuducu-anbar müəssisələri yaradılmış və əhaliyə məhsulların keyfiyyətli çatdırılmasına xidmət edir.

Müəssisələrdə tətbiq olunan texnika və texnologiya bir sıra tələblərə cavab verməlidir:

- tətbiq olunan texnologiya istehsalın həcmi artırmaqla yanaşı müəssisələrin strateji inkişaf hədəflərinə və dövlətin sosial-iqtisadi inkişaf strategiyasına xidmət etməlidir;
- innovativ yenilik məhsulun keyfiyyət göstəricilərini yüksəltməklə yanaşı istehsal olunan məhsulun alıcılar tərəfindən tələbi də artırmalıdır;
- istehsalata tətbiq edilən texnologiya, istehsal edilən məhsulların daxili və beynəlxalq bazarların standartlarına uyğunluğunu təmin etməlidir;
- istehsalata tətbiqi zamanı əhalinin gəlir səviyyəsinə uyğun məhsulun maya dəyərinin aşağı olması, qiymətin minimumlaşdırılması;
- yeni texnika və texnologiya əsas etibarilə sahibkarların gəlir əldə etməsinə və onun artırılmasına səbəb olmalıdır. Bütün bunlara nail olmaq üçün ən başlıcası isə peşəkar mütəxəssis əməyindən istifadə olunmalıdır.

Nəticə

Yeyinyi sənayesinin inkişaf etdirilməsi istiqamətində aparılan iqtisadi inkişaf tədbirləri özündə əhalinin ərzaq təhlükəsizliyinin təmini və Azərbaycanın digər ölkələrdən ərzaq təminatı nöqtəyindən əsərləndirilməsinə əsaslanır. İqtisadiyyatın inkişafı onun ən geniş sahələrindən yeyinti sənayesi spesifikasiyası ilə kənd təsərrüfatının (ASK) qarşılıqlı birgə uzlaşdırılmış inkişafına əsaslanır. Yeyinti sənaye müəssisələrinin mövcud vəziyyəti, müasir dövrün qabaqcıl tələblərinə uyğun avtomatlaşdırılması, qloballaşma şəraitində Azərbaycanda mövcud olan yeyinti sənayesinin inkişaf problemlərinin müqayisəli təhlili və tədqiqi məsələləri öz əksini tapmışdır. Azərbaycan Respublikasının yeyinti sənayesi perspektiv iqtisadi sahə kimi qarşısında duran mühüm vəzifə olaraq, sosial-iqtisadi inkişaf strategiyasının həyata keçirilməsi nəticəsində iqtisadi artım göstəricilərinin stabilliyinin qorunub saxlanılması və möhkəmləndirilməsi istiqamətində əlverişli inkişaf strategiyasının həyata keçirilməsi nəticəsində maksimum imkanlardan istifadə etmişdir.

Yeyinti sənaye müəssisələrində əldə edilən nəliyyətlər, yeni müəssisələrin tikilməsi, mövcud müəssisələrin genişləndirilməsi, rekonstruksiya edilməsi və texnika baxımından yenidən qurulması hesabına istehsal güclərinin artırılması mümkün olmuşdur. Bu müəssisələrdə ən son texnoloji yeniliklərin tətbiqi, rəqabətə davamlılıq, keyfiyyətə yüksək məhsul istehsalı təmin edilmiş və davamlı inkişaf naminə, daha optimal variantlardan istifadə edilmişdir.

Azərbaycanda nəinki, daxili bazar təminatı üçün, eyni zamanda xarici bazarlarda da ölkəmizin istehsalı olan, yeyinti məhsullarının ixracı xüsusi olaraq, diqqəti cəlb edir. Belə fəaliyyətin, təbii ki, respublika üçün nə qədər əhəmiyyət daşıdığı, bir xalq olaraq qürurvericidir.

THE PLACE AND ROLE OF THE FOOD INDUSTRY IN THE ECONOMIC DEVELOPMENT OF AZERBAIJAN

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SUMMARY

For the development of the food industry, raw materials should be taken into account first. The raw material base of agricultural products is the economic regions of Azerbaijan, and with the availability of sufficient products, it is important to develop the processing industry in this area in the regions. Our republic has a number of advantages related to the development of the food industry. For this purpose, the main and main issue arising from the State Programs is to provide each citizen of the country with food products in accordance with the accepted norms for a healthy, productive lifestyle.

In order to achieve this, the fulfillment of certain tasks has been set as an important goal and maximum measures have been taken. In the field of food production, favorable conditions have been created in different regions of the republic, and dozens of factories have been put into operation and serve to meet the country's food demand.

For the economic development of Oka, effective work has been done for the health and natural nutrition of the society. During the period of activity of the food production and processing plants, in addition to satisfying the needs of the people for these products, they also export the final products to foreign markets. Sufficient products have been produced in the food industry, which is one of the main leading areas of the processing industry, in the production of food, beverages, and tobacco products.

The result of the conducted research is that the production of food industry products in our country has increased by 2 times in the last 5 years in terms of food and beverage production, and by 10 times in the production of tobacco products. The main reason for this is the provision of state support to the non-oil industry.

The analysis of the current level of production of food industry products by different types shows that there has been an increase in the production of some products, and a decrease in others.

The application of the existing management system of large corporations in developed market economy countries in the largest joint-stock companies operating in the food industry of our country has a positive effect on the development of this field. In 2020, 5613.8 million manats of the 9065.3 million manats directed to the fixed capital of the entire industry were directed to the oil and gas extraction industry, 2610.5 million manats to the processing industry, and a small part of 225.1 million manats was directed to the production of food products.

Modern techniques and technologies applied in food industries create favorable conditions for more efficient use of raw materials and resources.

Ensuring the development of the non-oil industry in the country, in order to increase both the ecological quality and quantity of food products, the regular monitoring of work in the field by the relevant institutions increases the production of safer and natural products in the food sector.

Keywords: food industry, processing industry, food products, agriculture, quality of products, modernization of enterprises, export.

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NATURE, CONTENT, AND CLASSIFICATION OF EXISTING RISKS IN INDUSTRIAL ENTERPRISES

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ABSTRACT

In all areas of the development of the human society, the increase in income has been related to the risk that the owners and investors take. The owner and the guide who do not accept risky decisions in the market economy are a person who is eager to be still and to manage. It is always possible to obtain income-standard management, which is more likely to be obtained by the risk management report.

To live in accordance with the market conditions, it is necessary to refrain from being old-fashioned, and to follow technical innovations. All these increase the risk. The strengthening of the risk is the expense of the owner in the ownership and the special payment according to it.

The essence of the risks in the administration of the company is that it is a market that ensures the democratization of the administration. Because risk and income are related to each other. Each agreed-upon administration has varying degrees of risk. Since the risk is stated that the event will happen, it will not happen, it is considered in the acceptance of the management decisions for the owners. For every risk that may cause harm under the market conditions, the guides and installers of the establishment are financially liable.

Keywords: risk, economy, industry risks, finance.

Since the choice of the consumer is uncertain for the producer in many cases, the decisions made regarding the production are directly related to the risk. For this reason, it is essential to consider and predict the risks that the entrepreneur may face in both stages, and to determine possible ways to reduce the losses that may occur as a result of the risk. Since the concept of "risk" is a phenomenon consisting of complex and sometimes contradictory processes, it is not sufficiently reflected in the legislation and is not considered at the necessary level by several entrepreneurs during practical use, there are various conflicting and mixed opinions in giving its concept and showing its elements. is available. Information about the economic analysis of the concept of "risk" can be found in the literature written by researchers of the United States of America (USA) at the beginning of the 20th century [6].

