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FOREWORD

The proceedings of the international scientific - methodical conference "RELEVANT ISSUES OF ENVIRONMENT MANAGEMENT 2021" consists of scientific articles, issued as an online (ISSN 2345-0010) edition.

The conference was held on May 13-14, 2021 at Kaunas Forestry and Environmental Engineering University of Applied Sciences, Liepų str. 1, Girionys, Kaunas distr., Lithuania.

The authors of the articles are professors, researchers and practising professionals from Lithuania, Poland, Turkey, Ukraine, Kazachstan, Nigeria.

In research, the problems of protected areas, nature tourism, ecology, forest use, law, management and economics, renewable energy resources, territorial planning, landscape architecture are studied.

Each author is responsible for correct information of his/her article.

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PRATARMĖ

Pranešimų rinkinys yra sudarytas pagal tarptautinės mokslinės - metodinės konferencijos "Gamtotvarkos aktualijos - 2021" mokslinius straipsnius ir išleistas elektroninio formato (ISSN 2345-0010) leidiniu.

Konferencija vyko 2021 m. gegužės 13-14 dienomis Kauno miškų ir aplinkos iūnžinerijos kolegijoje, Liepų g. 1, Girionys, Kauno r., Lietuva.

Pranešimus parengė dėstytojai, mokslininkai ir praktikuojantys specialistai iš Lietuvos, Lenkijos, Turkijos, Ukrainos, Kazachstano, Nigerijos.

Mokslinių tyrimų pranešimai susiję su saugomų teritorijų, gamtos turizmo, ekologijos, miško naudojimo, teisės, valdymo ir ekonomikos, atsinaujinančių energijos išteklių, teritorijų planavimo, kraštovaizdžio architektūros aktualijomis.

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Redkolegija

MIŠKO AIKŠTELĖS MATAVIMAI SKIRTINGAIS GPNS PRIETAISAIS

Edita Abalikštienė[1], Daiva Gudritienė [1,2], Vilma Šalkauskienė[1]
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Tyrimo tikslas buvo išmatuoti miško plotą skirtingomis gamtinėmis sąlygomis ir skirtingais prietaisais bei gautus duomenis palyginti. Tyrimui pasirinkta miško aikštelė. Tyrimas atliekamas norint nustatyti, kaip tiksliai įmanoma matuoti tokio tipo plotus, esančius miške (įvairios aikštelės, įsiterpusios pievos ir pan.). Matavimai buvo atliekami balandžio gale, kai lapija jau buvo pilnai sulapojusi ir gruodžio viduryje, kai lapuočiai yra be lapijos. Matavimai atlikti GPS imtuvu TOPCON GRS-1 su išorine antena ir be jos.

Matuojant su prietaisais integruotomis antenomis ir LitPOS pataisomis pasiekiamas tikslumas tenkina miškininkams reikalingiems atlikti darbams keliamus vietos nustatymo tikslumo reikalavimus (iki 1 metro). Nenaudojant LitPOS pataisų matavimo rezultatai yra nepatikimi, gautų duomenų naudoti negalima. Analizuojant duomenis pastebima lapijos įtaka matavimams. Matavimai gruodžio mėnesį tikslesni 39 proc. nei balandžio mėnesį.

Raktažodžiai: miškų matavimas, lapijos įtaka, GPNS.

Įvadas

Miškuose kadastriniai matavimai atliekami preciziškai, tačiau dažnai miške vykdomiems darbams ribos nustatomos nenaudojant tikslių matavimo prietaisų, dėl ko galimi duomenų neatitikimai. Dažnai ribos miške nustatomos naudojant prietaisus su integruotomis GPNS antenomis. Abiotinių veiksnių trikdžiai, tokie kaip oro sąlygos, daro įtaką matavimų tikslumui, tačiau prietaisų netikslumus sukeliantis veiksnys gali būti ir biotinis. Tokie veiksniai dažni tankių lajų, kietųjų bei minkštųjų lapuočių miškuose. Jeigu yra naudojami GPNS prietaisai, jų signalas gali būti trikdomas lapijos, todėl prietaisas gali pateikti klaidingus duomenis.

Tyrimo tikslas. Atlikti miško sklypo masyvo matavimus skirtingais laikotarpiais įvairiais geodeziniais prietaisais.

Tyrimo uždaviniai:

1. Išmatuoti miško sklypą naudojantis GPNS imtuvu su išorine antena.

2. Atlikti miško sklypo matavimus naudojantis GPNS imtuvu su viduje integruota antena.

3 Permatuoti sklypą naudojantis išmaniuoju telefonu "HTC One", kuriame integruota vidinė GPNS antena.

Tyrimo objektas. Valstybinių miškų urėdijos Dubravos regioninio padalinio Vaišvydavos girininkijoje 112 kvartalo 8 ir 10 sklypų dalys.

GPNS prietaisų matavimo tikslumas priklauso nuo daugelio faktorių, tokių kaip: palydovų padėtis, elektromagnetinių virpesių plitimas, prietaisas ir kt. Įvairios kliūtys ir atsispindėję elektromagnetiniai virpesiai lemia matavimų, atliktų GPNS imtuvu, tikslumą, nes veikiant šiems veiksniams kinta elektromagnetinių virpesių nukeliaujamas kelias bei greitis. Palydovų padėties įtaka matuojant miškingose vietovėse nėra svarbiausias faktorius vertinant tikslumą (Sigrist P. ir kiti, 2010), tą patvirtino ir Piedallu ir Gégout (2005) nustatę, kad matavimo tikslumas priklauso nuo naudojimo įrangos ir miško medžių lajos tankumo. Kuliešius ir Bajorūnas (2011) atliko tyrimą, matuodami miškus su GPNS technologijų taikymu. Analizuotos GPNS imtuvo Pro XRS naudojimo miškams galimybės labai įvairiomis sąlygomis, kai medžiai su lapais, be lapų ir įvairios sudėties bei skalsumo. Miškingose teritorijose matavimus

su GPNS prietaisais analizavo Gudritienė, Šalkauskienė, Abalikštienė, Pupka, Piličiauskaitė (2020). Palydovinių sistemų įtaką matavimų tikslumui analizavo Norkus (2018).

Mobiliųjų telefonų naudojimas atliekant matavimus miškuose galimas tik, kai nereikia gauti tikslių duomenų, nes tikslumo vidutinės kvadratinės paklaidos gautos nuo 4,96–11,45 m lapuočių miško sklypuose, o atvirose vietose jos siekė 1,90–2,36 m (Tomaštik ir kiti, 2016).

Tyrimo metodika

Tyrimui pasirinktas plotas yra priskiriamas miško žemei, tačiau jame nėra brandžių medžių ar lajos dengimo. Tyrimas atliekamas norint nustatyti, kiek tiksliai įmanoma matuoti tokio tipo plotus, esančius miške, apsuptus medžių (įvairios aikštelės, įsiterpusios pievos ir pan.).

Matavimai buvo atliekami dvejais skirtingais metų laikais – balandį ir gruodį, taip įvertintas ir aplink esančios lapijos poveikis matavimams.

Tiksliems matavimams atlikti buvo pasirinkti 12 taškų, kiekviename aikštelės posūkio taške buvo įkalti riboženkliai ir visi matavimai buvo atliekami tuose pačiuose taškuose ir balandį, ir gruodį.

Matavimai atlikti trimis skirtingais prietaisais. Pirmasis jų buvo TOPCON GRS-1 imtuvas su išorine antena bei su pataisomis iš LitPOS tinklo.

Antrąkart matuojama buvo tuose pačiuose taškuose naudojant TOPCON GRS-1 imtuvą be išorinės antenos (naudojantis tik integruota) ir naudojantis pataisomis iš LitPOS tinklo.

Sklypas pakartotinai matuojamas buvo tuose pačiuose 12 taškų naudojant tik minėtą TOPCON GRS-1 imtuvą, tačiau be išorinės antenos ir nesinaudojant pataisomis iš LitPOS tinklo.

Pakartotinai sklypas buvo matuojamas naudojantis išmaniuoju telefonu "HTC ONE", kuriame yra integruotas GPNS.

Rezultatai

Pasirinktas plotas yra Valstybinių miškų urėdijos Dubravos regioninio padalinio Vaišvydavos girininkijos valdose 112 kvartale 8 ir 10 sklypuose. Taksoraštyje nurodoma, kad sklypo rūšinė sudėtis yra 10B, 0,8 skalsumo, I boniteto.

Bendras sklypo plotas pagal Lietuvos Respublikos miškotvarkos nacionalinės inventorizacijos duomenis yra 35 arai. Miškas auga Lc augavietėje.

Tyrimo tikslas buvo išmatuoti objektą skirtingomis gamtinėmis sąlygomis ir skirtingais prietaisais bei gautus duomenis palyginti. Matavimai buvo atliekami balandžio gale, kai lapija jau buvo pilnai išsiskleidus ir gruodžio viduryje, kai nebuvo lapijos. Matavimus atlikus su GPS imtuvu TOPCON GRS-1 su išorine antena ir be jos, tikslumas kinta nuo 13 cm iki 2,9 m.

Matavimo tikslumo rezultatai horizontalinėje projekcijoje pateikti 1 lentelėje.

1 lentelė. Matavimo tikslumas
Table 1. *Accuracy of measurement*

Taško Nr. Point No	Tikslumas, su išorine antena *Accuracy, with external antenna*		Tikslumas, be išorinės antenos (su pataisomis) *Accuracy, without external antenna (with corrections)*		Tikslumas, be išorinės antenos (be pataisų) *Accuracy, without external antenna (without corrections)*	
	gruodis *December*	balandis *April*	gruodis *December*	balandis *April*	gruodis *December*	balandis *April*
1	0,016	0,022	0,542	1,000	2,213	2,365
2	0,022	0,035	0,484	0,892	1,162	1,687
3	0,013	0,025	0,643	0,893	1,745	2,145
4	0,017	0,014	0,606	0,799	1,658	1,698
5	0,014	0,016	0,481	0,718	1,365	1,687
6	0,016	0,019	0,316	0,802	1,447	2,354
7	0,013	0,020	0,420	0,906	1,691	2,136
8	0,014	0,015	0,341	0,711	2,212	2,845
9	0,017	0,017	0,700	1,005	1,645	2,691
10	0,022	0,014	0,597	0,987	1,639	2,789
11	0,014	0,013	0,418	0,848	1,452	2,698
12	0,017	0,025	0,662	0,779	1,978	1,869
Vidurkis *Mean*	0,016	0,019	0,518	0,862	1,684	2,247

Išanalizavus duomenis matome, kad matuojant su išorine antena tokio tipo miško plotus tikslumas gaunamas labai aukštas. Nors gruodžio mėnesio matavimai buvo šiek tiek tikslesni nei balandį, bet skirtumas tarp matavimų - 3 mm. Šie duomenys leidžia teigti jog miško aikštelėse, įsiterpusiose pievose lapijos matavimas GPNS imtuvu su išorine antena ir LitPOS pataisomis turi minimalią įtaką ir matavimų tikslumas yra pakankamas ir atitinka kadastriniams matavimams keliamus reikalavimus.

Naudojantis prietaise integruota GPNS antena ir LitPOS pataisomis atlikti matavimai. Gauti matavimo rezultatai netenkina kadastriniams matavimams keliamų reikalavimų, tačiau tenkina miško darbų metu ribų nustatymo reikalavimus (1 metras). Tokie matavimo rezultatai įrodo, kad matavimai su prietaisais integruotomis antenomis ir Litpos pataisomis tenkina miškininkams reikalingiems atlikti darbams keliamus vietos nustatymo tikslumo reikalavimus. Analizuojant duomenis pastebima lapijos įtaka tarp matavimų atliktų gruodžio mėnesį ir matavimų balandžio mėnesį.

Naudojantis tik prietaise integruota GPNS antena atlikti matavimai. Gauti matavimų duomenys nenaudojant LitPOS pataisų yra gerokai žemesnio tikslumo. Tokie matavimo rezultatai įrodo, kad šie matavimai nėra tikslūs, yra visiškai nepatikimi, gautų duomenų naudoti negalima. Analizuojant duomenis pastebima lapijos įtaka tarp matavimų atliktų gruodžio mėnesį ir matavimų balandžio mėnesį.

Matavimų rezultatai pateikiami grafiškai 1 ir 2 paveiksluose.

*Raudona spalva - su išorine antena, geltona spalva - be išorinės antenos (su pataisomis), mėlyna spalva - be išorinės antenos (be pataisų) *Red - with external antenna, yellow- without external antenna (with corrections), green- without external antenna (without corrections)*
1 pav. Matavimas gruodžio mėnesį
***Fig. 1.** Measurement in December*

Lapija trikdo labai minimaliai arba visiškai netrikdo matavimų TOPCON GRS-1 imtuvu su papildoma išorine PG-A1 antena ir LitPOS pataisom gaunamiems duomenims.

*Žalia spalva - su išorine antena, oranžinė spalva - be išorinės antenos (su pataisomis), mėlyna spalva - be išorinės antenos (be pataisų). *Green - with external antenna, orange - without external antenna (with corrections), blue - without external antenna (without corrections)*
2 pav. Matavimas balandžio mėnesį
***Fig. 2.** Measurement in April*

Duomenys abiem matavimo laikotarpiais turėjo minimalius netikslumus. Tačiau matavimą atlikus su TOPCON GRS-1 imtuvu nenaudojant išorinės antenos nustatytos didesnės paklaidos ir yra nustatyta, kad lapija darė įtaką gaunamiems duomenims. Matavimai gruodžio mėnesį tikslesni 39 proc. nei balandžio mėnesį.

Atlikus matavimus su GPNS prietaisu, plotas papildomai permatuotas su telefonu. Matavimams naudojamas išmanusis telefonas su integruotu GPS imtuvu. Matavimai atliekami naudojantis nemokama "Field Area Measure" realaus laiko matavimo programa. Ši programa nenaudoja pataisų, gaunamų iš LiTPOS sistemos. Programa nepateikia tiesioginių koordinačių, tačiau galima sudaryt ploto planą matuojant prieš tai pažymėtuose 12-oje piketų realiu laiku. Matavimo principas yra labai panašus arba toks pats, kaip kitų matavimo prietaisų. Šiems matavimams atlikti reikalingas GSM mobilusis ryšys žemėlapiams gauti. Ilgas GPS siųstuvo ir imtuvo komunikavimas apsunkina darbus dėl laiko. Matavimų metu galima pasirinkti automatinį tašku pasirinkimą ar rankinį. Šia programa galima matuoti linijų ilgius. Išanalizavę gautus duomenis, nustatėme preliminarius duomenis bei matuojamo objekto plotą – 28 arus, kuris remiantis Lietuvos Nacionalinės inventorizacijos sudarytais miškotvarkos projekto duomenimis yra mažesnis 0,07 ha. Vadovautis tokiais duomenimis negalima, nes jie yra netikslūs ir suteikia per mažai reikalingos informacijos. Tokio pobūdžio programinė įranga ir matavimo prietaisas naudojamas gali būti tik savoms reikmėms, kai nereikia tikslumo - tai greitas ir patogus būdas preliminariai padėčiai nustatyti.

Išvados

1. Miško aikštelėse, įsiterpusiose pievose matavimams GPNS imtuvu su išorine antena ir LitPOS pataisomis aplink esančio miško lapija turi minimalią įtaką ir matavimų tikslumas yra pakankamas bei atitinka kadastriniams matavimams keliamus reikalavimus.
2. Matuojant su prietaisais integruotomis antenomis ir LitPOS pataisomis pasiekiamas tikslumas tenkina miškininkams reikalingiems atlikti darbams keliamus vietos nustatymo tikslumo reikalavimus (iki 1 metro). Nenaudojant LitPOS pataisų matavimo rezultatai yra nepatikimi, gautų duomenų naudoti negalima. Analizuojant duomenis pastebima lapijos įtaka matavimams. Matavimai gruodžio mėnesį - tikslesni 39 proc. nei balandžio mėnesį.
3. Atlikus matavimus išmaniuoju telefonu su integruotu GPS imtuvu nustatyta, kad naudotis tokiais duomenimis negalima, nes jie yra netikslūs, bet tai greitas ir patogus būdas preliminariai padėčiai nustatyti.

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Edita Abalikštienė, Daiva Gudritienė, Vilma Šalkauskienė

Open forest lot measurements using different GPNS devices

Summary

The aim of the research was to measure the forest area under different natural conditions and with different devices, and to compare the obtained data. Open forest lot was selected for the research. The survey is carried out to determine how accurately it is possible to measure this type of area in the forest (various sites, intervening meadows, etc.). Measurements were taken in late April, when the foliage was already fully leafed, and in mid-December, when the foliage is leafless. Measurements were performed with GPS receiver TOPCON GRS-1 with and without an external antenna. The accuracy achieved when measuring with antennas integrated with the devices and LitPOS corrections meets the requirements for positioning accuracy required by foresters for the work to be performed (up to 1 meter). Without LitPOS corrections, the measurement results are unreliable, the obtained data cannot be used. While analyzing the data the influence of foliage on the measurements is observed. Measurements in December are more accurate by 39 percent than in April.

Keywords: forest measurement, foliage influence, GPNS.

BLOGOS BŪKLĖS MELIORUOTŲ ŽEMĖS PLOTŲ ANALIZĖ TAURAGĖS RAJONO SAVIVALDYBĖS DAPKIŠKIŲ KADASTRO VIETOVĖJE

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Šiame straipsnyje pateikiami Tauragės rajono savivaldybės Dapkiškių kadastro vietovės blogos būklės melioruoti žemės plotai. Analizuojama kokie veiksniai lemia žemės plotų užmirkimą - didelę įtaką daro dirvožemio tipas ir jo granuliometrinė sudėtis, reljefo nelygumai ir žmogaus veikla. Įvertinus blogos būklės melioracijos plotus, atlikta lauko patikra kadastro vietovėje, nustatyta, kad dauguma tų plotų - neužmirkę, juose vykdoma žemės ūkio veikla, didžiausia problema yra plotuose šalia miško (daroma prielaida, kad medžių šaknys galėjo užkimšti sistemos rinktuvus). Atlikus erdvinių duomenų analizę Dapkiškių kadastro vietovėje taip pat nustatyta, kad joje vyrauja salpžemiai, kurie formuojasi upių salpose, deltose, yra labai įmirkę ir esant per dideliam iškritusiam kritulių kiekiui vanduo gali ilgiau išsilaikyti žemės paviršiuje.

Raktažodžiai: blogos būklės melioracija, užmirkęs žemės plotas.

Įvadas

Lietuva yra periodinės drėgmės pertekliaus zonoje, todėl būtina sureguliuoti normalų dirvožemio vandens režimą, kuris padidintų dirvos derlingumą, užtikrintų gausų ir pastovų derlių. Iškritusių kritulių kiekis tiesiogiai veikia dirvožemį, nes iškritus daugiau kritulių negu dirvožemis gali sugerti - prasideda erozija. Erozija sukelia dirvožemio nykimą, kuris būna spartesnis nei dirvožemio susidarymas (Klevinskas, 2018). Kritulių kiekis Lietuvoje apie 1,48 karto viršija išgaravusio vandens kiekį, todėl palankios žemės ūkio sąlygos gali būti sukurtos tik sausinant žemes. Melioracija yra vienas iš svarbiausių būdų norint atkurti užmirkusius nenaudingus žemės plotus (Povilaitis ir kiti, 2015). Blogos būklės melioruoti ir užmirkę žemės plotai Lietuvoje didėja. Tai sukelia daug nepatogumų ūkininkams, ši problema aktuali dirbantiems žemes, kartais dėl to žemės plotai yra net apleidžiami, nes atnaujinti melioracijos įrenginius brangu.

