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KÜRESEL HAREKETLİLİK ÇAĞINDA GÖC VE KÜLTÜRLEŞME

MIGRATION AND ACCULTURATION IN THE AGE OF GLOBAL MOBILITY

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Özet

Son yıllarda göç olgusu farklı ülkelerde yaşam arayışıyla gerçekleşen klasik göç hareketlerinin yanı sıra bölgesel hareketlilik, kısa süreli ikametler, yurt dışında çalışma deneyimleri ve uluslararası değişim programlarına katılan öğrencileri de kapsayacak biçimde önemli ölçüde artmıştır. Bu farklı göçmen grupları bağlamında öne çıkan temel sorulardan biri, bireylerin yeni toplumsal ve kültürel bağamlara nasıl uyum sağladıklarıdır. Bu çerçevede göç olgusu, kültürleşme kavramını sosyal psikoloji açısından merkezi bir tartışma alanı hâline getirmektedir. Çalışmanın amacı, kültürleşme kavramının sosyal psikoloji alan yazındaki tarihsel gelişimini, kuramsal dönüşümünü ve güncel anlam genişlemesini sistematik bir biçimde incelemektir. Kültürleşme kavramı 19. yüzyılda ortaya atılmış olmakla birlikte, özellikle yirmi birinci yüzyılda hız kazanan küreselleşme süreci, kültürlerarası etkileşimin niteliğini dönüştürerek bireylerin küresel ölçekte farklı bağamlarda deneyimlediği yeni ve özgün kültürleşme biçimlerinin ortayamasına yol açmıştır. Araştırmada, derleme yöntemi benimsenmiş, analiz ve sentez yaklaşımları ile artzamanlı ve eşzamanlı karşılaşmalar kullanılarak kültürleşme kavramının sosyal psikoloji bağlamındaki tarihsel gelişimi incelenmiştir. Bu kapsamda, kültürleşmenin ulusal ve uluslararası sosyal psikoloji literatüründe nasıl ele alındığı, hangi kuramsal çerçevelerle tanımlandığı ve zaman içinde nasıl kavramsal dönüşümler geçirdiği değerlendirilmiştir. Sonuç olarak, kültürleşme kavramının bilimsel düşüncenin ve toplumsal süreçlerin gelişimine paralel olarak içeriğinin değiştiği, yeni anamlar, özellikler ve nitelikler kazandığı ortaya konulmuştur. Özellikle sosyokültürel bağlam, sosyal etkileşimler, kimlik süreçleri ve davranış örtüntüleri arasındaki karşılıklı ilişkilerin, kültürleşme tartışmalarında giderek daha merkezi bir konuma yerleştiği görülmektedir.

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Anahtar kelimeler: Kültürleşme, göç, küreselleşme, kimlik

Abstract

In recent years, migration has increased significantly, encompassing not only classic migration movements driven by the search for a better life in other countries, but also regional mobility, short-term residencies, work experiences abroad, and students participating in international exchange programs. One of the fundamental questions in the context of these migrant groups is how individuals adapt to new social and cultural contexts. In this framework, the phenomenon of migration makes the concept of acculturation a central area of discussion in social psychology. This study aims to systematically examine the historical development, theoretical transformation, and current expansion of the meaning of the concept of acculturation in the social psychology literature. Although the concept of acculturation was introduced in the 19th century, the globalization process, which accelerated especially in the twenty-first century, has transformed the nature of intercultural interaction, leading to the emergence of new and unique forms of acculturation experienced by individuals in different contexts on a global scale. In this research, a compilation method was adopted, and the historical development of the concept of acculturation in the context of social psychology was examined using analysis and synthesis approaches, as well as diachronic and synchronic comparisons. In this context, the study evaluates how acculturation is addressed in national and international social psychology literature, the theoretical frameworks within which it is defined, and how it has undergone conceptual transformations over time. As a result, the concept of acculturation has changed in content and acquired new meanings, characteristics, and qualities, in parallel with the development of scientific thought and social processes. In particular, the reciprocal relationships among sociocultural context, social interactions, identity processes, and behavioural patterns are increasingly central to acculturation discussions.

Keywords: Acculturation, migration, globalization, identity

1. GİRİŞ

Son yıllarda küreselleşmenin hız kazanması, uluslararası göç hareketlerinin çeşitlenmesi ve kültürel temas biçimlerinin hem fiziksel hem de dijital düzlemlerde artmasıyla birlikte, kültürleşme ve kültürel uyum konusundaki çalışmalar belirgin biçimde artmıştır. Göç olgusunun günümüzde kalıcı olarak farklı ülkelerde yaşam arayışıyla gerçekleşen klasik göç hareketlerinin ötesine geçmiştir. Bu bireylerin yeni toplumsal ve kültürel bağlamlara nasıl uyum sağladıkları sorusunu hem kuramsal hem de uygulamalı düzeyde giderek daha merkezi bir tartışma alanı hâline getirmiştir. Bu bağlamda göç olgusu, kültürleşme kavramını temel bir inceleme nesnesi konumuna taşımaktadır. Bu çalışmanın amacı, kültürleşme kavramını küreselleşmiş ve çok kültürlü toplumlar bağlamında nasıl kavramsallaştırdığını bütüncül biçimde ele almak ve güncel alan yazındaki kuramsal dönüşümleri sistematik olarak incelemektir. Özellikle kültürleşmenin tek boyutlu ve asimilasyoncu yaklaşımardan başlayarak, iki boyutlu kültürleşme modelleri, karşılıklı kültürleşme yaklaşımları ve güncel süreç-odaklı, çok boyutlu modelleri içerecek şekilde genişletilmiştir. Böylece kültürleşmenin yalnızca bireylerin ev sahibi kültüre uyumunu merkeze alan bir süreç olmadığı; güç ilişkileri, bağlamsal koşullar ve karşılıklı etkileşimler doğrultusunda sürekli yeniden inşa edilen dinamik bir olgu olduğu gösterilmiştir. Araştırmada derleme yöntemi benimsenmiş; analiz ve sentez yaklaşımıyla birlikte artzamanlı ve eşzamanlı karşılaşmalar kullanılarak kültürleşme kavramının sosyal psikoloji literatüründeki gelişimi ele alınmıştır. Bu doğrultuda, kültürleşmenin ulusal ve uluslararası literatürde hangi kuramsal çerçevelerle tanımlandığı, zaman içinde nasıl kuramsal dönüşümler geçirdiği ve hangi boyutlar üzerinden ele alındığı değerlendirilmiştir.

Çalışmanın bulguları, kültürleşme kavramının bilimsel düşüncenin ve toplumsal dönüşümlerin etkisiyle durağan bir uyum süreci olmaktan çıkararak; bağlama duyarlı, karşılıklı, çok boyutlu ve süreç temelli bir yapı kazandığını ortaya koymaktadır. Özellikle sosyokültürel bağlam, güç ilişkileri, sosyal etkileşimler, kimlik süreçleri ve davranış örüntüleri arasındaki karşılıklı etkileşimlerin, çağdaş kültürleşme tartışmalarında giderek daha merkezi bir konuma yerlesiği görülmektedir. Bu yönyle çalışma, kültürleşmenin yalnızca bireysel uyum stratejileriyle değil, aynı zamanda daha geniş toplumsal ve ilişkisel dinamiklerle birlikte ele alınması gerektiğini vurgulamaktadır.

1.1. Küreselleşme ve Kültürleşme: Makro Bağlamın Dönüşümü

Küreselleşme, malların, insanların ve fikirlerin sınırlar ötesi dolaşımını hızlandıran çok katmanlı bir süreç olarak, kültürleşme olgusunun ortaya çıkışını ve yaygınlaşması açısından temel bir makro bağlam sunmaktadır (Berry, 2008). Bu süreç, doğrudan veya dolaylı olarak yaşamakta ve aşına olmayan farklı kültürlerle teması kolaylaştırmaktadır. Günümüzde göç olgusu; kalıcı olarak farklı bir ülkede yaşam arayışında olan bireylerin yanı sıra bölgesel hareketlilikler, kısa süreli ikametler, iş amacıyla yurt dışında çalışanlar ve uluslararası değişim öğrencilerini de kapsayacak biçimde önemli ölçüde çeşitlenmiş ve artış göstermiştir. Bu durum, göçmen grupların sosyo-demografik özelliklerini, göç motivasyonları ve geleceğe yönelik bekentileri açısından belirgin bir heterojen yapı sergilemesine yol açmaktadır (Schmitz ve Schmitz, 2022). Bu gruplar açısından en temel sorulardan biri, ev sahibi toplumda hangi kültürel uyum stratejisini benimseneceğidir. Kültürel uyum süreci özellikle iki temel boyut üzerinden ele alınmaktadır: bireylerin kültürel sürekliliklerini sürdürmeye ne ölçüde önem verdikleri ve diğer etnokültürel gruplarla temas kurarak daha geniş toplumla temas kurmayı ve katılmayı ne düzeyde tercih ettikleridir (Berry, 2017).

Kültürleşme kavramı tarihsel olarak yeni olmamakla birlikte yirmi birinci yüzyılda hız kazanan küreselleşme süreci kültürlerarası temasın biçimini, kapsamını ve hızını önemli ölçüde dönüştürmüştür ve bireylerin küresel ölçekte farklı bağlamlarda deneyimlediği yeni ve özgün kültürleşme örüntülerinin ortayamasına yol açmıştır.

Küreselleşme, kültürel uyumu yalnızca fiziksel yakınlık temelinde değil, dijital ve dolaylı temas biçimleri aracılığıyla da hızlandıran; aynı zamanda bireyler için hem risk hem de koruyucu etmenler barındıran kapsayıcı bir makro bağlam olarak değerlendirilmektedir (Ferguson ve diğ., 2023). Bu bağlam, küreselleşmiş sosyal çevrelere uyum sağlayabilmek için yeni psikososyal yetkinliklerin gelişimini de gereklî kılmaktadır.

Bu gelişmeler doğrultusunda, kültürleşmenin erken dönem kavramsallaştırmaları da önemli ölçüde genişletilmiştir. Başlangıçta kültürleşme, uzun süreli ve yüz yüze gerçekleşen kültürlerarası temaslara odaklanan bir süreç olarak tanımlanmıştır (Redfield ve diğ., 1936). Güncel literatürde ise kültürleşme, farklı kültürel gruplar ya da bireyler arasında sürekli veya aralıklı, doğrudan ya da dolaylı biçimde gerçekleşen temaslar sonucunda, taraflardan birinin ya da her ikisinin kültürel örüntülerinde meydana gelen değişimleri kapsayan çok boyutlu bir süreç olarak ele alınmaktadır. Bu yaklaşım, kültürleşmeyi yalnızca kültür tarafından şekillenen bir sonuç değil, aynı zamanda kültürü yeniden üreten temel sosyal süreçlerden biri olarak konumlandırmaktadır (Ferguson ve diğ., 2023).

Kültür kavramının kendisinde yaşanan dönüşüm de kültürleşme literatürünü doğrudan etkilemiştir. Güncel yaklaşım kültür; bireysel ve toplumsal dinamikleri, ekolojik ve kurumsal bağamları, davranışsal ve sembolik pratikleri ve güç ilişkileri ile sosyal eşitsizlikleri kapsayan çok katmanlı bir sistem olarak tanımlamaktadır (Causadias, 2020). Bu bağlamda, güç boyutunun kültür tanımına dâhil edilmesi, kültürel örüntülerin toplumların içinde ve arasında var olan güç asimetrisi ve sosyal eşitsizliklere uyum sağlama süreçleri içerisinde şekillendiğini ve bu dinamikler doğrultusunda dönüşmeye devam ettiğini ortaya koymaktadır (Ferguson ve diğ., 2023).

Kültürleşme araştırmaları, başlangıçta antropoloji disiplininde, Batı kaynaklı zorunlu kültürlerarası temaslar sonrasında Batı dışı toplumlarda meydana gelen kültürel değişimleri incelemek amacıyla ortaya çıkmıştır. Ancak bu yaklaşım, sömürgeci bilgi üretim pratikleriyle ilişkisi nedeniyle eleştirilmiş ve zamanla antropoloji içindeki merkezi konumunu kaybetmiştir. Buna karşın kültürleşme, zamanla sosyoloji ve psikoloji disiplinleri tarafından da benimsenmiş ancak her iki alan, kültürel uyum süreçlerini kendi epistemolojik ve metodolojik yaklaşımıları doğrultusunda ele almıştır. Sosyoloji literatürü, ağırlıklı olarak Amerika Birleşik Devletleri bağlamında, yirminci yüzyılın başlarındaki yoğun Avrupa göçü ile yirminci ve yirmi birinci yüzyılların son dönemlerinde Latin Amerika, Asya ve Afrika kaynaklı göç dalgaları çerçevesinde etnik grupların asimilasyon süreçlerine odaklanmıştır (Guarnaccia ve Hausmann-Stabile, 2016; Berry, 2008). Buna karşılık psikoloji, kültürel uyumu inceleyen baskın sosyal bilim alanı hâline gelmiş; psikolojik kültürleşme araştırmaları günümüzde de etkin biçimde sürdürilmektedir. Psikoloji alanındaki çalışmalar, kültürleşmenin bireysel düzeydeki özelliklerine ve bu süreçlerin ölçülmesine odaklanarak kültürel uyumu daha çok tutumsal, bilişsel ve davranışsal boyutlar üzerinden ele almıştır (Guarnaccia ve Hausmann-Stabile, 2016; Berry, 2008; Ferguson, 2018).

Psikolojik kültürleşme, bireyin etkileşim hâlinde olduğu tüm kültürel akımları ve kültürleşmenin gerçekleştiği temel yaşam alanlarını kapsayan bir değişim süreci olarak tanımlanmaktadır (Sam ve Berry, 2016). Bu alanlar, davranışsal örüntüler, değer sistemleri ve kimlik süreçleri gibi kültürel uyumun gerçekleştiği temel bileşenleri içermektedir (Schwartz ve diğ., 2010). Böylece bireyler eş zamanlı olarak birden fazla kültürel akıma uyum sağlayabilmektedir. Bu kültürel akımlar, bireyin kendi kültürel mirasıyla ilişkili olan kültürleri ve bireyin kökeniyle doğrudan ilişkili olmayan diğer kültürleri kapsayan psikolojik değişim sürecidir. Bu çerçevede, iki boyutlu kültürleşme, kültürlerarası temas sonucu meydana gelen miras kültür ile ev sahibi kültür arasında eş zamanlı uyum sürecini ifade etmektedir (Berry, 2017). Bununla birlikte, bireylerin kültürleşme deneyimlerinin çoğu zaman ikiden fazla kültürel bağlamı içerebildiği; dolayısıyla çok boyutlu kültürleşme süreçlerinin de dikkate alınması gereği vurgulanmaktadır (van de Vijver, 2015).

Kavram kendini azınlık grubu üyesi olarak tanımlayan ya da çoğunluk grubu üyesi olarak tanımlayan bireylerin karşılıklı uyumunu içerir. Konuya ilgili öncelikle kendilerini göçmen veya azınlık grubu üyesi olarak tanımlayan kişilerin yaşadığı kültürel değişimlere odaklanmıştır (Sam ve Berry, 2016). Ancak kendilerini göçmen ya da azınlık grubu üyesi olarak tanımlayan bireylerin çoğunluk grubu kültürünü nasıl, ne zaman ve hangi mekanizmalar aracılığıyla etkilediğini anlamak hem kuramsal hem de toplumsal açıdan güncel ve önemli bir araştırma alanı oluşturmaktadır (Kunst ve diğ., 2021).

Kültürleşme, uzun süre boyunca kültürleşme tutumları, kültürel yeterlilik düzeyleri ve etnik kimlik gibi görece durağan bireysel farklılıklar çerçevesinde ele alınmış ve ölçülmüştür. Bununla birlikte, gelişimsel bir bakış açısıyla değerlendirildiğinde kültürleşmenin, zaman içinde gerçekleşen dinamik bir değişim sürecini ifade ettiği görülmektedir. Bu doğrultuda kültürleşme, bireyin farklı kültürel bağlamlara ve sosyal ortamlara yönelik yönelimlerinde zaman içerisinde meydana gelen dönüşümleri kapsamakta; aynı zamanda yeni bir kültürle temasın sonucunda ortaya çıkabilen, miras kültürü ile alicı kültür arasında konumlanan ya da bu iki yapının ötesine geçen özgün ve emsalsiz kültürel örüntülere (örneğin, üçüncü kültürler veya kültürlerarası ara alanlar) uyum sürecini de içermektedir (Titzmann ve Lee, 2022).

Erken dönem yaklaşımlar kültürleşmeyi tek boyutlu bir süreç olarak ele almış; bireylerin ya miras kültürüne ya da ev sahibi toplumun kültürüne yöneldiğini varsayılmıştır (Liebkind, 2006). Kültürleşme yeni gelenlerin ev sahibi grubun kültürüne doğru ilerleyen doğrusal ve tek yönlü bir asimilasyon süreci olarak ele almıştır. Bu yaklaşıma göre bireylerin ya kendi kültürel özelliklerini, değerlerini ve davranış örüntülerini korumaları ya da bunlardan vazgeçerek baskın (ana akım) kültüre bütünüyle uyum sağlamaları beklenmektedir. Bu doğrultuda, göçmenlerin öncelikle kendi kültürel pratiklerini terk ederek ev sahibi toplumun kültürünü benimsemeleri gerektiği varsayılmış; böylece göçmenlerin kültürel miraslarını sürdürme potansiyeli büyük ölçüde göz ardı edilmiştir (Bourhis ve diğ., 1997). Özellikle tek boyutlu modelin dayandığı tek ulus, tek dil, tek kültür ve tek din varsayıminın, çoğulcu toplular bağlamında neredeyse uygulanamaz olduğu vurgulanmıştır (Berry, 2005).

Bu tek boyutlu yaklaşım, doğum yeri, vatandaşlık durumu, ev sahibi ülkede geçirilen süre ve ev sahibi ülke dilinin kullanım düzeyi gibi, araştırmalarda sıkılıkla kullanılan dolaylı kültürleşme göstergelerine de yansımıştır. Buna göre, ev sahibi ülkede doğan (sıklıkla ikinci ya da üçüncü kuşak olarak tanımlanan), bu ülkede daha uzun süre yaşayan ve/veya ev sahibi ülkenin dilini miras diline kıyasla daha iyi konuşan bireylerin daha yüksek düzeyde kültürleşmiş olduğu varsayılmaktadır (Arends-Tóth ve van de Vijver, 2006). Ancak bu yaklaşım, bireylerin eş zamanlı olarak iki kültürel bağlama da yönelik iki kültürlü kimlikler geliştirebileceği gerçeğini göz ardı etmektedir. Bu doğrultuda, daha güncel kuramsal yaklaşımlar kültürleşmeyi iki boyutlu bir yapı olarak kavramsallaştırmakta; bireylerin ev sahibi kültüre ve miras kültürüne yönelik yönelimlerini birbirinden bağımsız süreklilikler üzerinde konumlandırmaktadır. Bu iki boyutlu model, dört temel kültürel uyum stratejisinin ortayamasına olanak tanımaktadır: asimilasyon (ev sahibi kültüre yüksek, miras kültürüne düşük yönelik), ayrışma (ev sahibi kültüre düşük, miras kültürüne yüksek yönelik), entegrasyon (her iki kültüre yüksek yönelik) ve marginalleşme (her iki kültüre düşük yönelik) (Berry, 2008). Bu tipolojiye göre kültürel uyumun sağlıklı biçimde değerlendirilebilmesi, dil kullanımı ve tercihleri, medya tüketimi, bireyin kendisinin, ailesinin ve arkadaş çevresinin kültürel ya da etnik kimliği gibi çeşitli kültürel alanlarda ev sahibi ve miras kültürlerine yönelik yöneliklerin bağımsız alt ölçekler aracılığıyla ölçülmesini gerektirmektedir.

Berry'nin kültürleşme modeli, alan yazında öncü bir çerçeve sunmuş olmakla birlikte, zaman içerisinde çağdaş toplumsal ve kültürel süreçlerin artan karmaşıklığını açıklamada sınırlı kaldığı konusunda çeşitli eleştirilere maruz kalmıştır (örn., Bourhis ve diğ., 1997; Chirkov, 2024). Özellikle modelin kültürleşmeyi ağırlıklı olarak bireysel düzeyde, tek yönlü ve görece durağan olarak ele alması; çoğunluk grubun rolünü ikincil bir konuma indirmemesi nedeniyle yetersiz olduğu ileri sürülmüştür (Kunst ve Lefringhausen, 2024).

Buna ek olarak, kültürleşmenin entegrasyon, asimilasyon, ayrışma ve marginalleşme olmak üzere dört sabit stratejiyle sınıflandırılması, sürecin dinamik niteliğini yeterince yansıtamadığı gerekçesiyle eleştirilmiştir (Schwartz et al., 2024).

Bu eleştiriler, kültürleşme alanında daha kapsayıcı ve esnek kuramsal yaklaşımın geliştirilmesine zemin hazırlamış özellikle Karşılıklı Kültürleşme (Reciprocal Acculturation) yaklaşımının ortayamasına katkı sağlamıştır. Bu yaklaşım “taraflar birbirlerini nasıl etkiler ve dönüştürür?” sorusuna odaklanmaktadır. Bu yaklaşımın temel varsayımları, kültürleşmenin karşılıklı kültürel öğrenme ve dönüşüm süreçleri yoluyla şekillendiğidir. Bu yaklaşım kültürleşme sürecini daha bağlamsal ve gerçekçi biçimde açıklamayı amaçlamaktadır. EKM, kültürleşmeyi yalnızca göçmenlerin ev sahibi kültüre uyum sağlaması olarak değil; ev sahibi toplumun göçmenlere yönelik beklenti, tutum ve politikallarıyla karşılıklı etkileşim içinde gelişen dinamik bir süreç olarak ele alır. EKM’de, Berry’nin stratejilerine ek olarak bireycilik (individualism) adı verilen yeni bir strateji eklenmiştir. Bu stratejiyi benimseyen göçmenler, kendilerini belirli bir grup kimliği üzerinden değil, bireysel özelliklerini temelinde tanımlamayı tercih etmekte; gruplar arası aidiyet kategorilerini reddederek diğerleriyle birey olarak etkileşime girmektedirler (Bourhis ve diğ., 1997).

Modelin ayırt edici yönlerinden biri, göçmenlerin kültürleşme tercihleri kadar ev sahibi toplumun yöneliklerini de sürecin merkezine almasıdır. Ev sahibi toplumun kültürleşme stratejileri; göçmenlerin kendi kültürel kimliklerini sürdürmelerine atfedilen değer ile ev sahibi toplum kültürünü benimsemelerine yönelik beklentilerin kesişimi üzerinden tanımlanmaktadır. Bu iki boyutun farklı kombinasyonları beş temel strateji ortaya koymaktadır: (1) entegrasyon, (göçmenlerin her iki kültüre yüksek yönelikimi); (2) asimilasyon, (göçmenlerin ev sahibi kültüre yüksek, miras kültürüne düşük yönelikimi); (3) ayrımcılık/segregasyon, (göçmenlerin ev sahibi kültüre düşük, miras kültürüne yüksek yönelikimi); (4) dışlama (exclusion), (ve marginalleşme (göçmenlerin her iki kültüre düşük yönelikimi); (5) bireycilik, bireylerin göçmen ya da çoğunluk üyesi gibi grup temelli kategoriler yerine bireysel özellikleri üzerinden değerlendirildiği yaklaşımı ifade eder (Bourhis ve diğ., 1997; Barrette ve diğ., 2004;).

EKM ayrıca, ev sahibi toplumun göçmenlere yönelik üç temel ideolojik yönelikini tanımlamaktadır: çoğulculuk, asimilasyonculuk ve dışlayıcılık/ayırmcılık (Bourhis ve diğ., 1997). Bu yapı sayesinde model, göçmenlerin tercihleri ile ev sahibi toplumun beklentileri arasındaki uyum ve uyumsuzluk örüntülerini sistematik biçimde ortaya koymasıdır. Bununla birlikte, EKM çeşitli eleştirilere de konu olmuştur. Öncelikle, model göçmen ve ev sahibi toplum stratejilerini ayrıntılı biçimde sınıflandırsa da bunlar karmaşık bulunmuştur (Rudmin, 2003).

Son dönemde kültürleşme alanında geliştirilen yeni kuramsal modeller, sürecin çok boyutlu, karşılıklı ve bağlama duyarlı yapısını öne çikaran; dinamik, süreç temelli ve esnek yaklaşılara odaklanmaktadır. Bu doğrultuda geliştirilen modellerden biri, Wilczewska’nın (2023) Üç Boyutlu Süreç Odaklı Kültürleşme Modeli (ÜBSOM; Tridimensional Process-Oriented Acculturation Model, TDPM)’dır. Model, kültürleşmenin yalnızca bireylerin mevcut kültürel yapılara uyum sağlamaıyla sınırlı olmayan daha kapsayıcı, akışkan ve dönüşümsel bir süreç olarak ele alınması gerekliliğinden hareketle geliştirilmiştir.

ÜBSOM’un temel varsayımlarından biri, bireylerin yalnızca miras ve ev sahibi kültürler arasında denge kuran pasif aktörler olmadığı; aksine mevcut kültürel unsurları yeniden düzenleyerek yeni kültürel pratikler ve kimlik biçimleri üretebilen etkin öznelere sahip olduğunudır. Günümüzün göçmen ve çok kültürlü bağamlarında bireyler farklı kültürel repertuarları harmanlayarak özgün ve hibrit kültürel formlar geliştirebilmektedir. Bu doğrultuda Wilczewska, Berry’nin iki boyutlu kültürleşme yaklaşımına ek olarak, bireylerin farklı kültürel unsurları birleştirerek yeni kültürel pratikler ve kimlikler yaratma kapasitesini kültürel yaratım (cultural creation) kavramı altında üçüncü ve süreç odaklı bir boyut olarak modele dahil etmiştir (Wilczewska, 2023). Model kapsamında bireylerin,

yaşam deneyimleri, bağlamsal koşullar ve sosyal etkileşimler doğrultusunda kültürel pratiklerini ve kimliklerini sürekli dinamik olarak yeniden inşa ettikleri varsayılmaktadır.

2. SONUÇ, TARTIŞMA VE ÖNERİLER

Çalışma, kültürleşme kavramının tarihsel kökenlerinden güncel kuramsal yaklaşımlarına uzanan gelişimini sosyal psikoloji perspektifinden bütüncül bir çerçevede ele almıştır. Küreselleşme, artan uluslararası göç hareketleri ve dijitalleşme gibi makro düzey süreçlerin, kültürlerarası temasın niteliğini, hızını ve kapsamını önemli ölçüde dönüştürdüğü görülmektedir. Bu dönüşüm, kültürleşmenin uzun süre baskın olan statik, tek yönlü ve asimilasyoncu kavramsallaştırmalarının sorgulanmasına yol açmış; kültürleşme giderek daha dinamik, çok boyutlu ve karşılıklı bir sosyal süreç olarak ele alınmaya başlanmıştır (Berry, 2008; Ferguson ve diğ., 2023).

Derlemede incelenen kuramsal yaklaşımlar, kültürleşme araştırmalarında yaşanan paradigmatic değişimi açık biçimde ortaya koymaktadır. Erken dönem tek boyutlu modeller, bireylerin ya miras kültürlerini sürdürmeleri ya da ev sahibi kültüre bütünüyle uyum sağlamaları gerektiği varsayıımıma dayanmış; bu yaklaşım özellikle çoğulcu toplumlar bağlamında eleştirilmiştir (Liebkind, 2006; Berry, 2005). Buna karşılık Berry'nin iki boyutlu kültürleşme modeli, miras kültürün sürdürülmesi ile ev sahibi kültüre katılımı bağımsız eksenler olarak ele alarak alan yazına önemli bir katkı sunmuştur (Berry, 1997, 2008). Ancak modelin kültürleşmeyi ağırlıklı olarak bireysel düzeyde ve görece durağan stratejiler üzerinden açıklaması; çoğunluk grubun rolünü, güç ilişkilerini ve yapısal eşitsizlikleri sınırlı biçimde ele alması nedeniyle eleştirilmiştir (Bourhis ve diğ., 1997; Chirkov, 2024; Kunst ve Lefringhausen, 2024).

Bu eleştiriler, kültürleşmenin yalnızca göçmenlerin bireysel uyum tercihleri üzerinden değil, ev sahibi toplumun tutumları, ideolojik yönelimleri ve kurumsal bağamlarla etkileşim içinde ele alınmasını gerekli kılmıştır. Bu doğrultuda geliştirilen Etkileşimsel Kültürel Modeli (EKM), kültürleşmeyi karşılıklı bir süreç olarak kavramıslarak, göçmenlerin kültürleşme stratejileri ile ev sahibi toplumun bekleni ve yönelimleri arasındaki uyum ve uyumsuzlıkların toplumsal sonuçlarını açıklamayı amaçlamıştır (Bourhis ve diğ., 1997; Barrette ve diğ., 2004). Bununla birlikte, EKM'nin de ev sahibi toplumu homojen bir yapı olarak ele alma ve güç asimetrisini sınırlı düzeyde yansıtma gibi kısıtları bulunduğu görülmektedir (Rudmin, 2003).

Son dönemde geliştirilen süreç odaklı ve çok boyutlu modeller, kültürleşmenin dinamik ve bağlamsal doğasını daha kapsamlı biçimde ele almayı hedeflemektedir. Bu bağlamda Wilczewska'nın (2023) Üç Boyutlu Süreç Odaklı Kültürel Modeli (ÜBSOM), bireylerin yalnızca miras ve ev sahibi kültür arasında denge kuran pasif aktörler olmadığını; aksine kültürel repertuarları yeniden düzenleyerek yeni pratikler, kimlikler ve anlamlar üretebilen etkin öznel olduğunu vurgulamaktadır. Kültürel yaratım boyutunun modele dâhil edilmesi, kültürleşmeyi yalnızca uyum ve adaptasyon temelli bir süreç olarak değil, aynı zamanda yenilikçi ve dönüştürücü bir toplumsal olgu olarak ele alma olanağı sunmaktadır (Wilczewska, 2023).

Sonuç olarak, bu derleme, kültürleşme kavramının sosyal psikoloji literatüründe tek yönlü ve durağan modellerden, çok yönlü, karşılıklı ve süreç temelli yaklaşımlara doğru belirgin bir evrim geçirdiğini ortaya koymaktadır. Güncel kuramsal çerçeveler, kültürleşmenin bireysel psikolojik süreçler ile toplumsal güç ilişkileri, kurumsal yapılar ve küresel bağamlar arasındaki dinamik etkileşimler içinde şekillendirdiğini göstermektedir (Causadias, 2020; Ferguson ve diğ., 2023). Gelecek araştırmaların, kültürleşme süreçlerini çoklu düzeylerde (bireysel, ilişkisel, kurumsal ve toplumsal) ve boylamsal tasarımlarla ele alması; özellikle çoğunluk gruplarının dönüşümü, kültürel yaratım süreçleri ve yapısal eşitsizliklerin psikolojik sonuçlarına odaklanması, alan yazının kuramsal derinliğini ve açıklayıcılığını önemli ölçüde artıracaktır.

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DİJİTALLEŞMENİN GÖC SÜREÇLERİNE ETKİLERİ

THE IMPACT OF DIGITALIZATION ON MIGRATION PROCESSES

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Özet

Dijital dönüşüm ve bilgi-iletişim teknolojilerindeki hızlı gelişmeler, çağdaş göç süreçlerinin biçimini, hızını ve niteliğini önemli ölçüde dönüştürmüştür. Dijitalleşme, göçü yalnızca fiziksel bir yer değiştirme süreci olmaktan çıkararak, bilgiye erişim, sosyal ağlar ve karar alma mekanizmalarının sosyal medya, dijital iletişim araçları ve çevrimiçi ağlar aracılığıyla şekillendiği çok boyutlu bir deneyime dönüştürmektedir. Bu bağlamda göçmenler, artık yalnızca "köklerinden kopmuş bireyler" olarak değil, ulusötesi dijital ağlar içinde sürekli bağlantı hâlinde olan "bağlantılı göçmenler" olarak kavramsallaşmaktadır.

Bu çalışmanın amacı, bilgi ve iletişim teknolojilerinin göç süreçlerindeki rolünü, özellikle göç öncesi ve göç sonrası aşamalarda bireylerin göç kararları, bilgiye erişimleri, sosyal ağları ve risk algıları üzerindeki etkileri bağlamında incelemektir. Çalışma, dijital teknolojilerin göçü nasıl kolaylaştırdığı kadar, eksik ve yanlış bilginin yayılması yoluya göç süreçlerinde yeni kırılganlıklar ve riskler de üretebildiğini tartışmayı amaçlamaktadır. Araştırmada, derleme yöntemi kullanılarak dijitalleşme ve göç ilişkisini ele alan ulusal ve uluslararası alan yazın sistematik biçimde incelenmiştir. Çalışma, "kaynak toplum–ev sahibi toplum" ve "göç öncesi–göç sonrası" eksenleri doğrultusunda yapılandırılmıştır. Bu çerçevede sosyal medya, göçmen ağları, dijital bilgi portalları, mobil uygulamalar ve dijital kimlik teknolojilerinin göç niyeti, göç karar alma süreci ve göçmen deneyimi üzerindeki etkileri değerlendirilmiştir.

Sonuç olarak, dijital teknolojilerin göç süreçlerinde çift yönlü bir işlev sahip olduğu görülmektedir. Bir yandan göçmenlerin bilgiye erişimini, sosyal bağlarını ve hareket kabiliyetlerini artırarak göçü kolaylaştırmakta; diğer yandan eksik, yanlı veya söyletiye dayalı bilginin yayılması yoluya düzensiz göç, hayal kırıklığı ve sosyokültürel dışlanma risklerini artırıbmaktadır. Bu sonuçlar, göç ve dijitalleşme alan yazınına, dijital teknolojilerin göç süreçlerindeki aracılık rolünü hem fırsatlar hem de riskler bağlamında ele alan bütüncül bir bakış sunarak katkı sağlamaktadır.

Anahtar kelimeler: Dijitalleşme, göç, dijital göç çalışmaları

Abstract

Digital transformation and rapid developments in information and communication technologies have significantly transformed the form, speed, and nature of contemporary migration processes. Digitalization is transforming migration from a mere physical displacement into a multidimensional experience in which social media, digital communication tools, and online networks shape access to information, social networks, and decision-making mechanisms. In this context, migrants are no longer conceptualized only as "individuals uprooted from their origins," but as "connected migrants" who are constantly connected within transnational digital networks.

This study aims to examine the role of information and communication technologies in migration processes, particularly their effects on individuals' migration decisions, access to information, social networks, and risk perceptions in the pre- and post-migration phases. The study aims to discuss how digital technologies can both facilitate migration and create new vulnerabilities and risks in migration processes by spreading incomplete and inaccurate information. This research systematically examines national and international literature on the relationship between digitalization and migration using a compilation method. The study is structured along the axes of "source society–host society" and "pre-migration–post-migration." Within this framework, the effects of social media, migrant networks, digital information portals, mobile applications, and digital identity technologies on migration intention, migration decision-making processes, and migrant experiences are evaluated.

In conclusion, it is observed that digital technologies have a dual function in migration processes. On the one hand, they facilitate migration by increasing migrants' access to information, social connections, and mobility; on the other hand,

they can increase the risks of irregular migration, disillusionment, and sociocultural exclusion by spreading incomplete, biased, or anecdotal information. These results contribute to the literature on migration and digitalization by offering a holistic perspective that examines the mediating role of digital technologies in migration processes, both in terms of opportunities and risks.

Keywords: Digitalization, migration, digital migration studies

1. GİRİŞ

Yirmi birinci yüzyılın başlangıcı, bilgi ve iletişim teknolojilerinin (BİT) kapsamlı bir şekilde yaygınlaşması da dahil olmak üzere yüksek tempolu bir teknolojik yenilik sürecine işaret etmektedir. Dijital teknolojilerin artan kullanımı, 21. yüzyılda insanların yaşamının ayrılmaz bir parçası haline gelmiştir (Verwiebe ve diğ., 2023). Günümüz toplumsal yapıları, yalnızca teknik bir gelişim süreciyle değil, aynı zamanda kurumsal ve toplumsal düzeyde hayatı kalma ve rekabet edebilirliğin temel bir koşulu haline gelen kapsamlı bir dijital dönüşüm ile tanımlanmaktadır (Van Veldhoven ve Vanthienen, 2023). Dijital dönüşüm, basit bir teknolojik adaptasyonun ötesinde; fiziksel süreçlerin, ilişkilerin ve somut pratiklerin dijital karşılıklarla yeniden yapılandırılmasını içeren çok katmanlı ve karmaşık bir yeniden örgütlenme sürecidir. Dijitalleşme, fiziksel dünyada tekil ve analog olarak işleyen süreçlerin sanal ortamda parçalanarak çoğullaştırılmasını ve farklı bağlamlara taşınmasını mümkün kılmaktadır (Omol, 2024).

Dijital dönüşüm, küresel ölçekte toplumların yaşam biçimlerini, sosyal ilişkilerini ve kimlik inşa süreçlerini sürekli olarak dönüştüren dinamik bir süreç olarak ele alınmaktadır. İnsan hareketliliği alanında bu değişim, dijital alanın farklı coğrafi konumlarda gerçek zamanlı etkileşime izin verdiği, birbirine bağlı göçmenler ve dijitalleşmiş göç süreçlerinden oluşan yeni bir dönemin doğusuna yol açmıştır. Bu dönüşüm, bireylerin sosyal etkileşim biçimlerini, aidiyet duygularını ve sosyal destek ağlarını yeniden şekillendirirken; göç olgusunu da giderek daha fazla dijital araçlar ve platformlar aracılığıyla deneyimlenen bir süreç haline getirmektedir. Özellikle insan hareketliliği alanında dijitalleşme, farklı coğrafi konumlar arasında gerçek zamanlı etkileşimi mümkün kılarak, birbirine dijital ağlar üzerinden bağlı göçmen topluluklarının ve dijital olarak göç deneyimlerinin ortayamasına zemin hazırlamıştır.

Göç olgusu, tarihsel olarak teknoloji ve yenilik süreçleriyle iç içe gelişmiştir. Uluslararası göçün, yatırım ve ticaret akışlarıyla birlikte teknoloji ve bilgi transferini nasıl desteklediğini ya da bazı durumlarda sınırlandırdığını inceleyen geniş bir alan yazarın bulunmaktadır. Bu bağlamda teknoloji, ülkeler arasındaki ekonomik ve toplumsal bağların güçlenmesinde önemli bir aracı rol üstlenmektedir. Günümüzde ise göç sürecinin her aşamasında, özellikle yeni nesil bilgi ve iletişim teknolojilerinin (BİT) etkisi giderek daha görünür hâle gelmiştir (Olusegun ve Olanrewaju, 2023).

Bu dönüşümün yaşadığı bağlamda Birleşmiş Milletler Yüksek Komiserliği (UNHCR), yirmi birinci yüzyılın ikinci on yılını artan zorunlu göç hareketleri nedeniyle bir “yerinden edilme on yılı” olarak tanımlamaktadır (UNHCR, 2019, s. 4–7). Özellikle genç mültecilerin eğitim, sosyal uyum ve psikososyal iyilik hâli, giderek dijital ortamlarda şekillenen yeni bağlamlar içerisinde ele alınmaktadır (Kutscher ve diğ., 2022). Dijitalleşmiş ortamlar, bir yandan bilgiye erişim ve sosyal katılım açısından yeni fırsatlar sunarken, diğer yandan dijital eşitsizlikler, dışlanma ve kimlik tehditleri gibi sosyal psikolojik riskleri de beraberinde getirmektedir.

Dijital dönüşüm, göçmenler arasında ağ kurulmasına olanak tanıarak, farklı coğrafi konumlardan dijital alanda gerçek zamanlı etkileşime geçmeyi mümkün kılıyor. Ekonomik fırsatlar, politik belirsizlikler, güvenlik kaygıları ve sosyal ağlar gibi göçü belirleyen temel süreçler, günümüzde

giderek artan biçimde dijital platformlar, sosyal medya ve çevrim içi iletişim ağları aracılığıyla deneyimlenmekte ve anlamlandırılmaktadır. Bu durum, göçün yalnızca mekânsal bir hareketlilik değil; aynı zamanda dijital olarak aracılıanmış bir sosyal deneyim olduğunu göstermektedir (Pannocchia ve diğ., 2020).

Göç üzerine yapılan araştırmalar, başlangıçta sosyoloji, eğitim, siyaset bilimi, kültürel antropoloji, beşerî coğrafya ve tarih gibi disiplinlerin çerçevesinde yoğunlaşmıştır. Ancak son yıllarda, dijital teknolojilerin göç deneyimini dönüştürücü etkisinin belirginleşmesiyle birlikte, bu araştırma alanı disiplinler arası bir genişleme sürecine girmiştir (Kutscher ve diğ., 2022). Özellikle dijital medya ve iletişim teknolojilerinin göçmen ve mültecilerin gündelik yaşamları, bilgiye erişim biçimleri ve sosyal ilişkileri üzerindeki etkileri, göç çalışmalarında bağlantılı göçmenler, akıllı mülteciler gibi yeni kavramsal açımların ortayamasına zemin hazırlamıştır (Leurs ve Smets, 2018).

Bu kavramsal gelişmeler, dijital medya ile göç çalışmalarının kesişiminde yeni bir araştırma odağının şekillendirdiğini göstermektedir. Leurs ve Smets (2018) tarafından “dijital göç çalışmaları” (digital migration studies) olarak adlandırılan bu alan, göç deneyimini yalnızca mekânsal bir hareketlilik olarak değil aynı zamanda dijital olarak aracılıanmış, çok katmanlı ve sürekli yeniden üretilen bir sosyal süreç olarak ele almaktadır. Özellikle dijitalleşmiş bağamlarda genç mültecilerin eğitimsel katılımı, kimlik müzakereleri ve psikososyal uyum süreçleri, bu yeni araştırma alanının merkezinde yer almaktadır (Kutscher ve diğ., 2022).