For the first time, it was brought to the scientific literature by the US researcher Frank Knight, and in his research work "Risk, Uncertainty and Returns" (1921), risk was interpreted as an economic category. While researching the general principles of sustainable socio-economic organization, i.e., any firm, F. Knight looked at the competition together with the natural price theory and explained the firm's activity in a net and non-net competitive environment and showed the difference between them. He noted that ideally, buyers and sellers have information about the market in a purely competitive environment, which exists only in theory.

Therefore, firms do not face any difficulty in price management. In the later chapters of the work, F. Knight states that a purely competitive market does not exist in real life and that firms face uncertainty during the formation of prices and their management.

Two functions of risk - stimulating and protective functions are distinguished. The stimulating function has two aspects: constructive and deconstructive.

The first aspect manifests itself when the risk fulfills the role of a specific catalyst during the solution of economic issues.

The second aspect is manifested by the fact that decision-making and implementation lead to adventurism with unreasonable risk.

Consistently, the protection function has two aspects - historical - genetic and socio-legal aspects. The content of the first aspect is that people always spontaneously look for forms and means of protection against possible undesirable consequences. The essence of the second aspect is the need to apply the category of legality of risk to economic, labor and criminal legislation. The stimulating role of readiness for risk can be both constructive (creative) and destructive (destructive).

In the first case, the willingness of the entrepreneur to take risks, his determination to act in uncertain conditions, relying on the factor of will, helps economic activity. Making decisions about where to invest or how to use these available funds can be particularly important. This aspect is characteristic, first of all, for innovation issues and investment projects. In the second case, voluntary decision-making can lead to adventurous activity, and in this case it should be viewed as unfounded voluntarism.

The role of protecting an entrepreneur operating in uncertain conditions can be interpreted in two ways. It is about the fact that the participants of the economic process have always created and use various forms of protection against undesirable results in their activities. This aspect is practically expressed in the creation of various insurance and need funds, as well as in the insurance of entrepreneurial risks.

The effectiveness of the organization of risk management is determined, first of all, by the correct identification of the risk according to the scientifically justified classification system. By combining categories, groups, types, subtypes, this system creates conditions for the effective application of appropriate methods and techniques of risk management. Each risk has its own management method [4].

The following types of risks are distinguished. The credit risk for the enterprise consists of the commercial bank's refusal to grant credit or to extend the credit period as much as possible. This is the risk of not being able to pay the interest and principal amount on the loan. In the conditions of granting loans, the level of credit risk increases with the increase of the amount and period of the loan.

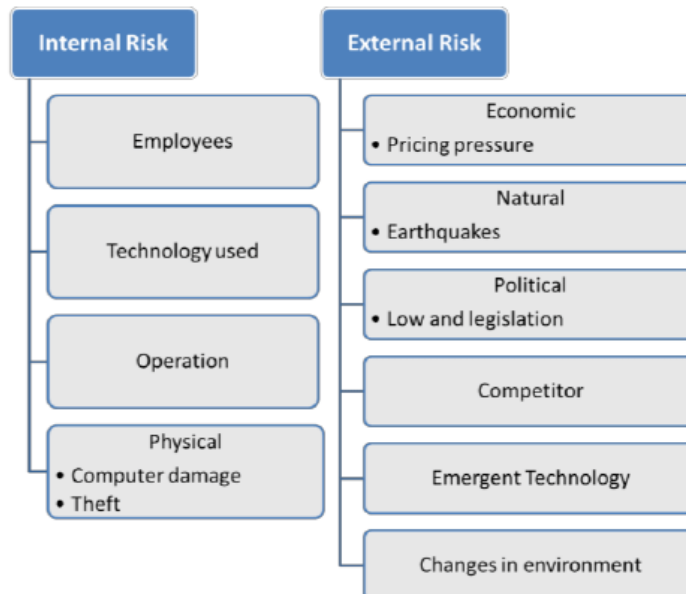
The factors that determine the credit risk are: debt term, interest rate, payment method, bilateral or group credit, credit provision and guarantee, terms of the credit agreement, credit currency provided, reliability of the commercial bank. When determining the cost of the loan, one-time payments should be included in the total cost of the loan, and the total cost of the debt should be taken into account. In the management of credit risk, the correct selection of the type of loan that depends on the borrower's demand and the value of the loan is important. If the debtor enterprise is constantly in need of debt funds, then an emergency loan provided in full at the beginning of the term is a more favorable form.

The interest on such a loan is calculated from the entire amount, the main part of which is paid in periodic payments or at the end of the term. Credit risk management involves a justified choice of debt terms (floating or fixed interest rate).

Sources of risks

In public literature, there are not only approaches to the understanding of the content of the concept of "risk", but also to its nature from objective and subjective points of view. In the literature, either subjective or objective-subjective nature of risk is preferred. An important place among them is its objective-subjective nature. Risk is related to choosing certain alternatives and calculating the probability of their outcome, so this is its subjective side. It is clear from this that people's psychological, ideological, etc. since their views are different, their views on this or that level of risk are also different. Risk also has an objective side [1,2].

The objective existence of risk presupposes the possibility of the existence of options, material and ideological relations, many natural, social and technological processes acting as subjects of socio-economic life. The objectivity of the risk is that it reflects the events that exist and occur in real life in terms of activity. Thus, the risk exists regardless of whether its existence is accepted, investigated, or denied. The objective-subjective nature of risk is explained by the fact that it originates both from subjective processes and from processes that ultimately do not depend on people's desire and will.



Internal and External risk sources

Source: [2,15]

Investigating the nature of risks makes it possible to determine the sources of their occurrence. Risks arise mainly from the following sources [3].

1. Natural processes and events that occur by themselves or arise from internal causes, natural disasters. The natural forces of nature are manifested as: earthquakes, floods, hurricanes, storms, landslides, as well as individual unpleasant natural phenomena - frost, rain, hail, lightning,

drought, etc. All these processes can become a source of unexpected costs, having negative effects on the results of entrepreneurial activity.

2. Randomness. Many socio-economic and technological processes, multi-variant material relations, acting as the subjects of entrepreneurial activity, which are assumed to exist, cause that these or other similar events do not occur in the same way under the same conditions. Thus, there is an element of randomness here. This shows that it is impossible to determine the occurrence of the expected result in advance. For example, it is not possible to accurately predict the number of passengers of a vehicle operating on a certain route.

The most noticeable, unpredictable effects affecting the results of entrepreneurial activity are the following: - various types of accidents - fire, explosion, nuclear and thermal power plant waste, and other similar events; - equipment failure; - unpleasant incidents in production, transportation, etc. Experience shows that although society takes steps to reduce the probability of occurrence of the above-mentioned accidental events and the damage they can cause, the probability of their occurrence remains the same and no advanced engineering measures can eliminate them.

1. Existence and conflict of controversial ideas, conflict of interests. This source of risk is the manifestation of events ranging from an extremely large number of wars and transnational conflicts to competition and conflicts of common interests. Thus, an entrepreneur may face the following situations during war operations:

- stoppage of import and export operations.
- confiscation of goods, even enterprises.
- restriction on foreign investment.
- freezing or forcible confiscation of assets or income abroad, etc.