Tyrimo objektas – erdvinių duomenų rinkinyje pateikti blogos melioracinės būklės žemės plotai Tauragės rajono savivaldybės Dapkiškių kadastro vietovėje.

Tyrimo tikslas – nustatyti blogos būklės melioracijos plotus Dapkiškių kadastro vietovėje ir atlikti šių plotų analizę.

Tyrimo uždaviniai:

1. Nustatyti blogos būklės plotus Dapkiškių kadastro vietovėje;
2. Atlikti lauko ir nuotolinį tyrimą siekiant išsiaiškinti užmirkimo priežastis.

Melioracijos statiniai projektuojami ir statomi norint sureguliuoti dirvožemio vandens, šilumos ir oro režimą, sudaryti geresnes sąlygas žemdirbystei, išsaugoti ir padidinti dirvos derlingumą, sudaryti racionaliai tvarkomą žemės valdą (Tamošauskas, 2008). Melioracijos įstatymas nustato melioracijos statinių nuosavybės santykius, žemės savininkų ir kitų naudotojų teises ir pareigas, susijusias su melioracijos statinių statyba, naudojimu ir apsauga, taip pat melioracijos organizavimą, valdymą, projektavimą, ekspertizę, melioruotos žemės ir melioracijos statinių apskaitą bei melioracijos finansavimo tvarką (Lietuvos..., 1993). Melioracija pagal veikimą yra skirstoma į tris lygius: (1) gera melioracijos būklė (tai tokia melioracijos sistemos būklė, kai vandens perteklius gali būti sugertas ir naudojamas derliui padidinti bei vandens trūkumo metu galimas drėkinimas); (2) patenkinama melioracijos būklė (tai tokia melioracijos sistemos būklė, kai dėl melioracijos ir klimato sąveikos yra išgaunamas mažesnis

derlius); (3) bloga melioracijos būklė (tai tokia melioracijos sistemos būklė, kai yra užsistovėjęs vanduo arba vandens telkiniai ir dėl jų neįmanoma išgauti jokio derliaus). Melioracinių sistemų būklę Lietuvoje ir jos įtaką žemės naudojimui analizuoja Krenciūtė (2017), Povilaitis (2016). Lietuvoje drenažu sausinamos žemės sudaro beveik 2,5 mln. hektarų. Deja, dauguma melioracijos įrenginių statyti 1950–1960 metais (įrenginiai įprastai tarnauja maždaug 50 metų) ir šiandien yra visiškai nusidėvėję, keliantys daugybę problemų laukus dirbantiems ūkininkams. Lietuvos melioracijos sistemos būklė vertinama labai prastai, tačiau lėšų sutvarkyti ir prižiūrėti įrenginiams valstybė neturi. Sumažėjus paskirstytoms lėšoms, drenažo sistemos kaskart blogėja (Grybauskienė ir kiti, 2017).

Neatsakingas ūkininkavimas - taip pat vienas iš veiksnių, kodėl užmirksta plotai. Naudojant neracionalius žemės dirbimus, netaikant sėjomainų, nenaudojant biologinių preparatų stipriai nualinamas dirvožemis. Būtina reguliuoti dirvožemio vandens režimą įvairiomis priemonėmis, be pagrindinio sausinimo būdo (melioracijos) yra dar agromelioracinės priemonės: siauralysvis arimas, arimų ir pasėlių vagojimas, gilusis arimas. Ūkininkai, norėdami išvengti derliaus nuostolių, turėtų drėgmės perteklių pašalinti paprasčiausiomis ir pigiausiomis agromelioracinėmis priemonėmis (Zaidelman, 2016). Giliai ariamose ir geros struktūros dirvose augalai rečiau nukenčia nuo drėgmės pertekliaus, nes tokiame dirvožemyje vanduo turi kur pasiskirstyti. Nesudėtingais žemės dirbimo padargais sudaromos sąlygos vandeniui toliau nubėgti. Pasėlius vagoti būtina netgi ir drenuotose žemėse (Pocienė, 2004).

Tyrimo metodika

Atliekant tyrimą išanalizuoti teisiniai ir mokslinės literatūros šaltiniai. Išanalizuoti erdviniai duomenų rinkiniai: Lietuvos Respublikos teritorijos M1:10000 apleistų žemių erdvinių duomenų rinkinys AŽ_DRLT, Lietuvos Respublikos teritorijos M1:10000 dirvožemio erdvinių duomenų rinkinys Dirv_DR10LT, Lietuvos Respublikos teritorijos M1:10000 žemių melioracinės būklės ir užmirkimo erdvinių duomenų rinkinys Mel_DR10LT.

2021 metų kovo mėnesį kadastro vietovėje atliktas lauko tyrimas.

Gauti duomenys analizuoti ir interpretuoti. Atliktas surinktos informacijos apibendrinimas, surinkta informacija susisteminta ir pateikta lentelėse bei paveiksluose. Taikyti grupavimo, palyginimo ir grafinio vaizdavimo būdai.

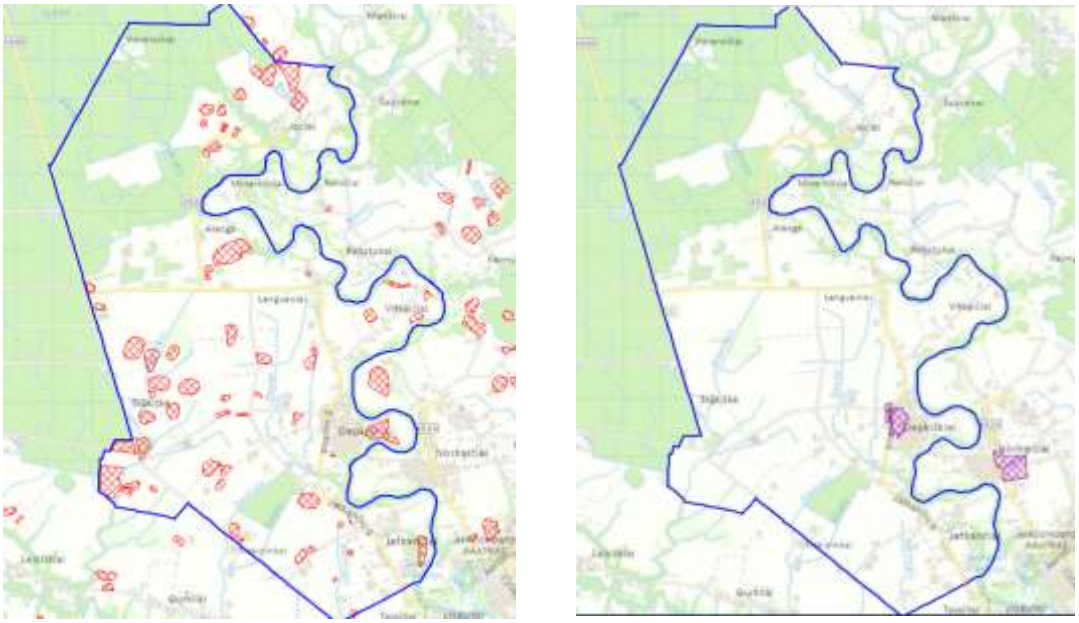
Rezultatai

Žemės melioracinės būklės ir užmirkimo erdvinių duomenų rinkinyje (MEL_DR10LT) pateikiama informacija, kad Tauragės apskrities Tauragės rajono savivaldybės Dapkiškių kadastro vietovėje 1647,80 hektarų plotas nusausintas grioviais ir drenažo rinktuvais. Tai sudaro 59,9 proc. kadastro vietovės ploto.

Tačiau kiekvieną pavasarį vietovėje fiksuojami mirkstantys plotai, kuriuose yra blogai veikiančios melioracinės sistemos (1 pav.)

1 pav. Blogos būklės melioruoti plotai Dapkiškių kadastro vietovėje
Fig. 1. *Land reclamation areas in poor condition in Dapkiškės cadastral area*

Nustatyta, kiek kadastro vietovėje yra blogos būklės ir iš apskaitos išimtų melioruotų žemės plotų (2 pav.).



2 pav. Blogos būklės (kairėje) ir iš apskaitos išimti (dešinėje) melioruoti žemės plotai Dapkiškių kadastro vietovėje
Fig. 2. *Land reclamation in poor condition (left) and deregistered (right) areas in Dapkiškės cadastral area*

Tauragės rajono savivaldybės Dapkiškių kadastro vietovėje iš 1647,80 hektarų melioruotų žemės plotų trys yra išimti iš apskaitos. Iš apskaitos išimti plotai yra 0,68 ha, 0,82 ha ir 7,40 ha dydžio. 1 lentelėje pateikiama blogos būklės melioruotų plotų suvestinė.

1 lentelė. Blogos būklės melioruoti žemės plotai Dapkiškių kadastro vietovėje
Table 1. *Land reclamation areas in poor condition in Dapkiškės cadastral area*

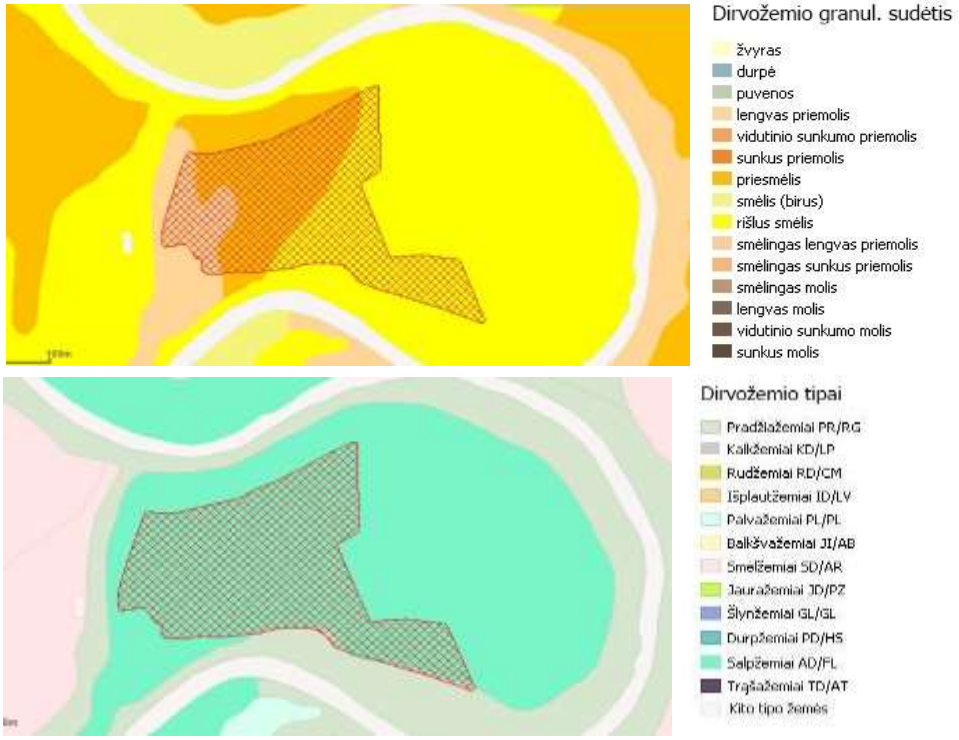
Kontūras *Contour*	Plotas *Area*	Pažeidimo tipas* *Type of infringement**	Kontūras *Contour*	Plotas *Area*	Pažeidimo tipas* *Type of infringement**	Kontūras *Contour*	Plotas *Area*	Pažeidimo tipas* *Type of infringement**
38646	0,98	DZ	38674	0,57	DZ	38696	3,76	DZ
38654	0,33	DZ	38675	12,04	DZ	38697	7,74	DZ
38655	4,36	DZ	38676	0,80	DZ	38697	4,42	DZ
38656	1,76	DZ	38677	4,96	DZ	38698	7,11	DZ
38657	1,91	DZ	38678	2,52	DZ	38699	4,74	DZ
38658	3,54	DZ	38680	6,85	DZ	38700	3,02	N
38659	2,52	DZ	38681	0,62	DZ	38701	0,10	N
38660	0,43	DZ	38682	2,98	DZ	38703	0,75	N
38661	2,20	DZ	38683	3,00	DZ	39474	0,42	N
38662	0,43	DU	38685	1,58	DZ	39525	0,43	N
38663	0,74	DU	38686	0,62	DZ	39526	0,24	N
38664	0,39	DU	38687	1,40	DZ	39527	2,00	N
38665	0,04	DU	38687	1,40	DZ	39528	5,20	N
38666	0,11	DU	38688	1,04	DZ	39529	0,57	N
38667	0,02	DU	38689	1,41	DM	39531	1,52	N
38668	0,12	DU	38690	2,15	DZ	39532	0,73	N
38669	1,27	DZ	38691	1,30	DZ	39534	10,3	N
38670	1,35	DZ	38692	0,86	DZ	39535	3,71	N
38671	2,14	DZ	38693	1,11	DZ	39536	4,12	N
38672	1,30	DM	38694	0,17	DZ	39537	10,59	N
38673	3,72	DM	38695	3,44	DZ	**Iš viso / *Total***		**151,95 ha**

***DM** – užmirkęs drenuotas plotas, **DU** – drenuotas plotas, užstatytas statiniais, drenažas sugadintas inžinerinių komunikacijų, **DZ** – drenuotas plotas, užstatytas statiniais, pagrindiniai rinktuvai veikia, **N** – nenustatyta priežastis.
** DM - waterlogged drained area, DU - drained area, built up by buildings, drainage damaged by engineering communications, DZ - drained area, built up by buildings, main collectors are working, N - no cause identified.*

Dapkiškių kadastro vietovės vidutinis našumo balas - 41,54 balo ir yra 2 balais didesnis už Tauragės rajono savivaldybės. Tačiau vietovėje yra 63 blogos melioracijos plotai. Sausinamų žemių melioracinę būklę atspindi blogai veikiantis drenažas, kurio plotas sudaro 151,95 ha iš 1647,80 ha. Beveik 10 proc. melioracinių sistemų Dapkiškių kadastro vietovėje neveikia. Drenažo sistemos gedimai gali būti įvairūs: drenų užaugimas šaknimis; drenų užsidumblinimas; drenų užsikimšimas geležies junginiais; atsitiktinės drenų užsidumblinimo priežastys; drenažo linijų nusėdimas; vamzdžių suirimas; drenažo žiočių, kontrolinių šulinių ir filtrų gedimai.

Tyrime analizuojant blogos melioracijos būklės žemės plotus, atliekant erdvinių duomenų analizę ieškomos priežastys, galinčios lemti blogą melioracinių sistemų veikimą.

Pirmiausiai analizuojamas dirvožemio tipas ir granuliometrinė sudėtis. Dirvožemio analizei buvo naudotas Dirv_DB10LT erdvinių duomenų rinkinys. Analizuojamoje teritorijoje dominuoja trys granuliometrinės sudėtys ir vienas dirvožemio tipas (žr. 3 pav.).

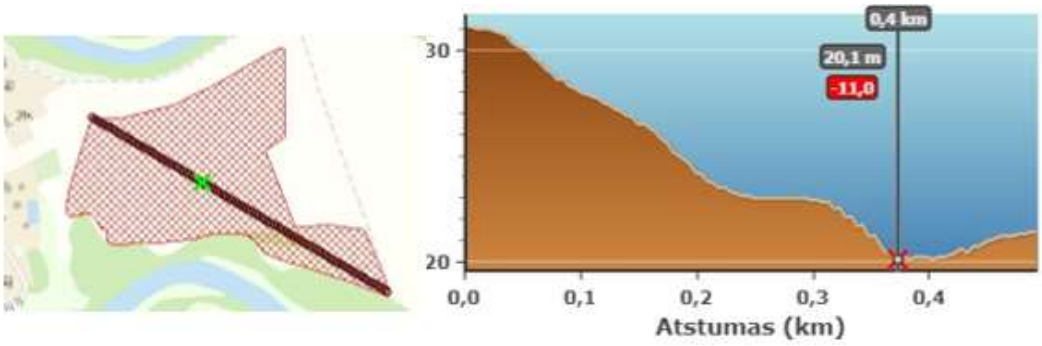


3 pav. Dirvožemio granuliometrinė sudėtis ir tipas kontūre Nr. 38698
Fig. 3. *Soil granulometric composition and type in contour No. 38698*

Analizuojamoje teritorijoje didžiausią dalį užima salpžemiai, kurie yra upių ir upelių užliejamų salpų (slėnių) bei deltų dirvožemiai, kuriuose pavasario arba rudens potvynių vanduo palieka dažniausiai derlingų aliuvinių sąnašų sluoksnį, giliau dažniausiai yra įmirkę ir turi glėjinių savybių. Pagal granuliometrinę sudėtį vyrauja lengvas priemolis, vidutinis priemolis ir rišlus smėlis. Dirvožemio vandens laidumas priklauso nuo porų, plyšių skaičiaus ir jų dydžio. Kuo didesni oro tarpai, tuo geresnės vandens praleidimo savybės. Labiausiai laidūs – smėlis ir žvyras, o mažiausiai – molio dirvožemiai.

Reljefas taip pat yra vienas iš faktorių kodėl pradeda atsirasti žemės užmirkimas. Vanduo, besikaupdamas žemiausioje reljefo vietoje, užmirkimą ne tik skatina, bet ir didina jo lygį. Kai reljefas yra lygus, vandens perteklius dažniausiai išsilieja į gretimas teritorijas, taip didindamas žemės užmirkimo plotą. Analizuojamas vietovės reljefas įvertinant blogos melioracijos būklės žemės plotams reljefo daromą įtaką (4 pav.).

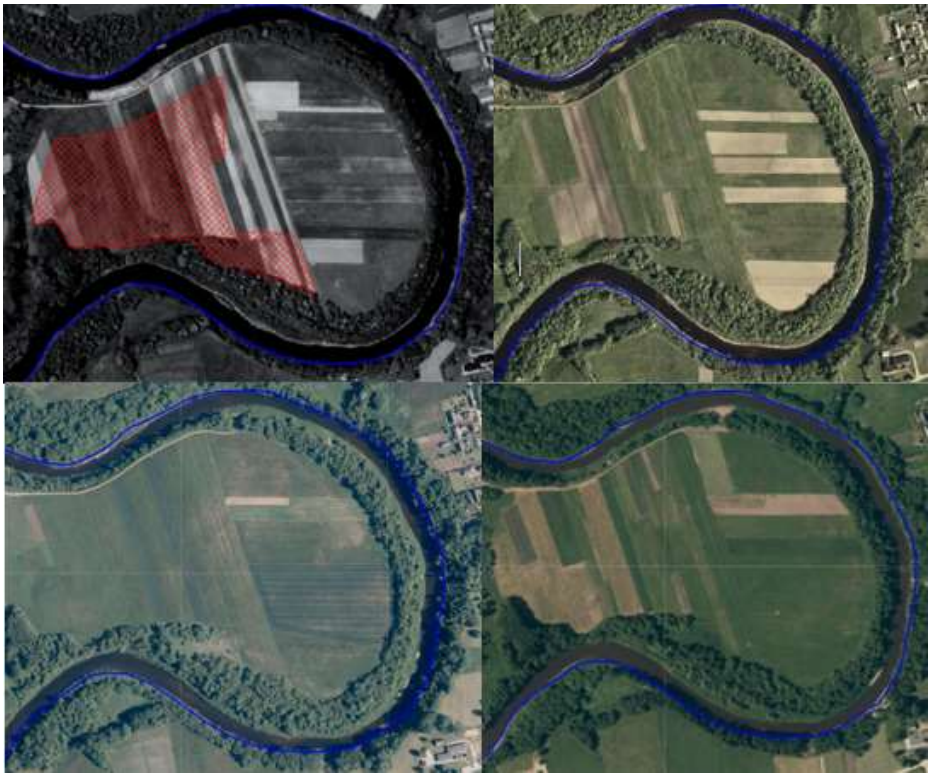
Nepakankamai išlyginta ganykla ar pieva taip pat sudaro problemų norint sustabdyti užmirkimą, kadangi ir didesnėse uždarose daubose, ir mažesniuose įdubimuose žiemą pripusto daugiau sniego, atsiranda ledas, o pavasarį – balos.