Kişiler dijital teknolojileri kullanarak sosyo-ekonomik gelişmeler, doğal afetler ve iklim değişikliği gibi beklenmedik olaylara zamanlama ve mekân açısından esnek biçimde tepki verebilmekte; bu doğrultuda göç planlarını yeniden şekillendirme imkânı elde etmektedir. Bu bağlamda dijital dönüşüm, göç sürecinde yeni dijital teknolojilerin (sosyal medya platformları, göçmenlere yönelik çevrim içi bilgi portalları, göçmen işçiler için tasarlanmış iş arama ağları ve dijitalleştirilmiş kamu hizmetleri) kullanılması olarak tanımlanmaktadır. Bu teknolojiler, göçmenlerin bilgiye erişimini kolaylaştırmakta, karar alma süreçlerini desteklemekte ve genel olarak göç deneyimini daha yönetilebilir hâle getirmektedir (Olusegun ve Olanrewaju, 2023).

2. Göç Yaşam Döngüsünün Sanallaşması

Dijital teknolojiler ve sosyal medya aracılığıyla elde edilen bilgiler, göç sürecinde hem algılanan maliyetleri hem de riskleri önemli ölçüde azaltmaktadır. Sosyal medyanın coğrafi sınırları geçirgen hâle getirmesi, bireylerin mekânsal hareketliliğini artırırken, göçmenlerin varış noktalarını daha bilinçli ve stratejik biçimde değerlendirmelerine olanak tanımaktadır. Bu bağlamda göçmenler, internet ve sosyal medya tarafından desteklenen bağlantı olanaklarına sahip destinasyonları tercih etmekte; gelişmiş dijital altyapılar, göç kararlarının şekillenmesinde belirleyici bir unsur hâline gelmektedir. Dijital teknolojiler sayesinde göçmenler, varış ülkesindeki sosyal, ekonomik ve kurumsal koşullara ilişkin daha kapsamlı bilgi edinerek belirsizliği azaltabilmektedir (Hidayati, 2019).

Göç süreci artık münferit bir olay değil; kaynak ve ev sahibi toplumların yanı sıra göç öncesi ve sonrası aşamaları da kapsayan dijital altyapılarla sürekli bir etkileşim halidir (Reips ve Buffardi, 2012). Dijitalleşmenin kullanımını, coğrafi olarak dağınık grupların ortak ilgi alanları etrafında bir araya gelmesini sağlayan sosyal medya platformlarından, en güncel bilgilerin paylaşımına imkân tanıyan mobil uygulamalara kadar geniş bir yelpazeye yayılmaktadır. Bununla birlikte, bu teknolojilerin düzensiz ve gizli sınır geçişlerini kolaylaştırmaya potansiyeli, dijital araçların göçü ne ölçüde desteklediği ve göçmenleri istismar ve sömürgeye dayalı risklerden ne ölçüde koruyabildiği sorularını da gündeme getirmektedir (Olusegun ve Olanrewaju, 2023). Dijital dönüşüm kaynaklarının kavramsal çerçevesi, göçmenlerin yasal, sosyal ve ekonomik yapıları yönlendirmek için dijital araçları kullandığını ve esnek aidiyet alanları yarattığını öne sürmektedir (Yalçın ve Akar, 2026).

2.1. Göç Öncesi ve Karar Verme Süreçleri

Göç öncesi aşama, bireylerin göçe ilişkin niyetlerinin şekillendiği, alternatiflerin değerlendirildiği ve risk-fayda analizlerinin yapıldığı kritik bir karar verme sürecini kapsamaktadır. Bu aşamada dijital dönüşüm, aña oluşturma ve bilgi alışverişini kolaylaştırarak göçmenlerin sosyo-ekonomik gelişmeler, doğal afetler veya iklim değişikliği gibi beklenmedik olaylara göç planlarını zaman ve mekân açısından esnek biçimde uyarlayabilmelerine olanak tanımaktadır. Gerçek zamanlı dijital bilgi akışı, bireylerin belirsizlik koşulları altında daha hızlı ve tepkisel kararlar alabilmesini mümkün kılmakta böylece göç kararı statik bir tercih olmaktan çıkarak dinamik bir süreç hâline gelmektedir (Reips ve Buffardi, 2012).

Dijitalleşme, göçmen adaylarının bilgiye erişim biçimlerini, alglarını ve bekentilerini köklü biçimde dönüştürmektedir. Özellikle internet, sosyal medya ve mobil iletişim teknolojileri, göç kararının yalnızca bireysel değil; aynı zamanda sosyal olarak aracılıanmış bir süreç hâline gelmesine katkı sağlamaktadır (De Haas, Castles ve Miller, 2019). Dijital platformlar, göçmen adaylarına potansiyel varış ülkelerindeki yaşam koşulları, iş olanakları, barınma, eğitim ve hukuki süreçler hakkında doğrudan ve dolaylı bilgi sunmaktadır. Sosyal medya, diasporik ağlar ve çevrim içi topluluklar aracılığıyla paylaşılan deneyimler, bireylerin belirsizlik algısını azaltmakta ve göç kararının daha hesaplanabilir ve öngörlübilir algılanmasına yol açmaktadır. Bu durum, belirsizlik azaltma ve algılanan kontrol kavramıyla açıklanabilir; dijital bilgiye erişim, bireylerin göç sürecini daha öngörlübilir ve yönetilebilir olarak algılamasını sağlamaktadır (Hidayati, 2019; Van Meeteren ve dig., 2009).

Bununla birlikte dijital ve gerçek zamanlı bilgi alışverişi, göçmenler için yalnızca yön bulmayı ve karar vermeyi kolaylaştırın bir araç değildir. Aynı dijital kanallar, hedef ülkelere ilişkin hem olumlu hem de olumsuz anıtların ve mitlerin dolaşma girmesine de zemin hazırlamaktadır. Bu mitler, göçmen adaylarının bekentilerini gerçekçi olmayan biçimde şekillendirebilmekte ve risk algısının çarptırmasına yol açabilmektedir. Özellikle gelişmiş ülkelerdeki yaşam kalitesi temsillerinin; haberler, filmler ve dijital reklamlar yoluyla idealize edilmesi, göç kararlarında güçlü bir çekici unsur hâline gelebilmektedir (Olusegun ve Olanrewaju, 2023).

Göç öncesi karar verme sürecinde dijitalleşmenin bir diğer önemli etkisi, sosyal ağların rolünün güçlenmesidir. Dijital iletişim araçları, coğrafi olarak dağınık sosyal bağların sürekliliğini sağlayarak, göçmen adaylarının hem kaynak toplumla hem de potansiyel varış toplumuyla eşzamanlı ilişki kurmasına olanak tanımaktadır. Diminescu'nun (2008) bağlantılı göçmen kavramı oluşturması, bu durumu görün artık kopoşa dayalı değil, sürekli bağlantı hâlinde deneyimlenen bir süreç olarak yeniden tanımlamaktadır. Bu bağlantılar, göç kararını bireysel bir risk alma davranışını olmaktan çıkararak, kolektif deneyimlere dayalı bir karar süreci hâline getirmektedir.

Ancak dijitalleşmenin göç öncesi süreçlerde yalnızca kolaylaştırıcı bir işlev gördüğünü varsaymak yanıltıcı olacaktır. Dijital ortamlarda dolaşma giren bilgilerin doğruluğu ve güvenilirliği her zaman garanti edilmemekte; yanlış yönlendirici ya da aşırı iyimser anıtlar, göçmen adaylarının riskleri olduğundan düşük algılamasına neden olabilmektedir. Bu durum, bilgi güvencesizliği kavramı çerçevesinde ele alınmakta ve dijitalleşmenin göç kararlarını hem güçlendirici hem de kırılganlaştırıcı etkiler üretebildiğini göstermektedir (Wall ve dig., 2017).

Sonuç olarak dijitalleşme, göç öncesi karar verme süreçlerini çok katmanlı biçimde dönüştürmektedir. Dijital teknolojiler bir yandan bilgiye erişimi artırarak belirsizliği azaltmakta, algılanan riski düşürmekte ve bireylerin öz-yeterlilik algısını güçlendirmektedir; diğer yandan ise eşitsiz dijital erişim, bilgi kirliliği ve yapısal kısıtlar nedeniyle yeni risk alanları da üretmektedir. Bu nedenle göç öncesi karar verme süreçlerinin dijitalleşme bağlamında ele alınması, göçü yalnızca

ekonomik ya da politik nedenlerle değil, aynı zamanda psikososyal ve bilişsel süreçlerle birlikte değerlendirmeyi gerekli kılmaktadır (Leurs ve Smets, 2018).

2.2. Göç Sonrası Aşamada Dijitalleşme

Göç sonrası aşama, bireylerin yeni bir toplumsal, kültürel ve kurumsal bağlamda yaşamlarını yeniden yapılandırdıkları; sosyal uyum, aidiyet ve psikososyal iyilik hâlinin şekillendiği kritik bir dönemi kapsamaktadır. Bu aşamada dijitalleşme, göçmenlerin gündelik yaşam pratiklerinden kurumsal etkileşimlerine kadar geniş bir alanda belirleyici bir rol oynamaktadır. Dijital teknolojiler, göçmenlerin ev sahibi toplumla kurdukları ilişkileri, sosyal destek ağlarını ve kamusal hizmetlere erişim biçimlerini dönüştürerek göç sonrası deneyimin nitelğini doğrudan etkilemektedir (Olusegun ve Olanrewaju, 2023).

Göç sonrası uyum sürecinde dijital platformlar, göçmenlere ev sahibi ülkedeki hukuki prosedürler, istihdam olanakları, eğitim sistemleri ve sağlık hizmetleri hakkında bilgi sunmakta; aynı zamanda dil öğrenimi ve kültürel oryantasyon süreçlerini desteklemektedir. Özellikle mobil uygulamalar ve çevrim içi kamu hizmetleri, göçmenlerin kurumsal yapılara erişimini kolaylaştırarak algılanan bürokratik engelleri azaltmaktadır. Bu durum, bireylerin göç sonrası süreçleri daha yönetilebilir ve öngörülebilir olarak algılamalarına katkı sağlamaktadır (European Commission, 2020).

Dijital ortamlar göçmenler için önemli bir sosyal destek ve aidiyet kaynağı işlevi görmektedir. Çevrim içi topluluklar ve diasporik ağlar, göçmenlerin yalnızlık, dışlanma ve kültürel yabancılılaşma gibi duygularla başa çıkmalarına yardımcı olmakta; psikolojik dayanıklılığı artırıcı bir rol üstlenmektedir (Berry, 1997; Ager ve Strang, 2008). Bununla birlikte, dijital alanlarının göçmenler için her zaman kapsayıcı olmadığı da vurgulanmalıdır. Dijital eşitsizlikler, dil bariyerleri ve sınırlı dijital okuryazarlık, bazı grupların bu kaynaklardan yeterince faydalananamasına yol açabilmektedir (Leurs ve Smets, 2018).

Göç sonrası aşamada dijitalleşmenin bir diğer önemli boyutu, göçmenlerin işgücü piyasalarına entegrasyonudur. Çevrim içi iş arama platformları, mesleki ağlar ve dijital sertifikasyon sistemleri, göçmenlerin istihdam olanaklarına erişimini kolaylaştırmakta; ancak aynı zamanda güvencesiz ve esnek çalışma biçimlerinin yaygınlaşmasına da katkı sağlayabilmektedir. Özellikle yapay zekâ temelli iş alım sistemlerinin göçmenler üzerindeki etkileri, ayrımcılık ve dışlanma riskleri açısından tartışılmaktadır (World Migration Report, 2020). Ancak entegrasyon süreci, tek dilli e-devlet platformları ve düşük dijital güven gibi yapısal ve sosyokültürel engellerle sıkılıkla sekteye uğrar (Yalçın ve Akar, 2025). Dijital okuryazarlık, özellikle ekonomik açıdan kentsel entegrasyonun önemli bir yordayıcısı olsa da psikolojik entegrasyon üzerindeki etkisi nispeten zayıf kalmaktadır; bu da dijital becerilerin tek başına yer değiştirmenin getirdiği derin duygusal zorlukları tam olarak çözemediğini göstermektedir (Zhao ve ark., 2025). Dijital dönüşüm bağlantıyı kolaylaştırırken, aynı zamanda Belirsiz Kayıp ve Kültürleşme Stresi çerçeveleri altında kategorize edilen benzersiz psikolojik stresörleri de beraberinde getirir (Perez ve Arnold-Berkovits, 2018). Ulusötesi aileler, üyelerin fiziksel olarak yok olduğu ancak psikolojik olarak var olduğu bir sınır belirsizliği durumu içinde yaşarlar (Solheim ve Ballard, 2016).

Sonuç olarak dijitalleşme, göç sonrası aşamada göçmenlerin uyum, aidiyet ve katılım süreçlerini hem destekleyen hem de yeni eşitsizlikler üretebilen çift yönlü bir dinamik olarak ortaya çıkmaktadır. Dijital teknolojiler, bilgiye erişimi ve sosyal bağlantıları güçlendirerek göçmenlerin psikososyal uyumunu kolaylaştırırken; aynı zamanda dijital ucuруmlar ve dışlayıcı pratikler yoluyla kirılganlıkları da derinleştirebilmektedir. Bu nedenle göç sonrası aşamanın dijitalleşme bağlamında ele alınması, göçmen deneyimini yalnızca yapısal uyum göstergeleriyle değil, aynı zamanda sosyal psikolojik süreçlerle birlikte değerlendirmeyi gerekli kılmaktadır (Leurs ve Smets, 2018; World Migration Report, 2020).

2. SONUÇ

Bu çalışma, dijital dönüşümün göç yaşam döngüsünün tüm aşamalarını (göç öncesi karar verme süreçlerinden göç sonrası uyum ve aidiyet dinamiklerine kadar) çok katmanlı biçimde dönüştürdüğünü ortaya koymaktadır. Bulgular, alan yazındaki önceki çalışmalarla karşılaşıldığında, dijitalleşmenin göçü yalnızca kolaylaştırıcı bir teknik araç olarak değil; aynı zamanda göçmenlerin algılarını, bekłentilerini ve psikososyal deneyimlerini yeniden yapılandıran merkezi bir toplumsal süreç olarak istediğini göstermektedir.

Araştırma sonuçları, dijital teknolojilerin göç öncesi aşamada belirsizliği azaltma, algılanan kontrolü artırma ve karar verme süreçlerini hızlandırma işlevlerine vurgu yapan çalışmaları desteklemektedir (Hidayati, 2019; Reips ve Buffardi, 2012). Özellikle gerçek zamanlı bilgi akışının göç kararlarını daha esnek ve tepkisel hale getirdiği yönündeki bulgular, dijitalleşmenin göç niyetlerini dinamik bir süreçte dönüştürdüğünü savunan yaklaşımalarla örtüşmektedir (de Haas ve diğ., 2019).

Bu bulgular, dijital bilgiye erişimin belirsizlik azaltma ve algılanan kontrol mekanizmaları yoluyla göç kararlarını şekillendirdiği hipotezi ile uyumludur. Aynı zamanda sosyal medya ve dijital platformlar üzerinden dolaşma giren anlatıların, hedef ülkelere ilişkin mitlerin oluşumuna katkıda bulunduğu gösteren sonuçlar, dijitalleşmenin göç kararlarını hem güçlendirici hem de kırılganlaştırıcı etkiler üretebildiğini ortaya koymaktadır. Bu durum, bilgi güvencesizliği kavramını merkeze alan önceki çalışmalarla paralellik göstermektedir (Wall ve diğ., 2017).

Göç sonrası aşamaya ilişkin bulgular, dijital teknolojilerin sosyal destek, aidiyet ve kurumsal entegrasyon süreçlerini önemli ölçüde etkilediğini göstermektedir. Araştırma sonuçları, çevrim içi toplulukların ve diasporik ağların göçmenlerin psikolojik dayanıklılığını artırdığını işaret eden çalışmaları desteklemektedir (Berry, 1997; Ager ve Strang, 2008). Bununla birlikte, dijital eşitsizlikler, tek dilli e-devlet uygulamaları ve düşük dijital güven düzeyleri gibi yapısal engellerin, dijitalleşmenin kapsayıcı etkisini sınırladığı da ortaya konmuştur. Bu bulgular, dijital okuryazarlığın ekonomik entegrasyon açısından güçlü bir yordayıcı olduğu ancak psikolojik uyum üzerindeki etkisinin daha sınırlı kaldığını ileri süren araştırmalarla uyumludur (Zhao ve ark., 2025).

Sonuçlar, dijital dönüşümün göç sonrası süreçlerde yalnızca uyumu kolaylaştıran bir araç olmadığını; aynı zamanda belirsiz kayıp, kültürleşme stresi ve sınır-aşan aile ilişkileri bağlamında yeni psikolojik stresörler ürettiğini göstermektedir. Bu durum, dijital bağlantının fiziksel ayrılığı telafi ederken duygusal belirsizliği artırabileğini vurgulayan çalışmalarla örtüşmektedir (Perez ve Arnold-Berkovits, 2018; Solheim ve Ballard, 2016). Elde edilen sonuçların ışığında şu yorum yapılabilir: Dijitalleşme, göçmenlerin yaşamalarını eşzamanlı olarak hem genişleten hem de karmaşıklaştıran çelişkili bir etki alanı yaratmaktadır.

Araştırma sonuçları, dijital göç çalışmalarının sosyal psikolojiyle daha güçlü biçimde ilişkilendirilmesi gerektiği bağlamında ele alınabilir. Bu çalışmanın önemli bir katkısı, dijitalleşmeyi göçün teknik bir bileşeni olarak değil; belirsizlik, algılanan kontrol, aidiyet ve psikolojik dayanıklılık gibi temel sosyal psikolojik süreçlerle ilişkilendirerek ele almasıdır. Araştırmanın teorik açıdan en önemli katkısı, dijital dönüşümü göç yaşam döngüsünün tüm aşamalarında etkili olan bütüncül bir yapı olarak kavramsallaştırmasıdır. Pratik açıdan ise bulgular, göçmenlere yönelik dijital politikaların yalnızca erişim ve altyapı odaklı değil; aynı zamanda psikososyal ihtiyaçları gözeten kapsayıcı stratejilerle tasarlanması gerektiğine işaret etmektedir.

Bununla birlikte, bu sonuçlar bazı sınırlamaları da içermektedir. Çalışma, büyük ölçüde ikincil kaynaklara ve mevcut alan yazına dayandığından, farklı bağlamlarda yürütülecek ampirik araştırmalarla desteklenmeye ihtiyaç duymaktadır. Ayrıca dijitalleşmenin etkilerinin yaş, cinsiyet,

sosyoekonomik statü ve göç statüsü gibi değişkenlere göre nasıl farklılaşlığı, gelecekteki araştırmalarda daha ayrıntılı biçimde ele alınmalıdır.

Sonuç olarak, dijital dönüşüm göç deneyimini hem yapısal hem de psikososyal düzeyde yeniden şekillendiren temel bir dinamik olarak karşımıza çıkmaktadır. Göç süreçlerinin dijitalleşme bağlamında ele alınması, göçü yalnızca mekânsal bir hareketlilik olarak değil; aynı zamanda dijital, ilişkisel ve sürekli yeniden müzakere edilen bir sosyal süreç olarak anlamayı mümkün kılmaktadır. Bu bakış açısı hem akademik alan yazına hem de göç politikalarının tasarımasına yönelik önemli açınlımlar sunmaktadır.

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Animal Welfare and Legal Protection in Azerbaijan: Gaps, Challenges, and Reform Needs

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Abstract

Animal welfare has become an important legal and ethical concern worldwide; however, in Azerbaijan protection remains fragmented and largely ineffective. Existing legislation, primarily the Law “On the Animal World” (1999), focuses on environmental conservation rather than the welfare of individual animals, leaving domestic and stray animals insufficiently protected. Cruelty to animals is treated mainly as an administrative offense, with limited deterrent effect due to the absence of explicit criminal liability. The lack of institutional responsibility, ineffective enforcement, and the absence of a national framework for stray animal management further exacerbate the problem. This article analyses the shortcomings of Azerbaijan’s current legal system, highlights practical consequences arising from regulatory gaps, and proposes comprehensive legislative and institutional reforms aimed at aligning national practices with modern principles of humane animal protection.

Önsöz

Hayvan refahı dünya genelinde giderek artan bir hukuki ve etik önem kazanmasına rağmen, Azerbaycan'da bu alandaki koruma parçalı ve yetersizdir. Mevcut mevzuatın temelini oluşturan 1999 tarihli “Hayvanlar Âlemi Hakkında Kanun” bireysel hayvan refahından ziyade çevresel korumaya odaklanmakta, evcil ve sahipsiz hayvanlar yeterli korumadan mahrum kalmaktadır. Hayvanlara yönelik zulüm çoğunlukla yalnızca idari suç olarak düzenlenmiş, açık ceza sorumluluğunun bulunmaması caydırıcılığı azaltmıştır. Kurumsal sorumluluğun net olmaması, yaptırımların etkisizliği ve sahipsiz hayvanlara ilişkin ulusal bir politikanın yokluğu sorunu daha da derinleştirmektedir. Bu makale Azerbaycan'daki mevcut hukuki çerçeveyinin eksikliklerini analiz etmekte ve hayvanların insancıl korunmasına yönelik kapsamlı reform önerileri sunmaktadır.

Introduction

Animal welfare has increasingly become a significant legal and ethical concern in modern societies, reflecting broader values of compassion, responsibility, and respect for life. Legal systems across the world have gradually evolved to recognize that animals, while traditionally treated as property, require specific protection against cruelty, neglect, and abuse. Effective animal welfare legislation not only safeguards animals but also contributes to public order, environmental protection, and the moral development of society as a whole.

Despite these global developments, the legal protection of animals in Azerbaijan remains limited and insufficient. The presence of large numbers of stray animals—particularly dogs—in urban areas, along with frequent reports of neglect, violence, and inhumane treatment, highlights serious shortcomings in both legislation and enforcement. Although certain legal provisions exist that nominally address animal protection, they are fragmented, weak in scope, and largely ineffective in practice. Acts of cruelty are often treated as minor administrative offenses, penalties lack deterrent value, and enforcement mechanisms remain underdeveloped or inconsistent.

The gap between formal legal provisions and the actual situation on the ground raises important questions about the adequacy of Azerbaijan’s current animal protection framework. The absence of a

comprehensive animal welfare law, combined with limited institutional responsibility and low public awareness, has contributed to a system in which animal suffering is often normalized and rarely sanctioned. This situation stands in contrast to evolving international standards, where animal welfare is increasingly recognized as an essential element of modern governance and legal responsibility.

This article aims to examine the existing legal framework regulating animal protection in Azerbaijan, identify its key gaps and weaknesses, and analyze the practical problems arising from ineffective regulation and enforcement. By highlighting structural deficiencies and real-world consequences, the article seeks to demonstrate the urgent need for legal reform. Finally, it offers recommendations aimed at strengthening animal welfare protection, improving enforcement mechanisms, and aligning national practices with fundamental principles of humane treatment and responsibility.

1. Current Legal Framework for Animal Protection in Azerbaijan

The legal regulation of animal protection in the Republic of Azerbaijan is characterized by a fragmented and predominantly administrative approach, lacking a comprehensive animal welfare framework. Existing norms are dispersed across environmental legislation, administrative liability provisions, and subordinate regulatory acts, none of which establish a unified or coherent system for the prevention of animal cruelty or the protection of animal welfare as an independent legal interest.

The principal legislative act addressing animals is the Law of the Republic of Azerbaijan "On the Animal World", adopted on 4 June 1999. This law is primarily environmental in nature and aims to regulate the conservation, protection, and rational use of fauna as part of the country's natural resources policy (Articles 1–3). While it includes general obligations to prevent harm to animals, its regulatory focus lies on biodiversity preservation and ecological balance rather than on the welfare of individual animals. The law does not define key concepts such as animal cruelty, neglect, or humane treatment, nor does it establish enforceable welfare standards. Furthermore, its provisions are largely directed at wild animals, leaving domestic and stray animals outside the core scope of regulation. Legal liability for cruelty to animals is mainly governed by the Code of Administrative Offences of the Republic of Azerbaijan. Relevant articles impose administrative sanctions for cruel treatment, including actions that cause pain, suffering, injury, or death to animals without lawful justification. Recent amendments have increased administrative fines, which currently range from 500 to 2,000 AZN, and in certain aggravated cases provide for administrative detention of up to one month. Public acts of cruelty, including those disseminated through mass media or electronic platforms, are subject to higher fines. Despite these changes, cruelty to animals continues to be treated primarily as an administrative violation, which significantly limits the deterrent effect of sanctions. The Criminal Code of the Republic of Azerbaijan does not contain a separate and clearly articulated offense criminalizing severe or systematic cruelty to animals. Criminal liability may arise only indirectly, for example where acts against animals coincide with violations of public order or property-related offenses. This absence of direct criminalization constitutes a major structural deficiency, as serious acts of violence against animals often fall outside criminal prosecution and result in minimal administrative penalties. Additional regulation exists in the form of Cabinet of Ministers' decisions and municipal rules concerning the keeping of domestic animals in urban environments. These norms mainly address issues of public hygiene, registration, and the obligations of pet owners, rather than animal welfare or protection from abuse. Importantly, Azerbaijan lacks a binding national framework governing stray animal management. There is no statutory obligation for municipalities to establish shelters, implement sterilization programs, or apply humane population control measures. Enforcement responsibilities are divided among environmental authorities, local executive bodies, and law enforcement agencies, none of which possess exclusive competence or specialized structures dedicated to animal welfare protection. Overall, the existing legal framework

in Azerbaijan provides limited, indirect, and ineffective protection for animals. The absence of a comprehensive animal welfare law, the reliance on administrative sanctions, and the lack of clear institutional responsibility significantly undermine the prevention and punishment of animal cruelty. These deficiencies create conditions in which animal abuse remains widespread and insufficiently addressed by the legal system, forming the foundation for the gaps and weaknesses analysed in the following section.

2. Gaps and Weaknesses in the Animal Protection Legal Framework

Despite the existence of certain legal provisions addressing animals in the Republic of Azerbaijan, the current framework suffers from substantial normative, institutional, and practical deficiencies. These gaps significantly undermine the effectiveness of animal protection and contribute to the persistence of widespread cruelty, neglect, and abuse, particularly regarding stray animals.

One of the primary weaknesses lies in the absence of a comprehensive animal welfare law. Existing legislation, most notably the Law “On the Animal World”, approaches animals predominantly as environmental or natural resources rather than as sentient beings requiring individual protection. The law lacks core welfare concepts, such as the prohibition of neglect, the obligation to ensure humane treatment, and minimum standards of care. Crucially, it does not establish animal welfare as an autonomous legal value, thereby limiting its applicability to cases of cruelty that fall outside environmental harm¹. A second major gap concerns the classification of animal cruelty as an administrative offense rather than a criminal act. Under the Code of Administrative Offences, even serious acts of violence—such as beating, torture, or killing of animals—are generally punishable only by fines or short-term administrative detention² (Code of Administrative Offences, Art. 274). This legal classification significantly diminishes the deterrent effect of sanctions and fails to reflect the gravity of severe animal abuse. The absence of direct criminal liability for aggravated or repeated cruelty under the Criminal Code further reinforces a perception of tolerance toward such acts and weakens prosecutorial incentives. Another fundamental weakness is the lack of clear enforcement mechanisms and institutional responsibility. Authority over animal-related matters is dispersed among environmental agencies, local executive bodies, and law enforcement institutions, without a specialized body dedicated to animal welfare protection. This fragmentation results in inconsistent enforcement, unclear jurisdictional responsibility, and limited accountability. Reports of animal cruelty are frequently deprioritized, inadequately investigated, or dismissed as minor administrative violations, even when substantial harm has occurred. The legal framework also fails to address the systemic issue of stray animals in a coherent and humane manner. Azerbaijan does not have binding national legislation mandating stray animal management policies such as shelter establishment, sterilization programs, vaccination, or adoption systems. Municipal authorities operate without clear statutory obligations or funding mechanisms, leading to ad hoc and often ineffective responses. This regulatory vacuum contributes directly to overpopulation, poor living conditions for animals, and frequent conflicts between stray animals and the public. Furthermore, existing legislation does not sufficiently regulate preventive measures, such as public education, responsible pet ownership, or compulsory registration and sterilization. Legal norms focus primarily on punitive responses, while neglecting structural prevention mechanisms that are essential for long-term effectiveness. Without public awareness obligations or clearly defined owner responsibilities, enforcement remains reactive and limited in scope. Finally, the absence of judicial and administrative practice transparency represents an additional weakness. There is limited publicly available data on investigations, sanctions imposed, or recidivism related to animal cruelty cases. This lack of transparency prevents

¹ Law of the Republic of Azerbaijan “On the Animal World”, 1999

² Code of Administrative Offences, Art. 274 and related provisions; Official information released by APA News Agency, 2024.

meaningful evaluation of the effectiveness of existing laws and undermines public trust in enforcement institutions. In sum, the legal framework governing animal protection in Azerbaijan is undermined by structural gaps, insufficient sanctions, weak enforcement mechanisms, and the lack of a unified state policy on animal welfare. These weaknesses do not merely reflect technical legislative shortcomings but contribute directly to persistent animal suffering and social tolerance of cruelty. Addressing these deficiencies is essential for the development of an effective and humane animal protection regime, as discussed in the following section on practical problems and real-world consequences.

3. Major Problems in Practice

The structural deficiencies of Azerbaijan's animal protection legal framework manifest most clearly at the practical level, where the gap between formal regulation and real-life conditions remains significant. Despite the existence of basic legal provisions, ineffective enforcement, weak institutional coordination, and the absence of preventive mechanisms have resulted in persistent and systemic problems affecting animal welfare throughout the country. One of the most visible and pressing problems is the widespread presence of stray animals, particularly dogs, in urban and suburban areas. Azerbaijani legislation does not impose a clear and binding obligation on state or municipal authorities to establish shelters, implement nationwide sterilization programs, or create structured adoption systems. Existing municipal rules focus largely on sanitation and public order, rather than animal welfare or population control. In the absence of a national regulatory framework governing stray animals, local authorities operate without consistent legal guidance or adequate funding, resulting in fragmented, temporary, and often ineffective responses³. A further major problem concerns the ineffective enforcement of administrative sanctions for animal cruelty. Although the Code of Administrative Offences establishes liability for cruel treatment of animals, enforcement remains weak and inconsistent in practice. Law enforcement bodies frequently deprioritize animal cruelty cases, treating them as minor violations with limited social impact. Investigations are often superficial or delayed, and administrative fines do not provide a meaningful deterrent, particularly in cases involving repeated or severe abuse. The continued absence of direct criminal liability for serious animal cruelty under the Criminal Code further reduces incentives for rigorous investigation and prosecution⁴. Institutional fragmentation constitutes another critical practical problem. Responsibility for animal-related matters is divided among environmental authorities, local executive bodies, and police structures, without a designated institution entrusted with primary competence for animal welfare protection. This lack of specialization and coordination leads to jurisdictional uncertainty and weak accountability. In practice, complaints involving stray animals or abuse in public spaces frequently fall outside the effective control of any single authority, resulting in inaction or procedural deadlock⁵. The absence of preventive and educational mechanisms further exacerbates existing problems. Azerbaijani legislation does not impose systematic obligations related to responsible pet ownership, compulsory registration, sterilization, or public education on animal welfare. Preventive veterinary and educational measures are not integrated into state policy, leaving enforcement bodies to respond only after harm has already occurred. This reactive approach fails to address the underlying causes of animal abuse and abandonment⁶. Finally, the lack of transparent statistical and enforcement data represents a serious institutional weakness. There is no centralized or publicly accessible system providing information on the number of animal cruelty

³ Law of the Republic of Azerbaijan "On the Animal World", 1999; Cabinet of Ministers' regulatory practice

⁴ Code of Administrative Offences of the Republic of Azerbaijan, Art. 274; Criminal Code of the Republic of Azerbaijan

⁵ Cabinet of Ministers' regulations; local executive authority competence frameworks

⁶ Law "On the Animal World", 1999; absence of sector-specific preventive regulation).

complaints, administrative proceedings, imposed sanctions, or repeat offenses. This absence of official data impedes evaluation of legislative effectiveness, limits public oversight, and undermines evidence-based policymaking. Without transparency and reporting obligations, deficiencies in enforcement remain largely unexamined and uncorrected (official practice of competent authorities). Taken together, these practical problems demonstrate that shortcomings in Azerbaijan's animal protection system extend beyond legislative drafting and directly shape everyday realities for animals. The persistence of stray animal suffering, ineffective enforcement, and institutional inaction highlights the urgent need for comprehensive reform, which will be addressed in the following section through concrete legal and institutional recommendations.

4. Recommendations for Legal and Institutional Reform

The deficiencies identified in Azerbaijan's animal protection framework demonstrate the need for comprehensive and systematic reform. Effective improvement requires not merely incremental amendments but the adoption of a coherent legal and institutional approach that recognizes animal welfare as a distinct and enforceable public interest. First, Azerbaijan should adopt a comprehensive Animal Welfare Law that consolidates existing fragmented provisions into a unified legal framework. Such a law should clearly define key concepts, including animal cruelty, neglect, humane treatment, and responsibility of ownership. It should establish minimum welfare standards applicable to domestic, stray, and working animals, moving beyond the environmental focus of the Law "On the Animal World" (1999). This statute should recognize animal welfare as an independent legal value rather than a secondary element of biodiversity protection. Second, criminal liability for severe and repeated acts of animal cruelty should be explicitly introduced into the Criminal Code of the Republic of Azerbaijan. Administrative sanctions under the Code of Administrative Offences are insufficient to address serious abuse. Criminalization would enhance deterrence, signal societal condemnation of cruelty, and align legal consequences with the gravity of harm inflicted on animals. Clear thresholds should be established for criminal responsibility, including acts resulting in death, permanent injury, torture, or systematic abuse⁷. Third, the state should clarify and strengthen institutional responsibility and enforcement mechanisms. A designated authority or specialized unit within existing law enforcement or executive structures should be entrusted with primary responsibility for animal welfare protection. This body should possess clear investigative powers, coordination authority with municipalities, and responsibility for monitoring enforcement outcomes. Institutional clarity is essential to overcoming current fragmentation and accountability gaps. Fourth, Azerbaijan should introduce a national legal framework for stray animal management, imposing binding obligations on municipal authorities. This framework should mandate the establishment of shelters, sterilization and vaccination programs, and humane population control measures, supported by state funding and oversight. Legal obligations should replace the current discretionary and ad hoc municipal practices, ensuring consistency and accountability across regions⁸. Fifth, preventive measures must be incorporated into the legal system. These should include mandatory registration of domestic animals, owner responsibility provisions, and public education initiatives on animal welfare. Preventive regulation reduces long-term enforcement burdens and addresses the root causes of abandonment and neglect. Integrating education and prevention into law reflects a modern, sustainable approach to animal protection⁹. Finally, the introduction of transparency and reporting obligations is essential. Competent authorities should be legally required to collect and publish data on animal cruelty complaints, enforcement actions, and sanctions imposed. Public access to such data would enable

⁷ Criminal Code of the Republic of Azerbaijan; Code of Administrative Offences, Art. 274

⁸ Cabinet of Ministers' regulatory competence; local executive authority frameworks.

⁹ Law "On the Animal World", 1999; absence of preventive obligations in current regulation.

evaluation of legal effectiveness, strengthen public trust, and provide a foundation for evidence-based policymaking.

Conclusion

Animal welfare protection in the Republic of Azerbaijan remains legally and institutionally underdeveloped despite the existence of basic normative provisions. The current framework is characterized by fragmentation, weak enforcement, an overreliance on administrative sanctions, and the absence of a comprehensive state policy addressing animal cruelty and welfare. These structural shortcomings translate directly into persistent animal suffering, particularly in the context of widespread stray animal populations and ineffective responses to abuse. This article has demonstrated that the problems confronting animal welfare in Azerbaijan are not incidental but systemic, rooted in legislative gaps, institutional fragmentation, and insufficient deterrence. While recent increases in administrative penalties represent limited progress, they fail to address the fundamental deficiencies of the existing framework. Meaningful reform requires a shift from symbolic regulation toward a coherent, enforceable, and humane legal system that recognizes animal welfare as a legitimate subject of legal protection. By adopting comprehensive legislation, introducing criminal liability for serious cruelty, strengthening enforcement institutions, and prioritizing prevention and transparency, Azerbaijan can significantly improve animal welfare outcomes and move toward a legal framework consistent with fundamental principles of responsibility, compassion, and rule of law.

Literature List

1. Law of the Republic of Azerbaijan “On the Animal World”, 4 June 1999.
2. Code of Administrative Offences of the Republic of Azerbaijan, Art. 274 (Cruelty to animals).
3. Criminal Code of the Republic of Azerbaijan (general provisions – absence of specific animal cruelty offense).
4. Cabinet of Ministers of the Republic of Azerbaijan – regulatory acts concerning rules for keeping domestic animals in urban areas.
5. Municipal regulations on sanitation and control of domestic animals in local administrative territories.
6. Official enforcement practice of competent authorities concerning administrative liability for animal cruelty (statistical gap noted).
7. Comparative international animal welfare standards (implicitly referenced in the article’s analytical sections).

A HAIKU POEM ABOUT SNOWING BY RADU ȘERBAN: AN ANALYSIS

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Abstract

The purpose of this paper is to analyse the following haiku poem by Romanian poet Radu Șerban: "Prima ninsoare -/ elevul ia lectura/ de la început" (First snowfall -/ the pupil starts all over again/ his reading, my translation), which is present in his haiku poetry volume *Hyaku Haiku*, or One Hundred Haiku Poems, published in 2025. This haiku poem takes over a well-known pattern, which relies on leaving behind usual activities in order to admire the beauty of nature. The pupil is clearly absorbed more by the show provided by snowing than by his school reading. Eventually, however, the pupil needs to return to his everyday activities. We readers find here a tension between what the pupil is impressed with and what he would like to continue doing, namely contemplating nature, and his duty, which is that of taking care of his school work. The haiku poem is originally from Japan, from as far back as the sixteenth-seventeenth century, but it has transcended time and culture and is now being practiced all over the world. The natural world coexists with the human world in this poem. In addition, the snowing gives us readers a clue about what season it is – namely, winter. The methodological framework is composed of literary studies and psychology.

Keywords: Free associations, cultural studies, psychology

1. INTRODUCTION

The haiku poem, originating in Japan in the 16th-17th century (Yasuda, 2011), has become popular all over the world in specialized communities where members read and write such poems themselves. The haiku poem is very popular for an international audience, in the English language. While mainstream literary works may not have focused on the complexity of the haiku poem, portraying it in a limited way, as referring to nature and having three lines, 5-7-5 syllables, online communities focused on haiku writing and analysis offer us valuable resources which can challenge our previous expectations about this type of poem. We may have viewed the haiku poem as a fixed form poem, yet online haiku communities may prompt us to look at its history in Japan, where the Free Haiku Movement during Modernist times challenged this structure. Everything started with Japanese authors, which makes us realize that the haiku poem does not only mean the classical Japanese haiku poem written by Basho and other haiku masters. Santoka Taneda (Oyama, 2021) is one of the well-known representative poets of the Free Haiku Movement, which does not only refer to a different structure than the 5-7-5 syllables and even three lines format, but also to a poem not using kigo, or the seasonal reference.

Western culture poets, especially those from the English-speaking countries, are more open towards experimentalism and write free form haiku poems. That rules are meant to be broken, especially since the author is a gifted person, is the opinion of haiku master Cornelius Traian Atanasiu, leader of the Romanian Kukai online community. Atanasiu (2025) refers to any kind of rules, as we notice from what he repeatedly draws our attention to in his online community in the Facebook group *Autori de Haiku din România* (Haiku Authors of Romania), where most of the communication with the members of his community takes place.

The haiku poem is not rooted in one particular culture. According to Atanasiu (2025), we can speak of haiku poems specific to each and every culture, as he brings into discussion his intention to be able to speak about a Romanian haiku, based on the haiku poems written in his community. The haiku poem offers us the opportunity to deal with a variety of experiences, which are relevant to our time

and culture, just as it can present us with universal aspects of our human experience. There is not one single type of haiku poem, which allows us to look at it as we look at any Western culture lyrical poem. It can be a poem about nature, but also a poem about human experience, as well as about both.

1.1. Theoretical Framework

One particular feature of the haiku poem is its division into two parts. The juxtaposition which lies at the basis of the haiku poem's mechanism is well-known to Western culture haiku poetry readers and writers. Atanasiu (2025) believes that it is based on a strong contrast between the two parts that the haiku poem works very well, having an effect of psychological and intellectual tension. Another particular feature of the haiku poem is that it relies on the work done by the readers. The reader can be pictures as an interlocutor of the author, looking for clues which belong to verbal and non-verbal language, in order to complete the message by filling in the blanks. A haiku poem does not say everything directly. It relies, mostly, on indirect language, leaving readers to look for more than what is actually said, interpreting the tone and the various allusions they can feel in the poem. This is why the approach of reader-response criticism (Mart, 2019) becomes the most suitable when analysing a haiku poem. According to reader-response criticism, readers have an emotional reaction when reading a text (Mart, 2019). What is more, readers rely in their efforts to understand the meaning of a text on their background knowledge (Mart, 2019). This background knowledge can include cultural and educational aspects, and knowledge from various domains, as well as on personal life experience.