During the fight for buyers, competing enterprises increase the nomenclature and assortment of released products, improve their quality, lower their prices, etc. There is also unfair competition [5].

Among the risk reduction methods, the following have a special place

1. Choosing unsystematic risk. Choosing an unsystematic risk based on the rule "Do not put a boss against a boss" means that these risks depend on the enterprise itself. After the analysis, the most convenient one is selected. This refers, first of all, to the distribution of the enterprise's power between the directions of activity, the results of which are not related to each other. Choosing an unsystematic risk means expanding the enterprise, acquiring an additional type of goods or services. In this case, the risk for the enterprise is reduced. In other words, it is necessary to create an opportunity for such a risk to occur so that it is possible to fight against it. Or the analogy "in order to successfully hunt with one cartridge, open fire not at the bird, but at their very random ball or take many cartridges" would be correct.

2. To share the risk among the participants of the project. This in itself is a way of avoiding risk. In addition, the risk must be transferred to the participant so that he can cope with the risk. Because all participants are a single team and the income belongs to them, not to the nonprofit. This work is confirmed in the project plan and contract documents with the full consent of all participants. Usually, the seller and the buyer, or the customer and the executive are participants. In such a case, since the interests of the parties are different, the well-known game theory is used to model the situation.

3. Insuring and self-insuring. In the first case, the enterprise applies to the insurance firm (company) and pays the insurance money. In the second case, he insures himself. However, in our republic, as in foreign companies, there is not enough opportunity to fully insure the project.

4. To obtain honest, additional, necessary and complete information. Every information means money. This information can be obtained on the basis of personal analysis, confidentially and from publicly published sources.

5. To limit capital. Banks apply this to this or that enterprise after conducting a detailed report.

6. Accumulate reserves. This is the more common way. Thus, the enterprise tries to implement the project by increasing the cost of the project by 7-12%. When the risk occurs, a part of it is compensated on account of the excess amount, and when it does not occur, it remains as the income of the enterprise as an additional reserve.

In general, the ways chosen to reduce risk should be carefully studied and applied responsibly. This in itself means managing risk.

Conspicuous achievements in the rapid economic development of Western countries with experience of management in market economy conditions prove that it is possible to manage risks. Since risk management is a part of enterprise management, there should be a person who deals with it. Usually, this function is performed by the financial manager. Risk management means the development and implementation of recommendations and measures in order to reduce them to an acceptable level.

In enterprises operating in different management structures, there are a large number of risks with different consequences, which are consistent with each other and which are not, repeated and not. For this reason, they are analyzed and managed with the help of various methods and techniques. A financial manager who uses the "risk avoidance" method in risk management should take the following steps:

- refuse unreliable partners;
- seek security;
- to insure business risks;
- avoid risky projects.

In the method of "eliminating the risk", steps are taken such as: a) creation of venture enterprises, b) creation of a special department to carry out risky projects. The following steps are taken in the method of "dissipating the risk":

- moving to diverse activity and economic zones;
- increase the number of sales and purchase places;
- to diversify the investment;
- share responsibility among production teams;
- allocating risk over time.

In the method of "compensating the risk" the following is envisaged:

- monitoring of the socio-economic and legal-normative environment;
- planning of external conditions and activities;
- creation of reserve systems;
- strategic planning of activities;
- preparation of targeted active marketing plan.

It has been proved from a theoretical and experimental point of view that every person who wants to properly manage risks must follow the following rules:

- one cannot risk more than the available capital;
- it is necessary to think about the consequences of the risk;
- they do not risk too much for the sake of little;
- a positive decision can be taken when there is complete certainty, otherwise a negative decision should be taken;

Endogenous factors of risk form the micro-environment of the enterprise's activity.

It is known that the main factor that motivates market subjects to engage in entrepreneurship is income. And income is the difference between the costs of production factors and their value. This includes rent (ie, interest income), wages, and risk premium. Risk premium is the additional profit that the entrepreneur tries to get as a reward for the decision taken by the entrepreneur under the conditions of risk.

Thus, in a fully informed environment, the market is not dynamic, but static, and individuals have no incentive to engage in entrepreneurial activity. Because the main factor that motivates people to do business is income, and therefore risk.

American professor C.B. Clark explains income as follows: "... income is a trap for people to engage in entrepreneurial activity. A better form of this is salary supplements. For development to occur, this bait must be large enough that the person is willing to overcome obstacles and take risks.

Some of the changes that occur because of human activity in everyday life can be known in advance, and some cannot. As a result of those changes, it is only possible to assume that a loss will occur or that additional income will be obtained. There is an indirect relationship between income and change, which is influenced by various factors.

From this it can be concluded that pure competition exists only in conditions of certainty. In reality, since people do not have complete information about the future, there is no pure competitive environment. It is this factor that creates uncertainty in entrepreneurs about their future activity in the market, which stimulates their activity and encourages them to earn income and develop.

Another cause of uncertainty is related to time. Because there is an indirect relationship between the change in the economic situation and income. Thus, income arises when the time between the time when the entrepreneur produces the product and the time when the product is sold differs. At the same time, production costs and sales prices differ from each other, which creates a change. If there was no change, the cost of production and the selling price of the product would be the same due to competition. Since this is not possible in reality, since there is no information about the future change, mainly, its result, the prices are formed only on the basis of the forecast, which creates an incentive for the entrepreneur.

We live in a constantly changing, uncertain world, and we have very little accurate information about the future. Problems in life are often caused by our lack of information. This can be seen both in business and in other areas.

Although uncertainty as an economic category has been studied by various researchers, there is still disagreement on its explanation. Some authors refer to the concept of "uncertainty" as a condition of lack of information or lack of reliability. Others do not agree with such a definition of uncertainty and do not consider the certainty of information to be the main condition for the effectiveness of management.

The main goal of management is to obtain certainty in various ways in conditions of uncertainty for efficient management of objects. For this, it is necessary to take into account random events in order to find optimal options in decision-making.

Uncertainty is the main feature of the market economy. Unlike the administrative-emirate system, not everything is known in the market economy, and different outcomes are possible. On the one hand, this is good because it creates an incentive for action among market subjects, on the other hand, it makes it difficult to predict the future and there is a possibility that the results will be negative.

Uncertainty also has its own characteristics. This is related to the economic system, the activity of the economic system, the diversity of the set goals, the contradictions of the economic parameters. All this creates different situations on the one hand, and on the other hand causes different types of uncertainty.

Reducing the level of uncertainty is possible by organizing and coordinating activities. Because it is thanks to the organization of the activity that the uncertain process is determined. After that, deficiencies are revealed through regulation.

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POSTOPERATIVE PAIN AND MULTIMODAL ANESTHESIA IN BARIATRIC SURGERY

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ABSTRACT

Any rational anesthesia strategy should focus on intraoperative and postoperative pain control. Adverse effects of opioids on the course of the early postoperative period are known.

The aim of our study is to determine the correlations of acute postoperative pain with different types of anesthesia.

Methods: 203 patients who underwent bariatric surgery were under our observation; 113 (55.67%) of them are women and 90 (44.33%) are men.

Standard anesthesia with opioids was administered to 49 (24.14%) patients - group I, multimodal + partial use of opioids - group II: 76 (37.44%), multimodal anesthesia - 78 (38.42%) - group III.