4 pav. Kontūro Nr. 38698 reljefas
Fig. 4. *Reljef of contour No. 38698*

Analizuojant pasirinktos teritorijos reljefą nustatyta, kad aukščių skirtumas yra didelis, nagrinėjame kontūre siekia 11 metrų, nors didžioji kadastro vietovės teritorija yra lygi. Blogos melioracinės būklės plotų užmirkimui įtakos turi ir vietovės ar atskirų plotų reljefas.

Įvertintas žemės naudojimas nagrinėjant skirtingo laikotarpio ortofotografinius žemėlapius (5 pav.).



5 pav. Kontūro Nr. 38698 žemės naudojimas 1995 – 2020 m.
Fig. 5. *Land use of contour No. 38698 in the period 1995 - 2020*

Atlikus blogos melioracijos būklės žemės ploto kitimų analizę naudojant skirtingų laikotarpių ortofotografinius žemėlapius, reikšmingų užmirkimų nepastebėta. Daroma išvada,

kad nagrinėtame plote melioracinės sistemos yra patenkinamos būklės, tik dėl dirvožemio sandaros ir daubos galimi periodiniai žemės įmirkimai.

Pagal Lietuvos Respublikos melioracijos įstatymą valstybinių melioracijos statinių priežiūrą, rekonstrukciją ir remontą finansuoja valstybė. Privačiose žemėse melioracijos statinius prižiūri, remontuoja ir rekonstruoja žemių savininkai savo lėšomis. Pagal Lietuvos Respublikos melioracijos įstatymą, mažesni kaip 12,5 cm skersmens drenažo rinktuvai ir visi sausintuvai priklauso žemių savininkams. Žemės savininkai privalo juos tinkamai prižiūrėti, kad nepadarytų žalos kitiems melioruotos žemės naudotojams.

Išvados

1. Tauragės rajono savivaldybės Dapkiškių kadastro vietovėje yra 63 blogos melioracijos būklės plotai, kurie užima 152 ha plotą. Išanalizavus žemės užmirkimą lemiančius veiksnius nustatyta, kad žemės užmirkimas tiesiogiai priklauso nuo melioracinių sistemų būklės, iškritusio kritulių kiekio, dirvožemio tipo ir sudėties, reljefo nelygumų, žmogaus veiklos.
2. Įvertinant blogos būklės melioracijos plotus atlikta lauko patikra ir erdvinių duomenų analizė. Didžiausia problema su užmirkimu yra plotuose šalia miško (daroma prielaida, kad medžių šaknys galėjo užkimšti sistemos rinktuvus) bei mažesnėse ar didesnėse daubose. Nustatyta, kad daugumą tų plotų užmirksta tik periodiškai ir juose vykdoma žemės ūkio veikla. Atlikus erdvinių duomenų analizę nustatyta, kad vyrauja salpžemiai, kurie yra labai įmirkę ir esant per dideliam iškritusių kritulių kiekiui vanduo gali ilgiau išsilaikyti žemės paviršiuje.

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Edita Abalikštienė, Milda Samoškaitė

Analysis of land reclamation areas in poor condition in Dapkiškes cadastre area of Tauragė district municipality

Summary

This article presents land reclamation areas in poor condition in the Dapkiškės cadastral area of Tauragė district municipality. Factors influencing the waterlogging of land areas are analyzed - the type of soil and its granulometric composition, uneven terrain and human activities, having a great influence. Assessing the reclamation areas in poor condition, a field inspection was carried out in the cadastral area. It was found that most of those areas are not wet, agricultural activities are carried out, the biggest problem is in the areas near the forest (it is assumed that tree roots could clog the collectors of the system). The analysis of spatial data in the Dapkiškės cadastral area also revealed that it is dominated by floodplains, which are formed in river floodplains, deltas are very impregnated, and in cases of too much precipitation the water can stay on the surface longer.

Keywords: land reclamation in poor condition, soaked land area.

ŽEMĖS SKLYPŲ KADASTRO DUOMENŲ NUSTATYMO PROBLEMOS KLAIPĖDOS, ŠILALĖS IR RASEINIŲ RAJONŲ SAVIVALDYBĖSE

Monika Bambalaitė, Vilma Šalkauskienė
Kauno miškų ir aplinkos inžinerijos kolegija

Straipsnyje analizuojami žemės sklypų kadastro duomenų bylų tikrinimo aktai taikant literatūros šaltinių analizės, duomenų palyginimo bei apibendrinimo metodus. Matininkams atlikus žemės sklypų kadastrinius matavimus, kadastro duomenis patikrina Nacionalinės žemės tarnybos prie ŽŪM teritorinio skyriaus specialistai. Šiuo metu kadastrinių matavimų poreikis yra didelis, todėl aktualu analizuoti atliekamų darbų kokybę, nustatyti didžiausias problemas, atlikti klaidų analizę, rasti būdų sumažinti pasitaikančių klaidų kiekį. Naudojantis NŽT internetiniame tinklalapyje pateiktu 2020 m. kadastrinių matavimų bylų tikrinimo archyvu buvo analizuojami aktai su dažniausiai pasikartojančiomis klaidomis. Straipsnyje pateikiamos klaidos, dėl kurių matininkų nustatyti žemės sklypų kadastro duomenys nėra patvirtinami. Tyrimui pasirinkti žemės sklypų kadastro duomenų bylų tikrinimo aktai žemės sklypams, esantiems Klaipėdos, Šilalės, Raseinių rajonų savivaldybėse.

Raktažodžiai: kadastriniai matavimai, žemės sklypas, kadastro duomenys.

Įvadas

Nekilnojamųjų daiktų kadastriniai matavimai yra labai aktualūs nekilnojamojo turto savininkams, nes be jų neįmanomas savininko ar valdytojo pilnavertis naudojimasis savo, kaip savininko ar valdytojo, teisėmis šių daiktų atžvilgiu. Neatlikus kadastrinių matavimų, neįmanoma ir nekilnojamojo daikto teisinė registracija. Nekilnojamojo daikto teisinė registracija suteikia teisę disponuoti nekilnojamuoju daiktu pagal savo poreikius. Kadastrinių matavimų atlikimas yra reglamentuojamas Lietuvos Respublikos teisės aktais, todėl yra svarbu, kad kadastriniai matavimai būtų atliekami ne tik laikantis įstatymų, bet ir su dideliu matematiniu tikslumu. Kadastrinių matavimų sąvoka apibūdinta 2000 m. birželio 27 d. Lietuvos Respublikos Seimo priimtame Nekilnojamojo turto kadastro įstatyme. Nekilnojamojo daikto kadastriniai matavimai – veiksmai, kuriais identifikuojamas nekilnojamasis daiktas, nustatomos žemės sklypo ribų posūkio taškų ir statinių fizinių ribų koordinatės, nekilnojamųjų daiktų geometriniai ir techniniai parametrai, apskaičiuojami žemės sklypo bei jame esančių žemės naudmenų plotai ir kiti šį daiktą apibūdinantys faktiški kadastro duomenys (Lietuvos..., 2000). Visame pasaulyje žemės sklypai ir pastatai laikomi didžiausiu fiziniu, ekonominiu, socialiniu ir kultūriniu visuomenės kapitalu. Duomenų rinkimas apie žemės sklypus ir kitą nekilnojamąjį turtą yra gana sudėtingas procesas, tačiau reikalingas (Behnisch ir kt., 2009).

Tyrimo objektas – žemės sklypų kadastro duomenų bylų tikrinimo aktai.

Straipsnio tikslas: išanalizuoti žemės sklypų kadastro duomenų problemas, dėl kurių bylos yra atmetamos tikslinimui.

Straipsnio uždaviniai:

1. Nustatyti dažniausiai pasitaikančius žemės sklypų kadastrų duomenų nustatymo netikslumus.
2. Identifikuoti klaidų pobūdį.
3. Pateikti pasiūlymus, kaip būtų galima mažinti klaidų kiekį.

Žymus informacinių technologijų proveržis Lietuvoje padarė didelį pokytį ir geodeziniuose matavimuose, kuriuose ši reikšmė yra labai svarbi. Pasirinktos temos aktualumą galima pagrįsti tuo, kad matininkai, atlikdami žemės sklypų kadastrinius matavimus tiems sklypams, kuriems yra parengti patvirtinti teritorijų planavimo dokumentai, turi jais vadovautis (Šalkauskienė ir kt., 2018). Nekilnojamojo turto kadastrinių matavimų metu labai svarbu, kad matavimai būtų atliekami tiksliai ir kokybiškai, t.y. svarbu užtikrinti atliekamų darbų kokybę.

Ne mažiau yra svarbu ir po atliktų kadastrinių matavimų tinkamai parengti nekilnojamojo daikto kadastro duomenų bylą, kurią sudaro nekilnojamojo turto planai, įvairios kadastro duomenų nustatymo formos bei reikalingi dokumentai apie nekilnojamąjį daiktą.

Žemės sklypų ribų tikrinimas yra svarbus ne tik Europos Sąjungoje ar Lietuvoje, bet ir kitose užsienio šalyse, pvz. Pietų Afrikoje dėl paruoštų prastos kokybės žemės sklypų dokumentų pateikiant prieš patikrinimą vykdomi teisminiai tyrimo procesai, todėl duomenys atmetami ir grąžinami atgal dėl patikslinimo (Chimhamhiwaa, 2017). Lenkijoje tuo pačiu metu kadastro duomenys, juos įvedus ar pakeitus duomenų bazėje, perkeliami į kitus registrus, pavyzdžiui, mokesčių įrašus arba žemės ir hipotekos teismų registrus (Buśko, 2017). Daugelyje šalių žemės ir statinių kadastre ir registre yra kaupiama informacija apie žemę, pastatus ir patalpas. Ši informacija yra laikoma IT sistemoje ir užtikrina duomenų, apimančių ir aprašomuosius, ir erdvinius duomenis, rinkimą, atnaujinimą ir dalijimąsi jais (Pęska ir kt., 2016).

Tyrimo metodika

Straipsnyje analizuoti Lietuvos Respublikos normatyviniai dokumentai bei kita mokslinė ir metodinė literatūra, taikyti literatūros šaltinių apibendrinimo, kartografinės ir statistinės informacijos analizės ir aprašomasis metodai. Darbe analizuoti statistiniai duomenys, gauti iš VĮ „Registrų centro“ bei Nacionalinės žemės tarnybos prie Žemės ūkio ministerijos. Iš duomenų bazėje sukauptų duomenų pasirinkti atsitiktine tvarka 2020 metų Šilalės r., Klaipėdos r. ir Raseinių r. 55 tikrinimo aktai.

Rezultatai

Žemės sklypų kadastrinių matavimų metu nustatomi duomenys, kuriais naudojantis formuojama žemės sklypo kadastro duomenų byla. Nacionalinė žemės tarnyba prie Žemės ūkio ministerijos atlieka dokumentų patikrą, t. y. tikrina nekilnojamųjų daiktų kadastro duomenų bylas. Bylos, iki patekdamos iki galutinių institucijų, nueina ilgą derinimą su daugybe tarpinių institucijų: su užsakovu, gretimų sklypų savininkais, Valstybės sienos apsaugos tarnyba (jei sklypas yra pasienio zonoje), institucija, atsakinga už saugomas teritorijas (jei žemės sklypas ar jo dalis patenka į saugomas teritorijas) ir pan.

Per 2020 m. NŽT prie ŽŪM Klaipėdos, Šilalės, Raseinių rajonų teritoriniams skyriams buvo pateiktos tikrinimui 2539 bylos, iš kurių net 747 buvo su trūkumais. Daugiau kaip 70% tikrinimui pateiktų bylų buvo suderintos, jose nerasta jokių netikslumų. Tačiau likusios paruoštos netinkamai: rasta klaidų, kurių pagal galiojančius teisės aktus kadastrinių matavimų bylose neturi būti.

Teritorinis padalinys, atlikdamas žemės sklypo kadastro duomenų bylos patikrinimą kameraliai, tikrina ar: byloje yra visi dokumentai; nepakeistos žemės sklypo ribos po kadastrinių matavimų; žemės sklypo ploto, nurodyto kadastro duomenų byloje, ir žemės sklypo ploto, įregistruoto Nekilnojamojo turto registre arba teritorijų planavimo dokumente suprojektuoto, bet neįregistruoto Nekilnojamojo turto registre, skirtumas nėra didesnis nei leistina (ribinė) ploto paklaida; žemės sklypo planas sudarytas pagal reikalavimus; teisingai užpildytas žemės sklypo ribų paženklinimo–parodymo aktas; teisingai užpildyta kadastro duomenų forma; teisingai apskaičiuotos žemės sklypo vertės; žemės sklypo plane pažymėti privažiuojamieji keliai; tinkamai atliktas žemės sklypo ženklinimas vietovėje riboženkliais ir kt. Išanalizavus tikrinimo aktus pagal tikrinimo kriterijus, nustatyta, kad 23% kadastrinių matavimų bylų atmetama pagal kriterijų – ribų neatitikimas. Tai yra ribos neatitinka patvirtinto teritorijų planavimo dokumento. Pagal kriterijų „ploto apskaičiavimas“ atmesta apie 6 % bylų. Pagal kriterijų „plano sudarymas“ atmetama ypač daug kadastrinių matavimų bylų, kurių iš

pasirinktų patikrinimo aktų net 48% buvo atmesti pagal šį kriterijų. Taip pat daug netikslumų pasitaiko užpildant paženklinimo – parodymo aktus, pildomus vietovėje. Iš analizuojamų aktų tai sudarė 39 %. Paženklinimo parodymo akto pildymo klaidas galima priskirti prie neatidumo klaidų. Kadastro duomenų formos užpildymo netikslumai sudarė 33 % visų analizuotų aktų. Šios klaidos pasitaiko dažniausiai dėl neatidumo, skubėjimo. Žemės sklypo vertės apskaičiavime netikslumų nustatyta 12% analizuojamų kadastrinių matavimų bylų. Kas rodo, kad žemės sklypo vertės apskaičiavimas nėra lengva užduotis kai kuriems matininkams, ypač daug sunkumų kyla dėl žemės sklypo vertės koeficientų taikymo. Net 30% analizuojamų aktų yra netikslumų žemės sklypo kadastro duomenų bylos komplektavime. Žemės sklypų kadastro duomenų bylos komplektavimą reglamentuoja Lietuvos Respublikos nekilnojamojo turto kadastro nuostatai bei kadastro tvarkytojo parengta ir patvirtinta specifikacija. Nekilnojamojo daikto kadastro duomenų bylos pateikimo, tikrinimo, derinimo, nekilnojamojo daikto kadastro duomenų įrašymo į kadastrą ir jų pakeitimo, panaikinimo, pataisymo darbai atliekami elektroninėmis ryšio priemonėmis: statinių – Nekilnojamojo turto registro posistemėje „Matininkas“, žemės sklypo – Nekilnojamojo turto registro posistemėje „GeoMatininkas“. Kadastro bylą sudaro: žemės sklypo planas, žemės sklypo kadastro duomenų forma, žemės sklypo ribų paženklinimo–parodymo aktas, verčių nustatymo žiniaraščiai, kvietimas dalyvauti ženklinant žemės sklypo ribą ir kiti dokumentai, kurių pagrindu atlikti kadastriniai matavimai. Žemės sklypo ženklinimas vietovėje riboženkliais sudaro mažiausiai klaidų (apie 3 %).

Siekiant detaliau išanalizuoti dažniausiai pasitaikančius neatitikimus straipsnyje aptariami keli konkretūs atvejai. Vienas iš pasirinktų kadastro duomenų tikrinimo aktų yra žemės sklypo, esančio Šilalės r. Jucaičių k. Didkiemio g. 10 (1 pav.). Šis žemės sklypas turėtų būti suformuotas, kaip namų valdos žemės sklypas. Tačiau matininko pateiktus dokumentus atmetė NŽT prie ŽŪM Šilalės skyriaus specialistas, nes neatitinka žemės sklypo kadastro duomenų bylos tikrinimo akto 3.5 punkto „Žemės sklypo kadastro duomenų forma“ (1 pav.). Šis punktas užpildytas neteisingai, nes neatitinka Lietuvos Respublikos nekilnojamojo turto kadastro nuostatų Nr. 534 32.1.3 punktą. Šis punktas nustato, kad pagrindinė žemės naudojimo paskirtis ir būdas nustatomi Nacionalinės žemės tarnybos prie Žemės ūkio ministerijos vadovo ar jo įgalioto teritorinio padalinio vadovo sprendimu pagal parengtus ir patvirtintus teritorijų planavimo dokumentus ar žemės valdos projektus formuojant naujus žemės sklypus (teritorijose, kuriose iki teritorijų planavimo dokumento ar žemės valdos projekto patvirtinimo nebuvo suformuoti žemės sklypai). Taip pat, jeigu būtų norima keisti žemės naudojimo paskirtį ar būdą, žemės savininkų, valstybinės žemės patikėtinių ar įstatymų nustatytais atvejais kitų subjektų prašymu Nacionalinės žemės tarnybos vadovo ar jo įgalioto teritorinio padalinio vadovo, savivaldybės tarybos, savivaldybės administracijos direktoriaus arba specialiojo teritorijų planavimo dokumentą tvirtinančios institucijos sprendimu pagal teritorijų planavimo dokumentus ar žemės valdos projektus. Sprendimas pakeisti pagrindinę žemės naudojimo paskirtį ar būdą priimamas kartu su sprendimu patvirtinti teritorijų planavimo dokumentą ar žemės valdos projektą.


NACIONALINĖS ŽEMĖS TARNYBOS PRIE ŽEMĖS ŪKIO MINISTERIJOS
ŠILALĖS SKYRIUS

ŽEMĖS SKLYPO KADASTRO DUOMENŲ BYLOS
TIKRINIMO AKTAS

1 pav. Žemės sklypas, esantis Šilalės r. Jucaičių k. Didkiemio g. 10 ir ištrauka iš žemės sklypo kadastro duomenų bylos tikrinimo akto

Fig. 1. *Land plot located in Šilalė district municipality Jucaičiai village Didkiemio st. 10 and an extract from the land cadastre data file inspection report*

Atliekdamas kadastrinius matavimus, matininkas, neatsižvelgdamas į teisės akto nuostatus, pažymėjo neteisingai sklypo būdą, dėl kurio ir buvo nesuderinta žemės sklypo kadastro duomenų byla.