2. METHOD

In order to better understand the haiku poem and the way in which it is deciphered by the readers, we start from an example of haiku poem by Romanian author Radu Serban. He has recently published, in 2025, a haiku poetry volume titled *Hyaku Haiku, or One Hundred Haiku Poems*. His poems are published in their Romanian and English versions. The poem chosen for analysis is a poem about snowing, which suggests that the author, while a modern one and one from outside of Japan, wishes to preserve the kigo, or seasonal reference. The poem (Serban, 2025) sounds as follows: "Prima ninsoare -/ elevul ia lectura/ de la început" (First snowfall -/ the pupil starts all over again/ his reading, my translation). I have preferred to offer my translated version instead of the one belonging to the author, Serban (2025), in his published volume, which sounds as follows: "First snow -/ the student takes the reading/ from the beginning." Through my translation I wanted to underline my reading, my interpretation of the poem. The use of the snowfall underlines the fact that the snow is falling at the present time, and that it is an action still going on. As it is snowing, and as the snowflakes are piling one over the other, the pupil looks at it falling in the air. I have chosen the word *pupil* instead of *student*, since *pupil* offers a more precise idea over the age of the boy. *Student* can refer to university students, just as it can refer to primary class students. While the term *student* present in Serban's translation can refer to a more inclusive age range, the term *pupil* refers to the joy associated with the snow during the age of childhood, where emotions are very intense with respect to this natural phenomenon. Children enjoy playing in the snow very much. It is to this kind of joy that the haiku poem alludes to. Even as adults, we may live again, psychologically and emotionally, the intense joy of watching the first snow during a certain year and during the respective winter season. Further on, in Serban's translation, reading and beginning have a pronunciation which suggests rhyme. A haiku poem is not supposed to contain rhyme, yet it may contain alliteration, which even makes it more effective. The phrase *starts all over again* used in my translation suggests a more natural, colloquial way of expressing the idea that the pupil resumes his reading and, likely, his work for school. The idea, however, remains the same in both translated versions. What differs is the slightly changed nuance. The translated versions can be used to look at the perspectives of two different readers, one of whom is the author of the poem himself. There is, however, no right or wrong interpretation of the haiku poem. The author of a haiku poem gives freedom to his readers to bring up their own contribution to the understanding of the haiku and, most importantly, to developing the haiku poem,

by reflecting further on starting from their own impressions and life experiences. The reader is invited to be creative, in his or her own turn.

The pattern based on which this haiku poem by Serban (2025) functions is the following: something happening in nature caused human activities to stop, since nature offers us a show of beauty. The human beings stop in awe, their attention directed elsewhere. This can be understood as part of a high awareness of the present moment and of the present surroundings, which is a consequence of the Zen Buddhist philosophy (Duval, 1991). The haiku poem is inter-related with the Zen Buddhist mindset, as the first haiku poems were written by Zen Buddhist monks or by authors who turned towards practising Zen Buddhism during the course of their lives. This type of mindset is nowadays popular as mindfulness, which is a simplified form of Zen Buddhism (Dawson, 2021), addressed to Western culture members. A high level of concentration and an increased performance at work and connection with the loved ones is the result of mindfulness. Mindfulness can be practiced by focusing on ourselves, on our needs and wishes, as well as on the needs and wishes of those with whom we interact. Mindfulness can, from this point of view, lead to empathy.

When we read the poem about the pupil whose attention is grabbed by the first snowfall, if we are teachers or simply since we have been children ourselves, we tend to behave in an empathetic, understanding way. It is normal to stop reading and to watch the snow falling in this context. The first snowfall is an event which moves beyond the ordinary, everyday life routine, and which can only grab our attention. Further on, readers understand that the child is already thinking of how he could later on start playing outside in the snow with his friends, from his neighbourhood, as well as from his school. However, he decides that he needs to focus on his schoolwork first, likely to be able to finish it and afterwards to be allowed to enjoy his playing outside in the snow. Likely, in the meantime, there would be more snow to play with, and maybe to start making a snowman. The mood is one of expectation. In a similar way in which focusing on schoolwork can lead to good school results, such as grades, the snow will pile down if the boy has enough patience. Patience is an attitude and value we Western culture readers especially can associate with Asian cultures and their meditation practices. In a way, the pupil can be seen as eventually detaching from his wish to watch the snow or even to go outside, and focusing on his duty, his work for school. He does not give in immediately to his strongest wishes. In Freudian terms, the ego, or the conscious self, is divided between the id and the superego. The id stands for immediate wishes and needs, for what brings us pleasure, while the superego is the moral instance, concerned with what is right and what is wrong. The superego can make us feel guilty if we do not do our duty. Thus, the pupil can be seen as being situated in a situation of tension: he is impressed by the first snowfall, yet he ends up choosing his duty, which involves being preoccupied with his school work. The pupil takes, however, some time to contemplate nature, and by doing so, to live in the here and now, in a moment of high awareness of the present moment.

Readers can, thus, start making a process of free associations (Freud, 1977) starting from the keywords snow, snowfall, pupil, and reading. The snow especially in combination with the already present free association, given by the author, pupil, triggers for most readers memories of themselves as pupils having to do school work while wishing they could take some more time to play and enjoy themselves, in the snow or simply by doing other activities they liked. A pupil is a child who would like to play and have fun more than he would like to do some school work. The contrast between work and play, between rules and play is clear. This can be considered to be a constant of everyone's childhood. Parents act as rule-enforcers, then teachers, while the wishes of children remain to play and to enjoy themselves. In fact, this tendency is visible at all ages, yet it can be considered to be more pronounced during the age of childhood. Childhood is also often associated with happy moments, when we think that we had no care in the world. However, this can also often be contradicted when we remember moments such as the one illustrated in this haiku poem. Our memory is selective and in fact we have fantasies based on our reconstructions of the past, as we select those happy moments and ignore the less happy ones. If we want to look for negative moments, we can start selecting those moments during our lives when we felt unhappy at any stage in life.

In every culture, we can find the image of the happy childhood which adults remember nostalgically. Childhood is portrayed as a time of innocence and happiness. It can be considered an ideologically enforced value and perspective, if we consider the approach of cultural studies. Based on cultural studies (Thomas, 1997), some values are around in a certain society at a certain time as they are controlled and reinforced through ideological means. At the same time, we can rely on personal life experience in order to confirm that we have all felt at certain times as adults that childhood has been our happiness stage in life. We can think in this way when we miss our parents or when we compare it to the problems we are facing at the present moment. We can also argue and think about cases where people had traumatic childhoods and where their parents mistreated them. However, the general perception remains the one of childhood as a time of innocence.

We can also consider that the boy in the poem can be presented as if in a dream. On the one hand, his need for a pause from reading is fulfilled by the show offered by nature, as it is snowing. He can watch something beautiful, and then start all over again his reading. In this way, he may be concentrating more, or he may be having a motivation to finish reading and then to have enough time to play outside. The dream imagery, if we look at Freudian dream analysis, brings about images of direct wish fulfillment, as in this poem. In young children's dreams, a wish is directly fulfilled. For instance, if a child is thirsty, he or she can dream about having before them a glass of water. For adults, such infantile dreams (Freud, 2025) where their wishes are directly satisfied are rare. In their dreams, the wish is fulfilled by images which disguise its fulfillment. The haiku poem takes the form of a dream of wish fulfillment, or of compensation. The boy may feel tired of reading, yet the beautiful show offered by nature offers him a compensation, or a sense of comfort.

The way in which human activity stops to contemplate nature is present in other poems from Romanian culture. We can mention two such poems written by Romanian author Serban Codrin (1994). The first poem sounds as follows: "drum cu-o rochiță/ rândunicii în floare –/ ocoleșc prin șanț" (the swallow's little dress/ in full bloom on the road –/ I take a detour through the ditch, my translation). The poetic persona does not want to disturb or to ruin the flower called, in its folk name in Romanian, *the swallow's little dress*. The second poem by Codrin (1994) sounds as follows: "azi imposibil/ de săpat în livadă -/ rutul melcilor" (today it is impossible/ to dig in the orchard -/ the mating of snails, my translation). Here we notice the sense of respect and wish not to disturb the natural world of the poetic persona.

While it is so short and also focusing on external reality and visual images, the haiku poem can be further developed and also able to include the psychological reality of the human beings present in it.

3. FINDINGS

We notice, in Radu Serban's (2025) poem, a feeling of respect for nature, next to all other free associations which lead to various scenarios created by the readers. It is the same feeling of respect for the natural world where the poetic persona does not wish to disturb it as we can see in the haiku poems by Serban Codrin (1994). Maybe the boy does not dare yet interfere with the beauty of the scenery when the snow starts falling. In Japanese culture, we find the philosophical idea that the human being is not above nature. The human being is as much a part of nature as any other natural world element. This can explain, at least to some extent, why the poetic personas in all the mentioned three haiku poems try to avoid interfering with the natural course of their surrounding environment. It is a reaction which may be considered specific to Japanese culture, yet it may also be a reaction of people belonging to any culture, as long as they have a high level of empathy.

4. DISCUSSION, CONCLUSION AND RECOMMENDATION

By analysing the haiku poem by Radu Serban, we have gone through several specific aspect of haiku poems, while also considering the way in which we can relate to this poem based on our own personal life experience and emotions. In order to be effective, a haiku poem needs to refer to our common psychological experiences, while presenting a common emotional state. The visual imagery works in such a way so as to allow readers to associate various emotional experiences to them and to be able to further develop the story included in the haiku poem.

Haiku poems can be used to make us aware of various emotional states which we can better understand. They can draw our attention to the realities of the seasons and to the ways in which we can see them from other perspectives. Since our surrounding environment prompts various emotional reactions from us, according to environmental psychology, a better understanding of these reactions can be useful for our psychological well-being. We can improve our emotional states regarding various seasons if we learn to look at them differently, and one way to do so is by reading and/ or writing haiku poems.

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**FINANCIAL INSTRUMENTS ACCOUNTING:
DIGITALIZATION AND INNOVATIONS BROUGHT BY BLOCKCHAIN APPLICATIONS**

**FİNANSAL ARAÇLAR MUHASEBESİNDE DİJİTALLEŞME VE BLOKZİNCİR
UYGULAMALARININ GETİRDİĞİ YENİLİKLER**

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Özet

Bu çalışma, finansal araçlar muhasebesinde dijitalleşme ve blokzincir teknolojilerinin getirdiği yenilikleri incelemektedir. Dijital dönüşüm, muhasebe süreçlerinde hız, doğruluk ve verimliliği artırırken; blokzincir teknolojisi güven, şeffaflık ve izlenebilirlik açısından devrim yaratmaktadır. Blokzincir uygulamalarının finansal araçlar muhasebesi ile nasıl bütünlüğü ve bu entegrasyonun işletmeler açısından ne tür sonuçlar ortaya çıkardığı ve uygulama örnekleri değerlendirilmiştir. Bulgular, dijitalleşme ve blokzincir entegrasyonunun muhasebe süreçlerinde otomasyon, denetim etkinliği ve veri güvenliği açısından önemli katkıları sağladığını göstermektedir. Blokzincir tabanlı sistemlerin finansal araçların kaydı, sınıflandırılması ve raporlanması süreçlerinde otomasyonu desteklediğini; böylece hata riskini azaltarak denetim faaliyetlerini kolaylaştırdığını göstermektedir. Ayrıca blokzincir yapısı, kayıtların değiştirilemez olması nedeniyle veri güvenliğini artırmakta ve finansal bilginin doğrulanabilir şekilde saklanması mümkün kılmaktadır. Bu durum, işletmeler için hem iç denetim süreçlerinde hem de finansal tabloların güvenilirliğinde önemli bir avantaj yaratmaktadır. Bunun yanında, dijitalleşme ve blokzincir uygulamalarının sadece teknik bir dönüşüm olmadığı; aynı zamanda kurum içi iş yapış biçimlerini, bilgi akışını ve karar alma süreçlerini de etkilediği görülmektedir. Özellikle tokenizasyon gibi yeni uygulamalar, finansal varlıkların daha hızlı ve düşük maliyetli şekilde transfer edilmesine olanak sağlayarak piyasalarda likidite yapısını dönüştürmektedir. Ancak literatürde, teknolojik altyapı maliyetleri, düzenleyici belirsizlikler ve standartlaşma eksikliğinin, bu dönüşümün benimsenmesinde en önemli engeller olduğu da ifade edilmektedir. Genel olarak çalışmanın bulguları, dijitalleşme ve blokzincir teknolojilerinin finansal araçlar muhasebesine hem operasyonel hem de stratejik açıdan kayda değer katkılar sunduğunu; fakat bu katkıların sürdürülebilir hale gelmesi için yasal düzenlemelerin, standartların ve kurumsal hazırlığın eş zamanlı olarak gelişmesi gerektiğini ortaya koymaktadır.

Anahtar Kelimeler: Dijitalleşme, Blokzincir, Finansal Araçlar Muhasebesi, Muhasebede Dijital Dönüşüm, Denetim ve Veri Güvenliği

Abstract

This study examines the innovations brought by digitalization and blockchain technologies in the accounting of financial instruments. While digital transformation increases speed, accuracy, and efficiency in accounting processes, blockchain technology creates a revolutionary impact in terms of security, transparency, and traceability. The study evaluates how blockchain applications are integrated into financial instruments accounting, the types of outcomes this integration produces for businesses, and relevant practical examples. The findings indicate that digitalization and blockchain integration make significant contributions to accounting processes, particularly in terms of automation, audit effectiveness, and data security. Blockchain-based systems support automation in the recording, classification, and reporting of financial instruments, thereby reducing the risk of errors and facilitating audit activities. Moreover, due to the immutability of records, the blockchain structure enhances data security and enables the verifiable storage of financial information. This situation creates a significant advantage for businesses both in internal audit processes and in the reliability of financial statements. In addition, it is observed that digitalization and blockchain applications do not represent merely a technical transformation; they also affect internal business practices, information flows, and decision-making processes. Especially new applications such as tokenization enable faster and lower-cost transfers of financial assets, thereby transforming liquidity structures in financial markets. However, the literature also emphasizes that technological infrastructure costs, regulatory uncertainties, and the lack of standardization constitute the main barriers to the adoption of this transformation. Overall, the findings of the study reveal that digitalization and blockchain technologies add value to financial instruments accounting from both operational and strategic perspectives; however, for these contributions to become sustainable, legal regulations, standards, and institutional readiness need to develop simultaneously.

Keywords: Digitalization, Blockchain, Financial Instruments Accounting, Digital Transformation in Accounting, Audit and Data Security

MODELING AND SIMULATION OF A HYDRAULIC BOOSTER SYSTEM FOR AIRCRAFT FLIGHT CONTROL APPLICATIONS

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Abstract

Aircraft hydraulic power systems (HPS) are extensively used to supply the high power and force levels required by flight control surfaces, landing gear, braking systems, and other safety-critical subsystems. Owing to their high power density, robustness, and proven reliability, hydraulic systems remain a core element of modern aircraft architectures. However, under demanding flight conditions, conventional hydraulic systems may suffer from pressure losses, nonlinear flow behavior, and limited dynamic response, particularly when high aerodynamic loads require rapid and precise actuator motion. These limitations can lead to increased control effort and degraded system performance.

To mitigate such effects, hydraulic booster systems are commonly employed to amplify input forces and improve actuator responsiveness. This thesis investigates the modeling and simulation of a hydraulic booster system as a functional subsystem within an aircraft hydraulic flight control application. To enable focused analysis while retaining physical relevance, the booster system is isolated from the full aircraft hydraulic network and modeled as a representative subsystem.

A physics-based model of the hydraulic booster system is developed using lumped-parameter modeling techniques. The governing equations describing fluid continuity, valve flow, actuator force balance, and fluid compressibility are formulated based on fundamental fluid mechanics principles. The model is implemented in a one-dimensional system-level simulation environment, allowing efficient numerical analysis and parametric studies while preserving the dominant system dynamics.

The developed model is benchmarked against a reference study from the open literature to assess consistency in structure and dynamic response trends. Comparative simulations are performed between baseline (non-boosted) and booster-assisted configurations under identical operating conditions. Performance evaluation focuses on actuator dynamic response, pressure build-up characteristics, hydraulic flow demand, and force amplification behavior. The simulation results indicate that the inclusion of a hydraulic booster improves pressure response, enhances actuator dynamics, and reduces the required control input force compared to a non-boosted system. These trends are consistent with reported findings in the literature and demonstrate the effectiveness of booster systems in managing transient high-load conditions.

Although motivated by aircraft flight control applications, the proposed modeling approach and findings are applicable to a wide range of aerospace and high-load hydraulic systems, including transport aircraft, rotorcraft, unmanned aerial vehicles, and industrial hydraulic actuation systems.

Keywords: Aircraft hydraulic systems; hydraulic booster; energy storage; supercharged accumulator; AMESim simulation; lumped-parameter modeling; transient power demand; flow and pressure characteristics

3B Yazıcı ile Üretilen Termoplastik Parçaların Mekanik Özelliklerinin İyileştirilmesi: Reçine İnfiltrasyonu ve Proses Parametreleri Üzerine Bir Çalışma

Improving the Mechanical Properties of 3D Printed Thermoplastic Parts: A Study on Resin Infiltration and Process Parameters

Ahmet Arif KOÇ, Mehmet ŞAHBAZ

Özet: Bu çalışma, Eriyik Yığma Modelleme (FDM) teknolojisi ile üretilen parçaların mekanik performansını etkileyen faktörleri ve özellikle epoksi reçine infiltrasyonu ile güçlendirme yöntemlerini literatür ışığında incelemektedir. FDM teknolojisinin endüstriyel kullanımını kısıtlayan gözeneklilik ve anizotropi gibi sorunlar, çeşitli art-işlemlerle giderilmeye çalışılmaktadır. Bu çalışmada, doluluk oranı ve deseni gibi baskı parametrelerinin etkilerini ve reçine infiltrasyonunun farklı malzeme grupları (PLA, ABS, PETG, PEEK) üzerindeki mekanik katkılarını sentezlemektedir.

Anahtar Kelimeler: FDM, Eklemeli İmalat, Epoksi Reçine, Kompozit Malzeme, Mekanik Özellikler.

Abstract: This study examines the factors affecting the mechanical performance of parts produced via Fused Deposition Modeling (FDM) technology, specifically focusing on reinforcement methods using epoxy resin infiltration, in light of existing literature. Various post-processing techniques are employed to address issues such as **porosity** and **anisotropy**, which limit the industrial application of FDM technology. This study synthesizes the effects of printing parameters, such as infill rate and pattern, and the mechanical enhancements provided by resin infiltration on different material groups (PLA, ABS, PETG, PEEK).

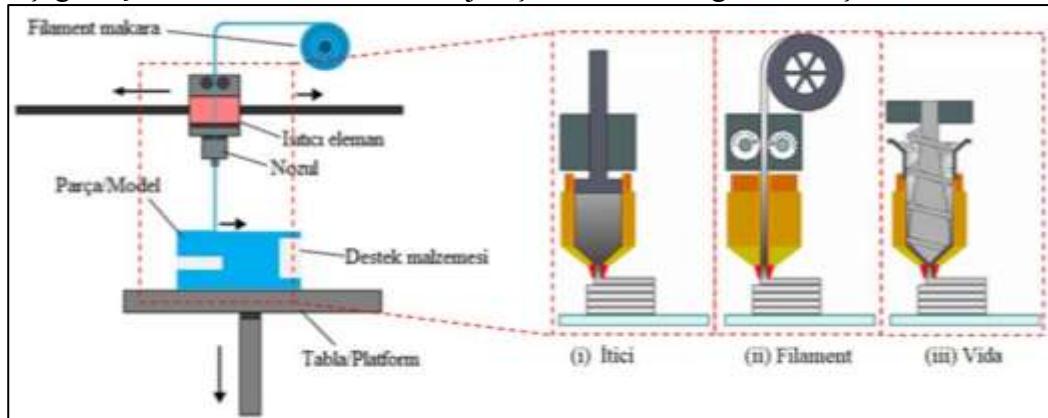
Keywords: FDM, Additive Manufacturing, Epoxy Resin, Composite Material, Mechanical Properties.

1. GİRİŞ

Eklemeli İmalat (Eİ) teknolojileri, karmaşık geometrilerin hızlı ve düşük maliyetli üretimine olanak tanyarak prototipleme ve son kullanıcı parçası üretiminde devrim yaratmıştır. Bu yöntemler arasında en yaygın olan FDM, termoplastik filamentlerin katman katman biriktirilmesi prensibine dayanır.

Ancak FDM parçaları, üretim doğası gereği iki temel mekanik kusur sergiler: katmanlar arası zayıf bağlardan kaynaklanan anizotropi ve iç yapıda oluşan gözeneklilik. Bu durum, parçaların yük taşıma kapasitesini sınırlamakta ve yapısal mühendislik uygulamalarında kullanımını zorlaştırmaktadır.

Aşağıda **Şekil 1.**'de FDM Metodolojisi şematik olarak gösterilmiştir.



Şekil 1. FDM Üretim Yöntemi Şematik Gösterimi (Karagöz, Danış Bekdemir ve Tuna, 2021).

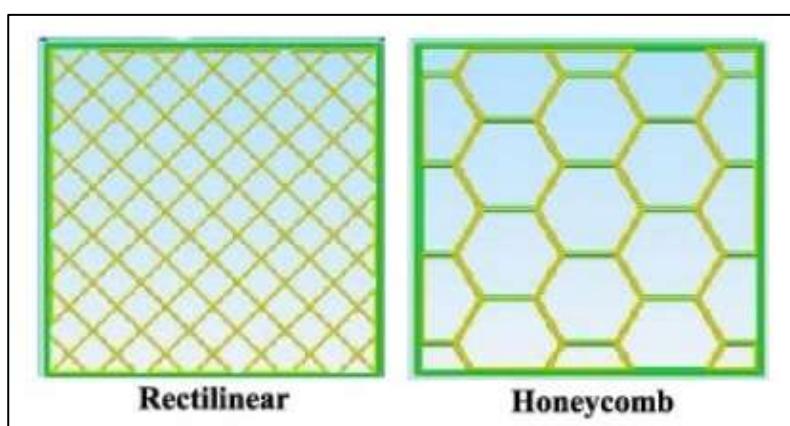
2. FDM BASKI PARAMETRELERİNİN MEKANİK ÖZELLİKLERE ETKİSİ

Literatürdeki çalışmalar, mekanik dayanımın öncelikle baskı parametrelerinin (doluluk oranı, dolgu deseni, sıcaklık vb.) optimize edilmesiyle artırılabilceğini göstermektedir.

Doluluk Oranı ve Sıcaklık: Özdoğan (2021) tarafından yapılan çalışmada, çekme dayanımı üzerindeki en etkili parametrenin doluluk oranı olduğu, bunu tarama açısı ve baskı hızının izlediği belirtilmiştir. Katman kalınlığının ve nozul sıcaklığının artırılmasının, katmanlar arası yapışmayı iyileştirmektedir. Çiçek (2019) ise ABS ve PLA malzemelerle yaptığı çalışmada, doluluk oranı arttıkça (%25'ten %100'e) parçaların yük taşıma kapasitesinin doğrusal olarak arttığını doğrulamıştır (Özdoğan, 2021).

Dolgu Deseni: Efe (2020), "Rectilinear" örgü deseninin, "Honeycomb" (bal peteği) desenine göre daha yüksek yük taşıma performansı sağladığını tespit etmiştir (Efe, 2020). Atakök ve ark.'ın (2022) çalışmasında literatürdeki çalışmaların genelinde Rectilinear deseni en sık tercih edilen ve dolgu yapısı olduğu raporlanmıştır. Bu durum, Rectilinear deseninin araştırmalarda bir standart veya referans noktası olarak kabul edildiğini ve güvenilir bir seçenek olduğunu göstermektedir. Honeycomb deseni ise kullanım sıklığı açısından hemen arkasından geldiği ve diğer en popüler desen olduğu rapor edilmiştir (Atakok, Kam ve Koc, 2022).

Ayrıca Lee ve ark. (2019), çizgisel desenlerin anizotropik, ızgara desenlerin ise izotropik özellikler sergilediğini belirtmiştir (Lee, Park, Kim ve Chun, 2019). **Şekil 2.**'de Rectilinear ve Honeycomb dolgu deseni tek katmandaki örgü modeli görülmektedir.



Şekil 2. Rectilinear ve Honeycomb dolgu deseni tek katman örnekleri (Atakok ve diğerleri, 2022)

3. ALTERNATİF GÜÇLENDİRME YÖNTEMLERİ

Mekanik özelliklerini iyileştirmek için sadece baskı parametreleri değil, malzeme modifikasyonları da araştırılmıştır:

Kompozit Filamentler: Taleb (2023) ile Çelik ve Gür (2021), tel takviyeli ve karbon fiber/EVA katkılı filamentlerin saf PLA'ya göre mukavemeti artırdığını, ancak katkı oranları arttıkça bazı durumlarda akma dayanımında azalma görülebileceğini raporlamıştır (Çelik ve Gür, 2021; Taleb, 2023).

Yüzey İşlemleri: Lee ve ark. (2019), nanopartikül kaplama ile yüzey özelliklerinin değiştirilebileceğini göstermiştir (Lee ve diğerleri, 2019).

4. REÇİNE İNFİLTRASYONU İLE YAPISAL GÜÇLENDİRME

Literatürde en belirgin mekanik iyileşmeyi sağlayan yöntemlerden biri, gözenekli iç yapının epoksi reçine ile doldurularak parçanın kompozit bir yapıya dönüştürülmesidir. Reçineyle doldurulan numune kompozite dönüştürmektedir. Kompozitlerin mekanik özelliklerindeki gelişmelerle yüksek teknoloji uygulamaları için çok önemli ve güvenli hale gelmektedir (Ayten, Polat, Sahbaz ve Seyhan, 2023).

4.1. Termoplastik Matrislerde İnfiltasyon Etkisi

3B baskıda kullanımı en yaygın filamentlerin en bilinenleri Akrilonitril Butadin Stiren (ABS) ve PLA'dır. Polietilen Tereftalat Glikol (PETG)'dır (Babayigit, Sefaci ve Şahbaz, 2024).

PLA ve ABS: Karakuş ve Tanık (2023), PLA parçalara uygulanan epoksi infiltrasyonunun çekme direncinde %300'e varan artış sağladığını belirtmiştir. Benzer şekilde Akın (2023), ABS numunelerde epoksi dolgunun yapısal bütünlüğü artırdığını ve çekme dayanımını önemli ölçüde yükselttiğini raporlamıştır (Karakuş ve Tanık, 2023).

PETG ve PEEK (Poliesterterketon): Sathishkumar ve ark. (2021), epoksi ile doldurulan PETG kafes yapılarının basma dayanımında %70 artış olduğunu tespit etmiştir. Yüksek performanslı plastiklerden olan PEEK üzerine yapılan çalışmalarda ise vakum destekli infiltrasyonun, termal işlemlere kıyasla daha etkili bir bağ kuvveti oluşturduğu görülmüştür (Sathishkumar, Elakkiyadasan, Manojkumar, Rangaraja ve Padmanabhan, 2021).

Tamburrino ve ark.'ın (2025) yaptığı çalışmada PEEK malzemesi kullanılarak yapılan 3B baskılarda, vakum destekli epoksi reçine infiltrasyonunun (sızdırma işleminin) etkilerini doğrudan ve ayrıntılı bir şekilde incelemektedir. İnfiltasyon işleminin başarısı, parçanın içindeki boşluk oranına bağlı olduğunu raporlamıştır (Tamburrino, Aruanno, Paoli, Razionale ve Barone, 2025).

Düşük Doluluk Oranlarında Daha Yüksek Verim: %30 ve %50 dolulukta gözenekler daha büyük ve birbirine bağlı olduğu için reçine içeriye rahatça sızar ve en yüksek performans artışı bu oranlarda görülür. %70 dolulukta Gözenekler küçüldüğü ve bağlantı azaldığı için reçine tam olarak nüfuz edemez, bu da performans artışını sınırlar ve sonuçlarda tutarsızlığa yol açmaktadır. Dolayısıyla, düşük doluluk oranlarında daha yüksek verim elde edildiği kaydedilmiştir (Tamburrino ve diğerleri, 2025).

İsıl İşlemden Daha Etkili: Geleneksel bir yöntem olan ıslı işlem (firırlama), malzemenin kristalleşmesini artırırsa da katmanlar arası bağı güçlendirmekte yetersiz kalmıştır. Buna karşın epoksi infiltrasyonu, mekanik dayanım açısından ıslı işlemden çok daha üstün sonuçlar vermiştir (Tamburrino ve diğerleri, 2025).

Ağırlık ve Maliyet Avantajı: İnfiltre edilmiş %30 veya %50 doluluğa sahip parçalar, %100 dolu PEEK parçalara göre hem daha hafiftir hem de daha dayanıklıdır (yüksek mukavemet/ağırlık oranı).

Ayrıca bu işlem, parça başına maliyeti ihmal edilebilir düzeyde artırmaktadır, bu da epoksi infiltrasyon yöntemini oldukça ekonomik kılmaktadır.

Çalışmada, 3B baskıda en büyük sorunlardan biri olan katmanların birbirinden ayrılmazı riskinin, infiltrasyon ile azaltıldığı sonucuna varılmıştır. Epoksi reçinenin, PEEK katmanları arasındaki gözenekli yapıya sızarak mekanik bir kenetlenme sağladığı görülmektedir. Bu işlem kimyasal bir bağdan ziyade, boşlukların doldurularak yapının fiziksel olarak bütünlMesmesini sağladığı için malzemenin anizotropik (yöne bağlı zayıflık) yapısı iyileştirilir. Sonuç olarak, epoksi reçine infiltrasyonu; parçayı %100 dolu basmaya veya ıslı işlem uygulamaya kıyasla, daha hafif, daha ucuz ve mekanik olarak çok daha sağlam parçalar elde edilmesini sağlayan en etkili yöntem olduğu bildirilmektedir (Tamburrino ve diğerleri, 2025).

4.2. Viskozite ve Uygulama Yönteminin Önemi

İnfiltrasyonun başarısı, reçinenin viskozitesine ve uygulama yöntemine bağlıdır. Özer (2025), orta viskoziteli (300–560 cP) reçinelerin en yüksek nüfuz kabiliyetine sahip olduğunu ve enerji absorpsyonunu maksimize ettiğini ortaya koymuştur (Özer, 2025). Erhard ve ark. (2023) da düşük viskoziteli reçinelerin daha derin ve homojen nüfuz sağladığını doğrulamıştır (Erhard, Taha ve Günther, 2023).

4.3. Yüzey Hazırlığı ve Bağlayıcılık

Zaldivar ve ark. (2017), ABS numunelere epoksi uygulanmadan önce plazma yüzey işlemi yapıldığında, eğilme dayanımında %130 artış ve kırılma uzamasında iki katına çıkış gözlemlemiştir. Bu durum, matris ile reçine arasındaki arayüzey bağının önemini vurgulamaktadır (Zaldivar, McLouth, Patel, Severino ve Kim, 2017).

5. SONUÇ

Literatür taraması, FDM parçalarının mekanik zayıflıklarının giderilmesinde epoksi reçine infiltrasyonunun son derece etkili bir yöntem olduğunu göstermektedir.

- **Mukavemet Artışı:** İnfiltrasyon, parçaların çekme, eğilme ve özellikle basma dayanımlarını dramatik şekilde artırmaktadır.
- **Süneklik-Gevreklik Dönüşümü:** İşlem, mukavemeti artırırken malzemenin sünek yapısını daha gevrek bir karaktere dönüştürmektedir.
- **Ekonomik Avantaj:** Düşük doluluk oranlarında (%20 gibi) basılan parçaların reçine ile doldurulması, filament sarfiyatını azaltarak endüstriyel yük taşıma kapasitesine sahip ekonomik parçalar üretilmesini sağlamaktadır.

Sonuç olarak, reçine infiltrasyonu, FDM teknolojisinin anizotropik ve gözenekli yapısından kaynaklanan dezavantajlarını ortadan kaldırarak, bu yöntemi yüksek dayanım gerektiren endüstriyel uygulamalar için uygun hale getirmektedir.

3B baskıda karşılaşılan en büyük sorunlardan biri olan delaminasyon riskinin, infiltrasyon ile azaltıldığı sonucuna varılmıştır.

Yapılan çalışmalar reçine infiltrasyonu ile kimyasal bir bağdan ziyade, boşlukların doldurularak yapının fiziksel olarak bütünlMesmesinin sağlandığı ortaya konulmuştur. Bu sayede malzemenin anizotropik (yöne bağlı zayıflık) yapısının iyileştirildiği sonucuna varılmıştır.

Sonuç olarak, epoksi reçine infiltrasyonu; parçayı %100 dolu basmaya veya ıslı işlem uygulamaya kıyasla, daha hafif, daha ucuz ve mekanik olarak çok daha sağlam parçalar elde edilmesini sağlayan en etkili yöntem olduğu görülmektedir.

Bu düşük maliyet + yüksek mukavemet/ağırlık oranı avantajı, PEEK malzemesinin havacılık, otomotiv ve biyomedikal implantlar gibi ağırlığa duyarlı sektörlerde kullanımını artıracağı düşünülmektedir.

Geleneksel ıslı işleme kıyasla daha kısa sürmesi ve düşük sıcaklık gerektirmesi, bu yöntemin enerji verimliliği açısından geleceğin tercih edilen post-proses yöntemi olacağına işaret etmektedir.

6. TARTIŞMA VE ÖNERİLER

Yapılan kapsamlı inceleme, bu alanda önemli teknolojik/teorik ilerlemeler kaydedilmiş olsa da; reçine akışını kolaylaşdıracak özel iç dolgu desenlerinin tasarlanması ve infiltrasyona en uygun gözenek yapısını oluşturacak 3B yazıcı ayarlarının (sıcaklık, hız, doluluk oranı vb.) optimize edilmesi konularında hala önemli araştırma boşlukları bulunduğu sonucuna varılmıştır.

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LIFETIME MEASUREMENT METHODS OF MINORITY CARRIERS IN SEMICONDUCTOR DEVICE

YARIMKÇİRİCİ CİHAZLARDA QEYRİ-ƏSAS DAŞIYICILARIN YAŞAMA MÜDDƏTİNİN ÖLÇÜLMƏ ÜSULLARI

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ABSTRACT

The lifetime of minority carriers is one of the main parameters characterizing the intensity of recombination processes in semiconductor materials and directly affects the operating principles of devices such as diodes, transistors, photodetectors, MOS structures, and solar cells. The carrier lifetime indicates how long injected electrons and holes remain “active” in the crystal and is crucial for the speed of transient processes, current variation dynamics, photoresponse time, and the overall efficiency of the device. For this reason, the accurate determination of carrier lifetime is considered one of the most important diagnostic methods in semiconductor technology.

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Keywords: semiconductor, injection, photodetector, transistor, diode, lifetime, recombination, concentration

XÜLASƏ

Qeyri-əsas daşıyıcıların yaşama müddəti yarımkçirici materiallarda rekombinasiya proseslərinin intensivliyini xarakterizə edən əsas parametrlərdən biridir və diodlar, tranzistorlar, fotodetektorlar, MDS strukturlar, günəş elementləri kimi cihazların iş prinsipinə bilavasitə təsir göstərir. Daşıyıcıların yaşama müddəti injeksiya olunmuş elektron və deşiklərin nə qədər müddət ərzində kristalda “aktiv” qaldığını göstərir və keçid proseslərinin sürəti, cərəyanın dəyişmə dinamikası, photocavab müddəti, həmçinin cihazın ümumi effektivliyi üçün həllədicidir. Bu səbəbdən yaşama müddətinin dəqiq təyini yarımkçirici texnologiyasının ən mühüm diaqnostika üsullarından biri hesab olunur.

Açar sözlər: yarımkçirici, injeksiya, fotodetektor, tranzistor, diod, yaşama müddəti, rekombinasiya, konsentrasiya,

1.Giriş

Yarımkçirici cihazlarda qeyri-əsas daşıyıcıların yaşama müddətinin ölçmə metodları əsasən elektrik, optik və kombinə olunmuş üsullara bölünür. Elektrik üsullara p-n keçidli diodlarda və tranzistorlarda keçid xarakteristikalarından istifadə etməklə aparılan ölçmələr daxildir. Bu üsullar arasında keçid cərəyanının azalması, injeksiya-sökülmə və tranzistorun impuls cavabının analizi kimi texnikalar geniş tətbiq edilir. Bu metodlarda yaşama müddəti yığılmış daşıyıcıların boşalma dinamikasına uyğun olaraq cərəyanın vaxt üzrə dəyişməsi ilə təyin olunur.

Optik metodlar qeyri-invaziv xarakter daşıyır və daha yüksək həssaslıq təmin edir. Ən tanınmış optik üsullar fotokeçiciliyin sönməsi, fotogərginliyin impuls cavabı, optik injeksiya-optik ölçmə, həmçinin TRPL –fotoluminessensiya metodudur. Bu texnikalarda yaşama müddəti daşıyıcıların rekombinasiyası nəticəsində yaranan işıq və ya fotokeçiciliyin zamanla azalması əsasında hesablanır.

Kombinə olunmuş üsullara isə həm elektrik, həm də optik stimullaşdırma tətbiq edilən ölçmə metodları daxildir. Məsələn, mikrodalğalı foto-keçicilik (μ -PCD) və lock-in “Lock-in” termini elektron ölçmə texnikasında istifadə olunan xüsusi bir siqnal aşkarlama metodunu ifadə edir. Lock-in texnikası – müəyyən tezlikdə titrədilən (modulyasiya olunan) zəif siqnalı həmin tezliyə “kilidləyərək” səs-küydən ayıran ölçmə üsuludur. Bu metod çox zəif siqnalları səs-küy içindən seçmək üçün tətbiq olunur. Fotokeçicilik üsulu kristaldakı rekombinasiya mərkəzlərini yüksək dəqiqliklə müəyyən etməyə imkan verir. Bu tip metodlar yarımkəciriçi plitələrin texnoloji keyfiyyətinin qiymətləndirilməsində, günəş panellərinin istehsalında və rekombinasiya mərkəzlərinin identifikasiyasında geniş istifadə olunur.

Ümumilikdə qeyri-əsas daşıyıcılarına yaşama müddətinin ölçülüməsi yarımkəciriçilərdə maddə keyfiyyətinin, defektlərin, səthi vəziyyətlərin və rekombinasiya mərkəzlərinin təyini üçün fundamental əhəmiyyət kəsb edir. Müxtəlif üsulların tətbiqi cihazın tipindən, kristal quruluşundan, defekt konsentrasiyasından və ölçülən parametrin diapazonundan asılı olaraq seçilir. Bu metodlar həm nəzəri modelləşdirmədə, həm də praktiki mikroelektronika istehsalında cihazların səmərəli işləməsini təmin etmək üçün həllədici rol oynayır.

2. Optik metodlar

p-n keçidli cihazlarda qeyri-əsas daşıyıcıların yaşama müddətinin ölçülümə üsulları üzərində dayanaq. Yaşama müddətinin ölçülümə üsulları iki yerə bölündü: stasionar və qeyri- stasionar. Stasionar-qərarlaşmış üsulda statik xarakteristikalardan injeksiya etmiş daşıyıcıların diffuziya uzunluğu, qeyri-stasionar üsulda isə p-n keçidlərin impuls və tezlik xarakteristikalarına görə yaşama müddəti təyin edilir. Qeyri-əsas daşıyıcıların diffuziya uzunluğu (L_p) işıq və γ – şüaları ilə şüalandırılmış p-n keçidlərin qısaqapanma cərəyanına görə təyin etmək olar. Bu ölçü üsulları stasionar üsullara daxildir. Ge p-n keçidlərində əks cərəyanın doyma qiyməti effektiv yaşama müddəti ilə təyin olunur. Bu müddət böyük sahəli nümunələrdə qiymətcə həcmi yaşama müddətinə, kiçik sahəli nümunələrdə isə səthi rekombinasiya sürətinə bərabər olur. [2] Deməli doyma cərəyanını ölçməklə effektiv yaşama müddətini hesablaşmaq olar. Həcmi yüksəkliklərə layında daşıyıcıların generasiya və rekombinasiyası üstünlük təşkil edən diodlarda əks və ya düzünə cərəyanın qiymətinə görə keçid oblastındakı daşıyıcıların yaşama müddəti təyin edilir. Qeyri-əsas daşıyıcıların yaşama müddətini düz istiqamətdə tutumu ölçməklə də qiymətləndirmək mümkündür. Bildiyimiz kimi, dəyişən gərginliyin kiçik tezliklərində düz istiqamətdə gərilmüş p-n keçidin tutumu (C_{dif}) aşağıdakı münasibətlə ifadə olunur:

$$C_{dif} = \frac{q}{KT} (I + I_s) \tau \quad (1)$$

Kəskin p-n keçid üçün keçid oblastında daşıyıcıların rekombinasiyasını nəzərə almasaq düzlənmiş cərəyanın tezlikdən asılılığının tədqiqi göstərir ki, tezlik arttıkca cərəyan azalır. Düzlənmiş cərəyanın tezlikdən asılılığının sadə ifadəsi, işçi müqavimətinin keçid müqavimətindən böyük olduğu halda açıq dövrə rejimində alınır.