Results: During anesthesia with opioids, compared to the second and third groups, the pain in the operative area, as well as in the head, throat, waist and ears is significantly higher.

During multimodal anesthesia, pain is reliably less in all cases, and pain in the throat was not noted.

Correlation analysis showed that opioid anesthesia was significantly correlated with postoperative pain.: Pain in the operated area - $r=0.504^{**}$, $p<0.001$; Head pain - $r=0.395^{**}$, $p<0.001$; Throat pain - $r=0.301^{**}$, $p<0.001$ Waist pain $r=0.320^{**}$, $p<0.001$ Muscles pain - $r=0.422^{**}$, $p<0.001$

whereas multimodal anesthesia was significantly negatively correlated with all types of postoperative pain.

In the second phase, in the opioid anesthesia group, compared to the second group, there is significantly more pain in the lower back and muscles, and in the third group, there was no pain at all.

The frequency of patients who did not require medical treatment during the intrahospital stage is not significantly different from each other, and the pain requiring non-opioid treatment is significantly less after multimodal anesthesia - Group I - 28(57.14%), Group II - 25(32.89%), Group III - 2(2.56)($p<0.0001$). Pain requires opioid medication - Group I - 20(40.82)Group II - 19(25.00%), ($p<0.0001$). No patient in this group required opioid treatment.

In the ambulatory stage, no patient in the multimodal anesthesia group needed medical treatment, and significantly fewer patients in group II needed non-opioid treatment.

Conclusion: Multimodal anesthesia reduces perioperative pain and the need for perioperative opioid use.

Keywords: Postoperative pain, Multimodal anesthesia, perioperative opioid use.

The use of bariatric surgery to treat severe obesity has several benefits in terms of sustained weight loss, improvement or resolution of several metabolic comorbidities in terms of improvement [1].

Cognition is defined as the brain's ability to acquire, process, store, and retrieve information. Pain is described as an unpleasant sensory or emotional experience, and in order to consciously experience pain, cognitive processing is necessary [2]. The pain pathway consists of transduction, transmission, modulation and perception [3].

Any rational anesthesia strategy should focus on intraoperative and postoperative pain control [4]. Adverse effects of opioids on the course of the early postoperative period are known. In addition to the traditional side effects of rats (depression of consciousness, excessive sedation, nausea, etc.), they have the ability to create opioid-induced hyperalgesia, immunosuppressive effects and reduce the effect of local anesthetics; In addition, opioid analgesia prevents accelerated postoperative rehabilitation of patients. The concept of multimodal analgesia allows refusing the use of opioid analgesics or reducing their dose to a minimum in the perioperative period. Multimodal analgesia involves the simultaneous administration of two or more drugs that affect different levels of acute pain syndrome formation [5].

The use of traditional methods of general anesthesia and postoperative analgesia with a combination of narcotic and non-narcotic analgesics is accompanied by an increase in hemodynamic parameters - both during the operation and during the four days of the postoperative period [6].

Management strategy, anesthetic choice and anesthetic doses must be adapted to the needs of the individual patient [7]

The aim of our study is to determine the correlations of acute postoperative pain with different types of anesthesia.

Methods

203 patients who underwent bariatric surgery were under our observation; 113 (55.67%) of them are women and 90 (44.33%) are men.

Standard anesthesia with opioids was administered to 49 (24.14%) patients - group I, multimodal + partial use of opioids - group II: 76 (37.44%), multimodal anesthesia - 78 (38.42%) - group III.

1 group

Propofol - potentiator of GABA A receptors, Fentanyl - opioid (narcotic analgesic), Sevoflurane - inhalation drug, Morphine - opioid (narcotic analgesic), Promedol - opioid (narcotic analgesic).

2 groups

Propofol - potentiator of GABA A receptors, Fentanyl - opioid (narcotic analgesic), Sevoflurane - inhalation drug,

Dexmedetomidine is a selective agonist of alpha 2 receptors, Locoregional analgesia (lidocaine, naropin, bupivacaine - sodium channel blockers).

3 groups

Propofol - potentiator of GABA A receptors, Sevoflurane - inhalation drug, Dexmedetomidine is a selective agonist, of alpha 2 receptors, Locoregional analgesia (lidocaine, naropin, bupivacaine - sodium channel blockers),

Dosing was done according to the individual characteristics of the patient.

Statistical Analysis

Categorical variables are expressed as frequencies and %. variables were compared with the use of the Fisher's Exact Test. Correlation analysis between categorical variables was performed by Spearman correlation analyses, p value <0.05 was considered as statistically significant. All statistical analyses were performed using SPSS version 23.

Results

The localization of pain after surgery is given in Table 1.

Table 1. Distribution of pain according to localization and type of anesthesia

Phases of postoperative care	localization of pain in the operated area	Group I (With opioids) n=49		Group II (With partial use of multimodal opioids) n=76		Group III (multimodal) n=78		F	p
		n	%	n	%	n	%		
Phase I	head	47	95.92	43	56.58	14	17.95	58.12	<0.0001
	throat	19	38.78	9	11.84	1	1.28	20.94	<0.0001
	waist	10	20.41	4	5.26	0	0.00	10.94	<0.0001
	muscles	20	40.82	14	18.42	4	5.13	14.17	<0.0001
Phase II	Pain in the lower back	25	51.02	15	19.74	2	2.56	26.98	<0.0001
	Pain in the muscles	9	18.37	3	3.95	0	0.00	10.38	0.0001
		11	22.45	8	10.53	0	0.00	9.77	0.0001

Post-anesthetic pain after bariatric intervention in Phase I of post-anesthetic care was distributed as follows:

As we can see, pain in the operated area is the most common, while throat pain is the rarest.

During anesthesia with opioids, compared to the second and third groups, the pain in the operative area, as well as in the head, throat, waist and ears is significantly higher.

During multimodal anesthesia, pain is reliably less in all cases, and pain in the throat was not noted.

Correlations between type of anesthesia and pain during bariatric surgery are shown in table 2.

Table 2. Correlations between type of anesthesia and postoperative pain:

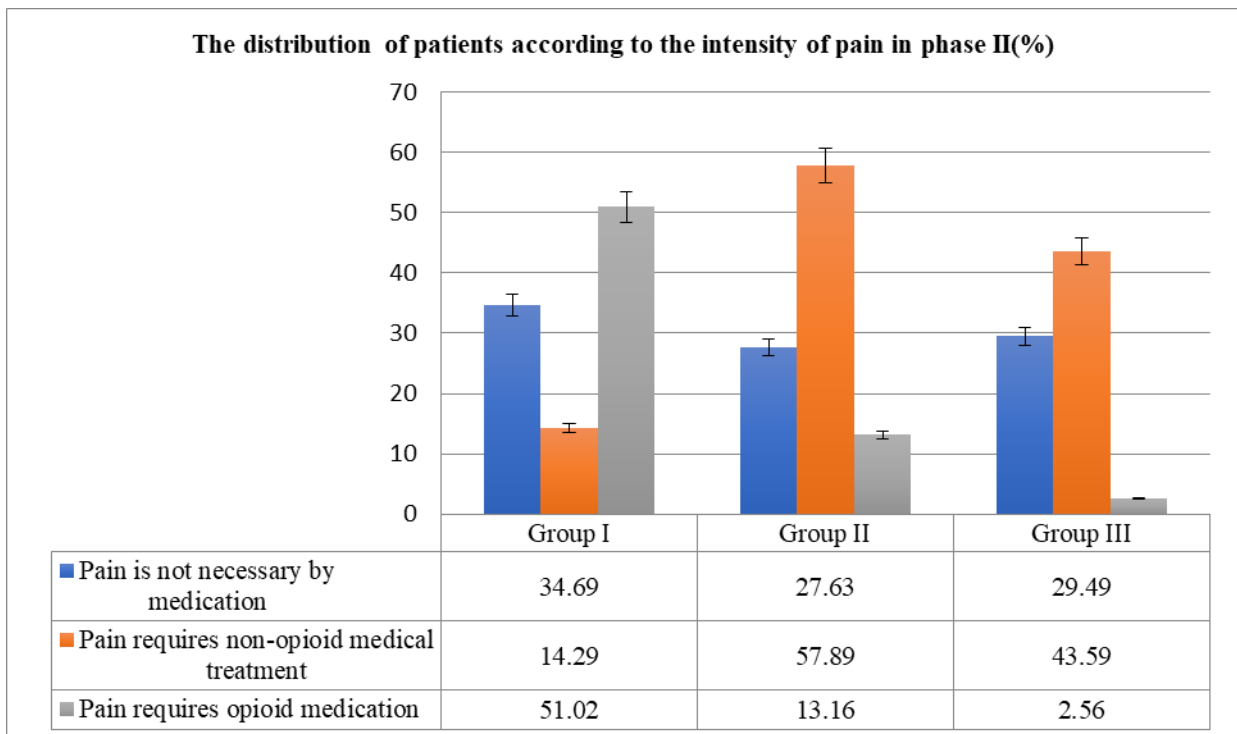
Factors		Anesthesia with opioids	With partial use of multimodal+opioids	Multimodal anesthesia
Pain in the operated area	r	0.504**	0.083	-0.526**
	p	<0.001	0.240	<0.001
Head pain	r	0.395**	-0.054	-0.294**
	p	<0.001	0.444	<0.001
Throat pain	r	0.301**	-0.050	-0.215**
	p	<0.001	0.480	0.002
Waist pain	r	0.320**	-0.006	-0.275**
	p	<0.001	0.933	<0.001
Muscles pain	r	0.422**	-0.018	-0.353**
	p	<0.001	0.797	<0.001
	p	<0.001		<0.001

* - $p < 0.05$, ** - $p < 0.01$

Correlation analysis showed that opioid anesthesia was significantly correlated with postoperative pain, whereas multimodal anesthesia was significantly negatively correlated with all types of postoperative pain.

In the second phase, in the opioid anesthesia group, compared to the second group, there is significantly more pain in the lower back and muscles, and in the third group, there was no pain at all.

The distribution of patients according to the intensity of pain in phase II is given in diagram 1.

**Diagram N1**

No significant difference between the groups was observed in the frequency of patients who did not require medication for pain relief after surgery, the need for non-opioids was significantly higher in group II, and the need for opioids was significantly higher in group III. The degree of pain in intra-hospital and post-hospital stages is given in Table 3.

Table 3. Assessment of pain quality at intrahospital and posthospital stages:

Post intensive stages	degree of pain	Group I (With opioids) n=49		Group II (With partial use of multimodal opioids) n=76		Group III (multimodal) n=78		F	P
		n	%	n	%	n	%		
Intrahospital stage	Pain (discomfort) is not necessary by medication	1	2.04	4	5.26	4	5.13	30.51	<0.0001
	Pain requires non-opioid medical treatment	28	57.14	25	32.89	2	2.56	20.78	<0.0001
	Pain requires opioid medication	20	40.82	19	25.00	0	0.00	30.51	<0.0001
Ambulatory stage	Pain (discomfort) does not require medical treatment	7	14.29	5	6.58	3	3.85	2.48	0.0865
	Pain requires non-opioid medical treatment	18	36.73	9	11.84	0	0.00	21.15	<0.0001

As can be seen from the table, the frequency of patients who did not require medical treatment during the intrahospital stage is not significantly different from each other, and the pain requiring non-opioid treatment is significantly less after multimodal anesthesia. No patient in this group required opioid treatment.

In the ambulatory stage, no patient in the multimodal anesthesia group needed medical treatment, and significantly fewer patients in group II needed non-opioid treatment.

Discussion

Multimodal anesthesia (MMA) refers to the use of additive or synergistic combinations of analgesics to achieve clinically necessary analgesia, with the goal of minimizing the significant side effects associated with higher doses of a single aquagenic medication, such as opioid analgesics[8], especially since a patient's first exposure to opioids often occurs in the perioperative setting, a vulnerable time when multimodal therapy can play a major role in reducing opioid exposure[9].

The importance of multimodal anesthesia is particularly emphasized in patients who may be prone to opioid-related side effects, such as patients with obstructive sleep apnea. Healthcare systems can also benefit from implementing effective MMA, as fewer opioid-related side effects can improve patient outcomes, lead to faster recovery, and rational use of resources [10].

Our study showed that there is a reduction in postoperative pain under multimodal anesthesia. Opioid-free anesthesia allows us to avoid their use in the perioperative period. According to our

study, the frequency of need for postoperative use of opioids is dramatically reduced in the multimodal anesthesia group.

Prevention of postoperative pain should begin immediately after planning the operative treatment. A multidisciplinary group of doctors, based on the conclusion made after assessing the patient's condition and risk factors, will draw up a perioperative plan for pain relief [12].

Conclusion: Multimodal anesthesia reduces perioperative pain and the need for perioperative opioid use.

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BOTOX COMPILATION

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ABSTRACT

Botulinum neurotoxin is a toxin produced by the anaerobic Clostridium botulinum bacteria. While Botox is used in many diseases thought to be caused by excessive contraction of striated and smooth muscles, it has also become popular with its use in the cosmetic field. When the toxin is injected into the muscles, it affects the nerve cells and creates partial and temporary paralysis, thus preventing the muscle from contracting too much. Botulinum toxin, which started to be applied in the perioral region for therapeutic purposes, is used in various areas such as temporomandibular joint disorders, bruxism, gummy smile, masseter hypertrophy, salivary gland problems. Although the therapeutic effect of Botox is temporary and relatively safe, it is essential to have knowledge of the relevant anatomy and the systemic and local side effects of drugs applied to the face.

Introduction

Treatment options in dentistry are changing day by day, and non-conventional options like the use of botulinum toxin (Botox) are becoming increasingly popular. Botox (BTX) is a reversible, minimally invasive, and safe treatment option for numerous disorders in the maxillofacial region. Even though Botox has been known as an aesthetic treatment option used to eliminate facial wrinkles, it has long been used in medicine and dentistry in different treatment indications by blocking neuromuscular activity for a certain period (1).

Botulinum toxin

2.1. Mechanism of Action

Botox has eight serotypes (A, B, C1, C2, D, E, F, G), and all serotypes have a similar structure and molecular weight (2). When botulinum toxin is administered to muscles with high activity, paralysis occurs in the relevant muscles, and muscle activity decreases. Botulinum toxin shows its effect by inhibiting the release of acetylcholine (Ach), which provides conduction in all parasympathetic and cholinergic nerve endings (1-8). The toxin irreversibly binds to the presynaptic neuron, but it takes two weeks to complete its effect. The effect duration varies between 3-6 months. With repeated injections, the duration of the toxin's effect is prolonged.