Dar vienas pasirinktas žemės sklypas yra Klaipėdos r. sav. Endriejavo mstl. Ąžuolų g. 5 (2 pav.).

2 pav. Žemės sklypas, esantis Klaipėdos r. sav. Endriejavo mstl. Ąžuolų g. 5 ir ištrauka iš žemės sklypo kadastro duomenų bylos tikrinimo akto

Fig. 2. *Land plot located in Klaipeda district municipality Endriejavo town Ąžuolų st. 5 and an extract from the land cadastre data file inspection report*

Šio žemės sklypo kadastro duomenų tikrinimo akte pažymėta, kad neatitinka žemės sklypo kadastro duomenų bylos tikrinimo akto 3.1, 3.2, 3.3 punktų. Žemės sklypo kadastro duomenų bylos tikrinimo akto 3.1 punkto neatitikimas – žemės sklypo ribos kirtimas su šalia esančiu sklypu ir reikalinga žemėtvarkos skyriaus išvada. Lietuvos Respublikos nekilnojamojo turto kadastro nuostatų Nr. 534 21 punktas nurodo, kad žemės sklypo ribos tarp ribų posūkio taškų įskaitant tas, kurios ribojasi su natūraliais kontūrais, turi sudaryti vieną uždarą kontūrą, pagal kurio ribų posūkio taškų koordinates apskaičiuojamas žemės sklypo plotas. Turi būti apskaičiuotas leistinas žemės sklypo plotas, nustačius nekilnojamojo daikto kadastro duomenis, atliekant kadastrinius matavimus tomis pačiomis ribomis naudojant tikslesnes nei ankstesnių matavimų priemones gali skirtis nuo Nekilnojamojo turto registre įregistruoto žemės sklypo ploto arba teritorijų planavimo dokumente ar žemės valdos projekte suprojektuoto, bet neįregistruoto Nekilnojamojo turto registre žemės sklypo ploto ne daugiau kaip maksimali leistina (ribinė) ploto paklaida. Žemės sklypo kadastro duomenų bylos tikrinimo akto 3.2 punkto neatitikimas – išvada dėl ploto leistinos ribos. Pagal Lietuvos Respublikos Vyriausybės 2011 m. spalio 12 d. nutarimo Nr. 1181 21 punktą žemės sklypo kadastriniai matavimai, atlikti nuo valstybinio geodezinio pagrindo GPS 1, 2 ir 3 klasių tinklų punktų ar Lietuvos Respublikos globalinės padėties nustatymo sistemos nuolatinių stočių tinklo arba nuo su valstybiniu geodeziniu pagrindu susietų kitų globalinės padėties nustatymo sistemos nuolatinių stočių tinklo, žemės sklypo plotas negali skirtis nuo anksčiau geodeziniais prietaisais sąlyginėse ir vietinėse koordinačių sistemose nustatyto žemės sklypo ploto daugiau nei kadastriniams matavimams leidžiama ploto santykine paklaida 1/1000. Žemės sklypo kadastro duomenų bylos tikrinimo akto 3.3 punkto neatitikimas – blogai užpildyta žemės sklypo plano forma, nes nėra

matmenų surašyta ant plano. Pagal žemės sklypo plano formos užpildymo reikalavimus 53.2. žemės sklypo adresas, žemės sklypo kadastro numeris, gretimų žemės sklypų adresai arba žemės sklypų kadastro numeriai, žinios apie bendrą sklypo naudojimą, suderinimai, įmonės, atlikusios kadastrinius matavimus, turi būti nurodyta žemės sklypo plane.

Kaip pavyzdį galima paminėti taip pat Raseinių r. sav. Betygalos sen. Žibulių k. Alyvų g. 17 esantį žemės sklypą (3 pav.).

3 pav. Žemės sklypas, esantis Raseinių r. sav. Betygalos sen. Žibulių k. Alyvų g. 17, ir ištrauka iš žemės sklypo kadastro duomenų bylos tikrinimo akto

Fig. 3. *Land plot in Betygala eldership of Raseiniai district municipality Žibulių village Alyvų st. 17 and an extract from the Land Cadastre Data File Inspection Act*

NŽT prie ŽŪM Raseinių skyriaus specialistas šio žemės sklypo bylą grąžino tikslinimui, nes nustatyti netikslumai pagal žemės sklypo kadastro duomenų bylos tikrinimo akto 3.4 punktą. Žemėtvarkos skyriaus specialistas tikrinimo akte nurodė, jog išmatuoto sklypo plotas neatitinka Nekilnojamojo turto registre įregistruoto žemės sklypo ploto. Išmatuotas sklypo plotas 2041 kv. m., o Nekilnojamojo turto registre – 1956 kv. m. Todėl reikalingas ploto patikslinimas.

Išanalizavus surinktą informaciją, galima teigti, kad didžiausią įtaką klaidų atsiradimui turi žmogiškasis faktorius, t. y., daugiausiai klaidų padaroma dėl neatidumo, skubėjimo, neįsigilinimo į pradinius duomenis, taip pat atsiranda įvairių dokumentų pildymo klaidų. Klaidų kiekis tam tikram laikui padidėja įvedus naujus pakeitimus darbui naudojamose kompiuterinėse programose ir teisės aktuose. Todėl reikėtų visiems susijusiems specialistams suteikti galimybę rengti užklausas dėl sudėtingesnių bylų patikrinimų, jog galėtų padarytas klaidas ištaisyti ir tik tada siųsti galutinėms institucijoms.

Išvados

1. Per 2020 m. NŽT prie ŽŪM Klaipėdos, Šilalės, Raseinių rajonų teritoriniams skyriams patikrai buvo pateiktos 2539 bylos. Iš tikrintų žemės sklypų kadastrinių matavimų bylų, net 747 buvo su trūkumais (apie 70%). Dažniausias žemės sklypų kadastro duomenų bylose pasitaikantis neatitikimas yra dėl Lietuvos Respublikos nekilnojamojo turto kadastro nuostatų nesilaikymo.
2. Iš analizuojamų žemės sklypų kadastro duomenų tikrinimo aktų daugiausiai (net 48%) žemės sklypo kadastro duomenų bylų buvo atmestos tikslinimui dėl blogo plano sudarymo. Mažiausiai netikslumų buvo (apie 3 %) susijusių su žemės sklypo ženklinimu vietovėje.
3. Norint sumažinti atsitiktinių klaidų kiekį reikia didelio atidumo rengiant žemės sklypų kadastro duomenų bylas, įdiegti papildomus algoritmus nustatančius neatidumo bei kito pobūdžio klaidas. Įmonėms, rengiančioms kadastrinius matavimus, siūloma turėti specialistus, kurie galėtų patikrinti bylas prieš teikiant tikrinimui NŽT prie ŽŪM darbuotojams. Suteikti sąlygas rengti elektronines greitesnes užklausas dėl sudėtingesnių

bylų patikrinimų, jog galėtų padarytas klaidas ištaisyti ir tik tada siųsti galutinėms institucijoms.

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Monika Bambalaitė, Vilma Šalkauskienė

Problems of determination of land plot cadastre in Klaipėda, Šilalė and Raseiniai district municipalities

Summary

The article analyzes the acts of inspection of land cadastre data files applying the methods of analysis of literature sources, data comparison and generalization. After the surveyors have performed cadastral measurements the land plots, cadastral data are checked by the specialists of the territorial division of the National Land Service under the Ministry of Agriculture. Currently, the need for cadastral measurements is high, so it is important to analyze the quality of work performed, identify the biggest problems, perform error analysis, find ways to reduce the number of errors. Using the 2020-data available on the National Land Service website, the archive of inspection of cadastral measurement files with the most frequent errors were analyzed. The article presents errors due to which the land cadastre data determined by surveyors are not confirmed. Land plot cadastre data files for land plots located in Klaipėda, Šilalė, Raseiniai district municipalities were selected for the research.

Keywords: cadastral measurements, land plot, cadastral data.

KAUNO RAJONO AKADEMIJOS GYVENVIETĖS PLĖTROS ANALIZĖ

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Priemiestinių teritorijų plėtra turi didelę įtaką visai visuomenei. Vykstant šiai plėtrai kinta kraštovaizdis, kurio samprata bendriniu požiūriu visuomenei pateikiama, kaip gamtinės aplinkos ir žmogaus veiklos sukurtų elementų sąveikos gautas rezultatas. Kraštovaizdis labai svarbus valstybės išteklius, aprėpiantis miestų ir kaimų teritorijas, taip pat miškus, vandenis ir kitas teritorijas. Tam įtakos turi formuojami padrikų pastatų kvartalai aplink miestus. Todėl laikui bėgant kraštovaizdis yra vis labiau veikiamas miestiškojo kraštovaizdžio plėtros bei urbanizacijos. Teritorijų planavimo dokumentuose labai svarbu numatyti plėstinas užstatymo teritorijas ir išsaugoti kraštovaizdį bei užtikrinti gyventojų gerbūvį.

Kauno rajono savivaldybė yra viena iš sparčiausiai augančių savivaldybių. Straipsnyje nagrinėjama Akademijos gyvenvietė, kurios teritorija turi didelę paklausą nekilnojamojo turto rinkoje. Kauno rajonas – geidžiamas kauniečių individualių namų statytojų arealas. Nagrinėjamas 2005 - 2020 metų laikotarpis. Didėjant užstatytų teritorijų plotams vyksta pokyčiai žemės ūkio paskirties teritorijose, dėl to žemės ūkio naudmenų nagrinėjamu laikotarpiu sumažėjo 4,45 proc., tuo tarpu užstatytų teritorijų padidėjo 33,09 proc. Pokyčiai vyksta ir kitose žemės naudmenose. Nagrinėjamu laikotarpiu Kauno rajone gyventojų skaičius išaugo nuo 83020 iki 96441. t.y. 13,92 proc. Teritorijų planavimo dokumentų tikslas - kurti sveiką, saugią, darnią gyvenamąją aplinką ir visavertes gyvenimo sąlygas gyvenamosiose vietovėse.

Raktažodžiai: žemės naudmenos, priemiestinė plėtra, užstatyta teritorija, bendrasis planas, detalusis planas.

Įvadas

Urbanizuotos teritorijos – tai statiniais bei įrenginiais užstatyti žemės plotai, taip pat ir kompaktiško užstatymo kaimai (kai gyventojų tankumas ne mažesnis kaip 30 gyv. /ha). Jų plėtra aplinkinėse teritorijose numatoma rengiant valstybės teritorijos dalies ir savivaldybių teritorijų bendruosius planus: juose nurodomi žemės naudojimo prioritetai bei zonos su skirtingais reglamentais statybų išdėstymui (Aleknavičius, 2010).

Lietuvos Respublikos teritorijų planavimo įstatymo (1995) tikslas – užtikrinti darnią teritorijų plėtrą ir racionalią urbanizaciją nustatant teritorijų planavimo proceso sprendinių sistemiškumo, skirtingo lygmens dokumentų suderinamumo ir tarpusavio poveikio reikalavimus, sudaryti sąlygas gamtinės ir antropogeninės aplinkos darnai, urbanistinei kokybei išsaugant vertingą kraštovaizdį, biologinę įvairovę, gamtos ir kultūros paveldo vertybes.

Lietuvos Respublikos žemės įstatyme (1994) teigiama, kad visa Lietuvos Respublikos teritorijoje esanti privati, valstybinė ir savivaldybių žemė sudaro Lietuvos Respublikos žemės fondą, o pagal pagrindinę žemės naudojimo paskirtį Lietuvos Respublikos žemės fondas skirstomas į žemės ūkio paskirties žemę, miškų ūkio paskirties žemę, vandens ūkio paskirties žemę, konservacinės paskirties žemę bei kitos paskirties žemę.

B. McCrea (2005) teigia, kad jei būtų skatinama bent dalį naujos statybos vykdyti anksčiau išvystytose teritorijose prieš leidžiant statyti laukuose, tai žymiai paveiktų urbanistinį miestų gyvybingumą.

J.Jasaičio ir kt. (2007) teigimu, urbanizacija bus neplaninga, ji sumažins vertingos žemės ūkio paskirties žemės plotus ir turės didelę įtaką žmonėms besiverčiantiems žemės ūkio veikla. Autoriai tvirtina, jog pastaruoju metu vykdant statybas yra negalvojama apie ateitį.

Užstatytų teritorijų plotai atsiranda neapgalvotai, bet kur nenumatant perspektyvių vietų mokykloms, komunikacijoms ir kt.

Intensyvūs urbanizacijos procesai ir augantis miestų ir kitų urbanizuotų teritorijų gyventojų skaičius lemia gausius debatus dėl miestų ir besiplečiančių priemiestinių zonų ateities. Didėjant teritorijų užstatymui dauguma autorių pastebi neigiamą įtaką žemės naudmenų struktūrai ir teritorijos ekologiniam stabilumui (Siikamäki ir kt.,2008).

Gausėjančios statybvietės priemiesčiuose rodo spartėjančio gamtinio, kaimiškojo ir priemiestinio kraštovaizdžio vietovėse mažaaukštės statybos plėtrą, paliekančią naujų statinių grupes, neretai ir urbanistines dykras bei statybinių atliekų sąvartas. Po nepriklausomybės atkūrimo beveik nereglamentuojama urbanistinė ekspansija sukūrė prielaidas chaotiškai miestų plėtrai kaime. Priemiesčių, žemės ūkio ir net miško žemėse legaliai ar nelegaliai "išdygo"ir plečiasi mažaaukštės statybos naujųjų "kaimiečių" arba tiesiog komercinio intereso namų grupės, uzurpuodamos vis naujas žemės ūkio teritorijas (Bučas, 2010).

Šiuolaikinės urbanistikos tikrovę fiksuoja kraštovaizdis, priemiesčiuose matome formuojantis naują, menkavertį kraštovaizdžio tipą, kuris pasižymi monofunkcinių kvartalų arba jų fragmentų, atskirų pastatų padriku atsiradimu apie didžiuosius miestus. Bendrųjų planų analizė rodo, kad sparti kaimo ir gamtos teritorijų urbanizacija apie Lietuvos miestus yra nepagrįsta nei socialiniu, nei ekonominiu požiūriu, tai daugiau tradicijų ir nekilnojamojo turto rinkos burbulo pasekmė (Bardauskienė, Pakalnis, 2011).

Dėl sparčios priemiesčių urbanizacijos padidėjo priemiesčių žemių paklausa ir spaudimas žemės ūkio paskirties žemių sąskaita. Namų ūkių sprendimą pakeisti žemės ūkio naudmenas į gyvenamosios ir komercinės paskirties žemę lemia daugybė įvairių veiksnių pradedant socialiniu ir baigiant ekonominiu (Dutta, 2012).

Plėčiantis priemiesčiams, vis didesnė grėsmė kyla patenkančioms į urbanizuojamas teritorijas tradicinėms agrarinio kraštovaizdžio kultūros vertybėms, kuriose atsispindi kraštovaizdžio, agrarinės, kultūrinės ir politinės veiklos, gyvensenos, architektūros, technikos raidos bruožai (Vitkuvienė, Ažukaitė, 2010).

Anot M. Cirtauto (2013), šis plačiai tarp miesto tyrėjų ir planuotojų įsivyravęs bei dažnai neigiamų reikšmių turintis priemiestinės plėtros traktavimas prieštarauja pačiai reiškinio prigimčiai – ekstensyvią miesto plėtrą iš dalies lemia dėl geresnės būsto kokybės noriai ten besikuriantys žmonės, mažesnių išlaidų suvilioti verslo subjektai. Urbanizacija ir su ja susijusi transporto infrastruktūra nusako miesto ir kaimo ryšį. Urbanizacija, išreikšta miesto vietose gyvenančių žmonių skaičiumi, rodo pastaruoju metu vykstantį, tačiau sprogstantį augimą, kuris daugelyje Europos šalių pasiekė maždaug 80% (Antrop, 2004).

Darbo objektas: Kauno rajono savivaldybės Akademijos gyvenvietė.

Darbo tikslas: išanalizuoti Akademijos gyvenvietės plėtros tendencijas.

Uždaviniai: 1. Išanalizuoti žemės fondo ir gyventojų skaičiaus kaitą nagrinėjamu 2005 – 2020 metų laikotarpiu.

2. Išnagrinėti teritorijų planavimo dokumentų sprendinius nagrinėjamoje teritorijoje.

Tyrimų metodika

Šis straipsnis perengtas taikant literatūros šaltinių ir teisinių dokumentų analizės metodą bei internetinių šaltinių duomenų, statistinės informacijos rinkimo, sisteminimo, grafinio modeliavimo, apibendrinimo metodus. Tyrimo metu analizuoti Nacionalinės žemės tarnybos, Teritorijų planavimo dokumentų registro, Statistikos departamento, Kauno rajono savivaldybės pateikti duomenys internetinėse svetainėse.

Kauno rajonas žiedu juosia vieną didžiausių Lietuvos miestų – Kauną. Išsidėstęs trijų didžiausių šalies upių – Nemuno, Neries ir Nevėžio santakoje. Čia įkurtos 25 seniūnijos, 371 kaimas, 9 miesteliai, 3 miestai. Istoriją saugo 302 kultūros paveldo objektai, 19 buvusių dvarų sodybų. Šiandien Kauno rajonas – vienas didžiausių ir tankiausiai apgyvendintų rajonų šalyje.

Vidutinis gyventojų tankumas - 56,9 žm./km^2. Kauno rajono plotas – 149,6 tūkst. hektarų, gyventojų sk. – per 99 tūkst. (2018 m. pabaigoje) (Kauno..., 2019).
Kauno rajono urbanistinė situacija šalyje – ypatinga. Tai metropolinio centro Kauno įtakos arealas.

Nagrinėjama teritorija - Akademijos seniūnija, sutampanti su Akademijos gyvenvietės ribomis – viena mažiausių ir jauniausių Pakaunės seniūnijų, kurios pradžia buvo tuometės Lietuvos žemės ūkio akademijos gyvenvietė (2. pav.). Seniūnijos plotas – 464 ha. Pagal 2011 metų duomenis, joje gyveno 2807 asmenys.

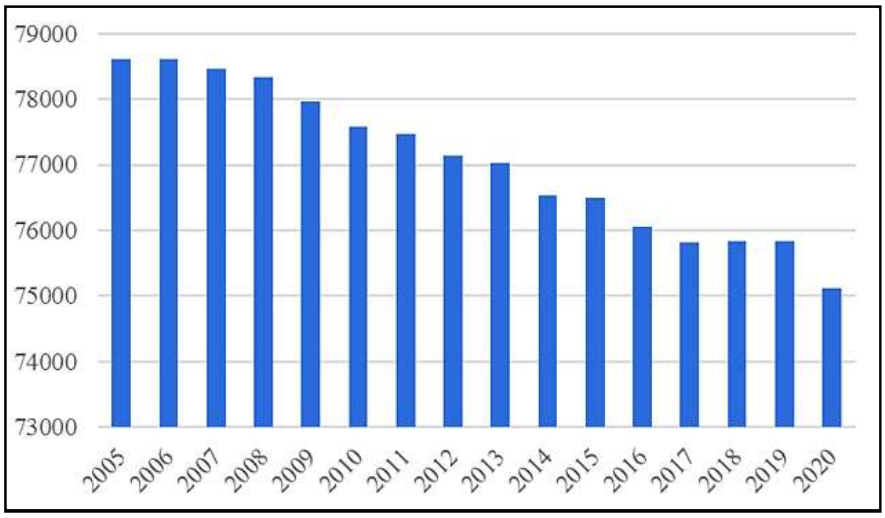
1 pav. Akademijos gyvenvietės teritorija (šaltinis: Žis.lt)
Fig. 1. *Territory of the Academy settlement (source: Žis.lt)*

Akademija įsikūrusi į vakarus nuo vakarinio Kauno lanksto. Į šiaurę nuo Akademijos yra Kamšos botaninis-zoologinis draustinis, prie jo ribojasi Obelynės parkas su Tado Ivanausko namu-muziejumi. Pietinėje dalyje prie vandentiekio bokšto stūkso gynybinio griovio, supamo Marvos forto, liekanos. Gyvenvietė įkurta 1999 m. kovo 23 d. LR Vyriausybės nutarimu iš Ringaudų ir Noreikiškių kaimų dalių. Akademijos gyvenvietės dalyje yra Vytauto Didžiojo universiteto Žemės ūkio akademija.