Ayri-ayri müəlliflər nəzəri olaraq yarımkəcərıcı diodun impulsdəyişmə xarakteristikalarını iki rejimdə tədqiq etmişlər. W. Shockley— p-n keçiddə injeksiya olunmuş daşıyıcıların yiğilması və boşalması nəzəriyyəsinin ilkin əsaslarını vermişdir [1]. Birinci rejimdə kəskin p-n keçidli diodun impulsdəyişmə xarakteristikaları öyrənilmişdir. Bu rejim diodu ani olaraq düz istiqamətdən əks istiqamətə sıçrayışla dəyişirdikdə müşahidə edilir. p-n keçidin baza oblastında injeksiya etmiş və yiğilmiş qeyri-əsas daşıyıcılar keçidə qayıdır və əks cərəyanın qiymətini artırır. Başqa sözlə desək p-n keçidin mütəhərrik daşıyıcılarla zənginləşməsi və baza keçiriciliyin azalması nəticəsində dəyişmənin başlangıç halında əks istiqamətdə diodun keçiriciliyi düzünə keçiricilik tərtibindədir. Əks cərəyanın başlangıç qiyməti diodun dövrəsinə ardıcıl birləşdirilmiş xarici R müqavimətinin və əks gərginliyinin qiymətindən asılıdır. Keçid oblastında daşıyıcıların konsentrasiyası çox böyük olduğuna görə gərginliyin verilmiş qiymətində əks cərəyan sabit olur:

$$I = \frac{U}{R} = \text{const}$$

və yalnız ardıcıl R müqaviməti ilə məhdudlaşır. Cərəyanın sabit olması keçiddə yiğilmiş deşiklərin konsentrasiyasının sabit sürətlə azalmasını təmin edir.

Əks istiqamətdə tətbiq olunmuş gərginliyin qiyməti böyüdükcə cərəyanın başlangıç qiyməti artır və yiğilmiş yük daha böyük sürətlə sorulmağa başlayır.

Ardıcıl qoşulmuş R müqavimətini azaltsaq, onda yiğilmiş daşıyıcıların azalma sürəti bazaın və omik kontaktların müqaviməti ilə məhdudlaşır. Burada p-n keçidin yaxınlığındakı əlavə tarazsız daşıyıcılar sorulana qədər sistemdən qiymətcə adı əks cərəyanından böyük olan cərəyan keçir. Əlavə daşıyıcıların sorulması onların bazada rekombinasiya etməsi və p-n keçidə qayıtması hesabınadır. [4]

Gərginliyin istiqaməti sıçrayışla dəyişildikdən sonra keçiddə deşiklərin konsentrasiyasının tarazlıq qiymətinin P_n -dən böyük olduğu ana qədər əlavə əks cərəyanı sabit qalır. p-n keçiddə gərginliyin dəyişməsi qeyri-əsas daşıyıcıların konsentrasiyasının azalması ilə təyin olunur. Buna görə də qeyri-əsas daşıyıcıların tam konsentrasiyasının tarazlıqdakindan böyük qiymətlərində dioda əks istiqamətdə gərginlik tətbiq edilməsinə baxmayaraq keşid düz istiqamətdə gərilmışdır. p-n keçidin yaxınlığında qeyri-əsas daşıyıcılar öz tarazlıq konsentrasiyasını aldığı anda keçiddəki gərginlik düşgüsü sıfıra bərabər olur. Bu ani zamanı t_2 qiyməti ilə işarə edək Belə ki, $t > t_2$ olan müddətdə p-n keçid düzünə gərilmışdır, cərəyan (I) isə əks istiqamətdə axır, qiymətcə adı əks cərəyanından xeyli çoxdur və t_2 müddətində dəyişməzdir. t_2 anından başlayaraq cərəyan sürətlə azalır. Bu cərəyan keçiddən nisbətən uzaqda yiğilmiş deşiklərin əks gərginliklə keçidə qaytarılması nəticəsində yaradılır. Buna görə də $0, R$ müqaviməti ilə deyil daşıyıcıların diffuziya və dreyf sürətləri ilə məhdudlaşır.

p-n keçidin yaxınlığında qeyri-əsas daşıyıcıların konsentrasiyası kəskin azalanda əlavə əks cərəyan yox olur və keçid əks istiqamətdə tətbiq edilmiş $U_{əks}$ qədər gərilir. Fiziki qanunlara görə $U_{əks}$ gərginliyinin verilmiş qiymətlərində R müqaviməti böyüdükcə daşıyıcılar daha kiçik sürətlə p-n keçidə qayıdaq və t_2 daha çox olacaqdır, yəni dioddan sabit əks cərəyanın axma müddəti artacaqdır. Yaşama müddətini ölçmək üçün istifadə olunan üsullardan biri də yarımkəcərıcı dioddakı düzünə cərəyanı sürətlə kəsmək üsuludur. Bu üsul Ledehandler üsulu adlanır. [6] Diodda belə impuls rejimində baş verən hadisələr araşdırılmışdır. P-n keçiddə gərginlik düşgüsü keçidin yaxınlığında daşıyıcıların konsentrasiyası ilə birqiyəmətlə ifadə olunur. Düzünə cərəyanı ani kəsikdə keçiddəki əlavə tarazsız daşıyıcılar ani yox olmur və orta yaşama müddəti ərzində özlərini biruzə verir. Buna görə də cərəyan ani yox olanda keçiddəki gərginlik düşgüsü sıçrayışla dəyişmir, əlavə daşıyıcıların konsentrasiyası azaldıqca yavaş – yavaş düşür.

3.Nəticə

Yarımkeçirici cihazlarda qeyri-əsas daşıyıcıların yaşama müddətinin təyini materialın rekombinasiya xüsusiyyətlərinin, daxili defektlərin və texnoloji prosesin keyfiyyətinin qiymətləndirilməsi üçün fundamental əhəmiyyət kəsb edir. Ölçmə üsullarının müxtəlifliyi — elektrik, optik və impuls rejimli metodlar — yarımkəcərincin fiziki xüsusiyyətlərindən və tələb olunan həssaslıq səviyyəsindən asılı olaraq geniş diaqnostik imkanlar yaradır. Xüsusilə impuls rejimində tətbiq edilən Ledehandler üsulu p-n keçiddə injeksiya olunmuş əlavə daşıyıcıların zamanla azalmasını birbaşa müşahidə etməyə imkan verir və rekombinasiya proseslərini yüksək dəqiqliklə xarakterizə edir. Keçiddə gərginlik düşgüsünün cərəyan kəsildikdən sonra tədricən azalması qeyri-əsas daşıyıcıların orta yaşama müddətinin təbii göstəricisi kimi çıxış edir.

Ledehandler üsulu yarımkəcərici diodlarda qeyri-əsas daşıyıcıların yaşama müddətinin təyini üçün effektiv impuls ölçmə metodlarından biri kimi xüsusi əhəmiyyət kəsb edir. Bu üsulda düzünə cərəyanın ani olaraq kəsilməsi nəticəsində p-n keçiddə əvvəlcədən injeksiya olunmuş tarazsız daşıyıcıların dərhal yox olmaması onların real rekombinasiya dinamikasını müşahidə etməyə imkan verir. Keçiddəki gərginlik düşgüsünün cərəyan kəsildikdən sonra sıçrayışla deyil, mərhələli şəkildə azalması qeyri-əsas daşıyıcıların orta yaşama müddəti ərzində rekombinasiya proseslərinin davam etdiyini göstərir.

Ümumilikdə bu ölçmə metodları yarımkəcərici materialın keyfiyyət parametrlərini, rekombinasiya mərkəzlərinin təsirini, defektlərin səviyyəsini və cihazların transient rejimlərdə davranışını qiymətləndirməyə imkan verir. Buna görə də yaşıma müddətinin təyini elektronika, fotonika və sensor texnologiyalarında həm nəzəri modelləşdirmə, həm də praktiki tətbiqlər üçün vazkeçilməz tədqiqat istiqamətidir.

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THE SEMANTIC AND DISCURSIVE CONSTRUCTION OF TIME IN ARABIC

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Özet

Bu çalışma Arap dilinde zamanın yalnızca fil çekimleriyle belirlenen dilbilgisel bir kategori olmadığını, aksine leksik, semantik ve söylemsel etkileşimler yoluyla inşa edilen çok katmanlı bir anlam alanı olduğunu ortaya koymayı amaçlamaktadır. Araştırma, klasik Arap nahiv geleneği ile modern anlambilim ve söylem yaklaşımlarını birleştirerek zaman kavramının nasıl üretildiğini incelemektedir.

Geleneksel gramer anlayışında zaman, mâzî, muzâri' ve emir fili biçimleriyle tanımlanır. Ancak bu biçimsel sınıflandırma, gerçek söylem ortamlarında zamanın nasıl algılandığını ve yorumlandığını açıklamakta yetersiz kalmaktadır. Bu çalışmada Tamam Hassan'ın anlam-merkezli yaklaşımı esas alınmış; fili biçimlerinin mutlak zamanı değil, eylemin tamamlanmışlık, süreklilik ve niyet gibi içsel durumlarını kodladığı savunulmuştur. Zamanın kesin yorumu ise bağlam ve zaman bildiren leksik birimler aracılığıyla belirlenmektedir.

Makale, özellikle sabah, gündüz ve geceyle ilişkili zaman leksemelerinin Arapçada zamanın kademeli ve geçişli bir süreç olarak kavramsallaştırıldığını gösterdiğini ortaya koymaktadır. Kur'an metinleri ve klasik şiirde fili zamanlarının yer değiştirmesi, anlatımın anlamsal yoğunluğunu artıran söylemsel bir strateji olarak değerlendirilmektedir. Bu bağlamda zaman, Arapçada dilbilgisel bir arka plan değil, metnin anlam örgüsünü yönlendiren merkezi bir semantik alan olarak ele alınmalıdır.

Anahtar Kelimeler: Zaman, Arapça, Semantik, Söylem, Fiil

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ABSTRACT

This study aims to demonstrate that time in Arabic is not a purely grammatical category defined by verb inflection, but rather a multi-layered semantic construct shaped through the interaction of lexical items, discourse structure, and contextual interpretation. By integrating classical Arabic grammatical theory with modern semantic and discourse-based approaches, the article examines how temporal meaning is produced in actual language use.

In traditional Arabic grammar, time is primarily classified through three verbal forms: the past (mâdî), the imperfect (muḍârî'), and the imperative (amr). While this classification provides a formal framework, it fails to adequately explain how temporal reference is interpreted in real discourse. Drawing on Tammam Hassan's meaning-centered approach, this study argues that Arabic verb forms encode aspectual properties—such as completion, continuity, and intention—rather than absolute temporal location. Precise temporal interpretation emerges through contextual cues and temporal lexemes.

The analysis further reveals that Arabic possesses an exceptionally rich inventory of temporal lexemes, particularly in relation to dawn, daylight, and transitional periods. These lexemes conceptualize time as a gradual and dynamic process rather than a sequence of discrete units. In Qur'anic discourse and classical Arabic poetry, shifts between tense forms function as deliberate discourse strategies that enhance semantic intensity and rhetorical impact. Accordingly, time in Arabic should be understood as a central semantic and discursive domain that organizes meaning and narrative coherence, rather than as a simple grammatical parameter.

Keywords: Time, Arabic, Semantics, Discourse, Verb.

1. INTRODUCTION

Time constitutes a fundamental organizing principle in human language, shaping how events are structured, interpreted, and narrated. In Arabic, temporal reference is not confined to grammatical

tense alone; rather, it emerges from the interaction of verbal morphology, temporal lexemes, and discourse context. This interaction produces a highly nuanced system in which temporal meaning is dynamically constructed rather than mechanically encoded.

Classical Arabic grammar provides a rigorous framework for verbal forms, traditionally classifying them into past (*mādī*), imperfect (*muḍāri'*), and imperative (*amr*). While this classification is structurally coherent, it does not fully account for the ways in which time is interpreted in real discourse. Arabic texts—especially the Qur'an and classical poetry—frequently employ tense shifts and temporal lexemes that transcend strict chronological sequencing. These phenomena indicate that time in Arabic functions as a semantic and discourse-driven category rather than a fixed grammatical parameter.

The present study investigates the semantic and discursive mechanisms through which time is constructed in Arabic. It focuses on the interaction between verbal aspect, temporal lexemes, and contextual cues, arguing that temporal interpretation arises from meaning in discourse rather than from verb form alone.

2. METHOD

This study adopts a descriptive and analytical methodology grounded in semantic, pragmatic, and discourse analysis. The data set consists of examples drawn from classical Arabic grammatical sources, Qur'anic texts, and classical Arabic poetry. These sources provide a broad spectrum of temporal usage across genres and registers.

The analysis integrates classical grammatical insights with modern linguistic theories, particularly aspectual models and discourse-based approaches. Rather than isolating verb forms, the study examines how temporal meaning emerges through the interaction of morphology, lexicon, and discourse structure. This integrated approach allows for a more comprehensive account of Arabic temporality.

3. FINDINGS

The analysis demonstrates that Arabic verbal forms primarily encode aspectual meanings rather than absolute temporal reference. The past form typically signals completion or certainty, the imperfect expresses continuity, habituality, or openness, and the imperative projects action into the future through intention and directive force.

Temporal interpretation is frequently determined by temporal lexemes and contextual indicators. As a result, the same verbal form may yield different temporal readings depending on its lexical and discursive environment. This confirms that Arabic tense cannot be interpreted independently of context.

3.1. Aspectual Structure And Temporal Interpretation

Arabic verb forms establish aspectual frameworks that structure how actions are perceived. The past form presents events as bounded and complete, while the imperfect depicts actions as ongoing, repetitive, or indeterminate. These aspectual distinctions provide the cognitive foundation upon which temporal meaning is constructed.

Crucially, aspectual meaning does not automatically correspond to a specific point in time. Instead, temporal anchoring is achieved through contextual cues and lexical markers. This explains why Arabic frequently employs past forms to describe future events in contexts of certainty and inevitability.

3.2. Lexical Stratification Of Time In Arabic Discourse

Arabic exhibits an exceptionally rich system of temporal lexemes, particularly in relation to dawn, daylight, and transitional periods. Rather than conceptualizing time as a sequence of discrete units, Arabic divides it into gradual phases marked by perceptual and environmental change.

Lexemes associated with dawn encode subtle transitions from darkness to light, while daytime and evening lexemes reflect varying degrees of intensity, stability, and decline. These lexical distinctions allow speakers and writers to situate events within a finely calibrated temporal continuum.

In discourse, temporal lexemes function as meaning-bearing units that shape narrative progression and rhetorical emphasis. Their use is rarely neutral; instead, lexical choice reflects the speaker's perspective on change, anticipation, or closure.

3.3. Discourse Functions Of Temporal Shifts

One of the most distinctive features of Arabic temporal expression is the strategic shifting of tense forms within discourse. In Qur'anic narratives, future events are often expressed through past forms to convey certainty and divine inevitability. Conversely, present forms may be used to depict past events vividly, creating immediacy and engagement.

These shifts are not grammatical anomalies but deliberate discourse strategies. They guide interpretation, intensify meaning, and structure narrative flow. Temporal meaning in Arabic is therefore inseparable from discourse organization.

4. CONCLUSION, DISCUSSION AND RECOMMENDATIONS

The study confirms that time in Arabic constitutes a complex semantic and discursive system rather than a purely grammatical category. Verbal forms encode aspectual meanings, while temporal lexemes and discourse context determine precise temporal interpretation. This interaction reflects a cognitive perception of time grounded in continuity, transition, and experiential awareness.

Understanding Arabic temporality thus requires moving beyond form-based analysis toward an integrated semantic–discursive approach. Such an approach provides a more accurate account of temporal meaning in classical texts and offers valuable insights for translation studies and Arabic language pedagogy.

Future research may extend this framework through comparative Semitic analysis, corpus-based studies, or applied linguistic research focusing on temporal interpretation in contemporary Arabic usage.

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SPIRITUAL EDUCATION BASED ON ART HISTORY
SANAT TARİHİNE DAYALI MANEVİ EĞİTİM

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Özet

Yerel tarih aracılığıyla kişi, ülkesinin manevi ve kültürel köklerini öğrenir, ulusunun tarihsel hafızasını ve estetik dünya görüşünü anlar ve böylece ahlaki ve vatansever nitelikler kazanır. Sanat tarihi, kişinin anavatanının kültürel ve sanatsal mirasını incelemeyi, korumayı ve tanıtmayı amaçlayan önemli bir bilimsel ve eğitimsel alandır. Yerel tarihin bir bileşeni olarak kişinin anavatanının sanat ve halk sanatının incelenmesi, ulusal kültürün tarihsel sürekliliğini korumasını sağlar. Özel literatürde, "sanat tarihi yerel tarih" terimi genellikle mimari, arkeolojik ve etnografik alanlarla yakın bağlantılı olarak ele alınır. Mimarlık, heykel, resim, dekoratif ve uygulamalı sanat eserlerini tarihsel yerel tarihin bir dalı olarak incelemeyi amaçlar. Sanat tarihi yerel tarihi nesneleri koşullu olarak iki gruba ayrılabilir: 1) Kendi sanatsal değerine sahip anıtlar; 2) Sanatçıların yaşamı ve eserleriyle ilgili nesneler. Sanat temelli yerel tarih, geçmişin mirasını incelemekle sınırlı değildir, aynı zamanda nesiller arasında manevi sürekliliği de sağlar. Sanat aracılığıyla aktarılan duygusal deneyim, insan zihninde inanç ve manevi değerlerin oluşumuna katkıda bulunur. Genel eğitim okullarında, güzel sanatlar dersi temelinde sanat üzerine yerel tarih çalışmaları yürütülmektedir. Bu doğrultuda, yerel sanat eserlerinin araştırılması ve incelenmesi, sanat nesnelerinin eğitim amaçlı kullanımı, ders dışı etkinlikler ve sergilerin düzenlenmesi gibi yöntemler kullanılmaktadır. Çalışma sırasında, Güney Kazakistan bölgesindeki kültürel ve tarihi mirasın tanınma düzeyini belirlemek amacıyla 70-80 öğrencinin katılımıyla bir anket-deney yürütülmüştür. Sonuçlar, öğrencilerin bölgesel kültürel mirasa aşina olduklarını ve ulusal değerlere yüksek ilgi duyduklarını göstermiştir.

Anahtar kelimeler: Sanat, Güney Kazakistan, eğitim, kültür.

Abstract

Art history is an important scientific and educational field aimed at studying, preserving, and promoting the cultural and artistic heritage of one's homeland. Through local history, individuals learn about the spiritual and cultural roots of their homeland, understand the historical memory and aesthetic worldview of their nation, and thus acquire moral and patriotic qualities. The study of the art and folk art of one's homeland, as a component of local history, ensures the preservation of the historical continuity of national culture. In specialized literature, the term "art history local history" is often considered in close connection with architectural, archaeological, and ethnographic fields. It aims to study architecture, sculpture, painting, decorative and applied arts as a branch of historical local history. Art history local historical objects can be conditionally divided into two groups: 1) Monuments possessing their own artistic value; 2) Objects related to the lives and works of artists. Art-based local history is not limited to studying the legacy of the past, but also ensures spiritual continuity between generations. The emotional experience transmitted through art contributes to the formation of beliefs and spiritual values in the human mind. In general education schools, local history studies on art are conducted as part of the fine arts curriculum. In this context, methods such as researching and examining local works of art, using art objects for educational purposes, organizing extracurricular activities and exhibitions are employed. During the study, a survey-experiment was conducted with the participation of 70-80 students to determine the level of recognition of cultural and historical heritage in the South Kazakhstan region. The results showed that students are familiar with regional cultural heritage and have a high interest in national values.

Keywords: Art, South Kazakhstan, education, culture.

SPECIFIC ASPECTS OF FORMING KNOWLEDGE, SKILLS AND COMPETENCES IN PROVIDING QUALITY EDUCATION TO STUDENTS

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Annotation

This article shows ways to ideally accept the level of students in quality education.

The teacher should always emphasize the clarity and correctness of his thoughts and the accuracy of the student's work during lessons and extracurricular activities. The basis of this article is that the teacher should pay attention to the standards of honest work in conversations with students, and this will serve to develop their creative work skills.

Key words: science, development, teacher, student, work, society, period, lesson, inspiration, independent, product, progressive.

Annatatsiya

Mazkur maqolada o'quvchilarga sifatli ta'lim berishda ularning o'zlashtirish darjasini qanday jarayonlarda mukammal tarzda qabul qilish yo'llari ko'rsatib berilgan.

O'qituvchi dars va darsdan tashqari mashg'ulotlar jarayonida yaxshi tayyorlangan bo'lishi fikrlarini aniq va to'g'riligi hamda o'quvchi mehnat harakatlarining aniqligini doimo ta'kidlab turishi kerak. O'qituvchi o'quvchilar bilan o'tkaziladigan suhbatlarda, halol mehnat normalariga e'tibor berish kerakligini va bu ularning ijodiy mehnat qilish ko'nikmasini shakllantirishga xizmat qilishi mazkur maqolaning asosini tashkil qiladi.

Kalit so'zlar: ilm-fan, taraqqiyot, o'qituvchi, talaba, mehnat, jamiyat, davr, dars, ruhlantirish, mustaqil, buym, ilg'or.

Аннотация

В данной статье показаны способы идеального принятия уровня студентов в качественном образовании.

Учитель всегда должен подчеркивать ясность и правильность своих мыслей и точность работы ученика в ходе уроков и внеклассной деятельности. В основу данной статьи положено то, что учителю следует обращать внимание на нормы честного труда в беседах с учащимися, а это послужит формированию у них навыков творческого труда.

Ключевые слова: наука, развитие, учитель, ученик, труд, общество, период, урок, вдохновение, самостоятельный, продукт, прогрессивный.

In the current conditions, due to the expansion of production sectors, the complexity of economic relations, and the acceleration of scientific and technical development, every minute of working time is a prize. Therefore, it is necessary to start the need for strict adherence to internal regulations and labor discipline from school education. To do this, it is necessary to create favorable conditions in the process of labor education and upbringing. In this case, it is necessary to approach the work of

students with high demands, using such methods as explaining, persuading, encouraging, and setting an example. When there are deviations in the relationship between teachers, it is necessary to explain (show) how to behave in one or another case with positive examples. As a result of the systematic and strict requirements of the teacher, students gradually get used to the clear and conscious implementation of various rules and work methods. They are accustomed to maintaining a work routine, keeping their workplace in an exemplary manner, and taking care of their teaching materials. One of the important conditions for preparing teachers for independent work and life is to establish this discipline and gradually achieve its maintenance.

In the current era of advanced science, self-critical assessment and intolerance of shortcomings in teachers encourage them to start their future work in a planned manner. Then, the teacher checks the finished knowledge and offers the students to independently evaluate it. The work experience of advanced teachers shows that such a method has important educational value. Regular practice by students in determining the quality of the prepared products helps them develop self-control skills and a sense of critical assessment of their own work. To do this, the teacher-trainer should tell the students about the methods used by the pioneers and devotees of labor during breaks, at the end of classes, and after analyzing the results of work. For such conversations, it is advisable to use the lives of masters at local enterprises as an example.

In order to consistently and consistently demand excellence from teachers, there must be a consistent will on the part of the leader.

It is necessary to teach teachers new methods of educating caring attitudes towards the property of society and individuals, to have a conscious attitude towards them, to take into account their thrifty attitude towards social and personal property. It is also important for them to respect themselves and those around them during work, to cultivate their will and character.

The teacher should always emphasize the clarity and correctness of his well-prepared ideas and the accuracy of the student's labor actions during lessons and extracurricular activities. In conversations with students, the teacher should teach and inspire that honest labor should become the main meaning of life in our society, and this should serve to form their creative labor skills. In our society, the beauty of labor is inextricably linked with spiritual and material motivation.

High work culture is an indispensable quality of working people. This process should be fostered in students through labor education and vocational guidance, as well as in the teaching of other general education subjects. The concept of work culture includes working conditions, beauty, comfort, work process, culture of communication, etc.

Based on the specific characteristics of training sessions in labor education and vocational guidance, these sessions are considered the most suitable group of sessions for using folk crafts in the education system. Because the main training sessions in folk crafts are carried out through manual labor.

Today's demand is to reform the educational process in the education system, develop teaching methods based on new information technologies, and widely implement them.

Organizational forms of teaching used to develop teachers' knowledge, skills, and competencies in providing quality education include electronic textbooks, seminars, forums, consultations, and others. Electronic textbooks are placed on the appropriate server partitions or are located on CDs. Electronic educational literature is aimed at expanding the imagination of learners, developing and deepening their initial knowledge, providing them with additional information, and it is advisable to create it in more in-depth subjects. The content of educational literature should ensure that learners develop the skills of independent and free thinking, gradual enrichment and improvement of the acquired knowledge, independent learning, and the ability to search for new knowledge in educational literature.

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Modern trends and tools for managing personnel development in service organizations

Sultanova Karakat

Abstract. The article is devoted to the analysis of modern trends and tools for managing personnel development in service organizations. It is shown that in the conditions of high competition and increased consumer requirements, the development of human capital becomes a key factor in the quality of service processes and the stability of the organization. The features of the personnel situation in the service sector, the role of motivation, corporate culture and training, as well as the logic of building a system of training and advanced training are considered. The need to rely on scientifically based approaches and practice-oriented technologies for personnel development, including mentoring, coaching, shadowing and learning by doing, is substantiated. Typical problem areas of domestic organizations are identified and directions for improving the effectiveness of personnel development programs through consistency, measurability and integration of training into the current activities of the enterprise are outlined.

Keywords: personnel management; personnel development; service sector; training; professional development; motivation.

Modern conditions of activity set high competition and intensify the price struggle. Organizations strive to occupy the most profitable market segments. The external environment has a significant impact. It forces businesses to increase efficiency and take advantage of available opportunities to remain competitive. In these conditions, personnel management becomes one of the key factors of sustainability.

The service sector is developing especially dynamically. Personnel here is the central resource of commercial activity. There is no material production in the classical sense. The result is created in the process of interaction with the client. Therefore, the qualification and specialization of employees working on the contact line directly determine the quality of service and the market position of the organization. Personnel management in the service sector is becoming a priority.

As S. Yusryani points out, "service enterprises are characterized by features that form personnel problems" [1]. The responsibility of ordinary employees often remains at a low or average level. Maintaining corporate discipline requires additional management efforts. Professional detachment is often manifested. It can be associated with an orientation towards a creative style of work, and not with material interest. There is also a weak connection between the behavior of employees and the goals of the organization. This reduces coordination and service efficiency.

According to H. R. Sinag, at the same time, the intensity of labor in the service sector is usually high [2, p.728]. It creates a significant burden on the staff. In practice, many companies focus on young specialists. For some employees, such work becomes a temporary stage. The service sector is considered as a career start for a subsequent transition to other industries. A similar situation is typical, for example, for the cellular communications segment, where a significant share is made up of sales managers and operators.

The opposite frame configuration is also possible. A team can be mainly "aged". In this case, the implementation of modern management models is often difficult. This trend is often observed in public services and in the consumer services sector. An additional factor is the small scale of many service enterprises. A small number of employees limits the formation of a stable corporate culture. It also complicates the creation of a full-fledged personnel management system.

W. Cho, S. Choi and H. Choi note that service workers interact directly with consumers [3, p.41]. This is often accompanied by a high psychological load. The workload affects the quality of service and the final results of activities. Therefore, personnel management must ensure a high level of personnel qualification. He is also obliged to create favorable working conditions and working environment.

Of particular importance is the correct development of the motivation system. It sets stable motives for the behavior of employees. Through motivation, the organization receives an instrument of managerial influence. This allows you to maintain the required standards of service and labor discipline.

In the personnel management of service enterprises, the key areas remain the organization of working conditions, personnel development, the use of motivational mechanisms and the development of corporate culture.

The personnel management system implements its functions through the personnel policy. Personnel policy sets the principles, models and targets of personnel work. It determines the directions and content of managerial influences on personnel.

A. Kutsior points out that the implementation of personnel policy is provided by the subsystems of personnel management [4, p.57]. Subsystems use personnel technologies as a tool of practical influence. Areas of work are specified through a set of procedures and methods. They cover the attraction of workers, their professional selection and rational distribution. A significant element is the adaptation of personnel to the requirements of the organization. A separate place is occupied by motivation and stimulation of labor behavior. Training, retraining and advanced training play an important role. Regular assessment of work results and competencies is necessary. An essential area is the development of corporate culture.

The modern mechanism of personnel development management contributes to improving the efficiency of the organization, its competitiveness, the quality of employees' work, etc.

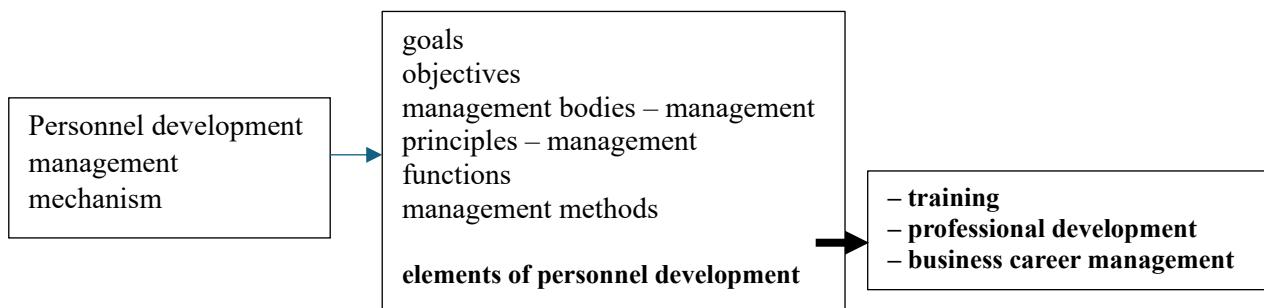


Figure 1 – Modern mechanism for managing the development of personnel of a service enterprise
Note – compiled by the author on the basis of the source [5, p.290]

The mechanism for managing the development of personnel in the service sector includes goals, objectives, principles, functions and methods of management, as well as key elements of development: training, advanced training and business career management.

The goals of such a system are related to increasing labor efficiency, training managers, developing young employees, increasing staff satisfaction, mastering new technologies and reducing turnover. The tasks are focused on coordinating the behavior of employees with the company's goals, creating conditions for the realization of their potential, preserving experience and knowledge, preparing for future projects, supporting corporate culture and motivation. In order to fulfill these tasks, the mechanism must be a stable and coordinated system, beneficial to both the organization and the staff [6, p.97].

Personnel services play a central role in the implementation of the mechanism. They plan the need for personnel, organize the development of employees and support the achievement of the goals of the organization. Development management is based on the principles of continuous development, innovation, flexibility, stimulation and long-term orientation to the strategy of the enterprise.

Personnel development is considered as an investment in human capital and includes an assessment of labor potential, business assessment, career management, professional training and the formation of a personnel reserve. Management methods combine scientific and analytical approaches and practical management influences. The practice combines directive measures of direct influence and

economic incentives of flexible influence. Training is a basic tool for achieving strategic goals and increasing the competitiveness of the organization [7, p.52].

The construction of a personnel training system is carried out in stages. First, the goals and objectives of training are formulated, taking into account the company's strategy and the tasks of departments. Then the need for training is determined and the target audience is identified. After that, responsible persons are assigned, including HR specialists and heads of departments, who can act as internal trainers. Next, the directions and methods of training are selected in accordance with the capabilities of the organization. The next step is to calculate the budget. Based on the decisions made, the program and schedule of training are formed. The final element is the development of internal documentation that regulates the training procedure and assessment procedures.

The effectiveness of training should be measured by indicators chosen by the organization itself. The most effective system is the one that contributes the most to achieving business results.

Advanced training of personnel is a requirement of the modern market. It ensures the stability of the company's activities and forms a resource for long-term development. The importance of advanced training increases under the influence of institutional and managerial changes, the transition to motivational and economic methods of management and the growth of innovative activity [8, p.32]. Advanced training is focused on professional and career advancement, as well as on the adaptation of the employee to modern technical and professional changes. Implementation can be carried out through course training on the basis of an enterprise or training center with the preservation of the job and wages. Another option involves training built into the work process and conducting training activities directly at the workplace.

Professional training of personnel in both cases is focused on the development of labor skills within the framework of a specific job. It does not imply an increase in the general educational level. Advanced training courses do not include general education disciplines and are aimed at developing the professional competencies of an employee [9, p.102].

Expanding the knowledge of employees contributes to the development of service enterprises in several areas. It improves the quality of recruitment and placement, as the training opportunity increases the attractiveness of the employer and reduces turnover. It accelerates the adoption of new technologies, as training eliminates the shortage of equipment skills and supports productivity growth. It improves the quality of services by increasing the managerial competence and efficiency of employees interacting with customers. Training also allows you to identify employees with managerial potential and plan their career advancement. In addition, the organization's adaptability to change is strengthened, as the staff understands customer needs more accurately and builds more stable communications.

The methodology of personnel development management is associated with the clarification of the essence of a business career. Career is considered as a phenomenon with a dual content. It is understood as a process of development and advancement that reflects the qualitative changes of the subject and his movement through the steps of organizational and professional hierarchies. At the same time, a career is interpreted as a result, that is, a fixed sequence of past or planned stages. In the career of a manager, development is expressed in professional growth and transformation of status-role and psychological characteristics. An important component is subjective assessments of one's own achievements, which corresponds to the psychological approach to career analysis.

The features of a manager's business career are due to the specifics of managerial work. They are manifested in the requirements for competence, the role content of the activity and the personal profile of the specialist. Selection and evaluation are of significant importance, which are complicated by the lack of certainty of the criteria for the effectiveness of the manager. This is due to the incomplete development of the professional vector, including the system of qualification levels for this profession. At the same time, career advancement in management often has a pronounced official character. It is also distinguished by the variability of status and monetary trajectories [10, p.73].

The mechanism for managing personnel development should be based on the achievements of science. It is considered as a practice-oriented system. Such a system accumulates and summarizes the experience of organizations. It includes practices of HR services, corporate universities, in-house

training centers, as well as assessment and certification centers. Reliance on this experience allows us to solve the problems of managed personnel development. The search for new approaches and technologies that increase labor productivity occupies a prominent place in managerial work at all levels.

The importance of personnel development management in the service sector requires a clear understanding of the tasks and problems of this activity. Difficulties arise already at the level of interpretation of a person and personnel as an object of development. This reduces the accuracy of management decisions and limits the effectiveness of development programs [11, p.62].

Many companies have recently become aware of the need for employee training and development. The attitude to learning remained ambiguous for a long time. It was often perceived as a costly activity not directly related to the results of labor. At the same time, practical data indicate the high effectiveness of mentoring and training under the guidance of a direct supervisor who knows the specifics of the work well. However, managers are not always ready or able to transfer knowledge. The reasons are fears of loss of authority and lack of pedagogical skills. Therefore, the personnel development strategy should take into account the needs of the organization and choose the best ways to transfer theoretical and practical competencies. It is also important to distribute responsibility for the theoretical and practical components of training.

In modern conditions, most domestic enterprises do not have stable mechanisms for regulating the career opportunities of employees, taking into account their abilities and potential. Career management remains fragmented and poorly controlled. The development of a career strategy requires both conceptual study and inclusion in the personnel management system at a practical level [12, p.29].

Often managers are not focused on the development of subordinates. This leads to the consolidation of personnel inertia and the reproduction of low ambition in the team. Candidates aimed at career growth in such conditions are more often undesirable. The lack of investment in development, motivation and involvement gradually reduces the interest in work even among active employees. Work begins to be perceived as a routine. Innovation and the desire for self-development are weakening. Initiative becomes rare.

Thus, in the organizations of the service sector, a significant set of problems of personnel development remains. They are manifested in the lack of development programs focused on the needs of business and employees, in the lack of specialized training among some employees and in the weakness of career management and professional development mechanisms. Periods of crisis exacerbate these difficulties by reducing development costs. Additional constraints are outdated methods of development and insufficient effectiveness of personnel services.

Improving the efficiency of personnel development requires applied solutions. An effective approach is training in a real working environment through the assignment of an employee to an experienced specialist. This expands the understanding of the position and forms practical skills. An important tool is psychological diagnostics before training, which allows you to assess the readiness and condition of the employee. Development methods should be selected taking into account the individual characteristics of the employee and the resources of the enterprise. After the completion of training, feedback is needed through a questionnaire, which captures the strengths and weaknesses of the program and reflects the attitude of employees to managerial attention. The implementation of such measures increases the interest and efficiency of staff, improves the quality of training and reduces costs through adjustments based on the results of the assessment. In the long term, this leads to an increase in productivity and an increase in the effectiveness of the enterprise due to more qualified personnel [13, p.61].

In the practice of personnel management, a wide range of methods is used that affect the development of an employee. Coaching is considered as targeted communication with the employee. It is focused on identifying potential and forming directions for further professional growth. Mentoring is based on the transfer of experience through personal example. It provides learning in the process of observation and subsequent reproduction of work actions.

Delegation is used as a tool for developing competencies. The employee is assigned tasks of increased complexity or beyond the current qualification. This stimulates the development of new knowledge and skills. As a result, the professional level of the employee increases and his career opportunities expand. Buddying is built on equal mutual support of colleagues. The method involves the exchange of experience without the rigid role of a mentor and contributes to faster involvement in work processes with correct organization.

Job shadowing is based on the observation of the activities of experienced specialists in a real working environment. A new employee is assigned to the selected employee and studies the logic of completing tasks in dynamics. It is allowed to pose clarifying questions, which increases the accuracy of the assimilation of practices and standards. Counselling involves professional counseling from a psychologist, psychotherapist or lawyer. This approach is aimed at preventing emotional burnout and reducing distractions from work. Learning by doing is considered as a method in which the development of competencies occurs in the course of solving real problems of the organization. It allows you to simultaneously obtain a training effect and a practical result for the company [14, p.97]. In service enterprises, personnel development is a key condition for sustainable competitiveness. The main resource here is related to the quality of interaction between employees and customers. Investing in training increases job alignment, competence, and motivation. This is reflected in the productivity, quality of service and financial results of the organization. Personnel development reduces turnover and reduces the cost of constant recruitment and onboarding of new employees.

The training system should be based on a personnel development strategy. The strategy sets the expected results and a list of competencies that need to be formed. In practical terms, it can be focused on solving a specific business problem, for example, to increase sales or improve the quality of service. It can also be systemic and permanent. In this case, training is built into the work of the organization and ensures regular updating of skills without interrupting the production process.

Planning of personnel needs is a basic element of the strategy. It requires an analysis of the staffing situation in the departments, the level of turnover, labor and training costs, as well as the prospects for the development of services. Based on these data, the requirements for the number and qualification of employees are determined. Next, the logic of learning is formed and priorities are distributed.

Professional training in the service sector is effective only if it is linked to real service tasks. First, the lack of competencies and the current level of training of employees are assessed. Then motivational conditions are formed that support involvement in learning. After that, the training format is chosen, internal or external, depending on the content of the competencies. Next, teaching methods and activities are designed, the educational process is organized and the results are monitored through assessment or certification. The criterion of quality is the contribution of training to business indicators and indicators of the quality of service [15, p.23].

Retraining and advanced training are fundamentally important for service organizations. Service technologies and customer experience standards are changing rapidly. Competencies become obsolete at an accelerated rate. Retraining provides the development of a new, often related, professional role when changing processes or positions. Advanced training is aimed at deepening skills within the current profession. Both areas support the readiness of personnel for change and increase the sustainability of the enterprise.

Business career management complements the development system. Career trajectories increase loyalty and retention. The employee receives clear prospects and growth criteria. For the service industry, horizontal movements between roles and service areas are useful. This rotation expands functional skills and increases interchangeability. Working with the talent pool reduces the risk of personnel gaps and speeds up the closure of key positions. Onboarding of newcomers should be structured, since the speed of inclusion in service processes directly affects the quality of service and the level of errors.

The corporate culture in the service sets the standards of behavior and communication with the client. It forms a unified style of service and maintains discipline. Its development requires clear norms,

mission and values, as well as regular communication and team practices. The psychological climate affects the resistance of employees to emotional stress and the quality of interaction with visitors. It is advisable to combine methods of personnel development in the service sector. Prescriptive approaches ensure the transfer of standardized knowledge and uniform rules of work. Interactive formats expand the availability of training and allow you to combine study with shift schedules. Personality-oriented practices strengthen self-learning and employee responsibility for the result. Effectiveness is increased when training is accompanied by discussion of experience and control of the application of skills in real work.

Organizational tools support the development of personnel at the system level. The regulations enshrine the norms of conduct, service standards and requirements for communication with customers. Enterprise digital environments accelerate access to knowledge and make it easier to distribute guidance and updates. The highest engagement is usually achieved where internal communications are interactive and provide quick feedback between employees and managers. As a result, the development of personnel becomes a continuous process, which simultaneously strengthens the quality of services and increases the sustainability of the enterprise.

Personnel development in service organizations is of strategic importance, since the quality of service is formed in direct interaction between the employee and the client and depends on the level of competence, involvement and resilience of employees to professional loads. An effective personnel development management system should have a target orientation and be built into the overall management model of the organization, based on personnel policy, sustainable organizational procedures and modern methods of knowledge transfer. Practice shows that the effectiveness of training and professional development increases when they are coordinated with the objectives of the service, the availability of management support, the development of mentoring and the use of feedback tools that allow adjusting programs based on the results of the application of skills in work. At the same time, the remaining problems associated with the fragmentation of career management, limited resources and the use of outdated approaches require a transition to systemic solutions based on scientific achievements, assessment of effects and the priority of long-term development of human capital as a condition for the competitiveness of service enterprises.

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A COMPARATIVE STUDY OF FEMALE IDENTITY IN CLASSICAL AND MODERN ARABIC LITERATURE

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Abstract

This article examines the concept of female identity in classical and modern Arabic literature, focusing on how women have been represented across different literary periods. The study explores the portrayal of female characters, their social roles, and the cultural and historical contexts that shaped these representations. In classical Arabic literature, women are often depicted as idealized and passive figures, primarily viewed through a male-centered perspective. In contrast, modern Arabic literature presents women as independent individuals with their own voices, inner struggles, and social agency. By comparing scholarly perspectives and literary examples from both periods, this article highlights the transformation of female identity in Arabic literature. The findings demonstrate that changes in the portrayal of women reflect broader social, cultural, and intellectual developments within Arab societies.