2.2. Commercial Forms

The A, B, E, and F types of toxin are active in humans. Types A and B are used for therapeutic purposes. (4). The dosage of botulinum toxin (BTX) treatment varies with the brand of toxin used. The dose given for any toxin type is valid only for the specific preparation and cannot be added or transferred to the doses of other preparation unless it is the same toxin serotype. The toxin dose

should be adjusted precisely because different preparations have varying effects on different body parts (5).

Some trade names and countries of origin of Botox are as follows:

Botox®: It is purified BTX-A isolated through the fermentation of *C.botulinum*. The Allergan company commercialized the purified BTX-A under the trade name Botox in 1991. Every vial of Botox provides 5 ng (nanograms) (100 U) of air-dried toxin. The vials also contain 500 µg of albumin and 900 µg of sterile vacuum-dried sodium chloride (without preservatives). There is FDA approval in many European countries, USA and Canada (6).

Dysport®: It contains 12.5 ng (500 U) of air-dried toxin, 125 µg of albumin, and 2.5 mg of lactose. Because Dysport comes from a different type A bacterial strain, its doses are not similar to those of Botox; they are higher and diffuse more compared to Botox (7).

Xeomin®: It is purified freeze-dried BTX-A that does not contain additional helper complex proteins (hemagglutinin and nonhemagglutinin). It is less immunogenic than other BTX-A products. Moreover, it is the only BTX form that can be stored at room temperature, whereas other forms should be kept in the refrigerator (8).

Myobloc®: It is made from Serotype B and is effective in treating movement disorders rather than cosmetic use. It can be used in cases of droopy eyelids, for some wrinkles, and as an alternative treatment for cosmetic neural blockade in patients resistant to BTX-A products. 1 U of Botox is approximately equivalent to 50-100 U of Myobloc. BTX-B is in an acidic solution which may result in painful injections (8).

2.3. Toxicity

The lethal dose for 50% of a human population (weighing approximately 70 kg) exposed to type A toxin is 90-150 ng intravenously, 700-900 ng by inhalation, and 70 µg orally. Since the dose usually used in dentistry is a maximum of 5 ng and is significantly smaller than the lethal dose, overdosing is nearly impossible (5-9).

2.4. Storage Conditions

The purified and powdered neurotoxin complex is packaged in vials containing 100 U of BTX-A. It is readied for use by diluting it with saline.

It is recommended to dilute the toxin by gently stirring the vial while not shaking it and avoiding foam formation; otherwise, the toxin will denature.

Botox® can be kept in the freezer at -5°C or below and in the refrigerator at 2-8°C for 6 months without diluting. The diluted Botox® should be used within 24 hours under the condition that it is stored in the refrigerator at 2-8°C. The literature has reported that it does not lose its activity up to 6 hours, loses 44% of activity by 12 hours, and 70% of activity within 1-2 weeks. When the diluted solution becomes frozen in the deep freezer, it becomes unusable since it will crystallize (10-11).

2.5. Resistance

Botulinum toxin is a protein capable of inducing potent neutralizing antibodies. Therefore, no more than 100 units should be administered in each treatment session, and intervals between treatments should not be shorter than one month to avoid antibody formation.

Other formulations can be used following resistance development because cross-reactions against other serotypes do not occur (12).

2.6. Contraindications

- 1) Muscular disorders (neuromuscular diseases such as Myasthenia Gravis and Eaton-Lambert Syndrome and motor neuron diseases)
- 2) Presence of infection at the injection site
- 3) Hypersensitivity to any known substance in the formulation
- 4) Patients receiving aminoglycosides or drugs inhibiting neuromuscular transmission
- 5) Pregnancy and lactation
- 6) Patients with unrealistic anticipations
- 7) Patients with psychological disorders (10)

2.7. Side effects

1. Pain during injection
2. Local edema, erythema, and ecchymosis due to injection
3. Temporary numbness and burning sensation at the administration site
4. Reversible muscular weakness
5. Flu-like syndrome
6. Diarrhea
7. Abdominal pain
8. Hypertension
9. Headache, dizziness (2)

3. Botox Applications In Orthodontic Practice

3.1. Gummy Smile

Smiling has a significant role in expressing one's emotions and facial aesthetics. Therefore, patients anticipate not only dental aesthetics but also smiling aesthetics following orthodontic treatment (13).

In orthodontics, facial aesthetics are achieved by conventional measures such as leveling the dentition, correcting the profile, and improving the smile. A beautiful smile is created by harmonizing the teeth, lips, and gums with each other in appropriate proportions. The ideal situation is that the upper lip symmetrically exposes 2-3 mm of the gingiva, and the gum line follows the upper lip contour. A gummy smile is defined as excessive exposure of the gingiva during smiling (14).

Etiologic factors may be skeletal, dental, muscular, and iatrogenic. For example, muscular hypertrophy causing excessive lip movements may lead to a gummy smile. Therefore, the treatment approaches differ depending on the etiology. (15).

The muscles elevating and laterally retracting the upper lip while smiling are the levator labii superioris muscle, levator labii superioris alaeque nasi muscle, levator anguli oris, zygomaticus major, zygomaticus minor, risorius and depressor septi nasi (16) (Figure 1).

While maxillary embedding is preferred if the gummy smile is of skeletal origin, alveoloplasty and/or gingivectomy is preferred for dentogingival origin, incisor intrusion for dental origin, myectomy is preferred in the presence of short upper lip, and Botox is preferred in the correction of the hyperactive upper lip (12).

Numerous surgical procedures have been described in the literature for the gummy smile. However, postoperative swelling, infection, postoperative pain, temporary or permanent nerve damage, and surgical and orthodontic relapse have led patients to alternative treatments.

Besides surgical approaches in muscle-related conditions leading to excessive lip mobility, Botox applications are also preferred since they offer painless and rapid solutions. In addition, Botox is an effective treatment, particularly in excessive gingival exposure due to excessive contraction of the lip muscles by blockade of the levator labii superioris alaeque nasi muscle and in limitation of upper lip movements (8).

A dose of 3 U is recommended for Botox injection at the injection point known as the "Yonsei point," located at the triangle's center formed by the levator labii superioris, levator labii superioris alaeque nasi, and zygomaticus minor muscles (8) (Figure 2). The advantage of the technique is that because it is a semi-permanent, minimally invasive, and painless procedure without postoperative morbidity, it is more acceptable for patients to undergo a radical change in appearance (17).

Polo (2005) treated cases with gummy smiles caused by excessive muscle contraction by injecting BTX-A into five patients and reported that the upper lip length increased by 124% and the gingival appearance decreased significantly. Likewise, in another study, Polo (2008) applied Botox to 30 gummy smile patients with a gingival exposure of 5.2±1.4 mm. In the post-injection second week, the patients' average gingival exposure decreased to 0.09±1.06 mm. The gingival exposure increased from the 2nd to the 24th week. However, it did not reach its initial values until the end of the 30-32nd week. Moreover, the application's other effect is a reduction of the nasolabial fold of (8).