Rezultatai

1. Žemės fondo ir gyventojų skaičiaus kaitos analizė 2005 – 2020 metų laikotarpiu

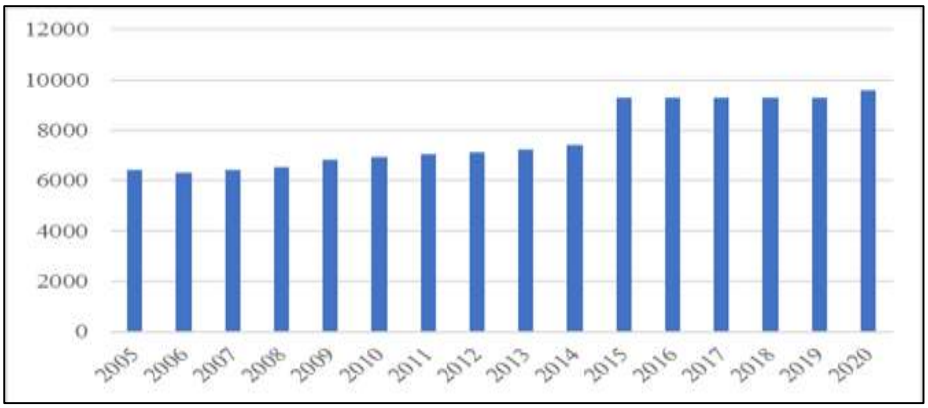
Nagrinėjamu laikotarpiu Kauno rajone pastebima žemės naudmenų kaita (2 pav.). Analizei pasirinkta Kauno rajono teritorija.



2 pav. Žemės naudmenų kaita Kauno rajone 2005 - 2020 m. (sudaryta autorių, šaltinis: nžt.lt)

Fig.2. *Land use change in Kaunas district in 2005 - 2020 (compiled by the author, source: nžt.lt)*

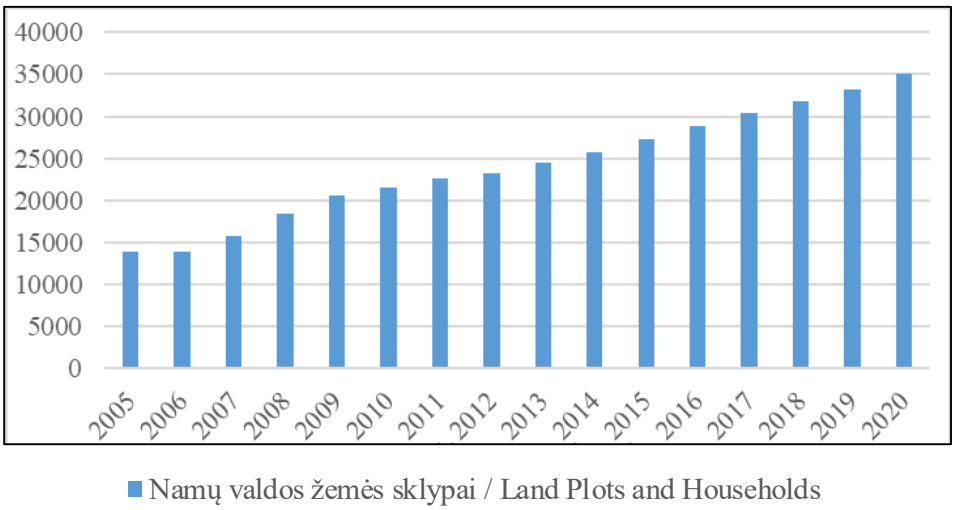
Analizuojamu laikotarpiu Kauno rajono teritorijoje žemės ūkio naudmenos sumažėjo 4,45 proc., t.y. nuo 78604,97 ha 2005 m. iki 75115,17 ha 2020 m. Didžiausias pokytis pastebėtas 2019 – 2020 m. laikotarpyje, tuo metu žemės ūkio naudmenų sumažėjo 0,96 proc. Manytina, kad tai vyksta todėl, jog žemės ūkio paskirties žemė yra keičiama į kitos paskirties žemę. Pastebėta užstatytos teritorijos didėjimo tendencija (3 pav.).



3 pav. Užstatytų teritorijų kaita Kauno rajone 2005 – 2020 m. (sudaryta autorių, šaltinis: nžt.lt)

Fig.3. *Change of built-up areas in Kaunas district in 2005 - 2020 (compiled by the author, source: nžt.lt)*

Nagrinėjamu laikotarpiu Kauno rajone užstatytų teritorijų plotas padidėjo 33,09 proc., t.y. nuo 6404,76 ha 2005m. iki 9572,72 ha. 2020 m. Didžiausias pokytis įvyko nuo 2014 metų. Tuo metu užstatytų teritorijų padaugėjo nuo 7394,44 ha iki 9291,10 ha, t.y. 20,41 proc. Lietuvos Respublikos statybų leidimų informacinės sistemos "Infostatyba" duomenimis Kauno rajone 2014 m. nuo sausio 1d. iki gruodžio 17 d. išduota 1200 statybų leidimų, tai ir lėmė didėjantį nagrinėjamų naudmenų pokytį. Taip pat Lietuvos Respublikos žemės fondo duomenų surašyme yra nurodyta, kaip kito namų valdų žemės sklypų skaičius (4 pav.).



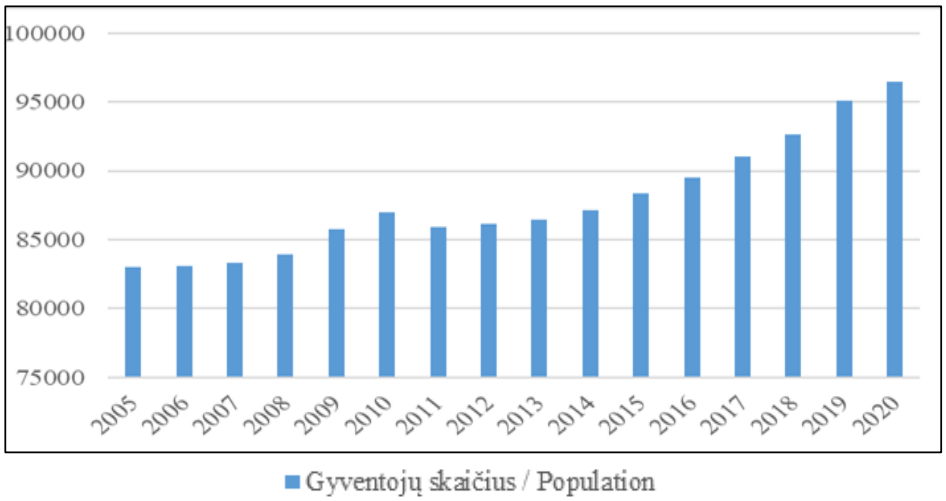
4 pav. Kauno rajono namų valdų žemės sklypų kitimas 2005 – 2020 m. (sudaryta autorių, šaltinis: nžt.lt)

Fig.4. *Change of land plots of Kaunas district household holdings in 2005 - 2020. (compiled by the author,source: nžt.lt)*

Nagrinėjamu laikotarpiu namų valdos žemės sklypų skaičius padidėjo 60,51 proc., t.y. nuo 13856 -2005 metais iki 35083 - 2020 metais. Didžiausi pokyčiai prasidėjo nuo 2007 – 2008 m. Tuo metu namų valdų žemės sklypų skaičius padidėjo 14,34 proc., t.y. nuo 15739 iki 18374.

Pastebima kelių kaita - jų padaugėjo nuo 2759,15 km. iki 3116,84 km., t.y. 11,48 proc. Tai lėmė, jog kuriantis naujoms gyvenvietėms yra tiesiami keliai, kadangi visi sklypai turi turėti privažiavimus prie jų.

Gyventojų skaičiaus augimas turėjo įtakos teritorijos pokyčiams. Šiai analizei panaudoti oficialiosios statistikos portale pateikti duomenys apie nuolatinius gyventojus savivaldybėse. Duomenys pateikti 5 paveiksle.



5 pav. Kauno rajono gyventojų skaičiaus kaita 2005 – 2020 m. (sudaryta autorių, šaltinis: stat.gov.lt)

Fig.5. *Population change of Kaunas district in 2005 - 2020 (compiled by the authors, source: stat.gov.lt)*

Nagrinėjamu laikotarpiu Kauno rajone gyventojų skaičius išaugo 13,92 proc., t.y. nuo 83020 - 2005 metais iki 96441 2020 metais. Ypač didelis gyventojų skaičiaus padidėjimas fiksuotas 2018 – 2019 m. Tuo metu į Kauno rajoną atsikėlė 2476 gyventojai, t.y. kitimas įvyko 2,60 proc.

Plėtros tendencijoms įtakos turi ir noras gyventi atokiau nuo intensyvaus transporto srauto, ramesnėje aplinkoje, šalia miškų, gamtos apsuptyje. Taip pat įtakos turi didėjanti darbo vietų pasiūla Kauno mieste.

2. Teritorijų planavimo dokumentų sprendinių įtaka nagrinėjamai teritorijai

Vienas iš teritorijų planavimo dokumentų, turintis įtakos nagrinėjamai Akademijos gyvenvietei, yra parengtas Kauno rajono teritorijos Bendrasis planas ir jo sprendiniai. Bendrojo plano rengimo tikslas – išanalizuoti, įvertinti, aptarti su suinteresuotomis grupėmis ir pasiūlyti teritorijos erdvinio, aplinkosauginio, socialinio ir ekonominio vystymo prioritetus bei kryptis. Vienas iš pagrindinių tikslų, tai urbanizuotų teritorijų aglomeracija bei esamos teritorijos panaudojimo optimizavimo skatinimas. Formuojant urbanistinio karkaso struktūrą yra pastebima teigiama plėtra, kai kompaktiškai vystosi miesteliai, turintys centrus – viešųjų įstaigų ir erdvių pradmenis. Plėtojant urbanistinį karkasą bendrojo plano sprendiniais yra nurodomos funkcinės zonos ir jose nustatomos galimos žemės panaudojimo paskirtys ir būdai, užstatymo intensyvumas. Naujos statybos numatomos mažiausiai jautriose gamtiniu požiūriu teritorijose, šalia kelių. Akademijos gyvenvietė Bendrajame plane patenka į modernizuojamų gyvenamųjų vietovių sąrašą, kuriose ruošiamasi tobulinti esamą urbanistinę struktūrą. Pagal Bendrojo plano 1 - ąjį pakeitimą ši teritorija jau gausiai užstatyta, teritorijos esminis bruožas yra užstatymo branduoliai. Taip pat yra likusi dalis sodininkų bendrijų bendrojo naudojimo žemės sklypų teritorijų bei plėtros teritorijų iki 2019 m. plėtoti.

Akademijos didelė dalis patenka į Kamšos botaninį - zoologinį draustinį, kuris priklauso Natura 2000 (6 pav). Taigi toje teritorijoje yra galiojantys draudimai.

6 pav. Urbanistiniai apribojimai gamtiniame karkase (šaltinis: Kauno rajono BP, 2017)
Fig. 6. *Urban constraints in the natural framework (source: Kaunas District BP, 2017)*

Rengiant šios teritorijos bendrąjį ar detalųjį planą plėtros teritorijos negali didėti daugiau nei 10 proc. nei numatyta Kauno rajono BP bei negali prieštarauti kitiems BP sprendiniams, nebent yra būtinybė ir ji yra pagrįsta. Įtakos teritorijai taip pat turi susisiekimo infrastruktūra. Šalia driekiasi magistralinis kelias, taip pat gausu krašto kelių, šalia rajoninis kelias, geras susisiekimas su Kauno miestu bei kitais Lietuvos miestais.

Detalieji planai reglamentuoja veiklą tose teritorijose, kurios yra užstatytos arba numatytos užstatyti. Jais vadovaujantis rengiami žemės sklypų formavimo planai, statybos techniniai projektai (7 pav.).

7 pav. Akademijos gyvenvietės parengti detalieji planai (šaltinis: regia.lt).
Fig.*7. Detailed plans prepared by the Academy settlement(source: regia.lt)*

Pagal Teritorijų planavimo registro duomenis 2005-2020 metais Akademijos seniūnijoje įregistruoti 6 detalieji planai. Paskutinį kartą detalusis planas Akademijoje buvo patvirtintas 2015 m. Jo rengimo tikslas - iš pagrindinės žemės ūkio paskirties pakeisti į kitą žemės paskirtį. Pakeistas sklypo naudojimo būdas - vienbučių ir dvibučių gyvenamųjų pastatų teritorijos. Žemės sklype yra nustatytos elektros linijų apsaugos zonos, vandentiekio lietaus ir fekalinės kanalizacijos apsaugos zonos, įrengtos valstybei priklausančios melioracijos sistemos bei įrenginiai. Įvažiavimas į sklypą kelio servitutu.

Planuojant gamtinį karkasą labiau atsižvelgiama į natūralius gamtos plotus. Analizuojant teritorijų planavimo dokumentus galima teigti, kad Akademijos centrui būdinga

daugiabučiai, čia plėtra nevyksta, o pakraščiuose – buvusiose sodų teritorijose, kurių paskirtis šiuo metu yra pakeista ir vyksta naujos statybos, kuriami nauji kvartalai. Taip pat yra likusios ir sodų bendrijos, kuriose taip pat statomi nauji gyvenamieji namai. Kaip kito Akademijos gyvenvietė 2005 – 2018 metais pateikiama (8 pav.)

ab

8 pav. Akademijos gyvenvietės fragmentai (šaltinis: geoportal.lt; a) 2005 -2006 metų ortofoto; b) 2018 – 2020 metų ortofoto)

Fig. 8. *Fragments of the Academy settlement (source: geoportal.lt; a) 2005-2006 orthophoto; b) 2018 - 2020 orthophoto)*

2005 metų ortofoto medžiagoje matomi sodų plotai, nebuvo nei kelių ir tik keli namų valdos žemės sklypai. 2018 – 2020 metų ortofoto matome jau užstatytas teritorijas. (9 pav.). Per nagrinėjamą laikotarpį suformuoti – Medeinos, Žemynos, Gabijos užstatyti gyvenamųjų namų kvartalai.

9 pav. Žemynos kvartalas (šaltinis Žis.lt)

Fig. 9. *Continental Žemyna (source Žis.lt)*

Medeinos, Žemynos ir Gabijos kvartalai tankiai užstatyti. Centrinė Akademijos gyvenvietės dalis išlikusi tokia pati, tik yra renovuojami daugiabučiai, tvarkoma aplinka. Visa plėtra išsidėsčiusi gyvenvietės pakraščių zonose.

Išvados

1. Kauno rajone nagrinėjamu 2005 – 2020 metų laikotarpiu nustatyta, kad žemės ūkio naudmenų sumažėjo 3489.80 ha, kas sudaro 4,45 proc. Padidėjo užstatytų teritorijų plotai 33,09 proc. ir kelių - 11,48 proc. Namų valdos žemės sklypų skaičius padidėjo 60,51 proc. Gyventojų per šį laikotarpį padaugėjo 13,09 proc. Išnagrinėti veiksniai rodo, kad plečiasi užstatymo teritorijos priemiestinėse zonose. Nagrinėjama Akademijos gyvenvietės plėtra

turi dideles perspektyvas, nes graži gamtinė aplinka, netoli Kauno miestas pritraukia naujų gyventojų kėlimąsi į šią teritoriją.

2. Išnagrinėjus teritorijų planavimo dokumentų sprendinius nagrinėjamoje teritorijoje nustatyta, jog tiek Kauno rajono Bendrasis planas ir jo pakeitimai, tiek detalieji planai turi įtakos priemiestinių teritorijų plėtrai. Pastebėta, jog analizuojamai teritorijai įtakos turi tokie sprendiniai, kaip urbanistiniai apribojimai gamtiniame karkase, inžineriniai ir susisiekimo infrastruktūros tvarkymo, atnaujinimo ir diegimo klausimai bei prioritetinis plėtros teritorijų zonavimas. Tačiau didžiausią įtaką šioms teritorijoms daro keičiama pagrindinė žemės sklypo paskirtis – iš žemės ūkio paskirties į kitą paskirtį – ir tose vietose įkūriami nauji kvartalai arba atnaujinami jau seniau pastatyti gyvenamieji namai.
3. Išnagrinėjus Akademijos gyvenvietės plėtros tendencijas, galima teigti, kad užstatymo plėtra vyksta gyvenvietės pakraščiuose, o centrinė gyvenvietės dalis yra užstatyta daugiabučiais namais, kurie yra renovuojami ir atnaujinami.

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Virginija Atkocevičienė, Jolanta Valčiukienė, Daiva Juknelienė, Gabrielė Valentaitė. Development analysis of Akademija village in Kaunas district

Summary

Landscape is a very important state resource, covering urban and rural areas, as well as forests, waters and other areas. This is influenced by the formation of scattered building blocks around cities. Therefore, over time, the landscape is increasingly affected by the development and urbanization of the urban landscape. In the spatial planning documents, it is very important to envisage the development territories to be expanded and to preserve the landscape, as well as to ensure the well-being of the population.

Kaunas district municipality is one of the fastest growing municipalities. The article examines the settlement of the Academy, the territory of which is in high demand in the real estate market. Kaunas district is the coveted area of Kaunas - individual house builders. Rapid suburban urbanization has increased the demand for suburban land and put pressure on agricultural land. During the analyzed period, the population of Kaunas district increased from 83020 to 96441. i.e. 13.92 percent. The area of built-up areas in Kaunas district increased by 33.09 percent. t.y. from 6404.76 ha in 2005. up to 9572.72 ha. 2020

Analyzing the territorial planning documents, it can be stated that the center of the Academy is characterized by apartment buildings, no development takes place here, and on the outskirts - in the former garden areas, the purpose of which is currently being changed and new construction is underway. There are also garden communities left, where new residential houses are also being built.

Keywords: land use, suburban development, built-up area, general plan, detailed plan.