Keywords: Female Identity, Classical Arabic Literature, Modern Arabic Literature, Gender Representation, Women in Literature

Arabic literature has long served as a reflection of social values, cultural norms, and intellectual traditions within Arab societies. One of the most significant themes present in this literary heritage is the representation of women and the construction of female identity. Literature not only mirrors social realities but also shapes perceptions of gender roles and personal identity (britannica.com).

In classical Arabic literature, female identity was largely portrayed through a male-centered perspective. Women often appeared as idealized figures of beauty, love, and longing, particularly in classical poetry. According to Reynold A. Nicholson, classical Arabic poets frequently depicted women as passive subjects whose identities were defined by emotional attachment and fate rather than personal agency (A Literary History of the Arabs, archive.org). This representation reflects the patriarchal structure of early Arab societies, where women's voices were rarely expressed independently.

Similarly, Ibn Qutayba emphasizes that classical Arabic poetry focused more on external descriptions of women than on their inner psychological experiences, reinforcing a limited literary space for female self-expression (academia.edu). These portrayals suggest that female identity in classical literature was shaped primarily by social expectations rather than individual autonomy.

In contrast, modern Arabic literature demonstrates a significant shift in the portrayal of female identity. With the rise of social reform, education, and feminist thought in the Arab world during the twentieth century, women began to emerge as central voices in literary production. Scholars such as Nawal El Saadawi argue that modern Arabic literature allows women to challenge traditional gender roles and redefine their identities through personal experience and resistance (jstor.org). Unlike classical representations, modern female characters are portrayed as active agents who question social norms and assert their individuality.

Furthermore, literary critic Muhsin al-Musawi notes that modern Arabic writers increasingly explore women's inner conflicts, emotional depth, and social struggles, marking a transition from symbolic representation to realistic characterization (britannica.com). This transformation highlights how changes in society directly influence literary depictions of female identity.

By examining both classical and modern Arabic literature, this study aims to analyze the evolution of female identity and to compare scholarly perspectives on women's representation across different historical periods. Such a comparative approach reveals that the portrayal of women in Arabic literature is closely connected to broader cultural and intellectual developments.

Main Body
Female Identity in Classical Arabic Literature

In classical Arabic literature, female identity is predominantly constructed through a male-centered narrative framework. Women are often portrayed as symbols of beauty, love, and emotional attachment rather than as independent individuals with personal agency. Classical Arabic poetry, particularly pre-Islamic and early Islamic poetry, presents women as idealized figures whose primary function is to inspire male poets (britannica.com).

Reynold A. Nicholson argues that classical Arab poets rarely explored the inner psychological world of women, focusing instead on their physical appearance and emotional impact on male characters (A Literary History of the Arabs, archive.org). According to Nicholson, women in classical literature function more as literary motifs than as fully developed characters. This view suggests that female identity was shaped by social conventions rather than personal expression.

In contrast, Ignaz Goldziher offers a slightly different interpretation. While acknowledging the dominant patriarchal structure of classical Arabic literature, Goldziher notes that certain poetic expressions reveal subtle emotional depth attributed to women, especially in elegiac and love poetry (jstor.org). However, these moments remain limited and are still framed within male authorship.

Comparison: Nicholson emphasizes passivity and symbolism, whereas Goldziher recognizes limited emotional presence but agrees that female autonomy is largely absent.

Additionally, Ibn Qutayba highlights that classical poetry prioritizes rhetorical beauty over character development, which further restricts the literary space available for female self-representation (academia.edu). As a result, women's identities are often static, defined by honor, loyalty, or loss rather than growth or transformation.

Transition from Classical to Modern Perspectives

The transformation of female identity in Arabic literature cannot be separated from broader social and historical changes. The decline of traditional structures, the rise of education, and increased exposure to global intellectual movements played a crucial role in reshaping literary discourse (britannica.com). These changes laid the groundwork for a new literary approach in which women began to appear not only as subjects but also as authors.

Muhsin al-Musawi notes that modern Arabic literature marks a shift from symbolic representation to realistic characterization, particularly in the portrayal of women. This transition reflects a growing awareness of women's inner lives and social struggles, which were previously marginalized.

Female Identity in Modern Arabic Literature

Modern Arabic literature presents female identity as dynamic, complex, and deeply personal. Women are no longer confined to idealized roles but are depicted as individuals who confront social constraints and seek self-definition. Nawal El Saadawi emphasizes that modern Arabic literature provides women with a platform to express resistance against patriarchal norms and reclaim their identities through narrative voice.

Unlike classical literature, where women were spoken about, modern literature allows women to speak for themselves. According to feminist literary criticism, this shift represents a fundamental change in narrative authority (academia.edu). Female characters in modern works often grapple with themes such as freedom, identity, education, and societal pressure.

However, scholars differ in their interpretations of this transformation. While El Saadawi views modern literature as a space of empowerment, some critics argue that traces of traditional stereotypes still persist. For instance, Muhsin al-Musawi points out that even modern narratives sometimes reproduce conventional gender roles, albeit in more subtle forms.

Conclusion

This study has examined the representation of female identity in both classical and modern Arabic literature, revealing a significant transformation shaped by social, cultural, and intellectual developments. The analysis demonstrates that literary portrayals of women are not static but evolve alongside changes in societal structures and collective consciousness.

In classical Arabic literature, female identity is largely constructed within a patriarchal framework where women are portrayed as idealized, passive, and symbolic figures. As Reynold A. Nicholson argues, classical poets primarily focused on women's external beauty and emotional impact rather than their inner psychological experiences, reducing female identity to a literary motif rather than a

fully developed subject. This perspective reflects the dominant social norms of the period, in which women's voices were limited both socially and literarily.

However, Ignaz Goldziher presents a more nuanced interpretation by suggesting that while classical literature was undeniably male-centered, certain poetic texts reveal moments of emotional depth attributed to women (jstor.org). When these two scholarly views are compared, it becomes clear that although traces of emotional recognition existed, female identity in classical Arabic literature remained largely constrained by traditional gender roles and authorial authority. This comparison highlights the tension between symbolic representation and limited emotional acknowledgment.

In contrast, modern Arabic literature marks a decisive shift in the portrayal of female identity. Influenced by education, social reform, and feminist thought, modern writers—particularly women authors—present female characters as active agents capable of self-reflection and resistance. Nawal El Saadawi emphasizes that modern Arabic literature allows women to challenge patriarchal structures and redefine their identities through personal narrative and social critique (jstor.org). From this perspective, literature becomes a space of empowerment and self-expression.

Nevertheless, Muhsin al-Musawi offers a critical counterpoint by noting that despite this progress, modern literature does not entirely abandon traditional representations of women (britannica.com). According to al-Musawi, remnants of classical gender norms still appear in modern narratives, though often in subtler forms. When these two scholarly positions are compared, it can be concluded that modern Arabic literature represents both continuity and change—liberation exists, but it is not absolute.

From a broader analytical perspective, this evolution of female identity reflects the dynamic relationship between literature and society. While classical literature mirrors a society that limited women's autonomy, modern literature responds to social transformation by granting women narrative authority and psychological depth. In my view, this shift does not merely represent a change in literary style but signifies a deeper cultural re-evaluation of women's roles and identities within Arab societies.

In conclusion, the comparative study of classical and modern Arabic literature demonstrates that female identity has moved from symbolic silence to expressive presence. This transformation underscores the power of literature as both a reflection of social reality and a catalyst for intellectual change. The ongoing negotiation of female identity in Arabic literature suggests that literary discourse will continue to evolve as societies reassess concepts of gender, identity, and human agency.

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GERONTOLOGICAL AND BIO-PSYCHOLOGICAL DIRECTIONS OF SOCIAL WORK WITH THE ELDERLY

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Xülasə. Sosial gerontologiya qocalmanın bioloji, psixoloji və sosial prosesləri kimi anlayışları araşdırır və həmçinin qocalıqda ən çox rast gəlinən somatik və ruhi xəstəliklərin təsvirini də əhatə edir. Sosial gerontologiyada demoqrafik qocalma, yaşla bağlı münasibətlər, məişət zorakılığı, stress faktorlarının təsiri, qocalmanın qarşısının alınması, tibbi və sosial iş və yaşlılara qulluq etməyin etik məsələləri kimi aktual məsələlər də əhatə olunur. Sosial gerontologiya və sosial iş qarşılıqlı əlaqəli proseslərdir, eyni zamanda, yaşlı və ahilların müasir cəmiyyətə adaptasiyasının aktual problemidir. Yaşlı və ahıl insanların sosial işin əsas vəzifələri və çətinlikləri bu insanların xarakterik xüsusiyyətlərini və sosial işdəki ehtiyaclarını nəzərə almaqla həyata keçirilir. Yaşlı insanların sosial işçiləri necə qəbul etmələri ilə bağlı stereotiplər bu sahədə mövcud olan problemlərdəndir.

Müasir dünya, əmək qabiliyyətli yaşdan yuxarı insanların mütləq sayının və ölkə əhalisində yaşlı vətəndaşların nisbətinin artması ilə xarakterizə olunan davamlı demoqrafik qocalma böhranı yaşayır. Əhalinin qocalması və yaşlı vətəndaşların artan nisbəti, işləməyən əhalini öz əməyi və qayğısı ilə təmin edən əmək qabiliyyətli vətəndaşlar üzərində demoqrafik üçün artmasına səbəb olur. Yaşlı və ahıl insanların rifahına yönəlmış sosial işin profiləşdirilməsi ehtiyacı XX əsrin sonlarında aktuallaşmışdır. Buna görə sosial iş peşəkar bir ixtisas olaraq yaşlılarla işləyən mütəxəssislərin hazırlanması istiqamətində yeni perspektivlər açır. Bu peşə yaşlı və ahıl insanların problemlərinin həllini tələb edən fəaliyyətlərin mözmununu formalaşdırır.

Açar sözlər: yaşlılar və ahillar, sosial iş, demoqrafik qocalma, sosial gerontologiya, təbii-sosial problemlər.

GİRİŞ

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Sosial gerontologiya keyfiyyətcə bir-birindən fərqlənən iki tamamilə fərqli qrupla qurulan münasibətləri araşdırır. Öz ehtiyaclarını ödəmək qabiliyyətinin az və ya çox itirilməsi və özünə qulluq etmək qabiliyyətinin demək olar ki, tamamilə saxlanması ilə xarakterizə olunan 65-75 yaş qrupunu və işləmək qabiliyyətinin tamamilə itirilməsi ilə xarakterizə olunan 75 yaşdan yuxarı qrupun həyat tərzini normal saxlamaq üçün ciddi resurslar tələb olunur. Bu qrupdakı insanlar özlərinə qulluq etmək qabiliyyətinin az və ya çox, çox vaxt isə tamamilə itirilməsi ilə tam asılı vəziyyətə düşürlər. Qocalığın ikili təbiətini anlamamaq bir çox faciəli nəticələrə gətirib çıxarır.

Qeyd edildiyi kimi, yaşlı əhali çox heterogen bir qrupdur və üzvləri mənfi həyat şəraitinə reaksiyalarında da fərqlidirlər. Yaşlı insanlar daim mühafizəkar, qurulmuş sosial davranış formaları kontekstində özündərk vəsitələri axtarırlar. Bundan əlavə, ailələrinə yaxın olduqları üçün tez-tez özlərinə və yaxınlarına mənfi təsir göstərən gərginliklər yaradırlar (Həsənova, Rüstəmli, 2021).

Yaşlı bir insanın sosial-psixoloji vəziyyətini müəyyən etməkdə ən vacib iki amil var: subyektiv və ya şəxsi (yaş, sağlamlıq) və obyektiv və ya sosial (yaşayış yeri, iş fəaliyyəti). Şəxsi amil yaş və onun spesifik xüsusiyyətləri ilə xarakterizə olunur ki, bunlar qocalma növlərini müəyyən etmək üçün istifadə olunur. Qeyd etmək lazımdır ki, yaşın spesifik xüsusiyyətlərini bilmək və anlamaq mütəxəssisə həyatın müəyyən bir mərhələsində müştərisinin ehtiyaclarını anlamağa və kömək göstərərkən müvafiq qarşılıqlı əlaqə texnikasını düzgün seçməyə imkan verir. Yaşlılarda həmçinin sinir sistemi pozğunluğunda və ya tamamilə ümidsizlik hissində özünü göstərən mənfi dəyərlər də özünü bürüzə verir. Bu dövrdə insanın fəaliyyət qabiliyyətinin müvəqqəti məhdudlaşdırılması ümidsizliyə səbəb olur. Bu ümidsizlik hissi onlarda müəyyən sosial institutlara və ya fərdlərə qarşı ikrah, insanpərvərlik və ya xor baxışı ilə seçilir. Yaşlılıqda şəxsiyyət dəyişiklikləri baş verir və tək bir insanda nadir hallarda rast gəlinən müxtəlif keyfiyyətlər dəstisi ilə müşayiət olunur. Buna görə də, qocalığın sosial-psixoloji tiplərinin müxtəlif təsnifatlarını nəzərdən keçirmək lazımdır (Harophnova, 2021).

MATERIAL VƏ METODLAR

Yaşlılar və ahıllarla sosial iş ali və orta ixtisas tələbələrinin gerontoloji profilin əsaslarını öyrənməyi tələb edir. Qocalma mexanizmlərinin öyrənilməsi bir tərəfdən biologyanın probelmi olsa da, digər tərəfdən sosiologiya ilə əlaqədar öyrənilir. Ç.Darvinin bioloji təkamül qanunlarını kəşf etməsi sosiologiyada bioloji istiqamətin inkişafına təkan verdi. Sosial təkamül mexanizmlərinin ortaya çıxması ilə əlaqədar olaraq, cəmiyyətə bioloji qanunların tətbiq edilməsinin vacibliyi təsdiq olundu. Sosiologyanın biologiya ilə qarşılıqlı əlaqəsinin tarixi, eləcə də, humanitar elmlərdəki müasir bioloji meyllər araşdırılır. Müasir təkamül nəzəriyyəsi baxımından sosioloqların bioloji anlayışlarının təhlili, sosioloqların bioloji qanunlardan istifadə sahəsində sistemli səhvleri də göstərməyə imkan verdi. Obyektiv reallığın istənilən hadisəsinin təbiəti və mahiyyəti, bu hadisələrin mənşəyi, formallaşması və inkişafı araşdırıldığda ən yaxşı şəkildə başa düşülür. Bu, yaşlılarda zehni hadisələrin anlaşılmasına da addır. Darwinin nəzəriyyəsindən elmi psixologyanın qurulmasının məqsədləri və yolları ilə bağlı fundamental metodoloji nəticələr çıxararaq, hissələrin, ideyaların, düşüncələrin insan fəaliyyətində rolunun inkaredilməz olduğu bir daha təsdiq olunur.

Biologiya cəmiyyətdə insanların yaş strukturunu təyin etməyə, uşaq, yeniyetmə, gənc və yaşlıların sosial-psixoloji vəziyyətlərini təyin etməyə kömək edir. Yaşlanma, zaman keçdikcə təbii səbəblərdən ölüm riskinin artmasıdır, bədənin və ya onun sistemlərinin, xüsusən də cinsi çoxalma və orqanizmin bərpası qabiliyyətinin tədricən pozulması və itirilməsi prosesidir. Yaşlanma nəticəsində orqanizm ətraf mühit şəraitinə daha az uyğunlaşır, sosial uyğunlaşma xüsusiyyətləri azalır, təbii-sosial problemlərə qarşı mübarizə aparmaq qabiliyyəti aşağı düşür. Orqanizm yaşlılıqda xəstəliklərə və xəsarətlərə müqavimət göstərmək qabiliyyətini də itirir. İnsanın yaşlanmasını öyrənən elmə gerontologiya, yaşlanmanın bioloji tərəfini araşdırın bölməyə biogerontologiya deyilir. Bu elm sahələri insanın təbii-sosial xüsusiyyətlərini tədqiq edir və yaşlanmanın immun sistemində təsirlərini öyrənir. Yaşlılar və ahıllarla sosial iş aparan mütəxəssislər onlarla ünsiyyət qurmağın forma və yollarını yollarını tapmaq bilik və bacarığına sahib olmalıdır. Buna görə də ünsiyyət bacarıqlarının mənimmsənilməsi daha çox nəzərə alınır.

NƏTİCƏLƏRİN MÜZAKİRƏSİ

Biologiya cəmiyyətdə insanların yaş strukturunu təyin etməyə, uşaq, yeniyetmə, gənc və yaşlıların sosial-psixoloji vəziyyətlərini təyin etməyə kömək edir. Yaşlanma, zaman keçdikcə təbii səbəblərdən ölüm riskinin artmasıdır, bədənin və ya onun sistemlərinin, xüsusən də cinsi çoxalma və orqanizmin bərpası qabiliyyətinin tədricən pozulması və itirilməsi prosesidir. Yaşlanma nəticəsində orqanizm ətraf mühit şəraitinə daha az uyğunlaşır, sosial uyğunlaşma xüsusiyyətləri azalır, təbii-sosial problemlərə qarşı mübarizə aparmaq qabiliyyəti aşağı düşür. Orqanizm yaşlılıqda xəstəliklərə və xəsarətlərə müqavimət göstərmək qabiliyyətini də itirir. İnsanın yaşlanmasını öyrənən elmə gerontologiya, yaşlanmanın bioloji tərəfini araşdırın bölməyə biogerontologiya deyilir. Bu elm sahələri insanın təbii-sosial xüsusiyyətlərini tədqiq edir və yaşlanmanın immun sistemində təsirlərini öyrənir. Qocalma mexanizmlərinin öyrənilməsi bir tərəfdən biologyanın probelmi olsa da, digər tərəfdən sosiologiya ilə əlaqədar öyrənilir. Ç.Darvinin bioloji təkamül qanunlarını kəşf etməsi sosiologiyada bioloji istiqamətin inkişafına təkan verdi. Sosial təkamül mexanizmlərinin ortaya çıxması ilə əlaqədar olaraq, cəmiyyətə bioloji qanunların tətbiq edilməsinin vacibliyi təsdiq olundu. Sosiologyanın biologiya ilə qarşılıqlı əlaqəsinin tarixi, eləcə də, humanitar elmlərdəki müasir bioloji meyllər araşdırılır. Müasir təkamül nəzəriyyəsi baxımından sosioloqların bioloji anlayışlarının təhlili, sosioloqların bioloji qanunlardan istifadə sahəsində sistemli səhvleri də göstərməyə imkan verdi (Козлов, 2001).

İnsanın qocalması, digər orqanizmlərin qocalması kimi, insan bədəninin hissələrinin və sistemlərinin tədricən pozulmasının bioloji prosesidir və bu prosesin nəticəsidir. Yaşlanma prosesinin fiziologiyası digər məməlilərdə yaşlanma fiziologiyasına bənzəyir, lakin zehni qabiliyyətin itirilməsi kimi bu prosesin bəzi aspektləri insanlar üçün daha böyük əhəmiyyət kəsb edir. Bu səbəbdən yaşlanma ilə əlaqədar bir çox sosial və iqtisadi problemlər ortaya çıxır. Yaşlanma prosesi təkcə fizioloji

dəyişiklikləri yox, həm də yaşlı insanların cəmiyyətdəki yerini araşdırın gerontologiya elmi tərəfindən öyrənilir (Медведева Г. П., 2000)

Yaşlılarla sosial işin tədqiqinə əsaslanaraq, sosial işçilərin birbaşa funksiyalarını nəzərdən keçirək. Funksiyani sosial sistemin fərdi iştirakçılarının onun təşkilində, fəndlərin və sosial qrupların məqsəd və maraqlarını həyata keçirməkdə oynadığı rol kimi nəzərdən keçirmək daha məqsədəyğundur (Яцемирская, 2002).

diaqnostik funksiya – sosial işçi yaşlıların bio-psixoloji xüsusiyyətlərini, mikromühitin onlara təsir dərəcəsini öyrənir və "sosial" diaqnoz qoyur;

proqnostik funksiya – bütün sosial institutların sosial iş subyektlərinə təsirini programlaşdırmaq və proqnozlaşdırmaq, bu subyektlərin sosial davranışının spesifik modelini hazırlamaq;

profilaktik (sosial və terapevtik) funksiya – mənfi hadisələrin qarşısını almaq və aradan qaldırmaq üçün sosial-hüquqi, hüquqi, psixoloji, sosial-tibbi, pedaqoji və digər mexanizmlərin tətbiqi, təqaüdçülərə sosioterapevtik, sosial, psixoloji, pedaqoji, tibbi, hüquqi və digər yardımın təşkili. Profilaktik funksiya yalnız mümkün olan bütün yardım və dəstəyi təmin etməyi deyil, həm də onların davranışlarının və ya fəaliyyətlərinin bütün mümkün mənfi nəticələrinin qarşısını almağı əhatə edir (Wahl, Gitlin, 2007).

insan hüquqları funksiyası – həm ölkə daxilində yaşayan, həm də onun bu və ya digər səbəbdən hüdudlarından kənarda qalan hissələrində yaşayan yaşlı vətəndaşlara kömək, dəstək və qorumağa yönəlmış bütün qanun və hüquqi normaların istifadəsi;

sosial-pedaqoji funksiya insanların müxtəlif fəaliyyətlərdə (mədəni və istirahət fəaliyyətləri, idman və bədən tərbiyəsi, eləcə də texniki və bədii yaradıcılıq) maraqlarını və ehtiyaclarını müəyyən etmək və müxtəlif qurumları, təşkilatları, mütəxəssisləri, təlimçiləri, mədəni və istirahət fəaliyyətinin təşkilatçlarını və s. cəlb etməkdir. Sosial-psixoloji funksiya müxtəlif növ məsləhət və şəxslərərasi münasibətlərin korreksiyası, sosial adaptasiyaya kömək və ehtiyacı olan bütün yaşlı insanlar üçün sosial reabilitasiya təmin etməkdir;

sosial-tibbi funksiya xəstəliklərin qarşısının alınması üzrə işlərin təşkili, ilk tibbi yardımın əsaslarının, sanitariya-gigiyena standartlarının mənimsənilməsinə kömək etmək və aktiv uzunömürlülüyü uzatmaq üçün sağlam həyat tərzinin təşviq edilməsidir;

sosial və məişət funksiyası yaşlı və əlil insanların həyat şəraitini yaxşılaşdırmaq və normal həyat tərzini təşkil etmək üçün onlara lazımi yardımın göstərilməsinə kömək etməkdir; **kommunikativ funksiya** müxtəlif yardım və dəstəyə ehtiyacı olanlarla əlaqə qurmaq, məlumat mübadiləsini təşkil etmək və müxtəlif sosial institutların sosial xidmətlərin fəaliyyətinə daxil edilməsinə kömək etməkdir.

reklam və təbliğat funksiyası sosial xidmətlərin reklamını təşkil etmək və yaşlı insanların sosial müdafiəsi üçün ideyaları təşviq etməkdir.

əxlaqi və humanist funksiya (bütün digər funksiyaların müəyyən xüsusiyyətlərini cəmləşdirir) sosial işə yüksək humanist məqsədlər aşılamaq və yaşlı insanların cəmiyyətdə ləyaqətli fəaliyyət göstərməsi üçün şərait yaratmaqdır.

təşkilat funksiyası cəmiyyətdə sosial xidmətlərin təşkilinə kömək etmək, ictimaiyyəti öz işlərinə cəlb etmək və sosial xidmətlərin fəaliyyətini yaşlılara müxtəlif növ yardım və sosial xidmətlər göstərməyə yönəltməkdir.

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Social gerontology studies concepts such as the biological, psychological, and social processes of aging, and also includes descriptions of the most common somatic and mental illnesses in old age. Social gerontology also covers such topical issues as demographic aging, age attitudes, domestic violence, the influence of stress factors, aging prevention, medical and social work, and ethical issues in caring for the elderly. Social gerontology and social work are interrelated processes, and at the same time, they address the pressing issue of the adaptation of older and elderly people to modern society. The main tasks and difficulties of social work with older and elderly people are carried out taking into account the characteristics of these people and their needs in social work. Stereotypes regarding the perception of social workers by older people are one of the problems that exist in this area.

The modern world is experiencing a continuous crisis of demographic aging, characterized by an increase in the absolute number of people over working age and the proportion of elderly people in the country's population. Population aging and an increase in the proportion of elderly citizens lead to an increase in the demographic burden on the working-age population, which provides for the unemployed population through its labor and care. The need to profile social work aimed at the well-being of older and elderly people became relevant at the end of the 20th century. Therefore, social work as a professional specialty opens up new perspectives for training specialists working with older people. This profession shapes the content of activities that require solving the problems of older and elderly people.

Key words: elderly and senile people, social work, demographic aging, social gerontology, natural and social problems.

**KİŞİLERARASI İLETİŞİM VE DAVRANIŞI ANLAMANIN PSİKOLOJİK İŞLEMSEL
ANALİZİ**

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Soyut. Bu makale, işlemsel analiz (TA) psikolojik modelinin kapsamlı bir genel bakışını sunmaktadır ; bu model, teorik temelleri, ego durumları (ebeveyn, yetişkin ve çocuk), işlem türleri ve psikolojik oyun kavramını içermektedir. Eric Berne tarafından geliştirilen bu yaklaşım, kişilerarası iletişimini anlamak, tartışmaları belirlemek ve çözmek, kişisel gelişim ve büyümeye sağlamak için önemlidir . Makale, işlemsel analizin psikoterapi, danışmanlık, eğitim ve organizasyonlardaki yönetim alanlarındaki uygulamalarını göstermektedir .

Anahtar kelimeler: işlem analizi, Eric Berne, ego durumları, ebeveyn, yetişkin, çocuk, işlem, psikolojik oyunlar, iletişim, psikoterapi.

Özet . Bu çalışmada, İşlemsel Analiz (TA) psikolojik modeli ele alınmakta; teorik temelleri, ego durumları (Ebeveyn, Yetişkin ve Çocuk), işlem türleri ve psikolojik oyunlar detaylı olarak açıklanmaktadır. Eric Berne tarafından geliştirilen bu yaklaşım, kişilerarası iletişimini anlamak, eksiklikleri gidermek ve kişisel gelişimi desteklemek için etkili bir yöntemdir. Makale ayrıca, işlemsel analizin psikoterapi, danışmanlık, eğitim ve organizasyon yönetimi alanlarındaki uygulamalarını da tartısmaktadır.

Anahtar kelimeler: işlem analizi, Eric Berne, ego durumları, ebeveyn, yetişkin, çocuk, süreçler, psikolojik oyunlar, iletişim, psikoterapi.

Özet. Bu makale, insan davranışını ve kişilerarası iletişimini anlamak için psikolojik bir model olarak İşlemsel Analizi (TA) incelemektedir. Makale, üç ego durumu (Ebeveyn, Yetişkin ve Çocuk), işlem türleri ve psikolojik oyun kavramı da dahil olmak üzere TA'nın teorik temellerini tartısmaktadır. Eric Berne tarafından geliştirilen İşlemsel Analiz, kişisel gelişim, tartışma çözümü ve etkili iletişim için pratik ve erişilebilir bir çerçeve sunmaktadır. Makale ayrıca TA'nın psikoterapi, danışmanlık, eğitim ve organizasyonel yönetimdeki uygulamalarına da değinmektedir.

Anahtar Kelimeler: İşlemsel Analiz, Eric Berne, ego durumları, Ebeveyn, Yetişkin, Çocuk, işlemler, psikolojik oyunlar, iletişim, psikoterapi.

İşlemsel analiz (TA), hem bireysel hem de grup insan davranışını tanımlamak ve analiz etmek için kullanılan bir psikolojik modeldir . İnsanların kendilerinin ve başkalarıyla etkileşimlerinin özelliklerini anlamalarını sağlayan bir felsefe , teori ve yöntemler içerir .

İşlemsel analizin gelişimindeki temel başlangıç noktası psikanaliz olmuştur, ancak işlemsel analiz bir model olarak çok daha genel ve kapsamlı bir karakter kazanmıştır. İşlemsel analizin ayırt edici özelliği, basit ve anlaşılır bir dilde sunulması ve temel ilkelerinin herkes için çok basit ve erişilebilir olmasıdır.

Üç farklı ego durumundan birinden hareket edebileceği görüşü yataktadır. ve duygularını açıkça ifade etmeyi öğrenebileceği önermesine dayanan, davranışını anlamaya yönelik rasyonel bir yaklaşımdır. Bu ilkeler işte, evde, okulda, komşularla ilişkilerde; genel olarak insanlarla etkileşimde bulunduğuuz her yerde uygulanabilir.

İşlemsel analiz teorisinin temelleri Eric Berne ve diğer birçok psikoterapist ile çeşitli psikologlar tarafından geliştirilmiştir. Eric Berne, insan davranışına ilişkin gözlemlerini 1960'ların başlarında yayinallyamaya başlamış ve işlemsel analize olan kamuoyu ilgisi 1970'lerde artmaya başlamıştır. İşlemsel analize göre, her birimizin üç ego durumu vardır: ebeveyn, yetişkin ve çocuk.

- **Ebeveynsel ego durumu** öncelikle ebeveynlerden edinilen tutum ve davranışları içerir. Dışarıdan bakıldığından, genellikle başkalarına karşı olumsuz, eleştirel ve ilgili tutumlar olarak kendini gösterir. İçsel olarak ise, içimizdeki çocuğu etkilemeye devam eden eski ebeveyn tavsiyeleri olarak tezahür eder.
- **Yetişkin ego durumu (K), bireyin yaşına bağlı değildir.** Mevcut gerçekliği algılamaya ve nesnel bilgi edinmeye odaklanmıştır. Düzenli, uyumlu, beceriklidir ve gerçekliği inceleyerek, olasılıklarını değerlendirerek ve sakin bir şekilde hesaplama yaparak işler.
- **Çocuk ego durumu (B)**, çocukta doğal olarak ortaya çıkan tüm dürtülerini içerir. Ayrıca erken çocukluk deneyimlerini, tutumlarını ve kendine ve başkalarına olan ilişkilerini de kapsar. Çocukluğun “eski” davranışları olarak ifade edilir. Çocuk ego durumu aynı zamanda kişiliğin yaratıcı ifadesinden de sorumludur.

Anne babamız gibi davranışımızda, onlar gibi düşündüğümüzde, anne babamızın ego durumunda oluruz. Şimdi gerçeklikle, olguların birikimiyle ve bunların nesnel değerlendirmesiyle meşgul olduğumuzda, yetişkin ego durumundayızdır. Çocuk gibi hissettiğimiz ve davranışımız zaman ise çocuk ego durumundayızdır. İnsanların ego durumları koşullara bağlı olarak değişir.

Bir işlem, bir uyarıcı ve bir yanıtta oluşan bir iletişim birimidir. Örneğin, uyarıcı: “Merhaba! ”, yanıt: “Merhaba! Nasılınız? ” İletişim (işlemsel alışveriş) sırasında, benlik durumlarımız iletişim kurduğumuz kişinin benlik durumlıyla etkileşime girer. Üç tür işlem vardır:

1. Tamamlayıcı ^[1] ^[2] veya paralel (İngilizce : karşılıklı/tamamlayıcı), bir kişinin uyarısının diğerinin yanıyla doğrudan tamamlandığı işlemlerdir. Örneğin, uyarı: “Saat kaç?”, yanıt: “Altiya çeyrek kala. ” Bu durumda, etkileşim aynı ego durumundaki kişiler (yetişkinler) arasında gerçekleşir.

2. Çaprazlanmış (İngilizce : crossed) — uyaran ve tepki yönleri kesişir; bu tür işlemlerin bir örneği kavgadır. Örneğin, koca sorar: "Kravamı nerede?", karısı öfkeyle cevap verir: "Her şeyi her zaman senin için bulmak zorundayım!". Bu durumda, uyaran (yetişkin) kocadan (yetişkin) karısına yöneliktir ve tepki çocuktan ebeveynlere yöneliktir.

3. Çift yönlü /gizli işlemler, bir kişinin bir şey söyleyip tamamen farklı bir şey kastettiği durumlarda ortaya çıkar. Bu durumda, söylenen kelimeler, ses tonu, yüz ifadeleri, jestler ve tavırlar genellikle birbirine uymaz. Gizli işlemler, psikolojik oyunların geliştirilmesinin temelini oluşturur. Psikolojik oyun teorisi, Eric Berne tarafından "İnsanların Oynadığı Oyunlar" adlı kitabında açıklanmıştır. Oyun analizi, işlem analistleri tarafından kullanılan yöntemlerden biridir.

Ve anlaşılır bir dille açıklayan psikolojik bir teoridir ; temel kavramı, kişinin üç "ego durumuna" (Ebeveyn, Yetişkin, Çocuk) dayanmaktadır. Bu yöntem, kişinin kendine güvenmeyi, bağımsız kararlar almayı ve duygularını açıkça ifade etmeyi öğrenmesine yardımcı olur.

Dr. Eric Berne (1910-1970), tanınmış bir psikiyatrist ve çok satan bir yazardı. Kanada'nın Montreal şehrinde büydü ve 1935'te McGill Üniversitesi'nden doktorasını aldı. Psikiyatri eğitimini Amerika Birleşik Devletleri'nde tamamladıktan sonra ABD Ordusu'na psikiyatrist olarak katıldı.

Kaliforniya'daki Carmel'e taşındı . Psikiyatrist olarak çalışmaya devam etti, ancak zamanının psikanalitik yaklaşımlarından giderek daha fazla hayal kırıklığına uğradı. Sonuç olarak, İşlemsel Analiz adını verdiği yeni ve devrim niteliğinde bir teori geliştirmeye başladı. 1958'de, bu yeni yaklaşımı özetlediği "İşlemsel Analiz: Yeni ve Etkili Bir Grup Terapisi Yöntemi" başlıklı bir makale yayınladı.

İşlemsel analizi yarattıktan sonra, Berne bu yeni metodolojiyi geliştirmeye ve uygulamaya devam etti. Bu da onu "İnsanların Oynadığı Oyunlar" adlı kitabını yayılmamaya ve Uluslararası İşlemsel Analiz Derneği'ni kurmaya yönlendirdi . Aktif bir yaşam sürdürdü ve 1970'teki ölümüne kadar psikoterapist ve yazar olarak çalışmalarına devam etti. İşlemsel Analiz, "İnsanların Oynadığı Oyunlar" ve 30'dan fazla kitap ve makalenin yanı sıra Uluslararası İşlemsel Analiz Derneği'nin kuruluşu da dahil olmak üzere dikkate değer bir miras bıraktı.

Dr. Eric Berne'nin "İnsanların Oynadığı Oyunlar" adlı kitabında , "Oyunlar" ve Dünyayı "İşlemsel Analiz" ile tanıştırıyor. Dr. Berne'ye göre, oyunlar bireyler arasında gizli duyguları veya hisleri ortaya çıkabilen ritüelleştirilmiş işlemler veya davranışlardır . 1960'ların ortalarında, "İnsanların Oynadığı Oyunlar" New York Times'in en çok satanlar listesinde iki yıldan fazla kaldı; bu, önceki on yılın herhangi bir kurgu kitabından daha uzun bir süreydı. "İnsanların Oynadığı Oyunlar" ve işlemsel analiz, " Ben İyiyim – Sen İyisin"de dahil olmak üzere milyonlarca insanı etkiledi ve ilham verdi. "En

"Büyük Şovmen" kitabının yazarı Thomas A. Harris ve "Kazanmak İçin Doğmuş" kitabının yazarı Muriel James.

Beş milyon kopya satıldıktan ve ilk çıkışından neredeyse ellî yıl sonra, "İnsanların Oynadığı Oyunlar" popülerliğini koruyor ve dünya çapında satılmaya devam ediyor. Yaklaşık 20 farklı dile çevrildi ve milyonlarca sıradan insan ve eğitimli psikoterapist Dr. Berne'nin yöntemlerini kullanıyor.

- Games People Play'in 40. yıl dönümünü kutlayan, cıtsız baskısı.
- İnsanların tekrar tekrar oynadığı psikolojik tiyatroların zekice, komik ve isabelli bir katalogu . İyi Doktor, bilgisayar korsanlarının önumüzdeki 10.000 yıl boyunca anlatacağı sayısız hikaye sunuyor.' Kurt Vonnegut Jr., Life dergisi, 1965. "Harika bir kitap... Bunlar mutlaka 'eğlenceli' oyunlar değil . Aslında, çoğu gerilimin boşaltıldığı ve genellikle başkalarının pahasına tatmin elde edildiği tüyler ürpertici, nevrotik ritüellerdir." Newsweek dergisi.
- "Orijinal, rahatsız edici ve keyifli, ana sohbet konusu... Bu oyunların çoğu, halka açık yerlerde, oturma odasında, yatak odasında, muayenehanede, anında ölümle sonuçlanan gerçek korku olaylarıdır." Chicago Tribune.
- 1966'da The New York Times, Eric Berne'nin Frank Sinatra ile nasıl oyun oynadığı hakkında ünlü bir yazı yayınladı . 2004'te Times, insanların nasıl oyun oynadığı hakkında bir kitap yayınladı ve "You're OK" (İyisin) yayınlanan ilk kişisel gelişim kitaplarından biri oldu.

Seanslar bireysel danışmanlık, aile, çift veya grup şeklinde gerçekleştirilebilir. TA kısa süreli terapide kullanılabile de, özellikle derinden yerleşmiş kalıplılmış düşünceler, ilişki modelleri ve travmalarla başa çıkmada, uzun vadeli ve derinlemesine bir psikoterapi yaklaşımı olarak kabul görmüştür.

Danışmanlıkta, TA terapisi çok yönlüdür çünkü çeşitli ortamlarda uygulanabilir ve hümanistik, bütünlüyici, psikanalitik ve psikodinamik terapilerden temel temaları içerir. Farklı TA ekollerinin farklı unsurları vurgular. Örneğin, ilişkisel TA gibi bazı TA yaklaşımıları daha modern psikodinamik prensipleri içerirken, klasik TA, Bern'in orijinal yapısal yaklaşımının daha fazlasını korur.

İşlemsel analizi destekleyen bir ortam, yargılayıcı olmayan, işbirlikçi, güvenli ve saygılı bir ortamdır ve terapist ile danışan(lar) arasında olumlu bir ilişkinin kurulmasını sağlayarak, terapi sonrasında gelişecek ilişkiler ve iletişim için bir model oluşturur. Hem terapistin hem de danışanın süreçten aktif olarak sorumlu olduğu terapötik sözleşme, işlemsel analizin önemli bir parçasıdır. Böyle bir ortamda, terapist bireyle ortaklık içinde çalışır. Birlikte, danışanın iletişiminde neyin yanlış olduğunu belirler ve potansiyellerini sınırlayan tekrarlayan kalıpları değiştirmeleri için onları güçlendirirler.

İşlemsel analiz, kişisel gelişimi ve değişimi teşvik etmek amacıyla tasarlanmış ve yaşamın tüm alanlarına uygulanabilen bir yöntemdir. Bu, her türlü beceriyi geliştirme fırsatı sunar. Bu da TA'yı birçok farklı problemin çözümünde değerli kılar.

Ve danışmanlık, ebeveynlik, eğitim ve koçluk da dahil olmak üzere çeşitli alanlarda başarıyla kullanılmıştır.

Özünde, işlem analizi, bireyleri, iletişimini ve ilişkileri anlamalarının gerekli olduğu her alanda uygulanabilir. Sonuç olarak, özellikle çatışma, kafa karışıklığı veya bir şyelerin eksik olduğu alanlarda faydalıdır. TA (Transaksiyonel Analiz), danışanları zaman içinde ortaya çıkan sorunları ele almaya teşvik ettiği için aileler, arkadaşlar ve çiftler arasındaki ilişki sorunlarından büyük ölçüde fayda görürler.

Birçok insan, danışan ve terapist arasında eşit bir ilişkiye teşvik ettiği ve danışanın değişime olan bağlılığını odaklanması sağladığını için işlemsel analizi çekici bulmaktadır. Bern, her birimizin hayatımız için ne istediğimize karar verme yeteneğine sahip olduğuna inanıyordu ve işlemsel analiz, kendi değerimizi ve kıymetimizi tanımadığımıza ve bu hedeflere ulaşmadığımıza yardımcı olur. Ego durumları, kişiliğin üç ana bölümünü ifade eder ve her biri düşünme, hissetme ve davranışma sisteminin tamamını yansıtır. Bu ego durumları şunlardır:

Ebeveyn: Geçmişe kök salmış; ebeveynlerimizden ve diğer önemli kişilerden öğrendiğimiz düşünce, duygusal davranışlar bütündür. Kişiliğimizin bu kısmı destekleyici veya eleştirel olabilir.

Yetişkinler: Şimdiki zamana odaklanmışlardır; geçmişimizden etkilenmeden, "burada ve şimdi" doğrudan tepkilerle ilgilenirler. Bu, kişiliğimizin en rasyonel kısmıdır. Sağlıklı yetişkinlerdeki ego durumu, dengeli ve bilim odaklı bir yaklaşımı korurken geçmiş deneyimleri bütünlüğe getirir.

Çocuk: Geçmişe kök salmış; çocukluğumuzdan beri öğrendiğimiz düşünce, duygusal davranışlar bütündür. Bunlar özgür ve doğal olabileceği gibi, ebeveyn etkisinden de güçlü bir şekilde etkilenebilir.

Ego durumlarımız, birey olarak kendimizi nasıl ifade ettiğimizi, birbirimizle nasıl etkileşim kurduğumuzu ve ilişkiler nasıl kurduğumuzu belirler. TA terapisinde kullanılan terminolojinin sadeliği, modeli oldukça erişilebilir kılmaktadır.

İşlemsel analiz pratikte aşağıdaki alanlarda kullanılmaktadır:

1. Psikoterapi ve Danışmanlık: İşlem analizi, terapistler ve danışmanlık hizmetleri tarafından danışanların duygusal durumlarını iyileştirmelerine ve içsel çatışmalarını çözmelerine yardımcı olmak için kullanılır.