Mazzuco and Hexsel (2010) identified four different gummy smile types and responsible muscles in 16 patients. They defined excessive gingival exposure as anterior if it was between canine and canine, posterior if it was in the premolar and molar regions, mixed if in both anterior and posterior regions, and asymmetric gummy smile if it was unilateral. In addition, the levator labii superioris alaeque nasi muscle was responsible in anterior cases, zygomaticus major and zygomaticus minor muscles in posterior cases, their combination in mixed cases, and unilateral levator labii superioris alaeque nasi, zygomaticus major and zygomaticus minor muscles in asymmetric gummy smile cases. To treat a gummy smile, they injected Botox into the muscles. The injection points were one cm lateral and inferior to the nasal area on the nasolabial fold for the levator labii superioris alaeque nasi muscle, and the most lateral point on the nasolabial fold and two cm lateral to this point at the level of the tragus for the zygomaticus major and minor muscles. The researchers treated gummy smiles in all patients and reported success rates of 96% for anterior, 61.06% for posterior, 90% for mixed, and 71.93% for asymmetric cases (18).

3.2. Masseter Hypertrophy

Masseter hypertrophy is a disorder characterized by either unilateral or bilateral enlargement of the masseter muscle. This condition can lead to malocclusion, bruxism, clenching and temporomandibular joint disorders. In its etiology, bruxism, psychosomatic factors, stress, parafunction, and trauma are involved (19).

The habits of unilateral chewing and clenching in patients may cause masseter hypertrophy resulting in facial asymmetry (2).

The results obtained with Botox injected into the masseter muscles in these cases seemed reliable and effective (20).

Smyth et al. (1994) performed the first botulinum toxin injection to the masseter muscle and stated that it was a less invasive method for shaping the lower face cosmetically (21).

After Botox administration, in most patients, a reduction in masseter hyperactivity was determined to result in a reduction in total muscle size over time (maximum reduction of 35.4%) (22).

Boris Bentsianov et al. (2004) demonstrated the injection sites in the masseter hypertrophy (20) (Figure 3).

To et al. (2001) evaluated the effect of Botox in masseter hypertrophy in five cases (4 cases - bilateral and one case - unilateral) using ultrasonography and EMG. They measured the volume changes with ultrasonography and the electrical activity with EMG. They received a positive response from all of their patients (23).

Baş et al. (2010) performed BTX-A injections in a patient with masseter hypertrophy developing due to unilateral chewing habits and in another with masseter hypertrophy whose etiology could not be determined. They reported atrophy of the masseter muscle and satisfactory facial appearance in both patients after three months (24).

3.3. Bruxism

Bruxism is defined as the parafunctional activity of the masticatory muscles occurring with repetitive mandibular movements and characterized by clenching or grinding of the teeth. In severe cases, bruxism might cause headaches and masseter hypertrophy. The prevalence of this condition, which is generally considered a clenching habit that occurs in response to stress and anxiety states, is 20% in the community (26). In addition, in bruxism, the excessive force exerted by the masticatory muscles on the dentition is a risk factor for tooth abrasion, muscle or joint pain, joint locking and sounds, and prosthetic restorations (25-26). The etiological factors are categorized as peripheral and central (27) (Table 1).

Contemporary bruxism treatments focus on reducing excessive muscular activity and protecting potentially affected structures such as teeth, masticatory muscles, and TMJ. Recent studies have shown that Botox application is effective in bruxism. The therapeutic efficacy of the toxin is achieved through the reduction of masticatory muscle contraction, including masseter, anterior temporalis, and in some cases, lateral pterygoid muscles (28).

In another study, BTX-A was injected into the masseter muscles of patients with a history of severe bruxism refractory to medical and dental procedures (mean dose: 61.7 U/side; range 25-100 U), and a mean therapeutic response time of 19 weeks was reported. Injecting Botox bilaterally into the masseter muscles was documented to significantly reduce the symptom severity for an average of 19 ± 17 weeks (29). Botox treatment was effective on bruxism, and injections at a dose of <100 U were considered safe for healthy patients (30).

3.4. Temporomandibular Joint Disorders

Temporomandibular joint disorders (TMDs) are disorders affecting the temporomandibular joint (TMJ), masticatory muscles, and associated structures (31). Symptoms may include pain in the head, face, neck, and around the ear, noise from the joint, and restricted jaw movements (1).

In most TMD cases, secondary muscle spasticity due to bruxism is an etiologic factor (32). The traditional treatment approaches in TMDs include physiotherapy and exercise, anti-inflammatory and analgesic drugs, muscle relaxants, oral splints, acupuncture, or their combination. Recently, Botox applications have also been proven effective in relieving pain and tenderness in TMD and have started to be practiced frequently (33). With BTX-A injection, attempts have been made to overcome pain in the joints and masticatory muscles, restriction in mouth opening, recurrent joint dislocations, and hyperactivity in the masticatory muscles. Even though there is no standard protocol for the use of Botox® for TMD, case reports have shown a reduction in pain, and improved function with 25 to 100 U of Botox® injected into the masseter and temporal muscles. Furthermore, Botox injection involving the lateral pterygoid muscles has also been reported as having a favorable therapeutic effect (34).

3.5. Oro-mandibular Dystonia

Oro-mandibular dystonia (OMD) is a movement disorder characterized by involuntary spasms and muscle contractions in the muscles around the TMJ and perioral muscles. OMD is considered a subgroup of TMD because of its affected muscles (35). As a result, trismus, bruxism, involuntary jaw opening-closing, and uncontrolled tongue movements are encountered (12). Most of the publications reported on OMD have been open-ended studies; however, they all have reported improvement with Botox injections. The most comprehensive and long-term study on this subject is the study conducted by Tan and Jankovic (1999) involving 162 patients with OMD. As a result of the injection of BTX-A into the masseter muscle and/or submental region, improvements in masticatory and speech functions were reported in 67.9% of patients, and the mean duration of clinical recovery was 16.4 ± 7.1 weeks (22-29-36).

3.6. Pathological clenching/teeth grinding (Trismus)

Trismus is a phenomenon causing chronic trauma to the gums and related tissues. Low Botox doses can potentially alleviate this disorder. Similarly, patients with a deep or cross bite undergoing orthodontic treatment encounter elevated chewing force due to prolonged masticatory muscle activity. With Botox, this unfavorable situation can be prevented; thus, the orthodontic treatment duration can be reduced, and patients can be provided with more comfortable eating, speaking, and swallowing functions (1-33).

3.7. Prevention of Post-Surgical Relapse

The utilization of Botox for paralysis of the geniohyoid muscle to prevent relapse in orthognathic surgical interventions in which the mandible was anteriorized has been reported (12). Even though the perioperative use of Botox is not considered very often, it actually accelerates postoperative wound healing by reducing muscle strength in many fields. For example, in jaw fractures where rigid internal fixation is not suitable, Botox can be used to prevent muscle movement to reduce the displacing forces on the bone fragments and provide better stabilization (12).

4. Other uses of botox in dentistry

4.1. Trigeminal Neuralgia

Trigeminal neuralgia is a neurological condition causing acute severe pain and affecting the orofacial muscles, and mainly secondary to a blood vessel's trigeminal nerve compression. The pain is sudden and sharp, like a lightning flash (3).

Botox is used in trigeminal neuralgia in patients who are unresponsive to medical treatment, in patients in whom surgery cannot be performed, or in patients whose surgical treatment has failed (37).

Zhang et al. (2014) injected different doses of Botox or saline into trigger points in 84 patients with trigeminal neuralgia and achieved successful results independent of the dose in patients treated with Botox in their randomized controlled study. In Botox use for trigeminal neuralgia, rather than systemic side effects, local side effects such as edema at the injection site and facial asymmetry due to surrounding muscles' involvement were observed. (38).