VANDENS GĖLINIMO MECHANIZMŲ LAIVE MODERNIZAVIMO GALIMYBIŲ TYRIMAS

Renata Jackuvienė, Lukas Žemgulys
Lietuvos aukštoji jūreivystės mokykla

Straipsnyje autoriai analizuoja vandens gėlinimo mechanizmų, eksploatuojamų laive, tobulinimo galimybes atsižvelgiant į šių įrengimų sąveiką su jūros ekosistemomis ir nurūgštinimui naudojamų medžiagų galimą neigiamą poveikį šių ekosistemų veiklai bei siekiant sumažinti gėlinimo mechanizmų laive eksploatacinius kaštus. Atlikus eksperimentą, autoriai siūlo įdiegti modernų vandens laive nugėlinimo mechanizmą, nenaudojantį cheminių medžiagų, tačiau veikiantį ultragarsiniu dažniu taip padidinant finansinių išteklių naudojimo efektyvumą, sumažinant jūros ekosistemų taršą rūgštiniais chemikalais bei sumažinant grėsmę įgulos narių sveikatai.

Raktažodžiai: *laivo inžineriniai įrenginiai, vandens gėlinimo mechanizmas, vandens gėlinimo modernizavimas.*

Įvadas

Tyrimo problema ir aktualumas. Gėlas vanduo laive yra reikalingas gyvybinėms įgulos funkcijoms palaikyti bei vandens tiekimui garo katilų aprūpinimui, tačiau siekiant didinti laivybos tvarumą ir jos draugiškumą aplinkai aktualu analizuoti vandens gėlinimo mechanizmų technologines modernizavimo galimybes diegiant šiuolaikinius technologinius sprendinius. Naujų inžinerinių įrenginių poreikį lemia tai, kad laivuose naudojami jūros vandens gėlintuvai turi nuolatinį sąlytį su jūros vandeniu ir todėl eksploatuojant tokius mechanizmus ilgą laiką susidaro didelė eksploatacinių incidentų rizika dėl korozijos, druskų ir kitų mineralų susidarymo ant mechanizmų paviršiaus ir šilumokaičių. Todėl siekiant šios rizikos išvengti laivuose yra naudojami polisulfato pagrindo junginiai, kurie nėra draugiški aplinkai ir gali sukelti ilgalaikį neigiamą poveikį jūros ir uosto vandens telkinių ekosistemoms. Taip pat reikia pažymėti, kad eksploatuojant tokius mechanizmus yra skatinamas ir kenksmingų medžiagų gamybos poreikis, kas didina ne tik laivuose naudojamų inžinerinių sprendinių, tačiau ir viso gavybos proceso taršumą bei kelia priekrančių urbanizuotų teritorijų ir už ekologiją kovojančių visuomeninių organizacijų pasipiktinimą. Siekiant tokias laivybos keliamas konfliktines situacijas mažinti didinant naudojamų mechanizmų draugiškumą aplinkai vienas iš galimų sprendimų galėtų būti šiuolaikiškų (modernių) vandens gėlinimo mechanizmų įrengimas laivo inžinerinėse sistemose.

Tyrimo objektas: vandens gėlinimo mechanizmų modernizavimas laive.

Tyrimo tikslas: ištirti vandens gėlinimo mechanizmų laive modernizavimo galimybes mažinant neigiamą ilgalaikį poveikį aplinkai.

Tyrimo uždaviniai:

- apibūdinti vandens gėlinimo procesą laivo inžineriniuose tinkluose;
- nustatyti laive eksploatuojamo vandens gėlinimo mechanizmo veikimo principus;
- ištirti galimą vandens gėlinimo mechanizmo modernizavimo atvejį.

Tyrimo metodai: mokslinės literatūros ir technologinės literatūros bei tarptautinės jūrų teisės dokumentų analizė, inžinerinis tyrimas, atvejo analizė, inžinerinio sprendinio modeliavimas.

1. Vandens gėlinimo proceso laivo inžineriniuose tinkluose apibūdinimas

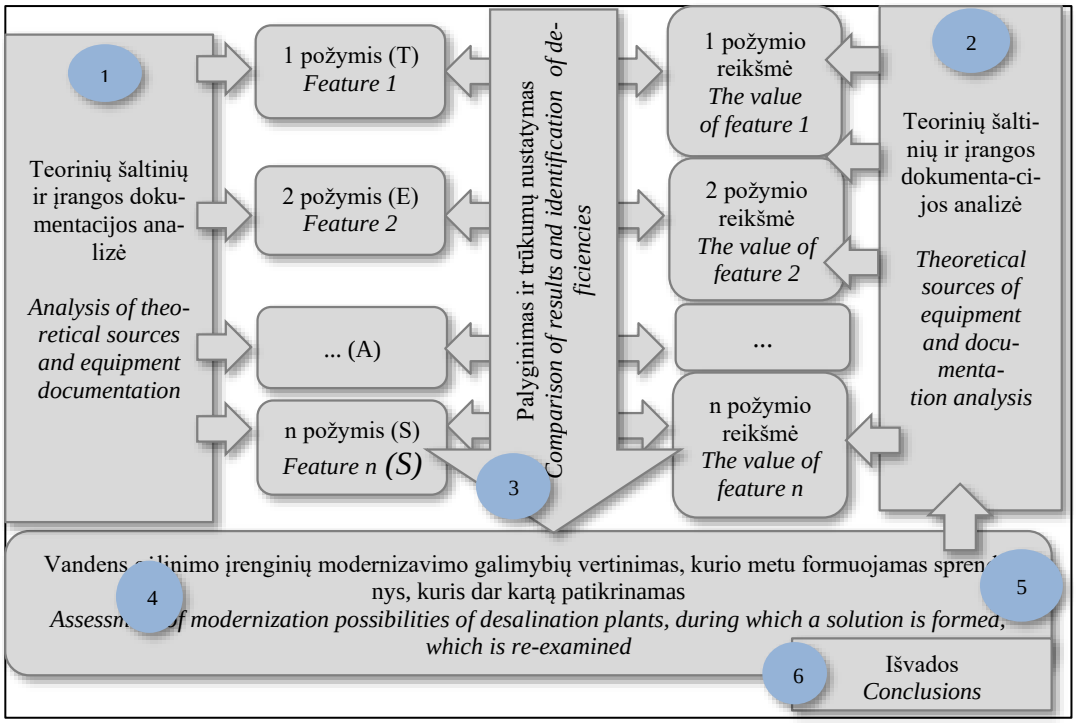
Jūros vandens gėlintuvas – tai mechanizmas, kuris turi pastovų sąlytį su vandeniu, todėl ilgalaikėje eksploatavimo perspektyvoje atsiranda korozijos, druskų ir kitų mineralų susidarymo ant jo paviršiaus (Curto et al., 2021). Analizuojant inžinerinių laivo tinklų mokslinės

literatūros šaltinius galima pastebėti, kad ši problema yra moksliškai tiriama atliekant įvairius tyrimus ir bandymus, kaip sumažinti šių nereikalingų medžiagų kiekį evaporatoriuje.

Pagrindinis vandens gėlintuvo naudojimo tikslas –padidinti laivo navigacinę autonomiją nelaikant laive didžiulio kiekio vandens atsargų. Pažymėtina yra tai, kad vanduo, kuris yra gaminamas gėlintuve, taip pat užtikrina gėlo vandens išteklius laive, kurie yra naudojami tiek įgulos, tiek ir laivo technologiniams- inžineriniams poreikiams tenkinti (Rustum et al, 2020). Laivo inžinerinių tinklų evoliucijoje laivuose naudojamų vandens gėlinimo įrengimų technologija kito: pirmieji vandens gėlintuvai buvo įrengti garo varikliais varomuose laivuose, todėl juose veikdavo vienpakopė technologija, kuri vėliau evoliucionavo į efektyvesnę daugiapakopę gėlinimo sistemą, technologiškai pažangesnę, tačiau dėl sąlyčio su druskingu vandeniu kai kurios inžinerinių įrenginių detalės pasidengia apnašomis, sutrikdydamos įrenginio darbą ir padidindamos neigiamo poveikio aplinkai rizikas (Amin et al., 2020).

Apibendrinant galima teigti, kad vandens gėlinimo procesas yra nuolat tobulinamas, išrandamos naujos technologijos, kurios ne tik palengvina vandens gėlinimo sistemos eksploataciją, bet ragina ir kitas kompanijas prisidėti prie ekologiškos laivybos plėtojimo.

Gėlinimo procesas turi nuolatinį tiesioginį sąlytį su jūros vandens ekosistema ir yra susijęs su poreikiu laive turėti gėlą vandenį, todėl laivo įgulos nariai turi skirti daug dėmesio aptarnaudami ir eksploatuodami šios sistemos įrenginius. Šis procesas reikalauja papildomų laiko ir darbo sąnaudų, jo metu naudojamos specialios cheminės įrenginių valymo priemonės, kurios gali padaryti žalos ekosistemai (Rustum et al., 2021). Todėl būtina modernizuoti laivų inžineriniuose tinkluose naudojamų cheminių medžiagų naudojimą jų priežiūrai, kartu sukuriant pridėtinę naudą laivo įgulos darbo planavimui, užtikrinant reikalingus gėlo vandens išteklius laive ir prisidėti prie jūros ekosistemos išsaugojimo.



1 pav. Vandens gėlinimo įrangos laive modernizavimo galimybių tyrimo modelis
Fig. 1. *Research model of the assessment of modernization possibilities of desalination equipment onboard.*

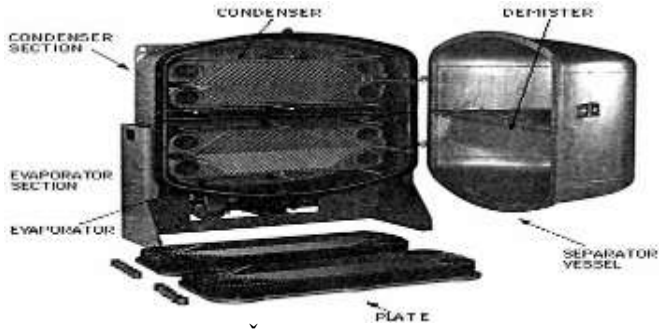
Siekiant įgyvendinti užsibrėžtus tyrimo tikslus tyrimas atliekamas taip, kaip parodyta tyrimo modelyje (1 pav.)

Analizuojant tyrimo modelio struktūrą reikalinga pažymėti, kad vandens gėlinimo mechanizmo laive veikimo principo inžinerinių principų analizės sudaro prielaidas surinkti pakankamą stebimų parametrų rinkinį ir sudaryti stebėjimų planą (1 pav. 1-as etapas). Parametrus sugrupavus į skirtingas grupes (technologinius, T; aplinkosauginius, A; ekonominius, E.; socialinius, S; 1 pav. 1 etapas) ir atliekant inžinerinį stebėjimą eksploatuojant įrenginį (1 pav. 2-as etapas) periodiškai fiksuojami įrenginio parametrai ir kiekvieną kartą vertinamos išryškintų parametrų reikšmės skirtingais laiko periodais, kurių per šį tyrimą buvo du. Kadangi tiesiogiai nebuvo dalyvaujama pačiame stebėjime, todėl laivo inžinieriams buvo parengta stebėjimo anketa, kurioje buvo fiksuojami parametrų pokyčiai (1 pav. 3-ias etapas).

Gavus rezultatinius duomenis, buvo atliktas palyginimas (1 pav. 4-as etapas) tarp siektinų reikšmių ir užfiksuotų reikšmių bei buvo įvertintas jų technologinis, aplinkosauginis, ekonominis ir socialinis poveikiai laivo inžineriniams procesams, įgulos funkcionavimui laive ir netiesioginei rizikai aplinkos ekosistemų atžvilgiu (1 pav. 4-as etapas). Remiantis tyrimo rezultatais buvo nustatyti pagrindiniai inžineriniai trūkumai ir buvo įrengtas modernizuotas įrenginys (1 pav. 5-as etapas) darant hipotetinę prielaidą, kad modernizuotas įrenginys turi eliminuoti ankstesnio stebėjimo metu užfiksuotus trūkumus. Įrengus modernizuotą įrenginį, inžinerinis stebėjimas buvo pakartotas (1 pav. 2-as etapas) ir buvo gauti duomenys, kurių pagrindu lyginamosios analizės būdu buvo suformuluotos tyrimo išvados (1 pav. 5-6-as etapai). Remiantis sudarytu tyrimo modeliu, pateikiami atlikto tyrimo rezultatai, pasiekti vandens gėlinimo inžinerinių įrenginių modernizavimo projekto įgyvendinimo laive metu.

2. Laivuose eksploatuojamo vandens gėlinimo mechanizmo veikimo principų vertinimas

Vandens gėlinimo įrenginys "Alfa laval" veikia garavimo ir kondensavimo principu. Pirmiausiai yra paleidžiamas ežektorinis siurblys, kuris cirkuliuoja jūros vandenį per ežektorių ir tokiu principu gėlintuvo viduje sukuria vakuumą, todėl vanduo užverda žemesnėje temperatūroje (2 pav.).



2 pav. Gėlintuvo vidinė konstrukcija. Šaltinis: ARCTIC DISCOVERER mašinų skyriaus plano žinynas

Fig. 2. *Inside construction of onboard desalination equipment*

Ežektorinis siurblys tuo pačiu metu tiekia jūros vandenį į evaporatorinį titaninių plokščių tipo šilumokaitį, kur jūros vanduo yra užverdamas ir garinamas bei taip pat aušina kondensavimo šilumokaitį, kur garai yra surenkami, atvėsinami ir kondensuojami. Gautas kondensatas - distiliuotas vanduo (Yuksel et al., 2018). Įrenginio korpuso apatinėje dalyje susikaupia iš evaporatoriaus likęs druska prisotintas vanduo (angl. brine), kuris nukreipiamas

atgal į jūrą. Prieš pradedant pumpuoti vandenį į talpyklas patikrinamas druskos kiekis "Chlorine test" būdu(neturi viršyti 2-3ppm dalelių druskos milijone). Sistemoje tai pat įmontuotas elektrodinis druskos kiekio vandenyje matuoklis. Padidėjus dalelių kiekiui daugiau nei 3 ppm, įsijungia signalizacija ir gėlas vanduo nukreipiamas atgal į jūrą (Curto et al., 2021).

Dėl aukščiau aprašyto veikimo principo apnašų susidarymą sąlygoja keletas veiksnių: naudojami chemikalai, vandens kokybė ir gėlintuvo būklė. Pagrindinės medžiagos, kurios susidaro gėlintuve yra: kalcio karbonatas, CaCO3, magnio hidroksidas (Mg (OH) 2), kalcio sulfatas (CaSO4). Pažymėtina, kad kalcio karbonato ir magnio hidroksido susidarymas labiausiai priklauso nuo darbinės temperatūros, tačiau kalcio sulfato susidarymas daugiausiai priklauso nuo vandens kokybės ir nuosėdų gėlintuve. Taip pat reikia akcentuoti, kad minėtų sulfatų susidarymą lemia ir temperatūriniai pokyčiai (1 lentelė).

1 lentelė. Kalcio sulfato susidarymo temperatūriniai režimai
Table 1. *Temperature regimes for calcium sulphate formation*

Temperatūrinės sąlygos *Temperature conditions*	**Reakcija** *Reaction*
Jeigu temperatūra yra mažesnė nei 80^0C *If the temperature is below 80^0C*	CO3 + Ca ————> CaCO3
Jeigu temperatūra yra didesnė nei 80^0C *If the temperature is above 80^0C*	CO3 + H2O ————> HCO3 + OH Mg + 2OH ————> Mg(OH)2

Kaip parodyta temperatūrinių rėžių pokyčių 1 lentelėje, galima daryti apibendrintą išvadą: jei jūros vandens gėlintuve vanduo yra pašildomas iki žemesnės negu 80^0C temperatūros, kalcio karbonato susidarymas bus dominuojantis, tačiau magnio hidroksido susidarymas padidės, kada vanduo bus pašildomas daugiau nei 80^0C. Ekpslotuojant jūros vandens gėlintuvą jo efektyvumas palaipsniui mažėja, nes pradeda formuotis nuosėdos, dėl kurių sutrinka šilumos perdavimo naudingumo koeficientas (Arnau et al., 2019). Jeigu evaporatoriaus druska prisotinto vandens (angl. brine) nuosėdų tankis viršija 96000 ppm, tada susidaro kalcio sulfato apnašos. Tačiau jūros vandens gėlintuvo nuosėdų tankis paprastai neviršija 80000 ppm, todėl kalcio sulfato apnašų susidarymas nėra dažnas reiškinys (Curto et al., 2021).

Ištyrus laivo inžineriniuose tinkluose naudojamų vandens gėlinimo mechanizmų technologines charakteristikas, galima sakyti, kad dėl skirtingų darbo temperatūrnių režimų bei dėl jūros vandens cheminės sudėties, eksplotacijos metu susidaro apnašos, mažinančios šilumos perdavimo naudingumo koeficientą ir ilgainiui sutrikdančios mechanizmo darbą.

Dėl šių priežasčių rekomenduojama naudoti jūros vandens gėlintuvą pagal gamintojo nustatytus reikalavimus, kadangi didesnis pagaminto vandens kiekis negu nustatyta padidina nuosėdų ir apnašų susidarymą. Aptarnaujant gėlintuvą yra prarandamas dar didesnis vandens atsargų kiekis, nes jo valymas trunka iki kelių parų. Gėlintuvo valymas yra atliekamas pilnai sustabdžius sistemą ir nuėmus kondensato arba evaporatoriaus plokštes, kurios pamerkiamos į rūgštinius cheminius tirpalus, polisulfato pagrindo junginius (angl. SAF acid), kad apnašas būtų lengviau pašalinti mechaniniu būdu.

Apibendrinant galima teigti, kad gėlintuvas turi būti eksplotuojamas pagal gamintojo nurodymus, kad nesusidarytų papildomos apnašos, kurios palaipsniui ne tik sumažintų pagaminamo vandens kiekį, bet ir apsunkintų jo aptarnavimą.

3. Vandens gėlinimo mechanizmo laive modernizavimo galimybių tyrimas

Danijos mokslininkai (Merus, 2014) sukūrė jūros vandens gėlintuvo sistemą, kuriai veikiant nereikalingi jokie papildomi chemikalai, o yra naudojamos specialaus lydinio titano

plokštės su integruotais ultragarsiniais moduliais. Ši sistema žinoma kaip „ScaleGuard“, kiekvieną valanda automatiškai yra įjungiama 3-4 minutėms (3 pav.). Sistemai veikiant ultragarsiniu dažniu (26500 Hz) per modulius susidaro mikroskopiniai burbuliukai, kurie teka karšto garintuvo paviršiumi ir susiliečia su druska ir mineralais ant gėlintuvo paviršiaus. Likusios nuosėdos yra išplaunamos iš sistemos per ežektorių į jūrą. (Danish Maritime Magazine, 2014).

a) b)

3 pav. a) ScaleGuard sistemos laive vizualizacija; (b) korozijos poveikis mechanizmams
Fig. 3. *Visualization of ScaleGuard system onboard (a) and corrozion influence (b)*
Šaltinis: Merus, 2014

Laivo vandens gėlinimo inžinerinės sistemos modernizavimas gali būti įgyvendintas įdiegiant Merus antikorozinį žiedą. Remiantis MERUS laboratorijoje atliktais mokslininkų tyrimais ir rezultatais, buvo nustatyta, kad atomo branduolyje vyksta nuolatiniai elektronų ir protonų mainai, kurie gali būti manipuliuojami su osciliacijos virpesių pagalba (Kralj, et al. 2017). Kompanija teigia, kad per 10 metų sugebėjo išstudijuoti ir sukurti tokį virpesių kontūrą, kuris galėtų neutralizuoti bet kokį nepageidaujamą šilumokaičiuose susidariusį nešvarumą ar korozijos poveikį. Šie dažnių signalai yra įkraunami į MERUS žiedą specialioje labaratorijoje pagal pasirinktą naudojimo būdą (Merus documentation, 2014).

a) b)

4 pav. a) Gėlintuvo plokštės prieš instaliuojant MERUS žiedą; b) MERUS antikorozinio žiedo poveikis po instaliacijos
Fig. 4. *Desalination plates before installing the MERUS ring (a) and the effect of MERUS anti-corrosion ring after the installation (b)*
Šaltinis: https://www.merusonline.com/fwg-tokyo/

Eksperimentas buvo atliekamas „Tokyo Express” laive, kuris yra modernus ir naujovių nebijantis. Tai - 300 metrų ilgio konteinerinis laivas, todėl jis buvo tinkamas pretendentas šiam tyrimui. Šiame laive gėlintuvas pagamindavo po 25 kubinius litrus geriamo vandens per parą, tačiau nors ir buvo tiekiami chemikalai, gėlintuvo efektyvumas palaipsniui mažėdavo. Dėl šios priežasties įgula turėjo reguliariai ardyti ir valyti gėlintuvą rankiniu būdu, todėl buvo prarandamas didelis pagaminto vandens kiekis (4 pav. a).