2. Sosyal İletişim: İşlemsel analiz, bireyler arasındaki iletişimini geliştirmek, yanlış anlamaları azaltmak ve etkili diyalogu teşvik etmek için kullanılabilir.

3. Organizasyonlarda yönetim: Liderler, çalışanlarla etkili iletişim kurmak ve ekip moralini iyileştirmek için işlem analizini kullanabilirler.

Özetle, işlemsel analiz, kişilerarası iletişimini etkili ve derinlemesine bir analizini sağlar. Bu yöntem, psikoloji ve sosyal iletişim alanlarında yaygın olarak kullanılmaktadır. İşlemsel analiz, insan

ilişkilerindeki çalışmaları analiz etmede, sorunları çözmede ve kişisel gelişimi desteklemede önemli bir rol oynar. Çalışması ve pratik uygulaması, bireyler ve toplum için faydalı sonuçlar doğurur .

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A STRATEGIC APPROACH TO MOTIVATION AND POSITIVE BEHAVIOUR

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Key words: Student motivation, positive behaviour, reward systems, classroom management.

A well-managed classroom environment is the foundation of effective teaching and meaningful learning. Among the many tools available to educators, classroom reward systems have proven to be one of the most powerful methods for reinforcing desirable behaviours and promoting sustained student engagement. When implemented correctly, rewards can transform classroom culture, encourage student responsibility, and heighten academic motivation.

The Purpose of Classroom Rewards

The primary goal of classroom rewards is to reinforce behaviour, not to control it. By acknowledging students' positive actions, teachers guide them toward developing productive habits and behaviours that support their intellectual and emotional growth. Rewards allow students to see a clear link between their actions and the consequences, making expectations more visible and understandable. Rewards also play a significant role in shaping students' self-concept. When learners consistently receive recognition for their effort, persistence, and improvement, they develop confidence in their abilities. This confidence encourages them to approach tasks with greater independence and resilience.

Types of Effective Classroom Rewards

There are several forms of rewards that teachers can incorporate:

1. **Intrinsic Rewards** – Praise, positive feedback, leadership roles, and opportunities for student voice. These build long-term motivation and self-esteem.
2. **Extrinsic Rewards** – Stickers, points, certificates, badges, or classroom privileges. When used moderately, they make learning enjoyable and increase short-term motivation.
3. **Social Rewards** – Applause, peer recognition, group celebrations, or teamwork bonuses. These strengthen social relationships and create a community-oriented atmosphere.
4. **Activity-Based Rewards** – Extra reading time, creative projects, choice-based activities, or educational games. These promote active engagement and give students autonomy.

Benefits of Classroom Reward Systems

A well-balanced reward system offers multiple advantages:

- **Improved behaviour:** Students are more likely to follow rules when positive behaviour is consistently recognized.

- **Higher engagement:** Rewards encourage active participation and reduce classroom disruptions.
- **Positive learning environment:** A culture of appreciation fosters respect and cooperation among classmates.
- **Enhanced academic outcomes:** Motivation to participate and complete tasks often leads to better performance.

Guidelines for Using Rewards Effectively

While rewards can be powerful, they must be used strategically:

- Ensure rewards are **fair and consistent**.
- Focus on rewarding **effort**, not only achievement.
- Gradually shift from **extrinsic** to **intrinsic** motivation.
- Avoid overusing rewards, which may reduce students' natural interest.
- Make sure rewards support the **learning goals** of the lesson.

Challenges and Considerations

- ✓ Despite their benefits, reward systems must be designed with care to avoid potential drawbacks:
- ✓ Over-reliance on extrinsic rewards may reduce intrinsic motivation.
- ✓ Inconsistent application can be perceived as unfair, damaging students' trust.
- ✓ One-size-fits-all systems may ignore the diverse needs, skills, and personalities of learners.
- ✓ Competition-based rewards may increase stress or discourage lower-achieving students.
- ✓ To address these issues, teachers must remain thoughtful and intentional in choosing and delivering rewards.

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Classroom rewards are an essential element of modern educational practice. They provide structure, motivation, and emotional reinforcement, all of which contribute to a healthier and more productive learning environment. When applied strategically and thoughtfully, reward systems not only encourage good behaviour but also promote students' academic success, personal growth, and long-term motivation. For educators, the goal is not simply to reward behaviour but to help students discover the value of learning and the satisfaction of personal achievement.

**Sustainability Strategies in Contemporary Business Management: Integrating
Environmental, Social, and Governance (ESG) Principles in Corporate Planning
(A Study of Nigerian National Petroleum Company Ltd., Abuja, Nigeria)**

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Abstract

This study delves into the ways ESG concepts are being incorporated into modern organizational management, shedding light on how they are essential for achieving sustainability and profitability in the long run. Businesses may use ESG principles as a guide to tackle environmental issues, improve society, and establish strong governance processes. In addition to discussing the difficulties that businesses have when trying to use ESG techniques, the research looks at how these strategies affect financial results, risk management, and stakeholder involvement. There is mounting evidence that businesses with robust ESG processes often beat their competitors, and the significance of ESG integration has grown as a result of global trends and regulatory demands. This paper provides practical advice for firms looking to improve their sustainability strategy and outlines best practices for successful ESG integration via literature study and analysis of case studies. The survey methodology was adopted for this study. Primary data collection using the questionnaire and interview technique was adopted in collecting data from 120 respondents. This sample size was arrived at using a simple random sampling technique of 10% of total population of 1,200 employees of the study area. Tables were used in the presentation of the data while the mean (x) and standard deviation (SD) were used in the analysis of data. Cronbach alpha coefficient of 0.70, was adopted to test the reliability of the instrument used. The independent t-test was adopted to test the hypothesis for the study while the SPSS Version 26 was utilized in further analysis of study data. The research shows that organizations need to make sure their sustainability efforts are supporting their larger strategic goals, which means they need to link their ESG goals with their entire organizational objectives. In order to help organizations navigate the difficult world of sustainability, this study attempts to provide a path for ESG integration. By doing so, they may eventually contribute to increased performance.

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Keywords: Sustainability, Environmental, Social, and Governance (ESG). Triple Bottom Line, Risk Management, Corporate Social Responsibility (CSR)

1.1 Background to the Study

From an afterthought to a top strategic objective, sustainability is now an essential factor in modern organizational management. A growing number of businesses throughout the globe are realizing they need to change the way they do business to be more environmentally conscious, socially responsible and accountable. To tackle these sustainability difficulties, firms may use the ESG framework, which integrates environmental, social, and governance principles. Not only do ESG principles aid in risk mitigation, but they also provide new potential for value creation, boost reputation, and guarantee sustainability in the long run. International accords like the Paris Agreement and domestic rules requiring more openness and responsibility from companies are propelling this change. It has been seen in the market that organizations that prioritize environmental, social, and governance (ESG) issues tend to have superior financial performance, employee engagement, risk management, and consumer loyalty, over time compared to their competitors.

Sustainability management is about stakeholders' view of corporate governance (Davis, et al., 2011; Donaldson et al. 2013; Clarkson 2012) and has been a subject of intense debate in academic literature. According to the United Nations World Conference on the Environment & Development Report, WCED (1987:43) popularly referred to as the Brundtland Report, sustainable development, is viewed as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. The concern on sustainability reflects the way managers run the companies, as well as the behavior of worldwide societies towards sustainable practices or actions. The commitment to creating organizational wealth in a manner that is economically, technologically, and socially sustainable, challenges conventional thinking about nature and sources of corporate success (Post et al., 2015, p.214). There is actual relationship amongst markets, corporations, government and sustainability, in which the government plays regulatory role in sustainability and environmental standards provision. Wilkinson and Hill (2007) describe how such complex relationship is predominant in most sustainable actions and corporate plan. They also stressed the fact that governments cannot solve the world's natural problems alone, if the economic environment is unsupportive. With organizations going global, government control on businesses has reduced. Businesses are faced with commercial pressures to adhere to environmental practices; such as customers complaining of depletion of non-renewable resources and accuse businesses of disrupting environmental scene. Also, there are internal pressures on organizations relating to sustainability of human resources, which manifests on staff turnover, decreasing firm loyalty, increasing work hours and stress levels, and levels of satisfaction.

Wilkinson and Hill (2007) affirm that for an organization to ensure long-term business success and ecological survival; human and sociological sustainability need to be addressed. Lo and Shen (2007)

in their study on some US firms, finds that a strong interaction of corporate sustainability and sales growth in firm value exist. Post et al, (2002) provide some preliminary evidence that support the proposition that corporation which chooses CSR may perform better than those that continue to embrace a more traditional management perspective. Verschoor (2008) in a study of 500 public corporations found that those that mentioned their commitment to interests and codes of conduct in their annual reports (more than 100 firms) reported superior financial performance to those that did not. Another study indicates that managerial attention to employee and customer stakeholders is associated is associated with favorable financial performance (Berman et al. 2009; Sam (2011) also affirms that adhering to sustainability principles outperform those that do not. These assertions suggest that organizations with marketable sustainable development strategies are more likely to be rewarded by investors with a higher valuation in the financial markets. Paramanathan et al. (2004) in relating sustainability and technology management, stress relationship between implementation of industrial sustainability and contribution technology management research has to offer. Also, Melville (2010) looks at information systems innovation for environmental sustainability and demonstrates the critical role information system can exert on beliefs about the environment, in creating possibilities to sustainable processes and practices in organizations, and in improving environmental economic performance. Aras and Crowther (2008) discuss how corporate governance is fundamental to continuing operation of any corporation. In the same vein, sustainability is also fundamental to continuing operation of any corporation. The need for substantial changes to company operations, possible upfront expenses, and the intricacy of assessing and reporting, ESG concepts are used in modern organizational management, how ESG strategies affect company performance, and how to effectively integrate ESG are the main goals of this research. It aims to answer important concerns about ESG principles, such as what they are, how they affect the sustainability and performance of businesses, how to integrate them effectively, and what obstacles businesses encounter. Businesses seeking to adopt ESG practices will find a road map in the study's analysis of successful examples and case studies. The end goal is for ESG goals to be in sync with corporate objectives so that sustainability efforts help achieve larger strategic goals, boost performance, and benefit society.

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1.2 Statement of the Problem

Managers within organizations are coming under increased pressure to not only reduce costs, but also to minimize the environmental impacts on their operations. Adopting tactics and procedures that boost a company's profitability while simultaneously favourably impacting society and the environment is what we mean when we talk about sustainability in business management. For a business to be socially sustainable, it must prioritize the happiness of its workers, consumers, and

neighbours. Human rights, nowadays are starting to understand the value of fostering inclusive and supportive workplaces, investing in company's capacity to be run in an ethical and transparent manner is a key component of its governance sustainability. Compliance with rules and regulations, competent leadership, and effective risk management are all part of this. In order to keep a company's reputation intact and earn the confidence of its stakeholders, good governance processes are crucial. Incorporating ESG (environmental, social, and governance) concepts into corporate planning is now essential for success in the long run. More and more, stakeholders like investors, customers, and government agencies are pressuring businesses to show they care about sustainability. Therefore, companies that put an emphasis on ESG considerations have a higher chance of attracting investors, improving their brand image, and gaining a competitive edge. Ultimately, the goal of sustainable business management is to provide long-term value for the organization and for society at large. Businesses may secure their own long-term prosperity and resilience while also making a positive impact on the planet via the adoption of sustainable practices.

1.3 Objectives of the Study

The main objective of this paper was to examine the sustainability strategies in contemporary business management: integrating environmental, social, and governance (ESG) principles in corporate planning (a study of NNPC Limited). The specific objectives which the paper sought to achieve are to:

- i. determine the impact of sustainability strategies on contemporary business management;
- ii. examine the environmental, social, and governance (ESG) principles in corporate planning;
- iii. evaluate the importance of the environmental, social, and governance (ESG) principles in achieving organizational sustainability and profitability;
- iv. assess the role of NNPC-Headquarters Abuja, FCT in the application of the environmental, social, and governance (ESG) principles in corporate planning;
- v. identify the challenges and implications for the NNPC Headquarters Abuja FCT in its application of the ESG principles in corporate planning.

1.4 Research Questions

The following questions were set to be addressed by the study.

- i. What is the impact of sustainability strategies on contemporary business management?
- ii. What are the environmental, social, and governance (ESG) principles in corporate planning?

- iii. What is the importance of environmental, social, and governance (ESG) principles in achieving organizational sustainability and profitability?
- iv. What is the role of NNPC Headquarters Abuja, FCT in the application of the environmental, social, and governance (ESG) principles in corporate planning?
- v. What are the challenges and implications for the NNPC Headquarters Abuja FCT. in its application of the ESG principles in corporate planning?

1.5 Statement of Hypothesis

The following statements were formulated in accordance with the research objectives, and will be tested at 0.05 Alpha level of significance.

Ho1: There is no statistically significant impact of sustainability strategies on contemporary business management;

Ho2: There is no statistically significant impact of the environmental, social, and governance (ESG) principles on corporate planning.

Ho3: There is no statistically significant impact of the importance of environmental, social, and governance (ESG) principles on organizational sustainability and profitability.

Ho4: There is no statistically significant impact of the role of NNPC Headquarters, Abuja FCT in the application of ESG principles on corporate planning.

Ho5: There is no statistically significant impact of the challenges and implications for the NNPC Limited in its application of ESG principles on corporate planning.

1.6 Scope and Limitations

The result of this research is of importance to the management of the corporate organizations, the NNPC Limited itself, and the staff and the government as well as the general public will also be interested in the result of the study. The NNPC Limited itself will benefit from the result of the research as it will help them to do self-assessment performance and identify where it may have to take corrective measures. The staff of the NNPC Limited will in turn benefit from the result of the study as they will be able to know the different methods of risk identification, assessment, and monitoring available to them.

This study is significant in that the findings would be of value to businesses to help them understand the significance of environmental, social, and governance (ESG) principles, adopting and implementing ESG principles in an organization. ESG is important for businesses for several reasons, including, risk mitigation and business sustainability. ESG implementation helps businesses mitigate risks by identifying and addressing environmental, social, and governance factors such as climate change impacts, labour rights violations, corruption and bribery risks, diversity and inclusion practices, and regulatory compliance issues that could potentially impact a company's operations, finances, and reputation.

Businesses can bolster their resilience and sustainability by effectively managing these risks, thus minimizing potential adverse impacts on their long-term success.

Businesses can also increase their investment and opportunities potentials by allowing investors to assess a target's ESG behaviour as part of the due diligence process prior to investment. By incorporating ESG principles into their practices, organizations can demonstrate their commitment to comprehensively addressing stakeholder expectations. By acknowledging the environmental impact of their activities and the associated risks, organizations can contribute to overall environmental sustainability. Prioritizing ESG principles enables organizations to build trust and credibility with their stakeholders and the public, resulting in a positive reputation within the relevant markets. The application of the ESG principles in corporate planning can equally lead to attraction and retention of talent. The social aspect of ESG emphasizes employee welfare, which enables organizations to attract and retain top talent by showcasing a commitment to employee well-being, diversity, equality, and inclusion. This study focuses on examining sustainability strategies in contemporary business management: integrating environmental, social, and governance (ESG) principles in corporate planning, adopting a case study of NNPC Limited. Despite the comprehensive approach of this study, there are several limitations that must be acknowledged. One significant limitation is the availability and quality of data from corporate organizations. The study relies on data from these organizations, which may vary in terms of transparency and reporting standards, particularly

concerning their remote work and virtual team policy. This limitation could restrict the depth and accuracy of the analysis. Another limitation is related to the generalizability of the findings. The study focuses on a specific corporate organization (NNPC Limited) which is a major regulatory institution for the oil and gas industry in Nigeria.

1.7 Operational Definition of Terms

The following operational terms were defined as used in this study.

Sustainability: Sustainability is concerned with the well-being of future generations and in particular with irreplaceable natural resources.

Sustainability Strategies: They are the well-articulated plans aimed at achieving the goals and objectives of sustainability. A good example is the United Nations Millennium Development Goals (MDGs).

Business Management: This involves planning, leading, coordinating, and controlling the activities of organizational members in order to achieve the organization's aims and objectives.

Environmental Factors: These are the negative climatic and natural occurrences which may adversely affect business operations. Such environment factors that may adversely affect business operations may include climate change, global warming, earthquakes, erosion, landslides, etc.

Social Factors: Social factors encompasses both interactions among people and their collective co-existence. All spheres of human activities are shaped by interactions between persons either individually or collectively.

Governance Factors: Governance is factored into credit ratings in the sense that it reflects and influences management behavior and their dealings with stakeholders. The key factors are ownership structure, and financial structure. Ownership and financial structures include institutional investors, directors, and foreign investors.

2.0 Literature Review

2.1.1 Concept of Environmental, Social, and Governance (ESG) Principles

In today's increasingly interconnected and environmentally conscious world, businesses are facing growing pressure to integrate environmental, social, and governance (ESG) factors into their operations (Simpa et al., 2024). This introductory section serves to elucidate the significance of ESG integration within business management, offering a clear overview of the strategic framework proposed in this paper which aims to guide financial professionals in effectively incorporating ESG considerations into their organizations' strategies. ESG integration refers to the systematic incorporation of environmental, social, and governance factors into business strategies, decision-making processes, and performance evaluation metrics (Solomon et al., 2024). Environmental factors encompass issues such as climate change mitigation, resource conservation, and pollution reduction/Social factors include labor practices, human rights, community engagement, and diversity and inclusion initiatives. Governance factors pertain to the structure, transparency, and accountability of corporate governance practices, including board diversity, executive compensation, and shareholder rights (Obasi et al., 2024). ESG integration goes beyond mere compliance with regulations, it involves embedding sustainability principles and ethical considerations into the core of business operations. This holistic approach acknowledges the interconnectedness of environmental, social, and governance issues and recognizes their impact on long-term business sustainability and stakeholder value (Simpa et al., 2024). The importance of ESG integration in business models cannot be overstated. In recent years, there has been a paradigm shift in the way businesses perceive sustainability. ESG considerations are increasingly recognized as critical drivers of financial performance, risk management, and long-term value creation.

Firstly, integrating ESG factors into business models can enhance financial performance. Studies have shown that companies with strong ESG performance often outperform their peers financially, attracting investors who prioritize sustainable and responsible investments. Additionally, ESG integration can lead to cost savings through improved resource efficiency, reduced regulatory risks, and enhanced brand reputation, which can translate into competitive advantages in the market (Simpa et al., 2024). Secondly, ESG integration is crucial for managing risks effectively. Environmental risks, such as climate change impacts and resource scarcity, social risks related to labor disputes or community conflicts, and governance risks stemming from poor oversight or unethical practices, can all have significant implications for business continuity and reputation. By proactively addressing these risks and implementing robust ESG management practices, companies can mitigate potential negative impacts and safeguard their long-term viability. Thirdly, ESG integration is essential for

maintaining and enhancing corporate reputation and brand value. In today's digital age, consumers, investors, employees, and other stakeholders are increasingly scrutinizing companies' ESG performance and holding them accountable for their actions (Simpa et al., 2024). Companies that demonstrate a commitment to sustainability, ethical business practices, and social responsibility can build trust and loyalty among stakeholders, differentiate themselves in the marketplace, and strengthen their brand reputation.

The strategic framework proposed in this paper provides a structured approach for financial professionals to integrate ESG considerations into business models effectively. It consists of several key components; Assessing Materiality, Identifying and prioritizing material ESG issues that are most relevant to the organization's business model, industry and stakeholders, Integration into Business Strategy, aligning ESG goals and initiatives with overall business objectives, embedding ESG considerations into decision-making processes, and fostering a culture of sustainability throughout the organization (Simpa et al., 2024). Establishing key performance indicators (KPIs) and metrics to track ESG performance, ensuring transparent reporting to stakeholders, and leveraging data to drive continuous improvement. Engaging with stakeholders, including investors, customers, employees, suppliers, and communities, to understand their expectations, address concerns, and build mutually beneficial relationships. Collaboration with industry peers, NGOs, and other stakeholders can also facilitate knowledge sharing and collective action on shared sustainability challenges.

Monitoring and evaluating the effectiveness of ESG initiatives, learning from successes and failures, and adapting strategies and practices accordingly drives continuous improvement and innovation (Solomon et al., 2024). By following this strategic framework, financial professionals can navigate the complex landscape of ESG integration, capitalize on the opportunities presented by sustainability and position their organizations for long-term success and resilience in a rapidly evolving business environment.

2.1.2 Concept of Sustainability in Business Management

Adopting tactics and procedures that boosts a company's profitability while simultaneously and favorably impacting society and the environment is what we mean when we talk about sustainability in business management. This all-encompassing method guarantees that companies act responsibly, ethically, and advantageously for all parties involved, encompassing workers, consumers, neighborhoods, and the environment. Over the last few decades, there has been a sea change in how businesses think about sustainability, with an emphasis on long-term viability and resilience replacing a concentration on short-term advantages.

The concept of the “triple bottom line” – People, Planet, and Profit – forms the basis of sustainability in company management. The framework’s proponents argue that businesses should prioritize social responsibility and environmental protection alongside profit maximization. Businesses may help build a better, more fair future by including these three characteristics into their value creation processes. Sustainable environmental practices aim to minimize human interference with the natural world (Nwokike, 2021: p.40). Reduced carbon footprints, less waste, more water conservation, and increased use of renewable energy sources are all part of this. To reduce their impact on the environment and make better use of their resources, Akpan et al., 2020 opine that more and more businesses are embracing sustainable supply chain strategies and green technology. For a business to be socially sustainable, they reiterated that it must prioritize the happiness of its workers, consumers, and neighbors. Human rights, community involvement, diversity and inclusion, and fair work standards are all part of it, Companies nowadays are starting to understand the value of fostering inclusive and supportive workplaces, investing in the health and happiness of their employees, and giving back to the communities in which they operate.

A company’s capacity to be run in an ethical and transparent manner is a key component of its governance sustainability. Compliance with rules and regulations, competent leadership, and effective risk management are all part of this. In order to keep a company’s reputation intact and earn the confidence of its stakeholders, good governance processes are crucial. . Incorporating ESG (environmental, social, and governance concepts into company plans is now is now essential for success in the long run. More and more, stakeholders like investors, customers, and government agencies are pressuring businesses to show they care about sustainability. Therefore, companies that put their brand image, are gaining a competitive edge. Ultimately, the goal of sustainable business management is to provide long-term value for the organization and for the society at large. Businesses may secure their own long-term prosperity and resilience which is also making a positive impact on the planet in the adoption of the sustainability practices.

2.1.3 Understanding ESG Factors

In today’s business landscape, environmental, social, and governance (ESG) factors play a pivotal role in shaping corporate behaviour, stakeholder perceptions and long-term sustainability (Adenekan et al., 2024). Environmental factors encompass a wide range of issues related to the natural world and its resources. Addressing these factors is essential for mitigating climate change, preserving biodiversity, and ensuring the sustainable use of natural resources. Climate change poses one of the most significant challenges facing businesses and society today. Rising global temperatures, melting ice caps, and extreme weather events are causing widespread environmental, social, and economic

impacts (Osimobi et al., 2023). Businesses are increasingly under pressure to reduce their carbon footprint, transition to renewable energy sources, and adopt sustainable practices to mitigate climate risks and contribute to global efforts to limit global warming. With growing populations, and increasing consumption levels, resource efficiency has become a critical consideration for businesses seeking to minimize their environmental footprint and optimize resource use (Onwuka et al., 2023). Efficient use of resources, such as water, energy, and raw materials, not only reduces costs but also conserves natural resources, reduces pollution, and enhances competitiveness in the market.

Pollution and waste management are pressing environmental issues that require urgent attention from businesses and policymakers alike (Onwuka & Adu, 2024). Industrial activities, transportation, and urbanization contribute to air, water, and soil pollution, posing risks to human health and ecosystems. Effective waste management practices, including recycling and waste reduction, are essential for minimizing environmental pollution and promoting a circular economy where resources are used more sustainably. Social factors encompass a broad spectrum of issues related to human well-being, equality and social justice (Onwuka & Adu, 2024). Addressing these factors is crucial for promoting inclusive and equitable societies and fostering positive relationships with employees, customers, communities, and other stakeholders. Labor practices encompass a range of issues related to employee rights, working conditions, and labour standards. Fair wages, safe working conditions, job security, and opportunities for skill development and career advancement are essential elements of responsible labour and loyalty but also mitigate labour-related risks and build a positive corporate reputation (Onwuka & Adu, 2024). Respect for human rights is fundamental to ethical business conduct and sustainable development. Businesses have a responsibility to uphold human rights principles and ensure that their operations do not infringe upon the rights of individuals or communities. This includes addressing issues such as child labour, forced labour, discrimination, and access to basic human rights, such as clean water, education, and healthcare, throughout their value chains. Diversity and inclusion are increasingly recognized as critical drivers of innovation, creativity, and organizational performance (Onwuka & Adu, 2024). Embracing diversity in terms of race, ethnicity, gender, age, sexual orientation, and disability fosters a culture of belonging and respect, encourages different perspectives and ideas, and strengthens employee engagement and productivity. Businesses that prioritize diversity and inclusion not only benefit from a more diverse talent pool but also gain a competitive edge in attracting and retaining talent and serving diverse customer bases (Daramola et al., 2024). Governance factors encompass the structures, and practices that govern how organizations are managed, directed, and controlled. Effective corporate governance is essential for ensuring accountability, transparency, and ethical behaviour, thereby safeguarding the interests of stakeholders and promoting long-term value creation. Board diversity refers to the representative of

individuals from diverse backgrounds, experiences, and perspectives on corporate boards (Daramola et al., 2024). Diverse boards are better equipped to understand and address the needs and concerns of diverse stakeholders, make more informed decisions, and promote innovation and long-term value creation. Board structure, including the separation of the roles of CEO and board chair, the composition of board committees, and the independence of board members, also plays a crucial role in ensuring effective governance and oversight. Executive organization practices influence corporate behaviour and performance, shaping incentives for executives, and driving organizational priorities (Daramola et al., 2024). Fair and transparent executive compensation policies that align executive pay with long-term performance, shareholder interests, and ESG goals can help mitigate excessive risk taking, promote sustainable growth, and enhance stakeholder trusts. Conversely, excessive or disproportionate executive compensation can undermine employee morale, shareholder confidence, and corporate reputation. Transparency and accountability are fundamental principles of good governance that promote trust, integrity, and responsible decision-making (Daramola et al., 2024). Transparent reporting practices including timely and accurate disclosure of financial information, enable stakeholders to assess an organization's performance, risks, and impact on society and the environment. Accountability mechanisms, such as independent audits, oversight by boards of directors, and engagement with stakeholders, ensure that organizations are held accountable for their actions and fulfil their obligations to society (Oduro et al., 2024). In summary, understanding ESG factors is essential for businesses seeking to navigate the complexities of the modern business environment, manage risks, and seize opportunities for long-term value creation and sustainability (Oduro et al., 2024). By addressing environmental, social, and governance issues comprehensively, businesses can enhance their resilience, reputation, and relevance in an increasingly interconnected and interdependent world.

2.1.4 Benefits of ESG Integration

ESG integration offers a multitude of benefits to businesses, ranging from financial performance to stakeholder engagement. This section explores the various advantages that organizations can gain by incorporating ESG considerations into their strategies and operations (Uzougbo et al., 2024). Numerous studies have shown a positive correlation between strong ESG performance and financial performance. Companies that prioritize ESG tend to outperform their peers financially, delivering higher returns on investment, lower cost of capital, and increased shareholder value over the long term. By addressing environmental, social, and governance risks proactively, businesses can enhance corporate reputation and brand value by demonstrating business continuity and resilience. ESG integration enhances risk management practices by identifying and mitigating risks early, thereby safeguarding business continuity and resilience. ESG integration can improve access to capital by

attracting a broader range of investors, including those who prioritize sustainable and responsible investments (Ikegwu, 2022). Companies with strong ESG performance are more likely to attract investment from sustainable investment funds, impact investors, and socially responsible investors, who seek to align their investment portfolios with ESG principles and achieve positive social and environmental outcomes alongside financial returns (Ibe et al., 2018). Companies with strong ESG performance may benefit from lower borrowing costs and improved credit ratings, as lenders and investors perceive them as lower-risk investments. By demonstrating robust ESG practices and transparency in reporting, businesses can access capital at more favourable terms, reducing financing costs and enhancing financial flexibility (Osuagwu et al., 2023). ESG integration facilitates meaningful engagement with stakeholders, including investors, consumers, employees, suppliers, communities, and regulators. By actively listening to stakeholders' concerns, incorporating their feedback into decision-making processes, and addressing their needs and expectations, businesses can build trust, foster collaboration, and create shared value for all stakeholders (Adanma, & Ogunbiyi, 2024). Engaged and motivated employees are essential for driving innovation, productivity, and business success. By prioritizing employee well-being, diversity inclusion, and professional development, businesses can attract, retain, and empower talent, leading to higher levels of employee satisfaction, loyalty, and performance.

2.1.5 Strategic Framework for ESG Integration

Implementing ESG integration requires a structured approach that aligns with the organization's strategic objectives and fosters continuous improvement (Adanma, & Ogunbiyi, 2024). This section presents a comprehensive strategic framework for ESG integration, consisting of five key components: Assessing Materiality, integration into Business Strategy, Measurement and Reporting, Engagement and Collaboration, and Continuous Improvement. The first step in ESG integration is to identify the key environmental, social, and governance issues that are most relevant to the organization's business model, industry, and stakeholders (Adabayo et al., 2021). This involves conducting a thorough materiality assessment, which may include stakeholders' engagement, risk assessments, industry benchmarking, and analysis of regulatory requirements and emerging trends. Once the key ESG issues have been identified, they need to be prioritized based on their materiality and significance to the organization's operations, reputation, and long-term sustainability (Oyinkansola, 2024). Materiality assessments help businesses focus their efforts and resources on addressing the most critical ESG risks and opportunities, ensuring that ESG integration efforts are targeted and effective.

ESG goals and initiatives should be closely aligned with the organization's overall business objectives, mission, and values. This ensures that ESG integration is integrated into the core of the business strategy and drives meaningful impact across all areas of the organization. By aligning ESG goals with business objectives, companies can create synergies, maximize value creation, and foster a culture of sustainability throughout the organization (Adelakun, 2024). ESG considerations should be embedded into decision-making processes at all levels of the organization, from strategic planning to day-to-day operations. This involves integrating ESG criteria into investment decisions, product development, supply chain management, employee engagement, and risk management practices. By incorporating ESG considerations into decision-making processes, businesses can make more informed and sustainable choices that benefit both the organization and its stakeholders (Adelakun, 2023). To track progress towards ESG goals and objectives, organizations need to establish key performance indicators (KPIs) and metrics for measuring ESG performance. These KPIs should be aligned with the organization's material ESG issues and strategic priorities and should be measurable, relevant and actionable. Common ESG KPIs may include carbon emissions, energy consumption, diversity and inclusion metrics, employee turnover rates, community engagement activities, and ethical sourcing practices (Adeusi et al., 2024). Transparent reporting is essential for building trust and credibility with stakeholders and demonstrating accountability and progress towards ESG goals. Organizations should develop clear and consistent reporting frameworks and processes for disclosing ESG performance data to investors, customers, employees, regulators, and other stakeholders (Jejeniwa et al., 2024). This may include annual sustainability reports, integrated financial reports, ESG ratings and rankings, and stakeholder's engagement forums. By providing transparent and comprehensive ESG reporting, organizations can enhance transparency, accountability, and stakeholder trust. Effective stakeholder engagement is essential for understanding stakeholder expectations, building relationships, and addressing concerns related to ESG issues (Jejeniwa et al., 2024). Organizations should engage with a wide range of stakeholders, including investors, customers, employees, suppliers, communities, NGOs, and regulators, through various channels, such as surveys, focus groups, town hall meetings, and online forums. By fostering open and transparent dialogue with stakeholders, organizations can gain valuable insights, build trust, and co-create solutions to complex ESG challenges (Jejeniwa et al., 2024). Collaboration with industry peers, partners, and other stakeholders can accelerate progress towards common ESG goals and drive collective action on shared sustainability challenges. Organizations should seek opportunities to collaborate with industry associations, multi-stakeholder initiatives, research institutions, and government agencies to share best practices, leverage resources, and scale impact (Jejeniwa et al., 2024). By working together, organizations can amplify their efforts, drive innovation, and create positive change at scale.

Continuous monitoring and evaluation are essential for assessing the effectiveness of ESG initiatives, identifying areas for improvement, and tracking progress towards ESC goals. Organizations should establish robust monitoring and evaluation mechanisms, including regular performance reviews, audits, and impact assessments, to measure the outcomes and impacts of ESG initiatives. By monitoring key performance indicators and tracking progress over time, the organization can identify trends, address gaps, and make data-driven decisions to optimize ESG performance (Joel & Oguanobi, 2024). ESG integration is an ongoing process that requires iterative adaptation and continuous improvement based on feedback and results. Organizations should be regularly review and update their ESG strategy, goals, goals, and action plans in response to changing internal and external factors, emerging risks and opportunities, and stakeholder feedback. By remaining agile and responsive to changing circumstances, organizations can stay ahead of the curve, drive innovation, and maintain a competitive edge in rapidly evolving business environment (Joel & Oguanobi, 2024).

2.1.6 The Nigerian National Petroleum Corporation (NNPC)

The Nigerian National Petroleum Corporation (NNPC) is the state oil corporation which was established on April 1, 1977 vide NNPC Act No 33 of 1977. In addition to its exploration activities, the Corporation was given powers and operational interests in refining, petrochemicals and products transportation as well as marketing (NNPC Annual Report, 2023). The NNPC Act of 1977 which establishes the corporation permitted, subject to delegation from the Minister and or, the President, the absence of licences and permits with respect to refining, storage, marketing and distribution. It is also to actively be involved with the licensing of marketers for the purpose of importation of petroleum products in Nigeria and to protect the petroleum operating environment. The NNPC Act provides for governance regime in the Nigerian oil and gas industry. It creates the NNPC as a body corporate. There is also a Board of Directors responsible for the conduct of the Department of Petroleum Resources (DPR). The Board of Directors consists of the Chairman, the Permanent Secretary, Federal Ministry of Finance and Economic Development, the Managing Director of the Corporation (now styled General Managing Director) and three persons to be appointed by the President, being persons who by reason of their ability, experience or specialized knowledge of the oil industry or of business or professional attainments are capable of making useful contributions to the work of the Corporation. Section 1(3) of the NNPC Act further provides that the Chairman shall be a Minister in the Government of the Federation to be known and styled as the Minister of Petroleum Resources (NNPC Annual Reports, 2024). As a vertically integrated national oil company, the NNPC Act fuses in the NNPC with both commercial, regulatory and governance functions. The NNPC is also empowered, and in fact it has a general duty to engage in activities that would enhance the petroleum industry in the overall interest of Nigerians. Thus, the NNPC may make policy

formulations in the Nigerian oil and gas industry at the same time it carries out commercial and regulatory activities in the industry. Policy implementations and the regulation of activities of operators in the oil and gas industry are key statutory functions of the NNPC. The NNPC's regulatory functions are to be performed by the Petroleum Inspectorate department. The Petroleum Inspectorate department is established by section 10(1) of the NNPC Act. The Petroleum Inspectorate department is an integral part of the NNPC, and it is headed by a chief executive who is appointed by the Minister of Petroleum Resources with the approval of the President. The Petroleum Inspectorate has now been redesigned as the Department of Petroleum Resources (DPR) without an amendment to the NNPC Act. NNPC is the Nigerian National Oil Company and DPR is the main regulator, for now. The DPR could not optimally perform its regulatory functions due to several factors. The only way to reposition the NNPC is to have an independent regulatory body to cater for the upstream, midstream and downstream sectors of the petroleum industry. The authors found that past reforms had tinkered on the need to have separate regulatory agencies for the industry but due to lack of political will to implement these various reforms, together with the inability of the nation's National Assembly to pass the PIGB Bill into law, coupled with the withholding of assent by the President to certain sections of the bill, the result has meant that the Nigerian nation shall continue to have for a long time, stalemate in the regulatory architecture governing the petroleum industry.

2.1.7 Challenges and Barriers to ESG Integration

Despite the numerous benefits of ESG integration, businesses may encounter several challenges and barriers when implementing ESG initiatives. Overcoming these challenges requires commitment, collaboration, and strategic planning (Adanma, & Ogunbiyi, 2024). One of the primary challenges facing businesses is the lack of standardization and disclosure in ESG reporting. There is a proliferation of ESG frameworks, standards, and reporting guidelines, leading to confusion and inconsistency in ESG disclosures. To address this challenge, businesses need to adopt globally-recognized ESG reporting standards, such as those developed by the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), or the Task Force on Climate-related Financial Disclosures (TCFD), and ensure transparent and consistent reporting practices. Short-termism in financial markets poses a significant barrier to ESG integration, as investors often prioritize short-term financial returns over long-term sustainability considerations (Adanma, & Ogunbiyi, 2024). To overcome this challenge, businesses need to educate investors about the value of ESG integration and the importance of considering environmental, social, and governance factors in investment decision-making. Additionally, regulatory reforms, incentive structures, and industry initiatives can help incentivize long-term thinking and promote responsible investment practices (Abati et al., 2024). Another challenge facing businesses is the availability and quality of ESG data.

Many companies struggle to collect, analyse, and report relevant ESG metrics due to data gaps, inconsistencies, and limitations in data collection methods. To address this challenge, businesses need to invest in robust data management systems, engage with stakeholders to gather relevant data, and collaborate with industry peers and partners to develop standardized ESG metrics and benchmarks (Adebajo et al., 2024). Resistance to change within organizations can hinder firm performance, businesses need to foster a culture of sustainability, empower employees to drive ESG initiatives, provide training and support, and communicate the benefits of ESG integration effectively (Adanma, & Ogunbiyi, 2024). Leadership commitment, employee engagement, and stakeholder buy-in are essential for overcoming resistance to change and driving meaningful ESG transformation within organizations. In conclusion, while ESG integration offers numerous benefits to businesses, including financial performance, risk management, reputation enhancement, access to capital, and stakeholder engagement, it also presents several challenges and barriers that require careful consideration, and strategic planning (Adanma, & Ogunbiyi, 2024). By addressing these challenges proactively and adopting a holistic approach to ESG integration, businesses can unlock value, drive innovation, and create a positive social and environmental impact for the benefit of all stakeholders.

2.2 Theoretical Review

A theoretical review is a collection of relevant theories upon which the study is based. It is the fundamental hypothesis that gives credence to the entire study. This study is anchored on the following theories: the stakeholders' theory, the triple-bottom-line theory, and the sustainable development theory. We shall discuss these theories separately, identifying their relevance and contributions to this present study.

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The Stakeholders Theory:

Stakeholders are groups and individuals who have an interest in the activities and outcomes of an organization and on whom the organization relies to achieve its own objectives. They include customers, suppliers, employees, community, and the government. Stakeholder theory, which is associated with Freeman (1986), is a mixed amalgamation of narratives covering strategic management, business, ethics, marketing, human resource management, finance, and corporate governance (Freeman, 1984; Freeman & McVea, 2001; Freeman & Reed, 1983). Different concepts of stakeholder theory and definitions have given rise to different narratives as a distinctive definitions and approaches are made to serve distinctive purposes ((S. Miles, 2017). The theory also rests on a strong ethics foundation to the extent that all stakeholders must be treated fairly and be given their due in the organization.

Stakeholder theory is a framework that recognizes that an organization not only has responsibilities to stakeholders but also to various parties who are affected to have an interest to the company's activities and decisions. This includes employees, consumers, local communities, government, and the environment. Environment, social, and governance (ESG) in its definition represents environmental protection, social responsibility, and corporate governance in the investment process, which is the basis of socially responsible investment and the core of sustainability.

Stakeholder theory helps in the understanding of interests and concerns of various stakeholders. Companies can manage the risks associated with long-term sustainability applying the tenets of the stakeholder theory. These risks may be representational risks, legal risks, or operational risks. Responding to stakeholder needs can drive innovation and create a competitive advantage for organizations, for example, consumer demand for environmentally-friendly ESG practices and concepts.

Triple-bottom-line Theory:

John Elkington strove to measure sustainability during the mid-1990s by encompassing a new framework to measure performance in corporate America. This accounting framework called the triple-bottom-line (TBL) theory, went beyond the traditional measures of profits, return on investment, and shareholder value to include environmental and social dimensions.

By focusing on comprehensive investment results, that is, with respect to performance along the interrelated dimensions of profits, people and the planet – triple-bottom-line reporting can be an important tool to support sustainability goals. Interest in triple-bottom-line accounting has been growing across for-profit, non-profit and government sectors. Many businesses and nonprofit organizations have adopted the TBL sustainability framework to evaluate their performance, and a similar approach has gained currency with government at the federal, state and local levels. The TBL captures the essence of sustainability by measuring the impact of an organization's activities on the world including both its profitability and shareholder values and its social, human and environmental capital. The triple-bottom-line (TBL) theory enunciated by Elkington has changed the way businesses, nonprofits and governments measure sustainability and the performance of projects or policies. Beyond the foundation of measuring sustainability on three fronts – people, planet and profits. State, regional and local governments are increasingly adopting the TBL and analogous sustainability assessment frameworks as decision-making tools. Maryland, Minnesota, Vermont, Utah, the San Francisco Bay Area and Northeast Ohio in the United States have conducted analysis using the TBL or a similar sustainability framework. Policy-makers use these sustainability assessment frameworks to decide which actions they should or should not take to make society more sustainable.