BTX has been stated as a rapid, effective, and minimally invasive method for treating trigeminal neuralgia compared to other invasive treatments (39).

4.2. Sialorrhea and Salivary Secretion Disorders

Sialorrhea (excessive salivation) is a common condition arising from poor oral and facial muscle dominance (2). Since the salivary gland cells' secretions occur by cholinergic receptor activation, BTX depresses the glands' secretory activity. Sialorrhea is particularly common in cases with cerebral palsy, Parkinson's disease, Frey syndrome, amyotrophic lateral sclerosis, or motor neuron disease. Regarding the salivary gland, Botox is utilized in various conditions such as salivary fistulas, aspiration of saliva, dysphagia, idiopathic hypersalivation, sialoceles, and chronic sialadenitis (40).

When the effects of Botox on salivary glands were analyzed, it was found that injections into the parotid and submandibular glands were effective in controlling hypersecretion (30). The salivary flow decreased significantly within four weeks after 30-70 U of Botox was injected into the parotid gland (41).

4.3. Mandibular Spasm

This muscle spasm originates from the spasm of all masticatory muscles and associated mandibular muscles (20). Botox treatment applied to the masticatory musculature effectively treats hyperfunctional or spastic muscles (42).

4.4. Combination with Dental Implant Applications

Overstrain of the masticatory muscles may interfere with osseointegration of implants and calli in jaw fractures. In this regard, injecting Botox into the masticatory muscles can provide a more stable environment and therapeutic benefit for the osseointegration of implants and fractures (43).

4.5. Facial nerve paralysis

For treatment of asymmetric appearance in cases of facial paralysis, a method that induces facial symmetry by intentionally creating partial facial paralysis by injecting Botox into the patient's normal (healthy) side of the face was proposed, and it was stated that visual symmetry of the patient could be achieved in this way (44).

4.6. Growth and Development Studies

Chemical denervation is achieved, muscle activities are reduced locally with Botox application, and muscle functions' contribution to craniofacial bone development can be identified (45).

In an animal study by Babuccu et al. (2009), a total of 4 groups were formed, including two groups in which Botox was injected into the right masseter and right temporalis muscles, a control group, and a group in which sterile saline was injected into the masseter and temporal muscles. Osteometric measurements revealed significant atrophy in the botox-injected groups' relevant muscles. The nasal bone, premaxilla, maxilla, and zygomatic arch dimensions were significantly reduced in the groups where Botox was injected into the right masseter and temporal muscles compared to the left-sided muscles. The masseter group showed no difference regarding skull dimensions and mandibular length compared to saline and control groups, whereas the decrease in skull dimensions was significant in the temporal group compared to the other groups. Therefore, it was stated that skeletal muscle denervation with Botox during the growth and development period negatively affected bone development. Researchers have even thought that with increasing utilization of BTX-A and comprehensive research that will be conducted on this subject, craniofacial development may be changed in the desired direction by manipulating muscle functions in craniofacial anomalies and deformities in the future (46).

Conclusion

Today, the use of Botox applications for aesthetic and therapeutic purposes in dental practice has become increasingly widespread. Even though more studies are needed about Botox applications in orthodontics, since its effect is reversible, it is a reliable and supportive treatment method. The correct indication and informing the patient are the issues that must be considered in practice.

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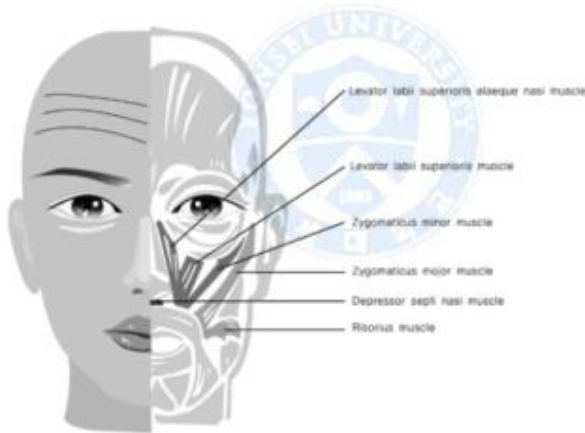


Figure 1. Muscles responsible for the gummy smile

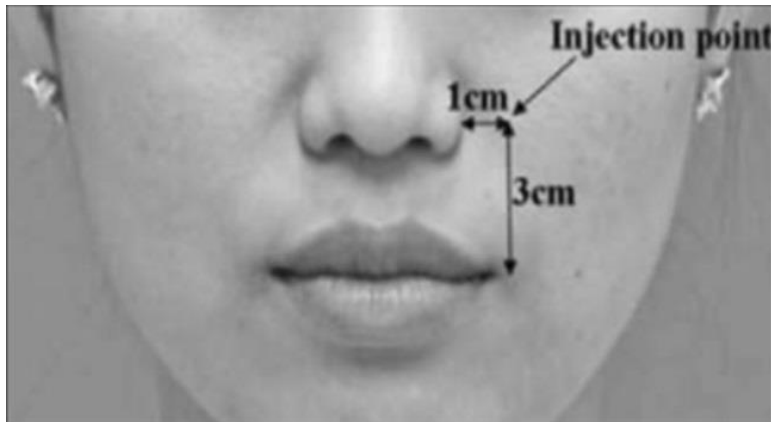


Figure 2. Yonsei point



Figure 3. Injection sites

Table 1. Etiologic factors for bruxism.

Peripheral factors	Central factors	
	Pathophysiological	Psychosocial
Facial morphology	Sleep disorders	Stress
Condylar asymmetry	Alterations in brain chemistry	Anxiety
Dental arch's shape	Using various drugs	Fear
Malocclusion	Alcohol/coffee usage/smoking	Frustration
	Familial-genetic factors	Poor social support
Centric relationship-maximal intercuspization unconformity	Nutritional deficiencies (calcium, magnesium, etc.)	Personality
Occlusal irregularities	Allergies	

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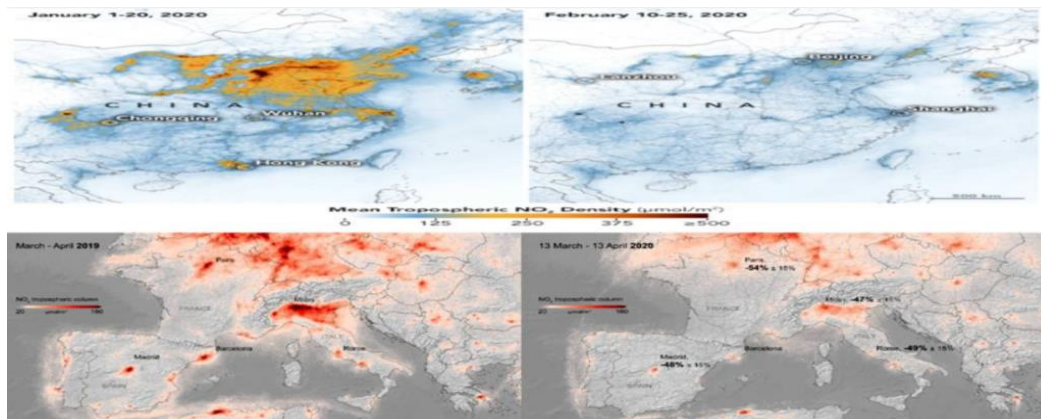


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