MERUS žiedas (4 pav. b) buvo instaliuotas „Tokyo Express“ laive. Instaliaciją atliko laivo energetinių įrenginių eksploatavimo specialistai, įgulos nariai, sumontavę MERUS žiedą ant pagrindinės jūros vandens tiekimo linijos, kol laivas buvo prisišvartavęs krantinėje, taip pat buvo nutrauktas chemikalų tiekimas į gėlintuvą. Po 8 mėnesių laikotarpio kompanijos buvo

paprašyta nufotografuoti plokštes, jų nevalius ir kitaip neapdorojus, kad būtų galima pastebėti skirtumus. Kaip ir buvo tikėtasi, plokštės buvo beveik be nuosėdų. Taigi, instaliavus "Merus" žiedą, galimi 3 pagrindiniai privalumai: eksploatuojant vandens gėlintuvą laive pasiekiamas didžiulis laiko ir pinigų sutaupymas; nereikalingi jokie chemikalai, kas yra didelis žingsnis link ekologiškos laivybos; cheminio apdorojimo talpos tik užima reikalingą vietą laive, kuri gali būti ženkliai sumažinta instaliuojant šią technologiją.

Išvados

Išanalizavus vandens gėlinimo procesą laivo inžineriniuose tinkluose, buvo nustatyta, kad siekiant didinti laivo įrenginių aptarnavimui reikalingą žmonių darbo laiką bei mažinti vandens ekosistemų taršą chemijos pramonės produktais laivo gėlinimo procesai turi būti modernizuojami pritaikant naujausius atradimus, tokius kaip „Merus antikorozinis žiedas" arba „ScaleGuard" technologija. Šios technologijos įrodė, kad galima ne tik pigiau ir efektyviau eksplotuoti gėlintuvą, bet ir prisidėti prie ekologiškos laivybos, kuri šiais laikais ypač aktuali.

Išanalizavus laive eksploatuojamo vandens gėlinimo mechanizmo veikimo principus, buvo nustatyta, kad esant skirtingiems temperatūrų režimams ant jo paviršiaus susidaro kalkių apnašos, kas sumažina įrangos produktyvumą ir padidina poreikį aptarnauti gėlintuvą, kai laivas eksplotuojamas zonoje, kur reikalingas didelis vandens kiekis.

Ištyrus galimą vandens gėlinimo mechanizmo modernizavimo atvejį, buvo nustatyta, kad laive, įrengus šiuolaikišką vandens gėlintuvo sistemą, veikiančią ultragarsiniu dažniu, kuri veikia be papildomų cheminių medžiagų, galima padidinti finansinių išteklių naudojimo efektyvumą, sumažinti jūros ekosistemų taršą rūgštiniais chemikalais, sumažinti grėsmę įgulos narių sveikatai, tačiau reikalingos papildomos išlaidos įrangai ir jos įdiegimui.

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Renata Jackuvienė, Lukas Žemgulis

Research of possibilities to modernize water desalination mechanisms onboard

Summary

Freshwater on board is needed to support vital functions of the crew and to ensure supply of freshwater used in ship maintenance processes, but in order to increase the sustainability and environmental friendliness of shipping, it is important to analyse the possibilities of modernization productivity of the engineering solutions that companies are providing. The object of research: the modernization of water desalination mechanisms on board. The aim of the research: to investigate the possibilities of modernization of water desalination mechanisms on board by reducing negative long-term impact on the environment. To achieve the research goal, three objectives are described: to analyse the principles of operation of the desalination mechanism operated on board and to investigate a possible case of modernization of fresh water generator. The research methodology is based on the analysis of scientific and technological literature and international maritime law documents, also on the engineering observation including the modelling method for the possible engineering solution application. The results of the study found out that existing desalination plates are subject to the formation of deposits, the removal of which uses acidic chemicals that pose a risk to marine ecosystems due to the contact with water and increase the cost of operating crew time. The possibilities of modernizing desalination engineering facilities by introducing a new generation of facilities based on certain principles can solve the problems and increase the sustainability of vessel processes.

Keywords: ship engineering equipment, desalination mechanism, modernization of desalination on board.

AZOTO OKSIDO DUJŲ EMISIJOS IŠ JŪRŲ LAIVŲ DYZELINIŲ VARIKLIŲ MAŽINIMO GALIMYBĖS TAIKANT IŠMETAMŲJŲ DUJŲ RECIRKULIACIJOS SISTEMĄ

Gvidas Denesevičius, Lukas Pažusis, Eugenijus Žagaras
Lietuvos aukštoji jūreivystės mokykla

Straipsnyje apibūdinama azoto oksido (NO_x) emisija iš jūrų laivų dyzelinių variklių ir šios emisijos mažinimo galimybės taikant išmetamųjų dujų recirkuliacijos sistemą, analizuojant mokslininkų atlikto lėtaeigio laivų dyzelinio variklio 7UEC60LS veikimo analizės rezultatus. Laivų variklio išmetamųjų dujų recirkuliacijos sistemos veikimas analizuojamas, remiantis Tarptautinės jūrų organizacijos reikalavimais, kuriais nustatomas variklio išmetamų dujų kiekis ir sudėtis. Remiantis atlikto tyrimo duomenimis, vertinamas variklio veikimas, nustatomas išmetamų azoto oksido dujų kiekio pokytis, o remiantis šiais duomenimis įvertinti variklio ekonominiai ir galios rodikliai esant konkretiems išmetamųjų dujų recirkuliacijos sistemos parametrams.

Raktažodžiai: jūrų laivų dyzeliniai varikliai, NO_x emisija, išmetamųjų dujų recirkuliacija

Įvadas

Didėjant krovinių gabenimui jūrų transportu tuo pačiu didėja ir tarša iš laivų. Tai neigiamai veikia jūros ir pakrančių aplinką, todėl emisijos iš laivų mažinimas yra svarbi pasaulinė problema (Winnes, H. & Fridell, E., 2010; Zhao, J., Zhang, Y., Yang, Z., Liu, Y., Peng, S., Hong, N., Hu, J., Wang, T. & Mao, H., 2020). Tarptautinės jūrų organizacijos (angl. International Maritime Organization – IMO) 1973 m. konvencija dėl teršimo iš laivų prevencijos MARPOL reglamentuoja emisiją iš laivų ir tuo iškelia reikalavimus laivų savininkams ir operatoriams rasti būdų, kaip sumažinti taršą. Vienas tokių yra išmetamųjų dujų recirkuliacijos sistemos įdiegimas laivuose (Jääskeläinen, H. & Khair, M., 2020).

Tyrimo objektas - jūrų laivų dyzelinio variklio 7UEC60LS „Mitsubishi“ su standartine išmetamųjų dujų recirkuliacijos sistema azoto oksidų emisija.

Tyrimo tikslas – pagrįsti jūrų laivų dyzelinių variklių išmetamųjų dujų emisijos mažinimo galimybę naudojant išmetamųjų dujų recirkuliacijos sistemą.

Tyrimo uždaviniai:

1. Apibūdinti jūrų laivų variklių azoto oksidų dujų emisiją ir jos mažinimo būdus.
2. Analizuoti išmetamųjų dujų recirkuliacijos sistemos poveikį emisijos iš jūrų laivų mažinimui.

Tyrimo metodai: mokslinės literatūros analizė, dokumentų turinio analizė, grafinė analizė, apibendrininas.

Azoto oksidų emisija iš laivų

Jūrų laivų dyzelinių variklių išmetamąsias dujas sudaro azotas, deguonis, anglies dioksidas (CO_2), anglies monoksidas (CO), sieros oksidai (SO_x), azoto oksidai (NO_x), angliavandeniliai, vandens garai ir dūmai. Vieni pavojingiausių yra azoto oksidai, nes jie ypač kenkia augalijai, aplinkai ir žmonių sveikatai (Winnes, H. & Fridell, E., 2010; Zhao, J., Zhang, Y., Yang, Z., Liu, Y., Peng, S., Hong, N., Hu, J., Wang, T. & Mao, H., 2020).

Azoto oksidai NO_x yra azoto ir deguonies dujų dariniai, susidarę kaip šalutinis kuro degimo ore produktas. Oksidų kiekis tiesiogiai susijęs su degimo temperatūra – kuo didesnė temperatūra, tuo didesnis kiekis susidaro. Dėl aukštos temperatūros ir slėgio dyzelinių variklių cilindruose susidaro didelis šių nuodingų dujų kiekis. Atmosferoje šios dujos jungiasi su vandeniu ir deguonimi, sudarydamos azotą ir azoto rūgštis, kurios turi stiprių korozinių savybių. Laivo dyzelinio variklio išmetimo kanale aptinkama apie 95% azoto oksido (NO) ir 5% azoto

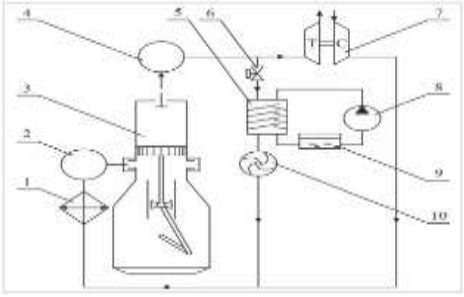
dioksido (NO_2). Oksidų susidarymo greitis priklauso nuo temperatūros variklio cilindruose - aukštesnė nei 200° C yra reikšminga oksido susidarymui, o esant aukštesnei nei 1 500° C oksidų susidarymas itin spartus. NO_x oksiduojantis atmosferoje susidaro azoto rūgšties (HNO_3) garai, kurie absorbuojami tiesiai ant žemės ir virsta nitratų turinčiomis dalelėmis arba ištirpsta debesų lašeliuose.

MARPOL konvencijos VI skyriuje „Oro taršos iš laivų prevencijos taisyklės“ apibrėžiami azoto oksidų emisijos standartai - leistinos NO_x išmetimo ribos susiejant tai su laivo variklio veleno sūkiais. IMO 1-o lygio NO_x išmetimo standartas taikomas laivams, pastatytiems 2000-2010 m. IMO 2-os pakopos NO_x išmetimo standartas įsigaliojo 2011 m. ir yra visuotinai taikomas naujiems didesnės nei 130 kW galios dyzeliniams varikliams, montuojamiems laivuose, kurie pastatyti 2011 m. ir vėliau. IMO 2-o lygio NO_x išmetimo lygis yra apie 20% aukštesnis nei 1-o lygio. Tai reiškia 20% mažesnę emisiją, kuri pasiekiama, optimizavus laivo variklio veikimą. IMO 3-ios pakopos NO_x išmetimo standartas įsigaliojo 2016 m. ir yra taikomas išmetamųjų teršalų kontrolės zonose. IMO 3-ios pakopos NO_x išmetimo lygis atitinka 80% emisijos sumažinimą, palyginus su IMO 1 lygio NO_x išmetimo standartu. Toks sumažėjimas gali būti pasiektas, įdiegus antrinę išmetamųjų dujų emisijos kontrolės sistemą.

Jūrų laivų variklio išmetamųjų dujų recirkuliacijos sistemos poveikio analizė

Išmetamųjų dujų recirkuliacija (angl. Exhaust gas recirculation - EGR) yra išmetamųjų teršalų kontrolės technologija, kurią taikant galima sumažinti NO_x dujų emisiją iš įvairių dyzelinių variklių, sumažinant degimo temperatūrą ir deguonies kiekį cilindruose. EGR apsaugo variklį nuo smūgių ir mažina kuro sąnaudas. Pranašumas – geresnės sudėties išmetamųjų dujų ir oro mišinys prieš patenkant jam į cilindrus ir švaresnės išmetamosios dujos. Trūkumai: vandens kondensatas padidina riziką sukelti kompresoriaus eroziją, padidina išmetamųjų dujų inerciją ir dujų paskirstymo mechanizmo detalių gedimo riziką (Jääskeläinen, H. & Khair, M., 2020; Khair, M. & Jääskeläinen, H., 2017).

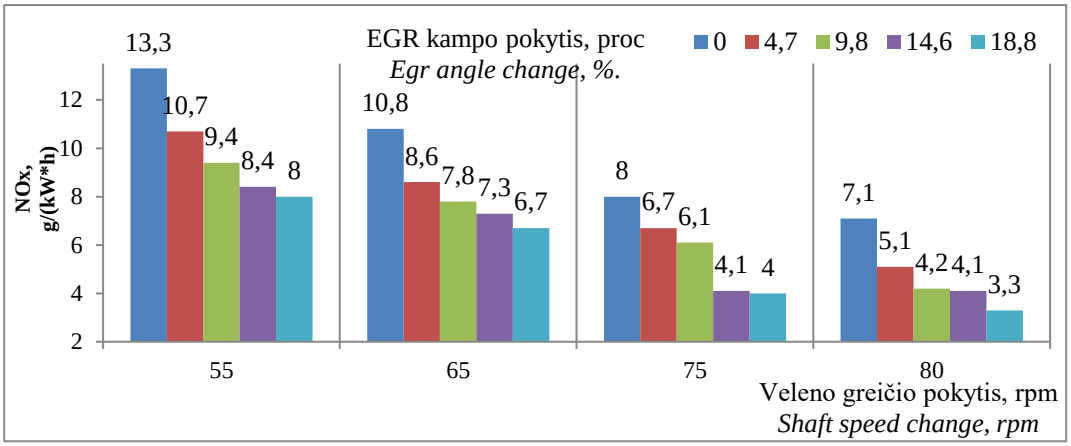
Šiame skyriuje bus išanalizuotas mokslininkų O. Kuropyatnyk ir S. Sagin (2019) atliktas eksperimentas su lėtaeigiu jūrų laivų dyzeliniu varikliu 7UEC60LS Mitsubishi, kuriame įrengta standartinė EGR sistema. Variklis buvo naudojamas, kaip varomosios jėgos agregatas, suteikdamas savo galią tiesiogiai sraigtui. Pagrindiniai variklio duomenys: dvitaktis; cilindro skersmuo 600 mm; stūmoklio eiga 2 400 mm; 7 cilindrai; nominali galia 12 600 kW; nominalių apsukų greitis 82 aps./min (1 pav.).



1 pav. Lėtaeigio dyzelinio 7UEC60LS Mitsubishi variklio EGR sistemos schema: 1. Oro aušintuvas; 2. Oro imtuvas; 3. Cilindras; 4. Išmetimo kolektorius; 5. Dujų plautuvas; 6. Bandomasis vožtuvas; 7. Dujų turbokompresorius; 8. Vandens siurblys; 9. Vandens rezervuaras; 10. Elektra varomas dujų pūstuvas

Fig.1 *Scheme of EGR system of slow-moving diesel 7UEC60LS Mitsubishi engine*

Atliekant eksperimentinius bandymus buvo išmatuota NO_x koncentracija, specifinio kuro sunaudojimas ir alkūninio veleno galia esant skirtingiems išmetamųjų dujų recirkuliacijos kampams (2 pav.). Kampai buvo išmatuoti išmetamųjų dujų recirkuliacijos metu, o pokytis nuo pradinio kampo apskaičiuotas procentais (Kuropyatnyk, O. & Sagin, S., 2019). Analizuojant NO_x koncentraciją iš 7UEC60LS Mitsubishi variklio NO_x koncentracija buvo išmatuota esant skirtingiems alkūninio veleno greičiams ir keičiant EGR kampus. Alkūninio veleno sukimosi greitis buvo keičiamas didinant arba mažinant ciklinį kuro padavimą į variklio cilindrą nekintant išorinei apkrovos vertei. EGR laipsnio pokyčiai buvo išmatuoti bandomuoju vožtuvu.



2 pav. Azoto oksidų koncentracijos pokyčiai
***Fig.2** Changes in nitrogen oxide concentration*

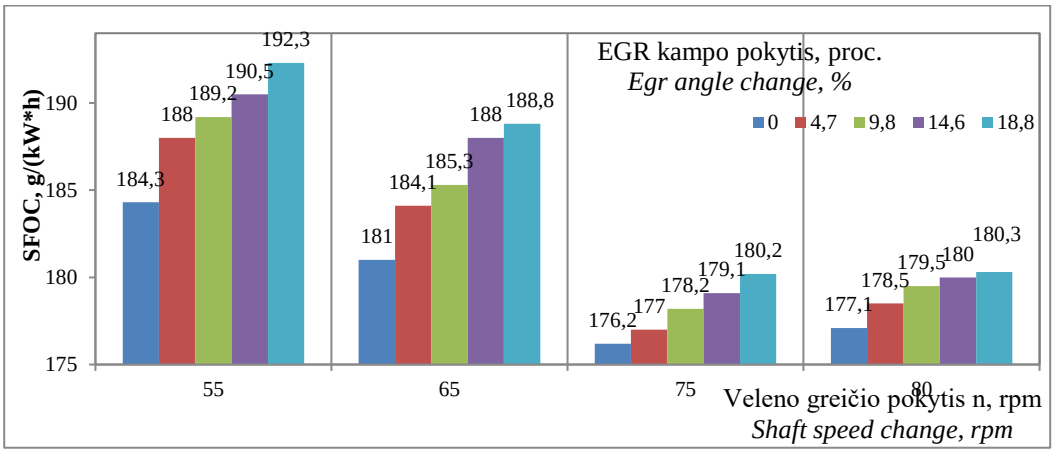
Grafiškai analizuojant azoto oksidų emisijos pokytį (2 pav.) nustatyta, kad didėjant alkūninio veleno apsisukimams (greičiui) ir EGR kampui NO_x koncentracija mažėja. Lyginant azoto oksidų išmetamą kiekį esant 55 ir 80 apsisukimų per minutę nustatyta, kad azoto oksidų išmetimas esant 0% EGR kampui ir greičiui 80 apsisukimų per minutę sumažėja 1,87 karto, palyginus su išmetimu esant greičiui 50 apsisukimų per minutę, o padidinus EGR kampą 4,7% - sumažėja 2,1 karto, 9,8% - sumažėja 2,24 karto, 14,6% - sumažėja 2,05 karto, 18,8% - sumažėja 2,42 karto.