Policy-makers want to know the cause-and-effect relationship between actions – projects or policies – and whether the results move society toward or away from sustainability. The State of Maryland, for example, uses a blended GPI-RBL framework to compare initiatives – for example, investing in clean energy – against consumption and alternative fuel usage. There are challenges to putting the TBL into practice. These challenges include measuring each of the three categories, finding applicable data and calculating a project or policy's contribution to sustainability. These challenges aside, the TBL framework allows organizations to evaluate the ramifications of their decisions from a truly long-run perspective.

Sustainability Development Theory:

Sustainability and sustainable development have become important concepts and goals across science and society. Sustainability, connected to desirable long-term conditions, is an inherently applied pursuit in geography and other fields. An integrative statement of essential concepts upon which sustainability studies and applications are being built has been lacking, however. According to Du Plessis (2002), sustainability in its broadest view can be defined as a state that allows continued existence of human life. To achieve this state, the following are required on an intra and extra-generational basis: equity, meeting social needs in an acceptable manner, balance between these needs and the earth's carrying capacity, and prosperity.

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Sustainable development (SD) on the other hand, emerges as a continuous dynamic process of ensuring human life sustenance (meeting the requirements to achieve a state of sustainability). This was what prompted the UN World Conference on Environment and Development (WCED) in 1992 and UN Conference on Sustainable Development in South Africa, popularly referred to as the Brundtland Report which defined sustainable development as development that meets the needs of the present without jeopardizing meeting the needs of the future generations yet unborn.

Du Plessis (ibid) further emphasized that sustainable development (SD) should not be seen as human development that can be sustained but rather as the development that is needed to ensure sustainability. This line of thought presents a departure from the conceptualization of sustainability and sustainable development (SD) as synonymous and thus interchangeable, as postulated by (Morray & Cotgrave, 2007; Huge et al., 2011 and Holland, 2017), to being two different concepts. As such, sustainability emerges to be the goal and sustainable development (SD) the means of achieving that goal.

Given the conceptual difference between sustainability and sustainable development (SD), various sustainability interpretations, the consequent SD discourses and associated implications, there is need

for specificity in sustainability research. For clarity of the intended/desired sustainability state and means thereof, SD in a given context, there is need for specificity on adopted sustainability interpretation(s); and consequent SD discourse(s) including reasons thereof. Additionally, this will curb technological misapplication and/or inadvertent simplification which have been identified as some of the outcomes of multiplicity of interpretations. Additionally, this review recommends continued debate around the subject.

2.2.1 Theoretical Framework

This study's theoretical framework is built and anchored on the foundation of the Stakeholders' Theory. It builds on the recognition of the role of stakeholders in the development of the corporation. Unlike other theories, stakeholder theory is interested in what happens not only in the principal-agent relationship, but also outside it, which includes other stakeholders such as personnel, customers, banks, suppliers, the state, local authorities, trade unions and others. Thus, new participants appear in corporate governance, whose place and importance have not been previously taken into considerations.

Having more participants means increasing and complicating the problems that corporate governance has to solve. Problems arise with the management of conflicts between stakeholders, which are much more and multi-layered than the principal-agent or principal-principal dichotomy (Nedelchev, 2017). The identification of stakeholders of stakeholder and their interests, the development of strategies to attract or neutralize them in the implementation of reforms and large-scale restructuring of corporation that affect many stakeholders are becoming extremely important.

Despite, and probably due to, its dynamic development, stakeholder theory focuses on three topics, protecting one's right to exist, research of the practice of corporate governance in relation to the stakeholders and development of policy recommendations and how to deal with them. Outside these topics remains the problem of theoretical foundations of this theory, the disclosure of which would facilitate the process of strengthening its identity and would dynamize its future development. This study deals with solving this problem.

2.3 Empirical Literature

Omowonuola et al. (2024) conducted their study on "Transforming Models with ESG Integration: A Strategic Framework for Financial Professionals", using 32 manufacturing firms in Lagos State, Nigeria. The paper presents a strategic framework for financial professionals aiming to integrate environmental, social, and governance (ESG) factors into business models effectively. As global awareness of sustainability issues grows, businesses face increasing pressure to adopt practices that

align with ESG principles. The framework outlined in this study offered a structured approach to navigate this complex landscape, leveraging ESG integration to drive financial performance. The research design adopted was the descriptive research design and primary data of structured questionnaire was utilized in the collection of research data. The hypotheses for the study were tested utilizing the independent t-test statistic. The study concluded that through a systematic assessment of material ESG issues, alignment with business strategy, robust measurement, and reporting mechanisms, proactive engagement, and a commitment to continuous improvement, financial professionals can position their organizations for long-term success in a rapidly, evolving market environment.

Tao Fua and Jiangjun Li (2025) conducted a study on an empirical analysis of the impact of ESG on financial performance: the moderating role of digital transformation in 51 selected manufacturing firms in China. They used a A-share listed companies in China from 2015 to 2021 as samples to test this mechanism. Regression analysis showed that ESG positively and significantly affects corporate financial performance and digital transformation drives this promoting effects. Specifically, the heterogeneity test results show that the enhancement effect of ESG on financial performance is significant for non-state-owned companies but significant for state-owned companies, the same is true for companies located in the eastern region compared with those in the midwestern region. Finally, the enhancement effect of ESG on the financial performance of polluting firms is stronger than that on non-polluting firms.

Wheelan et al. (2022) conducted their study entitled: Uncovering the Relationship by Aggregating Evidence from 1,000 Plus Studies published between 2015-2020. Meta studies examining the relationship between ESG and financial performance have a decades-long history. The study adopted a meta-analysis study with a qualitative approach and 2-investor meta-analysis studies (covering 107 unique studies) published since 2015. The former found consistent positive connections between ESG and corporate financial performance, the latter found that ESG investing returns were generally indistinguishable from conventional investing returns.

Xinya Shao (2022) conducted his study entitled: Empirical Research of ESG Performance and Firm Performance in Chinese Real Estate Companies. The research analyzes the existing ESG research and puts forward the research hypotheses. In addition, the ROE as well as Debt-to-asset ratio were adopted as the explanatory variables and ESG as the explanatory variables. This study used regression analysis to evaluate the annual reports of listed companies in China's A-share real estate industry from 2018 to 2020 to empirically analyze the relationship between ESG performance and ROE and debt-to-asset ratio. The results of the study indicate that there is a significant positive relationship

between ESG performance and ROE and debt-to-asset ratio. Based on the research results, and taking into account the current situation of enterprises in the real estate industry, this paper suggests that companies should strengthen the ESG information disclosures requirements for enterprises in the real estate industry, formulate corresponding ESG policies and continuously deepen the application of enterprise ESG management.

Shaikh (2021) conducted his study titled: Environmental, Social, and Governance (ESG) Practice and Firm Performance (An International Perspective) using 510 selected manufacturing firms from 17 countries across the globe. The study attempts to bring quantitative evidence of a firm's sustainability reporting in terms of non-financial voluntary disclosures. The disclosures are made available through the annual report and Corporate Social Responsibility (CSR) and Global Reporting Initiatives (GRI) report. The study's research problem is to examine the effects of non-market transactional sustainability strategy on firm performance. The study presents an analysis of nearly 510 firms ESG scores across 17 countries from 2010-2018. The descriptive and inductive statistical analysis shows that ESG compliance is more pronounced in European companies. Simultaneously, Asian firms are more disciplined concerning the energy sector, and the Asia-pacific counterpart is more inclined toward technology firms. The study shows that GRI and non-GRI companies differ significantly in their accounting performance (ROA and ROF) and market variations (Tobins-Q). The environmental dimension appears intimidating across accounting and market-based firm performance, while the social dimension contributes adversely, and governance positively affects operational efficiency.

Joseph et al. (2022) conducted their study on sustainability theory: synopsis, concepts, interpretations and discourses. The study was aimed at providing a comprehensive foundation for future sustainability studies in relation to context, interpretations and discourses in sustainability theory. The findings revealed that sustainability is the desired state of continued human life sustenance with SD being the means of achieving the said state. Additionally, two sustainability interpretation viewpoints were identified: extent of capital forms sustainability – radical, social democratic, liberal and neoliberal, and man-earth dominance – ecocentrism and anthropocentrism. Lastly, the consequent SD disclosures identified were limits – premised on planetary carrying capacity; change – based on need for change to counter critical natural resources depletion, and integration – premised on joint environmental and socio-economic consciousness. The above highlights the need for specificity on sustainability interpretation and SD disclosures adopted in research for; enhanced clarity; and, curbing technological misapplication and/or simplification. Additionally, the study recommends continued debate around the subject for continuous improvement of the knowledge advanced herein.

Marlina Kurniawan (2021) conducted a study on the influence of environmental, social, and governance (ESG) performance on company performance among Malaysian public companies. The study analyzes the effect of ESG performance on company performance in Malaysia public companies. The data sourced the Reifinitiv Eikon in the 2021 period. The estimation of the data regression model was determined in this study using Ordinary Least Square (OLS). The results of this study indicate that the higher the ESG score in a company, the company's performance will increase. Thus, ESG is considered to contribute to improving company performance. The analysis results can be used by management to make investment decisions on ESG whether it is worth the results, and for investors to be a consideration in determining their investment decisions.

Oyegunle-Osimaje (2025) conducted her study on environmental, social, and governance (ESG) score and corporate financial performance: evidence from the Nigerian Market. The study investigated the impact of ESG score on the corporate financial performance of non-financial firms (NFFs) listed in the Nigerian Stock Exchange group. In this study, disclosure of ESG is considered and quantified using sequential counting (ESG Score) and financial performance is measured by Return on Assets (ROA), Return on Equity (ROE) and Book Value to Equity (BTE) which is a combination of accounting and market-based variables. The study recommends NFFs to establish mechanisms for continuous monitoring and evaluation of the impact of ESG practices on various financial indicators. This involves regularly assessing the outcomes of ESG initiatives and making adjustments to ensure they are not more diversion of companies' resources.

Zhan (2024) conducted his study on ESG and Corporate Performance: A Review using 31 manufacturing firms in China. He opine that ESG is becoming increasingly important topic in corporate finance literature. The paper provides implications for investors, ESG can build up reputation, transmit positive signals, and investors react positively to socially responsible firms, increasing corporate performance. On the other hand, according to the agency theory, more ESG investments may reflect managerial opportunism, which negatively affects corporate innovation. This paper aimed to provide a synthetic and evaluation monograph of literature that examines the relationship between ESG and corporate performance.

Kupcu (2017) conducted her study on the art of the ESG conversation: Workshop Agenda carried out among 42 textile firms in Malaysia. The study adopted the use of interviews and semi-structured questionnaire in the collection of data for the study. The research design for the study was based on descriptive survey research. Simple random sampling technique was adopted in determining the sample size for the study. Chi-square statistic was employed in the analysis of data. The study

concluded that ESG has become the subject matter of 21st century corporate finance and its adoption in strategic management inevitable.

2.4 Gaps in Literature

The researcher reviewed a plethora of current literature in the subject area of study. The researcher was not privileged to identify any previous works that carried out an in-depth study on sustainability strategies in contemporary business management-integrating environmental, social, and governance (ESG) principles in corporate planning, adopting a case study from Nigerian National Petroleum Company (NNPC) Headquarters, Abuja, FCT., as was done in this present study. Hence, this study filled this important gap in literature. Again, the researcher was not privileged to identify any previous works conducted in the study area – the Nigerian National Petroleum Company (NNPC) Headquarters Abuja FCT., however scanty it may be, in this area of study. Hence, this was the first study carried out on this subject matter and in this study area. It is unarguably, therefore, that this present study filled this all-important gap.

3. Methodology

3.1 Research Design

Survey-based research design was used for the study, with a focus on NNPC Limited as the primary case study. This design allows for the collection of quantitative and qualitative data from a significant number of participants, to address the slated research objectives and hypotheses testing.

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3.2 Target Population

The study utilized a single-case study approach, targeting NNPC Limited as a representative organization within the Nigerian oil and gas sector. According to Premium Times (25thMay, 2022) paper, NNPC has 6,621 staff strength both at its headquarters and across all its subsidiaries, divisions and offices nationwide. of which 1,200 are employed at the NNPC Headquarters, Abuja FCT.

3.3 Sample Size and Sampling Technique

The study used simple random sampling technique to select participant among the identified staffs of NNPC Headquarters, Abuja FCT. A total of 1,200 employees of NNPC Headquarters, Abuja FCT was considered out of which 10% of the total population (i.e. 120 employees) were selected for the study.

3.4 Data Collection Technique

A structured questionnaire was administered to employees at NNPC Headquarters, Abuja FCT and other relevant stakeholders. The survey sought to collect data on: sustainability strategies in contemporary business management (integrating environmental, social, and governance – ESG Principles in Corporate Planning – a study of NNPC Headquarter, Abuja, FCT. Primary data was collected from structured questionnaire and interview technique. One hundred and twenty (120) questionnaires were distributed out of which one hundred (100) were properly filled-out and returned for the purpose of data analysis which represents 83.3% return rate.

Secondary data was equally utilized in the collation of materials for building up the literature for this study. Such secondary data utilized were from relevant Strategic management textbooks, journals and articles, unpublished thesis, dissertation and undergraduate projects, industry reports and periodicals, etc.

3.5 Analysis Technique

Frequency distribution tables were used in the presentation of the data while Mean (X) and Standard Deviation (SD) were utilized in the analysis of data. Cronbach Alpha coefficient of 0.70 was adopted to test the reliability of the instrument used. The independent t-test statistics was employed to test the hypotheses for the study while the Statistical Package for Social Sciences (SPSS) Version 26 was utilized in further analysis of the study data.

4.0 Data Analysis, Results and Discussions

4.1 Demographics of the Respondent

Table 1: Tabulation of Department

Department	Freq.	Percent
Electricals	10	10
Finance	5	5
Human Resources Department	10	10
IT	10	10
Internal Audit	20	20
Operations	5	5
Piping	10	10
Public Affairs	10	10
Risk Management	15	15
Software Engineering	5	5
Total	100	100.00

Source: Fieldwork, 2025

Table 1 reveals a diverse range of departments within the organization, with Internal Audit and Risk Management being the most prominent, accounting for over 50% of the workforce. Human Resources (10%) and IT (10%) also represent significant departments, while several others, including Operations, Software Engineering, and Finance departments have smaller but essential roles.

Table 2: Job Role

Job Role	Freq.	Percent
Consultant	15	15
Management consultant	10	10
Manager	15	15
Staff	40	40
Supervisor	20	20
Total	100	100.00

Source: Fieldwork, 2025

Table 2 displays the roles respondents assumed at the job. The table presents a mix of job roles, with "Staff" being the most common, constituting about 57.5% of the employees. Supervisors (30.77%) and Managers (7.69%) also form a substantial portion of the workforce, indicating a hierarchical structure. Consultant roles, while fewer in number, likely play specialized roles within the organization.

Table 3: Years of Experience in Current Role

Years of Experience in Current Role	Freq.	Percent
1-3 years	40	40
4-6 years	30	30
7-10 years	20	20
Less than 1 year	10	10
Total	100	100.00

Source: Fieldwork, 2025

Table 3 shows the years of experience of NNPC Headquarters Abuja employees. A significant portion of the employees (47.5%) have been in their current roles for 1-3 years, suggesting a relatively young and dynamic workforce. About 30 employees accounting for 12.5% of the total respondents have 4-6 years of working experience. Those with 7-10 years of experience form another significant group (32.5%), indicating a balance between newer and more experienced staff.

Table 4: Level of Education

Level of Education	Freq.	Percent
Bachelor's Degree	50	50
Master's Degree	30	30
Secondary School	15	15
PhD	5	5
Total	100	100.00

Source: Fieldwork, 2025

Table 4 shows that more than half of the respondents, 50.0%, hold Bachelor's degree as their highest qualification. A slightly lower portion of the respondents, 30.0%, attained Master's level degree. However, the remaining two respondents constitute of 5 with doctorate degree while the other has 15 secondary school certificated.

Table 5: Are there impacts of sustainability strategies on contemporary business management?

Are there impacts of sustainability strategies on contemporary business management?	Freq.	Percent
No	30	30.00
Yes	70	70.00
Total	100	100.00

Source: Fieldwork, 2025

Table 5 reveals that 30% of the respondents disagreed that sustainability strategies have any impact on contemporary business management. The remaining 70% were in agreement that sustainability strategies impact positively in many ways on contemporary business management.

4.2 Data Analysis

4.2.1 Impact of Environmental, Social, and Governance (ESG) Principles on Corporate Planning

Table 6: Impact of Environmental, Social, and Governance (ESG) principles on corporate planning

What are the impacts of environmental, social, and governance (ESG) principles on corporate planning?	Freq	Percent
Frequently	50	50.00
Never	10	10.00
Occasionally	25	25.00
Rarely	15	15.00
Total	100	100.00

Source: Fieldwork, 2025

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According to Table 6, (75) respondents agreed that there are significant and positive impact of environmental, social, and governance (ESG) principles on corporate planning with (75.0%) while only 25 respondents (25.0%) disagreed.

Table 7: Importance of environmental, social, and governance (ESG) principles on organizational sustainability and profitability

How important is environmental, social, and governance (ESG) principles to organizational sustainability and profitability?	Freq.	Percent
Agreed	40	40.00
Strongly Agreed	30	30.00
Undecided	15	10.00
Disagreed	10	15.00
Strongly Disagreed	5	5.00
Total	100	100.00

Source: Fieldwork, 2025

Table 7 shows that 70 respondents representing (70.0%) agreed that environmental, social, and governance principles impacts significantly on organizational sustainability and profitability while only 30 respondents representing (30.0%) disagreed.

Table 8: Impact of the role of NNPC Headquarters Abuja in the application of ESG principles on corporate planning

What is the impact of the role of NNPC headquarters in the application of ESG principles on corporate planning?	Freq.	Percent
High impact	40	40.00
Low impact	20	20.00
Moderate impact	15	15.00
Very high impact	20	20.00
Very low impact	5	5.00
Total	100	100.00

Source: Fieldwork, 2025

Table 8 presents the impact of the role of NNPC headquarters Abuja FCT in the application of ESG principles on corporate planning. Sixty (60) respondents agreed that the role of NNPC impacts positively on corporate planning while forty (40) respondents disagreed.

Table 9: Challenges and implications for NNPC in its application of ESG principles in corporate planning?

Are there challenges and implications for NNPC in its application of ESG principles in corporate planning?	Freq.	Percent
Agreed	45	45.00
Strongly Agreed	25	25.00
Undecided	15	15.00
Disagreed	10	10.00
Strongly Disagreed	5	5.00
Total	100	100.00

Source: Fieldwork, 2025

Table 9 shows that 70 respondents representing (70.0%) agreed that there are challenges and implications for NNPC in its application of ESG principles while only 30 respondents representing (25.0%) disagreed and 5 respondents representing (5.0%) were undecided.

4.3 Hypothesis Testing

The following null hypotheses will be tested at 0.05 level of significance.

Table 4.2 t-tests of Hypotheses on Ho1, Ho2, Ho3, Ho4 & Ho5

S/N	Hypothesis	Category of Staff	N	-X	SD	T-CD	DF	T.TAB
1.	There is no statistically significant impact of sustainability strategies on contemporary business management	-Top management -Other staff	20 80	4.01	1.05	-1.62	541	1.96
2.	There is no significant impact of the environmental, social and governance (ESG) principles on corporate planning	-Top management -Other staff	20 80	3.89	1.01	-1.62	541	1.96
3.	There is no statistically significant impact of the importance of environmental, social, and governance (ESG) principles on organizational sustainability and profitability	-Top management -Other staff	20 80	4.05	1.05	-1.62	541	1.96
4.	There is no statistically significant impact of NNPC	-Top management	20	4.10	1.08	-1.62	541	1.96

	headquarters in its application of ESG principles on corporate planning	_Other staff	80				
5.	There is no statistically significant impact of the challenges and implications for the NNPC Abuja in its application of ESG principles on corporate planning	_Top management _Other staff	20 80	4.02	1.05 -1.62	541	1.96

Researcher's Fieldwork, 2025

4.3 Discussion of Findings

The findings of this study sparked off some useful strategic management discuss that may further be expanded in future research works in this area of study. This study asserts that a strategic approach to ESG integration characterized by assessing materiality, integrity measuring and reporting ESG performance, engaging stakeholders, and continuous improvement is essential for maximizing the value and impact of ESG initiatives. This position is in tandem with the works of Onwuka & Adu, 2024; Onwuka et al., 2023).

Again, the study findings highlight that successful integration requires strong leadership commitment, and vision. Organizations that practice sustainability at the highest levels of management are more likely to overcome internal resistance, allocate resources effectively, and drive meaningful change throughout the organization. This position was in agreement with the works of Daramola et al., 2024, and Oduro et al., 2024).

The study's findings equally revealed that meaningful stakeholder engagement is essential for identifying material ESG issues, building trusts, and driving collaboration. Organizations that engage with diverse range of stakeholders, including investors, employees, suppliers, communities, and regulators, can gain valuable insights, align expectations and, co-create solutions to corporate sustainability challenges. The above findings is at par with the works of Uzougbo et al., 2024; and Ikegwu, 2023.

This study equally reiterated that ESG consideration should be integrated into the core of the business strategy and decision-making processes. By aligning ESG goals with overall business objectives, organizations can create synergies, maximize value creation, and foster a culture of sustainability throughout the organization. This position was in agreement with the previous works carried out by Ibe et al., 2018; Adanma & Ogunbiyi, 2024; and Abati et al., 2024.

Finally, the study's findings reveal that robust measurement and reporting mechanisms are essential for tracking progress towards ESG goals and demonstrating accountability to stakeholders. Organizations should establish clear and consistent reporting frameworks, disclose relevant performance over time. ESG integration is an ongoing process that requires continuous monitoring, evaluation, and adaptation. This was the conclusion drawn from the previous works of (Oyinkansola, 2024 and Adeusi et al., 2024).

4.3.1 Hypotheses Testing

Hypothesis (Ho1):

Hypothesis (Ho1) states that there is no statistically significant impact of sustainability strategies on contemporary business management. The above hypothesis was tested at 0.05 alpha level of significance. From the table 4.2 above, the calculated t-values (-1.62) is less than the t-tabulated (1.96). The null hypothesis (Ho1) is therefore rejected while the alternate hypothesis is therefore accepted.

Hypothesis (Ho2):

Hypothesis (Ho2) states that there is no statistically significant impact of the environmental, social, and governance (ESG) principles on corporate planning. The above hypothesis was tested at 0.05 alpha level of significance. From the table 4.2 above, the calculated t-values (-1.62) is less than the t-tabulated (1.96). Hypothesis (Ho2) is therefore rejected while the alternate hypothesis is hereby accepted.

Hypothesis (Ho3):

Hypothesis (Ho3) states that there is no statistically significant impact of the importance of environmental, social, and governance (ESG) principles on organizational sustainability and profitability. The above hypothesis was tested at 0/05 alpha level of significance. From table 4.2 above, the calculated t-values (-1.62) is less than the t-tabulated (1.96). Hypothesis (Ho3) is therefore rejected while the alternate hypothesis is hereby accepted.

Hypothesis (Ho4):

Hypothesis (Ho4) states that there is no statistically significant impact of NNPC Headquarters in the application of ESG principles in corporate planning. The above hypothesis was tested at 0.05 alpha level of significance. From the table 4,2 above, the calculated t-values (-1,62) is less than the t-tabulated (1.96). Hypothesis (Ho4) is therefore rejected while the alternate hypothesis is hereby accepted.

Hypothesis (Ho5):

Hypothesis (Ho5) states that there is no statistically significant impact of the challenges and implications for the NNPC Headquarters Abuja in its application of ESG principles in corporate planning. The above hypothesis was tested at 0.05 alpha level of significance. From the table 4.2 above, the calculated t-values (-1.62) is less than the t-tabulated (1.96). Hypothesis (Ho5) is therefore rejected while the alternate hypothesis is hereby accepted.

5.1 Conclusion

In conclusion, ESG integration offers numerous benefits to organizations, including enhanced financial performance, risk management, reputation, access to capital, and stakeholder engagement. A strategic approach to ESG integration, characterized by assessing materiality, integrating ESG considerations into business strategy, measuring and reporting ESG performance, engaging stakeholders and continuous improvement, is essential for maximizing the value and impact of ESG initiatives. Financial professionals play a crucial role in driving ESG integration within organizations. By reporting on ESG performance, financial professionals can help organizations realize the full potential of sustainability and create long-term value for shareholders and society. Looking ahead, ESG integration is poised to become increasingly important in shaping business models, investment decisions, and stakeholder relationships. As environmental and social challenges continue to escalate, organizations that prioritize sustainability and responsible business practices will be better positioned to navigate the complex challenges of the 21st century and create a more sustainable and inclusive future for all. By embracing ESG integration as a strategic imperative, businesses can drive positive change, foster innovation, and create shared value for stakeholders, society, and the planet.

5.2 Recommendations

Based on the suggestions provided by respondents and the findings of the study, the following recommendations are proposed to mitigate the impact of sustainability strategies on contemporary business management: integrating the environmental, social, and governance (ESG) principles in corporate planning using NNPC Headquarters Abuja FCT as a case study.

- a) A strategic approach to ESG integration, characterized by assessing materiality, integrating ESG considerations into business strategy, measuring and reporting ESG performance, engaging stakeholders, and continuous improvement, is essential for maximizing the value and impact of ESG initiatives.
- b) Successful ESG integration requires strong leadership commitment, and vision. Organizations that prioritize sustainability at the highest levels of management are more likely to overcome internal resistance, allocate resources effectively, and drive meaningful change throughout the organization.
- c) Meaningful stakeholder engagement is essential for identifying material ESG issues, building trusts, and driving collaboration. Organizations that engage with a diverse range of stakeholders, including investors, customers, employees, suppliers, communities, and regulators, can gain valuable insights, align expectations, and co-create solutions to corporate sustainability challenges.
- d) ESG considerations should be integrated into the core of the business strategy and decision-making processes. By aligning ESG goals with overall business objectives, organizations can create synergies, maximize value creation, and foster a culture of sustainability throughout the organization.
- e) Robust measurement and reporting mechanisms are essential for tracking progress towards ESG goals and demonstrating accountability to stakeholders. Organizations should establish clear and consistent reporting frameworks, disclose relevant performance over time. ESG integration is an ongoing process that requires continuous monitoring, evaluation, and adaptation.

5.3 Implications of the Study

This study has several practical implications for firms and government. First, to promote sustainable economic development, regulatory authorities should strengthen the guidance and supervision of ESG practices and information disclosure. Our study shows that ESG implementation can improve corporate performance. Therefore, enterprises should actively participate in ESG practices.

Secondly, the application of digital technology has brought significant changes to industrial development. Companies should use digitalization as a tool to address the risks and challenges of the information age. Digital transformation can not only improve enterprise resource utilization efficiency but also reduce their environmental and social impact, thereby enhancing their ability for sustainable development.

Our study has some limitations that require future research. First, other research studies did not focus on specific industries, although various industries are affected by distinct factors, such as policy environments, market sizes, and user behaviours. This study focused on specific industry (the NNPC Limited, Abuja, FCT, Nigeria) for an in-depth analysis, such as explaining the concrete mechanisms of the impact of ESG practices on financial performance in the oil industry. Second, considering difficulties in data collection, we only focused on a single organization in the oil industry that have disclosed ESG information. Other key industries such as manufacturing and textile and small and medium-scale enterprises (SMEs) serving as major sources of employment and providing consumers with valuable and innovative goods and services, should equally be studied.

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INVESTIGATION OF THE COMBUSTION BEHAVIOR OF ACRYLIC (PAN) BASED STABILIZED FIBERS USED IN HAND KNITTING YARNS

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Abstract

This investigation experimentally examines the influence of various flame-retardant chemicals on the combustion characteristics of acrylic (PAN) fibers, which are frequently employed in hand knitting yarns. Acrylic PAN fiber specimens were subjected to a 24 hour impregnation process within beakers, utilizing 5% concentration solutions of thiourea, boric acid, ammonium sulfamate, and ammonium bromide. Following impregnation, the samples underwent thermal treatment at 250°C for a duration of one hour, adhering to a single-ramp heating profile, to achieve fiber stabilization. The post treatment combustion behavior of the samples was assessed through comparative observations, including ignition ease, flame spread propensity, burning rate, and self extinguishing properties. The findings demonstrate a significant correlation between flame-retardant efficacy and the specific chemical employed. The most pronounced flame-retardant and non-flammability effects were noted in fibers treated with ammonium salts, with thiourea treated fibers exhibiting a lesser degree of improvement. Under the experimental conditions, boric acid demonstrated the least enhancement. These results collectively indicate that chemical impregnation, when coupled with a single step thermal stabilization method, can substantially alter the combustion characteristics of PAN based fibers; furthermore, ammonium based salts emerge as particularly advantageous for safety critical applications in hand knitting yarns.

Keywords: PAN, Stabilized fiber, Flame retardancy, Impregnation.

1. INTRODUCTION

An analysis of the crystalline structure of graphite reveals that carbon atoms are organized into hexagonal rings. This layered configuration, interconnected by weak intermolecular forces, allows for the sliding of parallel graphene layers relative to each other [1-3]. The carbon atoms depicted in Figure 1.a are bonded in large, flat sheets, while their 3D orientation is shown in Figure 1.b. Within the planes, the carbon bonds exhibit high strength; however, the bonds between these layers are significantly weaker [4, 5].

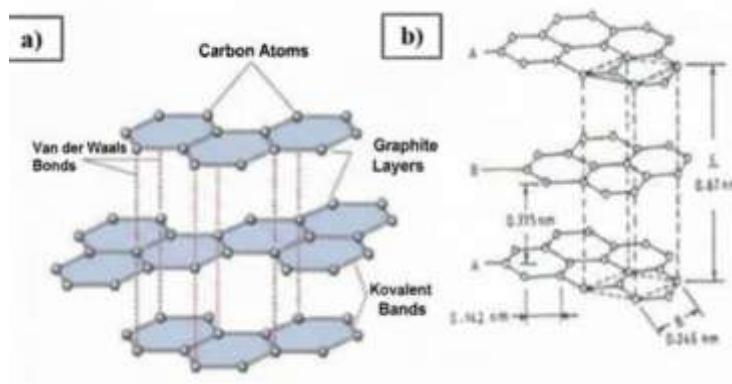


Figure 1. Chemical structure of hexagonal graphite: (a) Chemical bonds between carbon atoms [5], (b) Interplanar distances within the three dimensional structure of layer planes [4]

These anisotropic properties allow graphite to be utilized in various industrial applications, particularly as lubricants, electrical conductors, and heat dissipators. Due to these characteristics, graphite exhibits varying performance levels in specific directions, which is of critical importance for design and application. The SEM image of graphite is presented in Figure 2 [6].

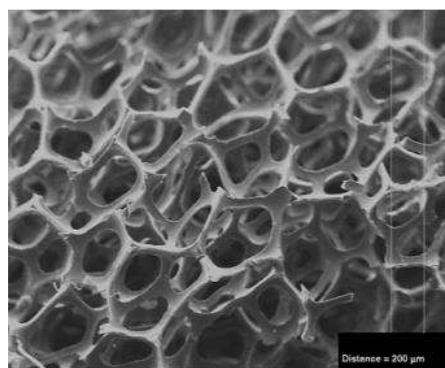


Figure 2. SEM micrograph of graphite at a magnification corresponding to a 200 μm scale [6]

Amorphous carbon refers to the allotropic form of carbon that lacks a specific crystalline geometry. These forms are typically coal like and soft [7, 8]. The classification of carbon allotropes according to their electron configurations is presented in Figure 3 [9]. During the fabrication of carbon fibers, the stabilization treatment is critical; inadequate stabilization leads to the formation of irregular amorphous carbon sequences from polymer molecular structures. The subsequent carbonization phase promotes the development of the hexagonal graphite lattice.

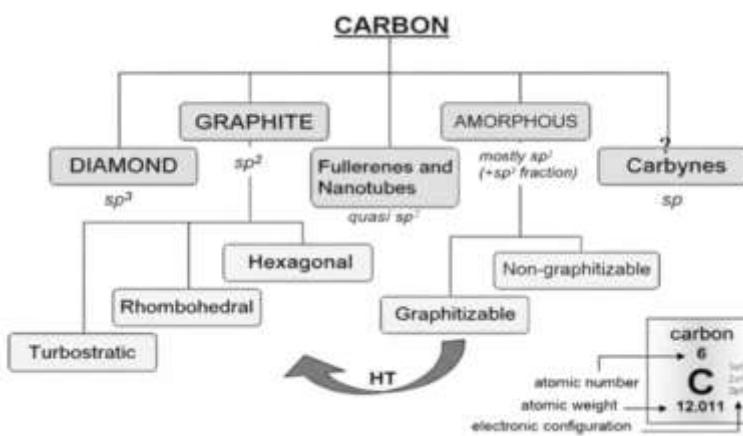


Figure 3. Electronic configurations of the carbon allotropes [9]

Carbon readily participates in a wide range of reactions with other elements. However, carbon atoms do not react with acidic or basic chemicals. The deformation (softening) temperature of carbon is approximately 3727–4427 °C; therefore, carbon exhibits excellent resistance to high temperatures [10,11]. In the literature, a material is defined as a fiber when its minimum length to diameter ratio is at least 100 [12–15]. Fibers possess a certain degree of flexibility. When fibers are twisted and/or plied together, the resulting assembly is referred to as yarn [16,17]. Fibers are prepared for use either in filament (continuous) or staple (discontinuous) form. Yarns form fabrics through weaving or knitting [18]. Synthetic fibers are produced from polymers whose primary feedstocks originate from the petrochemical industry and are composed of chemical elements such as hydrogen, nitrogen, and carbon [19,13,14]. Fiber production is typically carried out by drawing after converting linear polymers into a molten state or a solution form [19,13,14]. Synthetic polymers generally have tightly packed crystalline structures. To create amorphous regions that facilitate diffusion within the fiber, it is necessary to open up pores through high temperature treatment combined with relaxation processes, such as water assisted swelling and/or the use of auxiliary agents [20]. Among high performance fibers, carbon fibers are associated with aromatic chain groups, in which carbon atoms are interconnected in a hexagonal arrangement [21,19,14]. Carbon fibers have been reported to be approximately five times lighter and ten times stronger than steel [22]. As members of the high performance fiber class, carbon fibers are distinguished by high strength and a high elastic modulus, while their low density is a major advantage [23]. Fiber strength is often expressed using the free breaking length method. Reported free breaking lengths are approximately 25 rkm for steel, 195 rkm for carbon fibers, and 400 rkm for high performance polyethylene (HPPE) fibers [23–25]. Following crude oil distillation, the feedstocks of the polymers produced are presented in Figure 4. It is observed that the primary feedstock of acrylonitrile is derived from acetylene gas [26–28]. Today, because natural fibers are insufficient to meet the demands of the growing global population, synthetic (petroleum derived) fibers are increasingly preferred in many application areas.

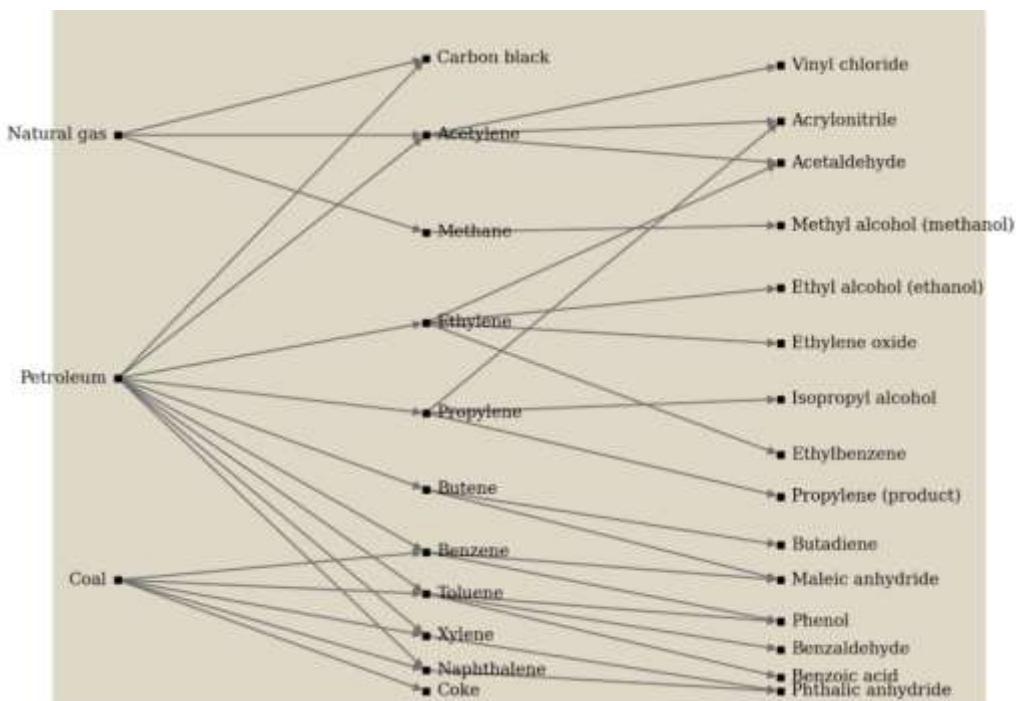


Figure 4. Feedstocks (raw materials) used in the production of polymers [26]

Acrylic fiber is a synthetic fiber based on polyacrylonitrile (PAN). PAN fibers must contain at least 85% acrylonitrile monomer [29]. As illustrated in Figure 5, acrylic fiber production begins with the formation of PAN macromolecules via chain polymerization of acrylonitrile monomers, followed by the conversion into filament (fiber) form using either dry spinning or wet spinning processes [30,31]. Acrylic fibers are known for their chemical resistance, soft hand, low density, and wool like appearance and feel. Therefore, they are widely preferred in the textile sector, particularly for products such as winter garments, sweaters, blankets, carpets, and upholstery fabrics. Because they are commonly used as an alternative to wool, acrylic fibers are also referred to as “synthetic wool.” In addition, they exhibit good resistance to UV radiation. Commercially, they are marketed under the names acrylic or polyacryl. In 1948, DuPont produced polyacrylic (PAN polyacrylonitrile) fibers under the trade name Orlon™ [30–33]. In this project, multifilament PAN fibers, which are commercially used as precursors in carbon fiber production, will be employed.



Figure 5. Schematic representation of acrylic fiber formation [30]

Polyacrylonitrile (PAN) is a long chain polymer formed by the repetition of acrylonitrile monomer units. The molecular structure of PAN can be described by the following components: Main chain: a backbone consisting of carbon atoms (polymer backbone), Side groups: a nitrile group ($-CN$) attached to each repeating carbon unit. In acrylonitrile, the carbon–carbon double bond ($C=C$) enables polymerization. During the polymerization process, numerous acrylonitrile monomers link together to form a long polymer chain. In this chain, each repeating unit carries a nitrile group ($-C\equiv N$) bonded to the carbon backbone. Overall, PAN exhibits high mechanical robustness and chemical stability, which makes it an ideal precursor material for carbon fiber production. Figure 6 shows the molecular structure of PAN [34,35].



Figure 6. PAN model: (a) polymer chain, (b) acrylonitrile monomer structure ($\text{CH}_2=\text{CH}-\text{C}\equiv\text{N}$) [35]

Key properties of carbon fibers include their excellent performance under hot and humid conditions and when exposed to fatigue loading. They do not absorb moisture and exhibit a very low coefficient of thermal expansion [36–38]. Carbon fibers are defined as fibers produced from organic precursor fibers through thermal treatments at very high temperatures (1000–1500°C) under oxidizing and/or non-oxidizing atmospheres, during which an ordered graphitic crystalline structure develops along the fiber axis; they contain at least 92 wt.% carbon. Carbon fibers possess an ordered hexagonal microstructure [39–45]. In the literature, carbon fibers are also referred to as carbon yarn, carbon filament, carbon tow (roving), and related terms [46].

The atomic structure of carbon fiber is similar to that of graphite. Carbon containing layers (graphene sheets) are arranged in an ordered hexagonal pattern [47–49]. The graphite surface is composed of three stacked graphene layers, in which each layer contains 448 carbon atoms, corresponding to 1344 atoms in total. The graphene layers are oriented along the x–y plane, and these stacked layers interact with one another [49]. The strong intramolecular bonds between the folds and undulations within the microstructure significantly influence the mechanical properties of carbon fibers [50–52]. The stabilization and carbonization steps account for approximately 39% of the total production cost [53,54]. The raw material used in carbon fiber production is referred to in the literature as the precursor, precursor, or original fiber [55,29]. The conversion of precursor fibers into carbon fibers comprises two mandatory and one optional stage(s). These steps are typically listed as: (1) thermal stabilization (oxidation), (2) carbonization, (3) activation, (4) optional graphitization, (5) surface treatment, and (6) sizing (Figure 7) [29, 11, 56–60]. When the temperature is increased gradually from low to high values (approximately 200°C to 2000°C), significant folding and bending can be observed as carbon atoms evolve toward a more graphitic structure. Up to 200–1000 °C, the carbon basal planes are not yet well aligned. In the second stage (1000–1500 °C), misoriented graphene layers become more ordered as they compact and constrain one another. In the third stage (1500–2000 °C), the degree of misorientation between graphene layers decreases further. In the final stage, above 2000 °C, the process involves annealing of the disturbed graphene basal planes within the carbon structure [58,56].

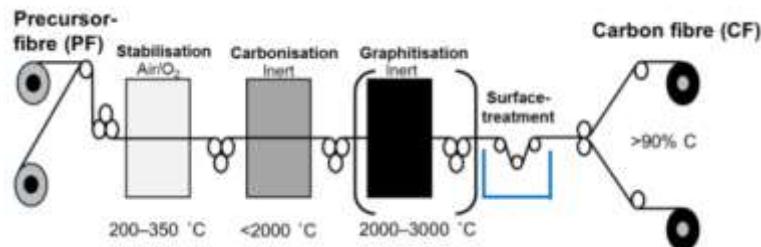


Figure 7. Flowchart of the carbon fiber production process [60,59]

For a polymer precursor to be readily converted into high quality carbon fiber, it should possess a circular cross section, a fine (thin) morphology, and good mechanical properties. In addition, the precursor fibers must not melt during the thermal treatments applied in the stabilization and carbonization stages and should provide a high carbon yield while maintaining these characteristic features [15]. In Figure 8, the carbon yields (%) of carbon fibers produced from synthetic and regenerated fibers are presented. The approximate carbon yields obtained from 1 kg of precursor fiber have been reported in the literature as follows: PAN: 45–50%, tar and pitch: 75–90%, and viscose rayon: 20–30% [61, 62, 63]. In industry, precursor fibers based on PAN (polyacrylonitrile), pitch, and viscose rayon (regenerated silk) are considered commercially viable. In our experimental study, the parameters of PAN precursor fibers which are widely used as the primary raw material for carbon fabrics in commercial composites will be optimized more effectively.

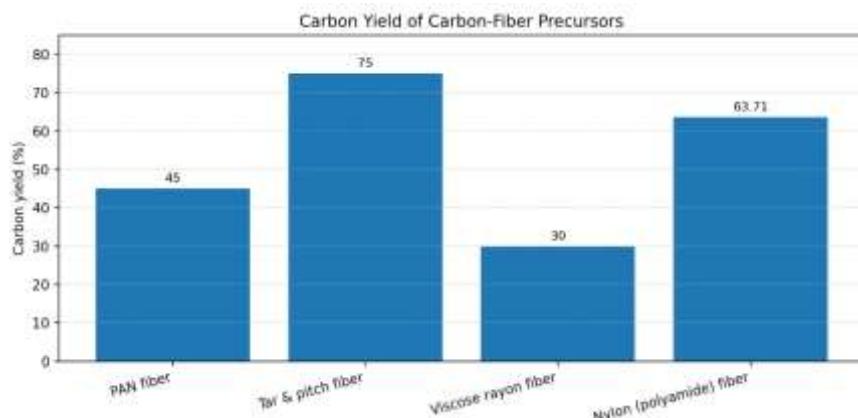


Figure 8. Approximate carbon yield (%) of regenerated and synthetic fibers [61,62, 63]

2. MATERIYAL AND METHODS

Although the modern construction sector is predominantly shaped by cement and concrete based structures, this dependence poses significant environmental and sustainability challenges. In particular, the high level of CO₂ emissions released during cement production negatively affects global warming and ecosystem balance. While concrete offers high compressive strength, its relatively poor performance under tensile and lateral loads has made the use of fiber reinforced hybrid matrices a technical necessity.

Polyacrylonitrile (PAN) fiber is of strategic relevance for such reinforcement applications due to its high melting point and rigid structure. Introducing PAN fibers into a concrete matrix especially after

stabilization and subsequent thermal treatments has the potential to improve key performance metrics, including mechanical strength and ductility, and may also contribute to enhanced fire resistance.

Although fiber reinforced concretes have been widely investigated, studies focusing specifically on the influence of PAN fibers on low strength concrete classes remain limited. The originality of the broader project stems from its stepwise comparison of the mechanical response of concrete reinforced with PAN fibers in the precursor (as-received) condition and in optimized states obtained via sequential thermal processing, including stabilization, carbonization, and graphitization. Within the project scope, fibers are planned to be incorporated at different volume fractions (0–2.5%), and specimens will be tested after 3, 7, and 28 days of curing using compressive strength, flexural strength, and splitting tensile strength tests. In addition, experimental results are intended to be validated through computer based numerical modeling, and the underlying reasons for similarities and discrepancies between experimental and numerical outcomes will be systematically examined, thereby supporting a holistic contribution to both academic literature and industrial practice (Figure 9).

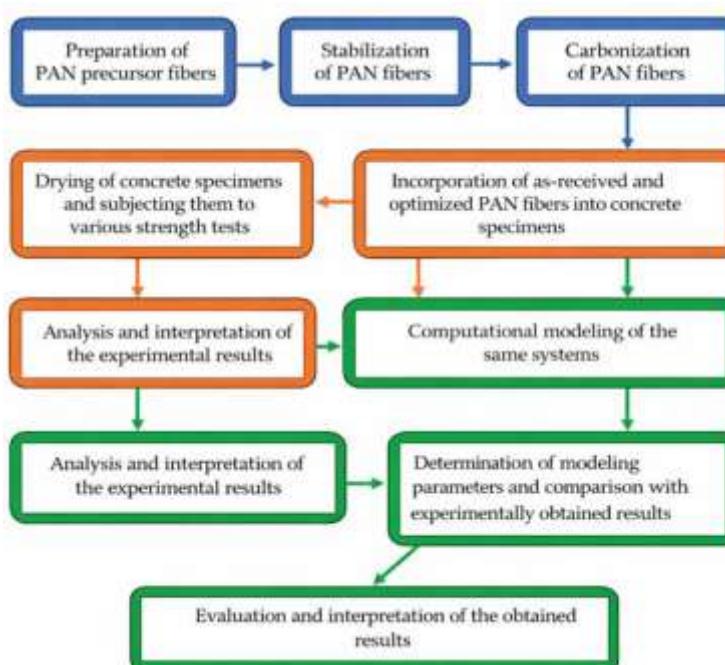


Figure 9. Overview of the methodology: PAN precursor fiber processing, concrete specimen preparation, mechanical testing, and model validation against experimental results.

In the present conference paper, however, the study is limited to investigating the stabilized fiber formation stages. Specifically, the yarn parameters that impart **flame retardant (non-flammable)** behavior have been identified. In the next phase of the project, the optimized yarns determined in this study will be incorporated into concrete composites and evaluated experimentally.

Prior to the experiments, a wire frame for winding the yarn to enable controlled chemical impregnation in a beaker, along with wire fixtures compatible with the dimensions of the furnace used for thermal treatment, were fabricated from AISI 304 stainless steel Figure 10.

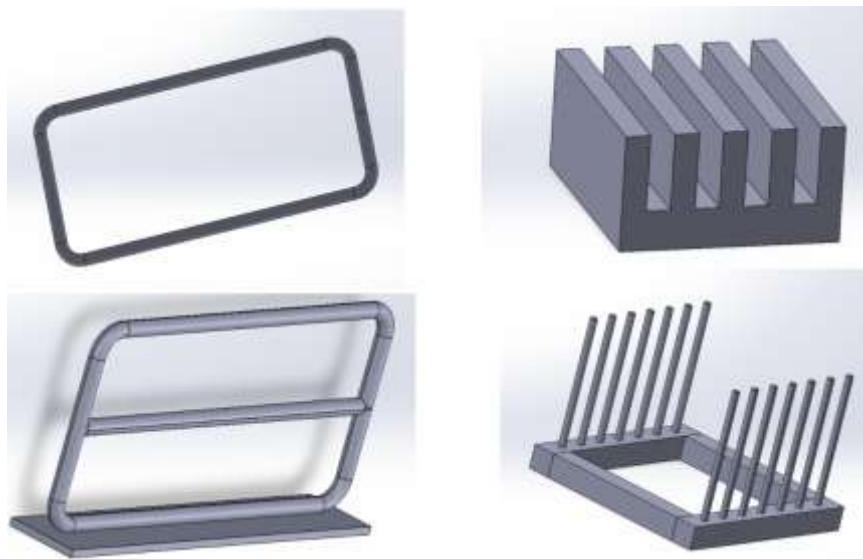


Figure 10. AISI 304 stainless steel wire frame and fixtures for yarn impregnation and thermal treatment

To ensure the chemical stability of the impregnation solutions and to optimize the ionic equilibria established with the polymer microstructure, an advanced buffering procedure was implemented in a distilled water medium. In this context, a specific reaction environment was prepared using buffer powder systems with nominal pH values of 6.86 and 4.01, dissolved in 250 mL of distilled water. The resulting pre-mixture was processed in a high precision magnetic stirrer at a constant speed of 1000 rpm for 10 min to achieve complete homogenization. Following stirring, the beakers were sealed with airtight polymer films to minimize potential evaporation losses and reduce the risk of atmospheric contamination, and were then left to reach chemical equilibrium Figure 11.



Figure 11. Experimental setup for buffered impregnation media prepared in distilled water and conditioned to chemical equilibrium

We carried out our tests at Gaziantep University's Materials Laboratory.

2.1. Chemical Pretreatment and Modification Processes of Precursor PAN Fibers

The acrylic (PAN) based fiber used in the hand knitting yarns (Figure 12). The sample yarn is based on acrylic (synthetic) fibers and consists of 100% PAN (polyacrylonitrile). During production, the fibers were processed to prevent residual wet shrinkage/swelling (relaxation); therefore, the yarn exhibits a “relax” (non-relaxing) behaviour. In other words, it was conditioned/stabilized so as not to undergo dimensional changes such as transverse swelling and longitudinal contraction under the influence of water or moisture. This relaxation control is typically achieved via steam box systems located at the outlet of tow breaking machines, which is consistent with standard practices reported in the acrylic fiber manufacturing literature. The yarn is specified as Nm 9 within the metric yarn numbering system (Nm), meaning that 1 g of yarn corresponds to 9 m in length. The linear density of the constituent fibers is 2.2 dtex. Here, dtex denotes the mass in grams of 10,000 m of fiber; thus, 2.2 dtex indicates that 10,000 m of the fiber has a mass of 2.2 g. Yarn numbering systems can be classified as follows: Nm/Ne are indirect systems based on the length to mass relationship (yarn fineness expressed by length per unit mass), whereas tex/denier/dtex are direct systems based on the mass to length relationship (mass per specified length). For example, tex represents the mass (g) of 1000 m of yarn, while dtex represents the mass (g) of 10,000 m. Overall, the sample can be described as a single ply, 100% PAN, relax type yarn with a yarn count of Nm 9 and a fiber linear density of 2.2 dtex.



Figure 12. Acrylic (PAN) based yarn used in hand knitting yarn

A total of five wire frames were placed in a 1000 ml beaker. For each frame, 20 m of yarn was wound, resulting in a total processing length of 100 m of yarn. In the subsequent step, aqueous solutions of five chemical agents (ammonium bromide, ammonium sulfamate, thiourea, and boric acid) were prepared. For each solution, five wire frames were separately immersed. Figure 13 presents a step by step illustration of the preparation of PAN (acrylic) based yarns for chemical impregnation and the post treatment specimen arrangement. The glassware used during solution preparation (beaker, graduated cylinder, etc.) and the chemical constituents are shown, indicating that the impregnation medium was prepared under volumetrically controlled conditions. It is observed that the yarn specimens were immersed in distilled water or a buffer solution for pre-wetting; this step is important to homogenize fiber solution contact and to facilitate diffusion. The impregnation treatment was performed by immersing the yarns wound on the wire frames into the chemical bath. Using wire frames allows the specimens to be maintained at a consistent geometry and tension, thereby improving process repeatability and inter sample comparability. The figure further shows that, after

impregnation, the prepared specimens were standardized and arranged on wire frames, enabling multiple replicates. Such a specimen preparation approach is methodologically appropriate in terms of (i) controlling the fiber solution contact area, (ii) ensuring comparable dripping/drying behavior after withdrawal from the bath under similar conditions, and (iii) obtaining a uniform specimen set suitable for subsequent thermal treatment or characterization steps. For solution preparation, 40 g of the chemical salts were dissolved in 760 ml of distilled water and stirred on a magnetic stirrer for 60 min until molecular level dissolution and a homogeneous phase distribution were achieved. Finally, the wire frames were placed into the beaker and left for impregnation at room temperature for 24 h (one day).

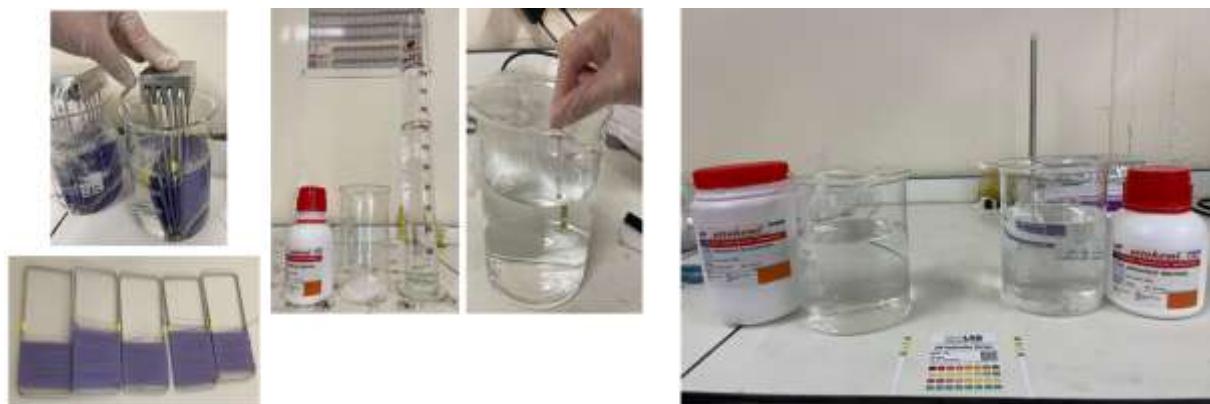


Figure 13. Steps of the chemical impregnation procedure

During the main modification stage of the process, ammonium bromide (NH_4Br), ammonium sulfamate ($\text{NH}_2\text{SO}_3\text{NH}_4$), and thiourea [$\text{CS}(\text{NH}_2)_2$] were selected as flame retardant and structural enhancing agents to increase carbon yield while improving the thermal resistance of the fibers. For each chemical component, a 5 wt% aqueous solution was prepared. Only thiourea did not dissolve completely at room temperature; it fully dissolved at 70 °C. In contrast, ammonium bromide, ammonium sulfamate, and boric acid readily dissolved at room temperature. The pH values of the aqueous solutions at room temperature (≈ 25 °C) are reported in Table 1. pH was identified as a critical parameter to ensure optimal interaction between the chemical agents and the reactive functional groups on the fiber surface, and to promote the defect free formation of the ladder structure during the stabilization stage. The 5 wt% ammonium sulfamate and 5 wt% ammonium bromide solutions exhibited pH values within a slightly acidic to near neutral range at room temperature (≈ 25 °C). Although the thiourea solution showed a pH close to neutral at room temperature, it became more stable and reproducible upon increasing the temperature (≈ 70 °C). As expected, the 5 wt% boric acid solution exhibited a markedly lower pH due to its weakly acidic nature (Table 1).

Table 1. pH measurement values

Chemical salt (5 wt% aqueous solution)	pH (≈ 25 °C)	Solubility / dissolution condition
Ammonium sulfamate	6.0	Yes (room temperature)
Ammonium bromide	6.8	Yes (room temperature)
Thiourea	6.5	Not fully dissolved at 25 °C; fully dissolved at 70 °C
Boric acid	4.5	Yes (room temperature)

2.2. Thermo-oxidative stabilization of PAN fibers

To enable deep penetration of the chemical agents into the PAN fiber microstructure, ensure complete filling of the porous network, and establish adsorption equilibrium, the specimens were kept in the solution at room temperature for a continuous period of 24 h. The chemical diffusion occurring during this period constitutes a structural pre-conditioning step that is expected to enhance the fibers' resistance to high temperatures (200–280°C) in the subsequent thermal stabilization stage and to reinforce their flame retardant performance. PAN fibers lose their thermoplastic character and transform into a heat resistant, aromatically enriched, infusible structure commonly referred to as a "ladder polymer." This transformation is essential for rendering the fibers suitable as carbon fiber precursors, and it also strengthens fiber matrix interactions, thereby improving their applicability as fiber reinforcement in composite systems such as concrete.

Ammonium sulfamate (5 wt %, pH ≈ 6.0): The mildly acidic–neutral medium promotes controlled cyclization of PAN chains; sulfamate species can moderate oxygen diffusion and suppress abrupt exothermic events, contributing to a more homogeneous stabilized structure. During carbonization, the incorporated N and S functionalities may facilitate the formation of N,S doped carbon, potentially enhancing electrical conductivity and surface reactivity; however, excessive loading may increase gas evolution (e.g., SO_x, NH₃) and induce micro void formation. Overall: it smooths stabilization and offers functionalization potential during carbonization.

Ammonium bromide (5 wt %, pH ≈ 6.8): The near neutral pH limits chemical activation; Br⁻ does not covalently integrate into the PAN backbone, and its influence is mainly through ionic environment and heat/mass transfer, thereby preserving fiber integrity rather than accelerating stabilization. At elevated temperatures, bromide may generate volatile HBr/Br₂, which can introduce slight surface roughening and limited porosity, yet the structural contribution remains weak and largely physical. Overall: chemically passive, acting primarily as an auxiliary processing medium.

Thiourea (5 wt %, pH ≈ 6.5 at 70 °C): At higher temperature, thiourea exhibits reducing/complexing behavior that can accelerate dehydrogenation and cyclization during PAN stabilization while simultaneously serving as a combined N and S source. Upon carbonization, co-doping with N and S may improve electrical conductivity, increase surface activity, and enhance suitability for sensor/electrode applications; nevertheless, uncontrolled conditions can promote excessive gas release and fiber brittleness. Overall: the most active additive, capable of strong modification when properly dosed.

Boric acid (5 wt %, pH ≈ 4.5): The acidic environment tends to slow PAN cyclization while improving process control; boric acid may form glass like B–O networks on/near the fiber surface, increasing thermal stability and flame resistance. During carbonization, boron incorporation can enhance oxidation resistance, whereas excessive boron may reduce carbon yield and promote a more amorphous carbon structure. Overall: improves thermal/oxidative stability, but requires careful dosage control.

A single ramp thermal treatment was carried out in a laboratory oven capable of reaching 360 °C. Separate heat treatments were applied at 250, 260, 270, and 280°C, each with a holding time of 60 min. During the stabilization stage, the sample treated with ammonium sulfamate exhibited flame

retardant behavior at 280°C. Compared with the other salts, ammonium sulfamate and ammonium bromide showed a stronger effect under the single ramp heating program. The figure illustrates the single ramp stabilization profile applied to PAN fibers, including heating to 280°C, iso-thermal holding for 60 min, and subsequent cooling, along with the laboratory oven used to conduct the thermal treatment. At 280 °C, the sample achieved complete non-flammability.

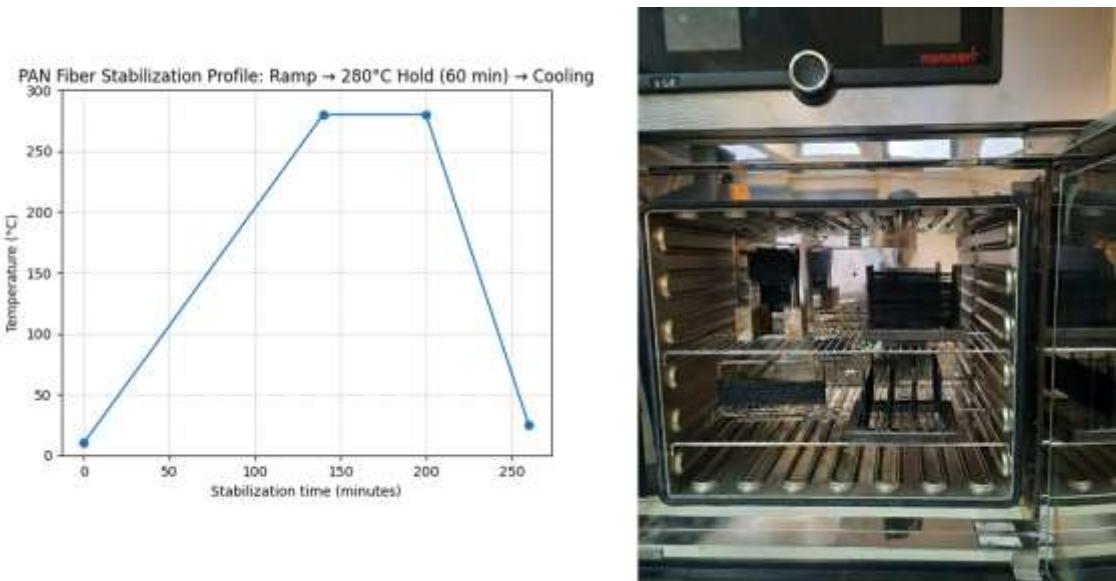


Figure 14. Single ramp PAN fiber stabilization at 280°C (60 min) and cooling, with the drying oven

RESULTS AND DISCUSSION

During the stabilization stage, the flame resistance/flame retardant behavior of the yarns was evaluated by a visually observable open flame test. The fact that the yarn ignited upon flame exposure indicates that the stabilization reactions particularly the conversion of PAN chains into a thermally stable ladder structure via cyclization and oxidative crosslinking were not fully completed or did not proceed uniformly throughout the specimen. In other words, the presence of partially stabilized regions that still retain thermoplastic characteristics may have increased the tendency to ignite under direct flame impingement. This behavior can be associated with processing parameters such as the thermal profile (heating rate and dwell time), oxygen diffusion, tow/yarn bundle thickness (heat and oxygen transfer limitations), tension-relaxation conditions during heating, and the potential influence of pre-treatments/chemical impregnation on stabilization kinetics.

Based on this observation, improving stabilization may require a more controlled heating program (e.g., a lower heating rate and a multi step), extended isothermal dwell times within the 260–280°C range, reduced bundle density, and more homogeneous oxygen access. Moreover, to avoid relying solely on qualitative visual assessment, the degree of stabilization should be quantitatively verified using FTIR (reduction of the C≡N band and evolution of C≡N/C=C bands), DSC (exothermic behavior), and TGA (mass loss and char yield), and, if possible, standardized flammability metrics such as LOI or UL 94 type tests.

In the flame exposure test shown in the Figure 15, the stabilized yarn exhibits clear flame resistant behavior. Upon contact with the open flame, the specimen does not display thermoplastic melting or dripping; instead, it tends to undergo surface carbonization/char formation. This response is consistent with successful stabilization of PAN based fibers, where cyclization and oxidative crosslinking lead to a ladder like structure and suppress melt flow. Overall, the observation qualitatively indicates improved flame retardancy and enhanced thermal integrity of the stabilized yarn under direct flame impingement (Figure 15). Using a single ramp stabilization program at a heating rate of 2°C/min, the effects of thiourea and boric acid salts on the flame retardant/nonflammable behavior could not be clearly and distinctly resolved under this one step thermal profile. As the temperature at which burning was observed increased, the yarns exhibited improved flame resistance; however, this improvement was accompanied by deterioration in mechanical integrity, manifested primarily as reductions in yarn strength (tenacity). These findings suggest that the contribution of the selected chemical additives is not fully realized within a single ramp schedule and that the stabilization process must be more precisely controlled to balance flame performance and mechanical properties. Therefore, for thiourea and boric acid salt treated systems, multi step stabilization profiles incorporating staged temperature increments and intermediate isothermal dwell periods are recommended.

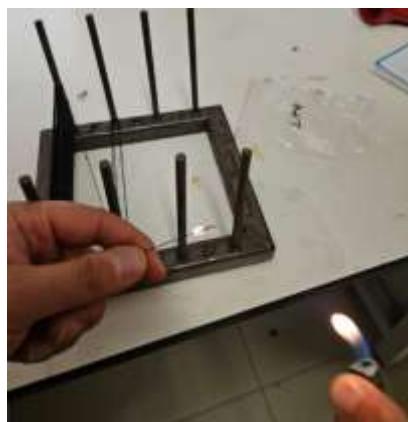


Figure 15. Visual assessment of the flame resistance/flame retardant behavior of stabilized PAN yarn under open flame exposure

At this stage, the observed “gain in non-flammability” is mainly attributed to a more advanced and more homogeneous stabilization conversion. Mounting the yarn on a frame/holder (i.e., keeping it under tension) also promotes this conversion: the yarn is exposed to heat in a more controlled manner without excessive shrinkage, allowing the reactions to proceed more uniformly along the filament bundle.

As stabilization progresses in PAN based yarns, the following occurs (Figure 16):

- Cyclization, oxidation, and crosslinking intensify, converting the PAN chains into a thermally stable, aromatically rich ladder like structure.
- With this structural transformation, the thermoplastic character is suppressed; under flame exposure, the material is less prone to melt flow and sustain burning, and instead tends to form char.

- During flame impingement, the resulting char layer acts as a protective barrier that restricts heat and oxygen transfer, thereby slowing flame propagation and promoting self extinguishing behavior.
- If additives such as boric acid salts and/or thiourea are present, they may further enhance flame performance by promoting char formation and, in some cases, contributing to a protective inorganic surface phase (e.g., boron-containing glassy/oxide like layers).

Overall, the observation that the yarn “becomes non-flammable” at this later step can be explained by an increased degree of stabilization, reduced formation of flammable volatiles, suppression of melt dripping, and development of a stronger, more continuous char barrier. However, as noted earlier, higher stabilization severity (temperature/time) may improve flame resistance while causing losses in mechanical strength, which is why multi-step ramping with intermediate dwell periods is recommended to balance flame performance and mechanical integrity (Figure 16).



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Figure 16. Evolution of flame retardancy after stabilization

Comparative interpretation by salt additives (Table 2)

1) Thiourea & Boric acid

- Still burning at 250–260 °C → These two additives appear to require a higher degree of stabilization for their effect to become fully functional.
- Burning decreases at 270 °C, non-flammable at 280 °C → Their flame retardant behavior becomes “visible” only once stabilization has progressed sufficiently.
- This suggests that under a single ramp profile, at lower temperatures the additive effect is not fully activated and/or not homogenized throughout the fiber.

2) Ammonium bromide & Ammonium sulfamate (most effective group)

- Burning already decreases at 250 °C
- Non-flammable from 260 °C onward (sustained through 260–280 °C)
- These ammonium salts likely promote mechanisms that suppress flame earlier and/or enhance char formation, thereby accelerating the gain of non-flammability. The fact that they improve flame behavior even before full stabilization is a key finding.

Performance ranking (based on the behavior in the table)

- Best (early non-flammability): Ammonium bromide \approx Ammonium sulfamate
- Late effective (non-flammable only at 280 °C): Thiourea \approx Boric acid
- Weakest: Reference (no complete non-flammability)

Scientific inference and recommendation

- The emergence of non-flammable behavior only at 280 °C for thiourea and boric acid supports the idea that, in a single ramp protocol, their effect may be better managed using a multi step (multi ramp) stabilization with intermediate holds.
- Also consistent with your earlier observation: as flame resistance increases, strength reductions may occur; therefore, a multi step stabilization strategy is more suitable to achieve an optimal balance.

Table 2. Flammability test

Order	Chemical salt	250°C	260°C	270°C	280°C
1.	Thiourea	Burning	Burning	Burning decreased	Non-flammable
2.	Boric acid	Burning	Burning	Burning decreased	Non-flammable
3.	Ammonium bromide	Burning decreased	Non-flammable	Non-flammable	Non-flammable
4.	Ammonium sulfamate	Burning decreased	Non-flammable	Non-flammable	Non-flammable
Reference	-	Burning	Burning	Burning decreased	Burning decreased

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As shown in the Figure 17, PAN stabilization proceeds through the transformation of PAN chains into a ladder like structure via the simultaneous and/or sequential progression of thermal cyclization, dehydrogenation, and subsequent oxidation steps. As this transformation advances, the material loses its thermoplastic character; instead of melt drip behavior under flame, a tendency toward char formation (carbonaceous residue) becomes dominant, and the overall burning behavior is suppressed. The schematic also highlights three critical roles of ammonium sulfamate during stabilization:

- (i) suppressing sudden and uncontrolled exothermic reactions (reducing the risk of runaway reactions),
- (ii) balancing/moderating oxygen ingress into the fiber so that oxidation proceeds in a more controlled manner,
- (iii) promoting a more homogeneous and advanced stabilization, thereby facilitating PAN's conversion into a stabilized structure.

This mechanism directly supports your table observation that ammonium sulfamate shows "burning decreased" even at 250 °C and shifts to non-flammable behavior from 260 °C onward: stabilization becomes more uniform at an earlier stage, and a protective char barrier forms more rapidly. In contrast, the fact that thiourea and boric acid exhibit non flammable behavior only at 280 °C is consistent with insufficient completion/homogenization of stabilization throughout the fiber at lower temperatures under a single ramp profile. Therefore, your recommendation of a multi ramp protocol with intermediate isothermal holds is scientifically sound for these additives: it allows tighter control of stabilization kinetics and helps achieve a better balance between increased flame resistance and potential loss of mechanical strength.

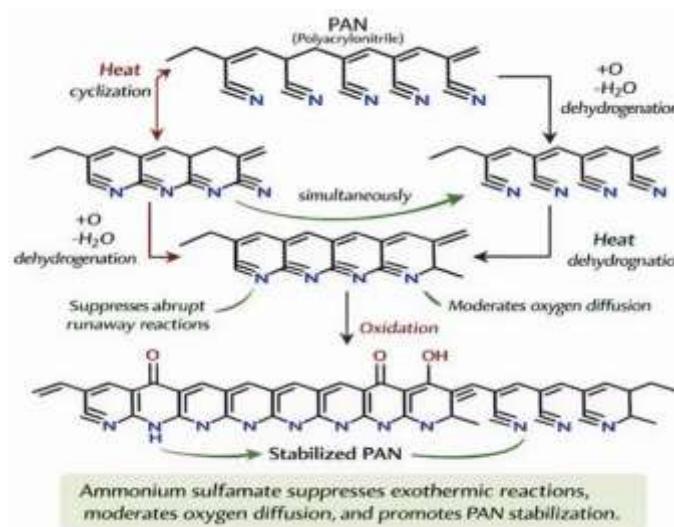


Figure 17. Molecular structural change [63]

CONCLUSION

This study demonstrates that chemical impregnation significantly modifies the combustion response of acrylic (PAN) fibers when combined with a single ramp thermal stabilization treatment at 250 °C for 1 h. Comparative burn observations revealed that the flame retardant performance strongly depends on the impregnated chemical. Among the tested additives, ammonium sulfamate and ammonium bromide provided the most effective improvement, showing the clearest suppression of ignition and flame propagation together with enhanced self extinguishing behavior. Thiourea yielded a moderate improvement in burning behavior but remained less effective than the ammonium salts under the same conditions. Boric acid produced the weakest enhancement, indicating limited efficacy at 250 °C within a single step stabilization profile.

Overall, the results indicate that ammonium based salts are the most promising candidates for improving the fire safety of PAN based fibers used in hand knitting yarns under low complexity processing conditions. Future work should validate these qualitative observations using standardized quantitative methods (e.g., LOI, UL 94 type classification, TGA/DSC) and investigate whether multi step stabilization (with intermediate isothermal holds) further improves the performance of thiourea and boric acid treated fibers while maintaining acceptable mechanical properties.

CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

RESEARCH AND PUBLICATION ETHICS STATEMENT

The authors confirm that the study was conducted in accordance with research and publication ethic

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Перспективы цифровизации и инноваций в сфере экономической дипломатии

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Аннотация

Мақалада экономикалық дипломатия саласындағы цифрландыру мен инновацияларды енгізуудің қазіргі тенденциялары қарастырылады. Үлкен деректер, жасанды интеллект, блокчейн және виртуалды платформалар сияқты цифрлық құралдар талданады, олар сыртқы экономикалық қызметтің тиімділігін арттыруға ықпал етеді. Цифрландырудың инвестицияларды тартудағы, экспортты ілгерілетудегі, Қазақстанның транзиттік-логистикалық мүмкіндіктерін дамытудағы және икемді сыртқы саясат стратегиясын қалыптастырудағы рөліне ерекше назар аударылады. Халықаралық тәжірибе мен ұлттық стратегиялық күжаттарды талдау негізінде экономикалық дипломатияны цифрлық трансформациялау перспективалары, ұлттық бәсекеге қабілеттілікті нығайту және Қазақстанды жаһандық цифрлық экономикаға интеграциялау құралы ретінде айқындалған.

Аннотация

В статье рассматриваются современные тенденции цифровизации и внедрения инноваций в сферу экономической дипломатии. Анализируются цифровые инструменты, включая большие данные, искусственный интеллект, блокчейн и виртуальные платформы, которые способствуют повышению эффективности внешнеэкономической деятельности. Особое внимание уделяется роли цифровизации в привлечении инвестиций, продвижении экспорта, развитии транзитно-логистических возможностей Казахстана и формировании гибкой стратегии внешней политики. На основе анализа международного опыта и национальных стратегий выявлены перспективы цифровой трансформации экономической дипломатии как инструмента укрепления национальной конкурентоспособности и интеграции Казахстана в глобальную цифровую экономику.

Abstract

The article examines current trends in digitalization and the implementation of innovations in the field of economic diplomacy. It analyzes digital tools, including big data, artificial intelligence, blockchain, and virtual platforms, which contribute to improving the efficiency of foreign economic activities. Special attention is given to the role of digitalization in attracting investments, promoting exports, developing Kazakhstan's transit and logistics capabilities, and shaping a flexible foreign policy strategy. Based on the analysis of international experience and national strategies, the article identifies the prospects of digital transformation in economic diplomacy as a tool for strengthening national competitiveness and integrating Kazakhstan into the global digital economy.

Түйін сөздер: цифрландыру, инновациялар, экономикалық дипломатия, сыртқы экономикалық қызмет, инвестициялар, экспорт, Қазақстан, цифрлық технологиялар, жасанды интеллект, блокчейн.

Ключевые слова: цифровизация, инновации, экономическая дипломатия, внешнеэкономическая деятельность, инвестиции, экспорт, Казахстан, цифровые технологии, искусственный интеллект, блокчейн.

Keywords: digitalization, innovations, economic diplomacy, foreign economic activity, investments, export, Kazakhstan, digital technologies, artificial intelligence, blockchain.

Введение

В условиях стремительных глобальных трансформаций цифровизация становится ключевым фактором развития мировой экономики и международных отношений. Экономическая дипломатия, выступая инструментом внешней политики государства, претерпевает значительные изменения под влиянием цифровых технологий. Современные государства активно внедряют цифровые решения для повышения эффективности переговоров, оптимизации инвестиционной привлекательности, продвижения экспорта и развития международной экономической кооперации. Казахстан, стремящийся укрепить свои позиции на глобальных рынках и диверсифицировать экономику, рассматривает цифровизацию дипломатических механизмов как стратегически важный инструмент. Внедрение инновационных технологий позволяет оптимизировать взаимодействие с иностранными инвесторами, развивать электронные платформы для международной торговли, повышать прозрачность процессов и ускорять принятие управлеченческих решений.

Цифровая экономическая дипломатия представляет собой совокупность инструментов и технологий, направленных на поддержку внешнеэкономической деятельности государства с использованием цифровых платформ, больших данных, искусственного интеллекта, электронных коммуникаций и аналитических систем. Она объединяет концепции цифровизации государственных сервисов, использование онлайн-платформ для торговых переговоров и продвижения экспорта, внедрение цифровых инструментов привлечения инвестиций, а также применение искусственного интеллекта для анализа глобальных экономических и политических трендов и подготовки переговорных стратегий. Методологически развитие цифровой экономической дипломатии рассматривается через системный, институциональный и сравнительный подход, что позволяет выявлять механизмы повышения эффективности внешнеэкономической политики и адаптации к глобальным вызовам.

В Казахстане цифровизация экономической дипломатии реализуется через развитие электронной инфраструктуры для инвесторов, создание онлайн-платформ для продвижения экспорта, внедрение цифровых сервисов в работе дипломатических миссий и использование аналитических инструментов на основе больших данных. Электронные платформы, такие как портал «Invest in Kazakhstan» и система «QazTrade», позволяют иностранным инвесторам получать полную информацию о проектах, мерах государственной поддержки и экспортных возможностях страны. Цифровые сервисы МИД и зарубежных представительств обеспечивают проведение онлайн-бизнес-форумов, B2B встреч и международных выставок, а также упрощают электронное взаимодействие с иностранными компаниями. Использование аналитических платформ и больших данных позволяет государству отслеживать торговые и инвестиционные потоки, прогнозировать экономические тенденции и принимать стратегические решения в режиме реального времени.

Инновации играют ключевую роль в трансформации экономической дипломатии. Применение искусственного интеллекта позволяет анализировать глобальные тенденции, выявлять инвестиционные возможности, прогнозировать развитие отраслей и формировать точные переговорные стратегии. Технологии блокчейн и цифровые платежные системы обеспечивают безопасные международные транзакции, прозрачность торговых операций и ускорение логистических процессов. Использование цифровых двойников позволяет моделировать сценарии экономического развития, демонстрировать инвестиционные проекты и повышать уровень прогнозирования. Виртуальные дипломатические миссии и VR-технологии открывают новые возможности для проведения онлайн-презентаций, демонстрации инфраструктуры и взаимодействия с международными партнёрами. Аналитические платформы и big data позволяют ускорить процесс принятия решений, прогнозировать изменения в мировой экономике и выстраивать адаптивные стратегии внешнеэкономической политики.

Перспективы цифровизации экономической дипломатии Казахстана включают формирование интегрированной цифровой экосистемы внешнеэкономических связей, которая объединяет информацию о торговле, инвестициях, экспортёрах и международных партнёрах, что повышает эффективность межведомственного взаимодействия. Развитие цифрового взаимодействия с международными организациями, такими как ВТО, ОЭСР, ЕАЭС и ШОС, укрепляет участие страны в глобальных инициативах и повышает её роль в формировании цифровой мировой экономики. Углубление сотрудничества в области электронных торговых коридоров и создание цифровых транспортно-логистических платформ вдоль трансасиjsких маршрутов позволяют Казахстану укреплять позиции ключевого транзитного узла между Европой и Азией. Важным направлением является подготовка дипломатов нового типа, обладающих навыками работы с цифровыми технологиями, аналитическими инструментами и киберкоммуникациями, что обеспечивает гибкость и эффективность дипломатической службы. Продвижение международных цифровых инициатив Казахстана, особенно в Центральной Азии, может способствовать объединению торговых платформ, цифровой логистики, инвестиционных сервисов и аналитических баз, создавая условия для устойчивого развития региона.

Несмотря на очевидные преимущества, цифровизация экономической дипломатии сталкивается с рядом вызовов. Недостаточный уровень цифровой грамотности в отдельных государственных структурах, необходимость усиления кибербезопасности, ограниченное использование искусственного интеллекта в управлении решениях, отсутствие международной стандартизации цифровых сервисов и высокая конкуренция за цифровые рынки и технологическое лидерство являются значимыми ограничениями. Преодоление этих проблем требует системного подхода, инвестиций в технологии и кадры, а также развития институциональной базы цифровой дипломатии.

Цифровизация и инновации открывают широкие возможности для повышения эффективности экономической дипломатии Казахстана. Они позволяют усилить позиции страны на мировой арене, повысить инвестиционную привлекательность, расширить экспортные возможности и укрепить международную кооперацию. Внедрение цифровых инструментов не только оптимизирует внешнеэкономическую деятельность, но и способствует формированию гибкой и адаптивной стратегии внешней политики. В перспективе цифровая трансформация станет ключевым фактором укрепления национальной конкурентоспособности, развития экономики на инновационной основе и интеграции Казахстана в глобальную цифровую экономику.

Заключение

Цифровизация и внедрение инноваций в экономическую дипломатию представляют собой стратегически важные направления развития внешнеэкономической деятельности Казахстана в условиях глобальных трансформаций. Современные цифровые технологии, включая большие данные, искусственный интеллект, блокчейн и виртуальные платформы, не только оптимизируют процессы взаимодействия с иностранными инвесторами и продвижения экспорта, но и создают условия для формирования интегрированной и прозрачной системы внешнеэкономических связей. Казахстанская экономическая дипломатия получает новые инструменты для анализа глобальных экономических и политических трендов, прогнозирования развития отраслей и построения эффективных переговорных стратегий, что позволяет стране более гибко реагировать на изменения международной конъюнктуры.

Важнейшим аспектом цифровой трансформации является повышение эффективности межведомственного взаимодействия и улучшение координации между государственными органами, институтами развития и бизнес-сообществом. Развитие электронной инфраструктуры, создание цифровых платформ для инвесторов и экспортёров, внедрение аналитических систем и виртуальных дипломатических миссий формирует условия для устойчивого экономического роста и укрепления инвестиционной привлекательности страны.

Цифровизация способствует также усилению роли Казахстана как ключевого транзитного узла в Евразии, расширяя возможности для международной торговли и логистического сотрудничества.

На современном этапе цифровизация экономической дипломатии является не только инструментом повышения эффективности внешнеэкономических процессов, но и фактором укрепления национальной конкурентоспособности, интеграции страны в глобальные цифровые цепочки добавленной стоимости и продвижения инновационной экономики. Перспективные направления включают дальнейшее развитие цифровой инфраструктуры, усиление международного сотрудничества через цифровые платформы, подготовку нового поколения дипломатов с компетенциями в области цифровых технологий и аналитики, а также активное участие Казахстана в международных инициативах цифровой экономики.

Тем не менее цифровизация сталкивается с рядом вызовов, среди которых недостаточная цифровая грамотность, ограниченное использование искусственного интеллекта, необходимость повышения кибербезопасности и международной стандартизации цифровых сервисов. Для преодоления этих проблем требуется системный подход, инвестиции в технологии и кадры, а также создание институциональной базы для устойчивого развития цифровой экономической дипломатии.

Таким образом, цифровизация и инновации открывают Казахстану уникальные возможности для укрепления своих позиций на мировой арене, повышения эффективности экономической дипломатии, расширения экспортного потенциала, привлечения инвестиций и интеграции в глобальную цифровую экономику. В долгосрочной перспективе цифровая трансформация станет фундаментом для устойчивого развития страны, формирования инновационной экономики и повышения национальной конкурентоспособности, обеспечивая Казахстану стратегические преимущества в условиях глобальной конкуренции.

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