Ekonominis rodiklis – tai specifinė kuro sunaudojimo vertė SFOC, apskaičiuojama pagal formulę (1).

$$SFOC = \frac{G_h}{N_{ework}}, \quad (1)$$

čia: G_h – kiekvienos valandos degalų sąnaudos, kg/h, nustatomos kiekvienam darbo režimui srauto ir laiko matuokliais, N_{ework} – variklio efektinė galia.

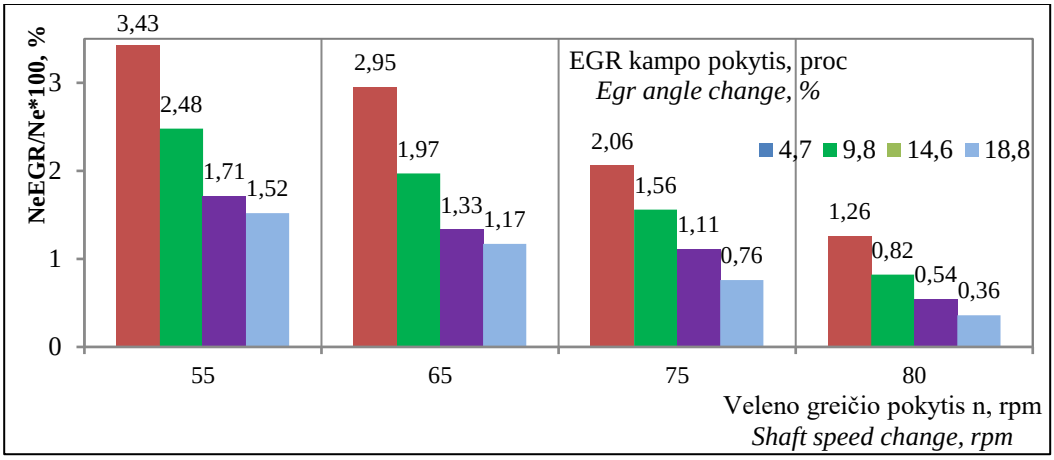
Variklio 7UEC60LS Mitsubishi specifinio kuro sunaudojimo verčių diagrama pateikiama 3 pav.



3 pav. Jūrų dyzelinio variklio specifinio kuro sąnaudų pokyčiai
Fig.3 *Changes in the specific fuel consumption of a marine diesel engine*

Didžiausios kuro sąnaudos (3 pav.) patiriamos esant 55 alkūninio veleno apsisukimams per minutę, o mažiausios - 75 apsisukimams per minutę. Lyginant specifinį kuro sunaudojimą esant 55 ir 75 variklio alkūninio veleno apsisukimams per minutę nustatyta, kad specifinis kuro sunaudojimas 0% EGR kampui ir greičiui 75 apsisukimų per minutę sumažėja 1,046 karto, palyginus su sunaudojimu esant greičiui 50 apsisukimų per minutę, padidinus EGR kampą 4,7% - sumažėja 1,062 karto, 9,8% - sumažėja 1,061 karto, 4,6% - sumažėja 1,063 karto, 18,8% - sumažėja 1,067 karto. Galima daryti prielaidą, jog didėjant alkūninio veleno apsisukimams specifinio kuro suvartojimas mažėja, tačiau didėjant EGR kampui – didėja.

Remiantis O. Kuropyatnyk ir S. Sagin (2019) eksperimentu, atliktu taikant laivo diagnostikos sistemą „Doctor“, toliau analizuojami su galia susiję variklio veikimo rodikliai, variklio efektinė galia N_{ework} įvairiu variklio darbo režimu (4 pav.).



4 pav. Santykinis galios praradimas jūriniame dyzeliniame variklyje
Fig.4 *Relative power loss in a marine diesel engine*

Didžiausias santykinis galios praradimas (4 pav.) patiriamas esant 55 alkūninio veleno apsisukimams per minutę, o mažiausias – 80 apsisukimams per minutę. Lyginant specifinį kuro sunaudojimą esant 55 ir 80 variklio alkūninio veleno apsisukimams per minutę nustatyta, kad santykinis galios praradimas, padidinus 4,7% EGR kampui ir greičiui 80 apsisukimų per minutę sumažėja 2,72 karto, palyginus su sunaudojimu esant greičiui 50 apsisukimų per

minutę, padidinus EGR kampą 9,8% - sumažėja 3,02 karto, 14,6% - sumažėja 4,22 karto. Taigi, naudojant išmetamųjų dujų recirkuliacijos sistemą mažėja NO_x dujų koncentracija išmetamosiose dujose, tačiau sumažėja galios rodikliai, mažiausiai galios nuostoliai patiriami prie 80 apsisukimų per minutę ir 18,8% EGR kampu.

Išvados

1. Išanalizavus laivo variklių išmetamųjų dujų emisijos sandarą nustatyta, kad didžiausią dalį sudaro azoto oksidai NO_x, susidarę kaip šalutinis kuro degimo ore produktas, kuris daro itin didelę žalą aplinkai - teršia orą, naikina ozono sluoksnį, todėl yra pavojingas. Tarptautinė jūrų organizacija nustato emisijos iš laivų standartus, kurių laikymąsis numato jūrų laivų dyzelinių variklių veikimo reguliuojančių sistemų įdiegimą.
2. NO_x dujų koncentraciją išmetamosiose dujose iš jūrų laivų dyzelinių variklių mažina recirkuliacijos sistema EGR. Išanalizavus bandymų, kuriuose išmatuota NO_x koncentracija, specifinio kuro sunaudojimas ir alkūninio veleno galios, keičiant EGR kampo dydį rezultatus, nustatyta, kad švariausios išmetamosios dujos gaunamos ir mažiausi galios nuostoliai patiriami esant alkūninio veleno greičiui 80 apsisukimų per minutę ir EGR kampą padidinus 18,8%, o mažiausios kuro sąnaudos - esant alkūninio veleno greičiui 75 apsisukimų per minutę 0% EGR kampu.

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Gvidas Denesevičius, Lukas Pažusis and Eugenijus Žagaras

Analysis of the possibilities to reduce NO_X emissions from marine diesel engines using exhaust gas recirculation system

Summary

Exhaust gas recirculation system, nitrogen oxide (NO_x) gas and slow-moving marine diesel 7UEC60LS Mitsubishi engine are discussed in the work. The standards to be met by the IMO for emissions, the principle of operation of the EGR system, advantages and disadvantages were also examined. The data of the study performed using the 7UEC60LS

Mitsubishi engine is reviewed, which allowed to draw conclusions about the changes in nitrogen oxide emissions, economic and power indicators of the engine at certain EGR angles and crankshaft speeds. The paper describes the nitrogen oxide (NO_x) emissions from marine diesel engines and the possibilities to reduce these emissions by using an exhaust gas recirculation system based on the results of the analysis of the performance of the 7UEC60LS slow-moving marine diesel engine. The operation of the marine engine exhaust gas recirculation system shall be analyzed in accordance with the requirements of the International Maritime Organization for the determination of engine emissions and composition. Based on the results of the experiment, done by scholars Kuropyatnyk & Sagin (2019) the engines performance shall be evaluated, the change in nitrogen oxide emissions shall be determined, and the economic and power performance of the engine at specific parameters of the exhaust gas recirculation system shall be evaluated.

Keywords: Marine Diesel, NO_x emissions, exhaust gas, recirculation.

X ĮMONĖS SANDĖLIO MODERNIZAVIMAS

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X įmonė yra vienos didžiausių Lietuvoje esančių įmonių grupės narė, kurioje sandėliuojama visų grupės įmonių pagaminta produkcija ir gamybinės žaliavos. Gaminamos ir sandėliuojamos produkcijos apimčių bei produkcijos sandėlio pajėgumų neatitikimas, t. y. trūksta sandėliavimo vietos. Tikslas – išanalizuoti X įmonės sandėliavimo procesus ir pateikti sprendimus procesų tobulinimui. Sudaryti galimybę sandėliuoti ne tik grupės produkciją, bet ir išorinių įmonių produktus. Maksimaliai padidinti sandėlio generuojamą pelną. Įvertinus sandėliavimo reikšmę tiekimo grandinėje ir sandėliavimo procesus, buvo atliktas giluminis interviu su įmonės vadovais. Buvo identifikuotos probleminės įmonės vietos sandėliavimo procese. Įvertinus iškilusias problemas, nuspręsta statyti naują sandėlį. Įgyvendinus sandėliavimo procesų tobulinimo projektą - tai lems daugybę naudingų pokyčių: prekių sandėliavimo vietos padidėja iki 23 000 paletinių vietų, įrengta pilnai automatizuota sandėliavimo kamera padidina sandėliavimo našumus ir sumažina žmogiško faktoriaus klaidos riziką. Nutraukiamos sutartys su išoriniais ir nuomojamais sandėliais, tai sumažina įmonės sandėliavimo kaštus. Sudaroma galimybė išorinėms įmonėms sandėliuoti savo produkciją naujame įmonės sandėlyje – tai didina sandėlio generuojamą pelną. Įrengta šokinė šaldymo kamera sumažina baudų ir neatkrovimų riziką, dėl temperatūrinių režimų neatitikimo. Visi šie veiksniai tiesiogiai lemia sandėlio generuojamą pelną – todėl jis turėtų kilti.

Raktažodžiai: sandėliavimas, paletinė vietos, sandėliavimo procesų tobulinimas

Įvadas

Logistika suprantama, kaip trijų pagrindinių srautų, dalyvaujančių visose logistinio proceso grandyse – materialinių, finansinių ir informacinių srautų valdymas. Teisingai valdomi srautai užtikrina veiksmingą atsargų susidarymą bei laiku atkraunamus krovinius. Patobulinus vieną iš trijų pagrindinių srautų, galima ženkliai pagerinti sandėliavimo procesą. Sandėliavimo proceso analizė yra vienas iš pagrindinių veiksmų norint identifikuoti sandėliavimo proceso problemines sritis, kurias pašalinus galima užtikrinti nuolatinį sandėlio darbą, pastovią sandėliuojamų prekių apyvartą maksimaliai išnaudojant sandėlio erdvę. Integruojant inovatyvius sprendimus sandėlyje šalinamos žmogiškojo faktoriaus sukeliamos klaidos ir trumpinamas operacijų atlikimo laikas.

Tyrimo problema. X įmonėje taikomi sandėliavimo procesai ir jų modernizavimas. Įmonė yra įmonių grupės narė, kurioje sandėliuojama visų grupės įmonių pagaminta produkcija ir gamybinės žaliavos. Gaminamos ir sandėliuojamos produkcijos apimčių sandėlio pajėgumų neatitikimas, t. y. trūksta sandėliavimo vietos. Tikslas – išanalizuoti X įmonės sandėliavimo procesus ir pateikti sprendimus procesų modernizavimui. Sudaryti galimybę sandėliuoti ne tik grupės produkciją, bet ir išorinių įmonių produktus. Maksimaliai padidinti sandėlio generuojamą pelną.

Tyrimo objektas. X įmonėje taikomi sandėliavimo procesai.

Tyrimo tikslas – išanalizuoti X įmonės sandėliavimo procesus ir pateikti sprendimus procesų tobulinimui.

Tyrimo uždaviniai:

1. Įvertinti sandėliavimo reikšmę tiekimo grandinėje.
2. Išanalizuoti X įmonės sandėliavimo procesus.
3. Identifikuoti problemines įmonės vietas sandėliavimo procese.
4. Pateikti pagrįstus sprendimus, kurie patobulins įmonės sandėliavimo procesus.

5. Tyrimo metodai ir sąlygos:
6. Literatūros autorių apžvalga ir analizė.
7. Sandėliavimo proceso analizė.
8. Sandėliavimo procesų trūkumų nustatymas giluminio interviu su įmonė vadovais metodu.
9. Gautų rezultatų analizė ir išvadų formulavimas.

Sandėliavimas, tiekimo grandinė ir sandėliavimo procesas

Logistika apibrėžiama kaip veikla, susijusi su aprūpinimu, t.y. išteklių srauto judėjimo valdymas tiekimo grandinėje (medžiagų įgijimas, gamybos planavimas, pagamintos produkcijos pristatymas vartotojams ir visi informaciniai bei finansų srautai, būtini materialiems ištekliams grandinėje valdyti. (Zinkevičiūtė, Vasiliauskas, 2013) Transportas yra ekonominės veiklos dalis, kuri susijusi su žmonių poreikių tenkinimu (transportas „sukuria naudingą erdvę“ – išlaisvina gamtinius, dirbtinius ir darbo išteklius iš vietų, kur jie atneša mažai naudos ir pergabena į vietas, kur jų nauda gali būti visiškai realizuota). (Vasiliauskas, 2013). Sandėliai gali būti naudojami gamybai aprūpinti pristatant prekes pavieniam vartotojui, jungiant keleto gamintojų prekes, dalijant didelę produkcijos siuntą į daugelį mažesnių siuntų, tenkinant grupės klientų poreikius ir jungiant mažesnes produkcijos siuntas į didelės apimties krovinius (Palšaitis, 2007). Tiekimo grandinės tikslas yra sukurti didžiausią pridėtinę vertę, kuri stipriai susijusi su įmonės pelningumu. Sandėliavimas yra neatsiejama tiekimo grandinės dalis, nes medžiagų srautas logistikoje turi būti greitas ir nepertraukiamas, tačiau tai yra sudėtinga įgyvendinti dėl daugybės priežasčių. Viena iš jų – medžiagų poreikių, laiko ir turimų atsargų neatitikimas. (Happonen, Minashkina, 2019). Tarptautinis aprūpinimas žaliavomis ir medžiagomis, taip pat prekių paskirstymas tarptautiniu mastu esant tolimiems nuotoliams skatina padidinti turimas atsargas. Šios priežastys ir verčia medžiagas sandėliuoti (Minalga 2007). Tiekimo grandinės valdytojas integruotai renka, apdoroja ir koordinuoja informaciją apie tiekėjus, atsargas, gamybos apimtis, sandėlius, paskirstymo centrus, produktus, pristatymo terminus, kainas ir užsakymus, t. y. apie visus tiekimo grandinės dalyvius, o ne atskirai vienos grandinės dalyvio procedūras. Šiuo požiūriu atskleidžiama tiekimo grandinės valdymo reikšmė ir poreikis, leidžiantis suderinti dvi – optimalumo ir efektyvumo – sąlygas, kurios lemia sėkmingą verslo procesų įgyvendinimą ir leidžia sumažinti veiklos riziką išskaidant ją kiekvienam grandinės dalyviui. Šių sąlygų neužtikrinimas tiesiogiai didina netekties riziką visuose tiekimo grandinės procesuose ir neigiamai veikia tiekimo grandinėje veikiančių įmonių pelningumą. (Rakickas, 2010).

Sandėliai yra vieni iš svarbiausių logistikos sistemos elementų, jie reikalingi visose logistikos grandinės stadijose. Pagrindinis sandėlio tikslas ir uždaviniai yra optimizuoti logistikos sistemą. Todėl jis turi prisitaikyti prie įvairių šios sistemos pokyčių, susijusių su krovinių kaupimu, perkrovimu, paskirstymu ir klientų aptarnavimu. Sandėlis turi veikti taip, kad užtikrintų visos sistemos efektyvumą. (Zinkevičiūtė;Vasiliauskas, 2013 m.). Tuo tarpu sandėliavimo procesas suprantamas kaip atskirų etapų seka, kuri prasideda medžiagų priėmimu ir baigiasi gaminių išdavimu į persiuntimo sandėlį (Bazaras, 2005). Analizuojamoje įmonėje sandėliavimo procesas apima žaliavų, skirtų produkcijos gamybai, sandėliavimą, pusgaminių ir gatavos produkcijos sandėliavimą. Šie procesai dažniausiai sutinkami gamybinėse įmonėse, todėl sandėliavimo procesas jose sudarytas iš šių etapų: žaliavų priėmimas, žaliavų sandėliavimas, žaliavų užsakymas į gamybą, pusgaminių sandėliavimas, gatavos produkcijos priėmimas, gatavos produkcijos sandėliavimas, gatavos produkcijos atrinkimas,

gatavos produkcijos išvežimas. (Richards, 2017) Esant didelei paklausai ir didelei apyvartai geriau turėti privačius sandėlius. Tokiu atveju lengviau kontroliuoti produkcijos laikymo sąlygas, koreguoti prekių realizacijos strategiją. Jame tikslinga įdiegti krovos mechanizavimo priemones, kurti automatizuotas sandėliavimo sistemas, o tai padidina darbuotojų darbo našumą ir sumažina sandėliavimo išlaidas saugojimo vienetui. Visa tai sustiprina įmonės konkurencingumą. (Sapronienė, Paškel, 2014).

Prekių ir žaliavų priėmimo procesas

Analizuojamoje įmonėje sandėliavimo procesai susideda iš etapų: prekių ir žaliavų priėmimo, sandėliavimo ir išdavimo procesų. Procesas valdo perkamų ir grąžinamų prekių patekimą į sandėlį. Sandėlis yra atskiras padalinys, atsakingas už kiekybinę jame esančių prekių kontrolę. Patekusios į sandėlį, prekės yra pajamuojamos ir patenka į sandėlio balansą. Siekiant užtikrinti efektyvų transporto priemonių iškrovimo/ pakrovimo procesą atvykstančios transporto priemonės privalo būti iš anksto registruojamos KVS (kiemo valdymo sistema) sistemoje rezervuojant iškrovimo/ pakrovimo laiką pagal tvarką, kuri įmonėje aprašyta procedūroje – KVSPR1703 Krovininių transporto priemonių BFE teritorijoje valdymas. Prekių priėmimo procesas prasideda, kai logistikos vadybininkas (priskirtas pagal rinką) pagal tiekėjo gautus dokumentus apskaitos sistemoje Navision suveda ir pateikia pirkimo užsakymą. Taip pat remdamasis pirkimo užsakymais, užpildo „Krovimų grafiką“ ir transporto priemonę užregistruoja KVS sistemoje. Vairuotojas, atvykęs nurodytu laiku įleidžiamas į įmonės teritoriją, pateikia krovinio reiso termogramą kartu su kitais pristatymo dokumentais sandėlininkui prieš pradedant iškrovimo procesą. Jei krovinys atvežamas jūriniuose konteineriuose, temperatūrų registravimas vykdomas naudojant vienkartinius temperatūros duomenų kaupiklius (thermologer). Atvykus kroviniui, sandėlininkas pamatuoja jūriniame konteineryje esančių prekių temperatūrą, duomenys iš kaupiklio perkeliami į kompiuterį ir atspausdinami. Atspausdintos termogramos yra prisegamos prie CMR dokumento ir saugomos buhalterijoje ne mažiau kaip trejus metus, praėjus šiam terminui – sunaikinama. Prekių priėmėjas priima prekes į sandėlį ir apyvartinę tarą pagal krovimų grafike nurodytą užsakymo numerį. Krovinio iškrovimo vietoje prekių priėmėjas sutikrina atvykusio krovinio plombas – ar jos nepažeistos ir sutikrina plombos numerio atitikimą dokumentuose. Patikrinami atvykusio krovinio termogramos duomenys, ar nėra temperatūros režimo pažeidimų, t.y. temperatūros nuokrypiai negali būti didesni nei 3°C 2 val. laikotarpyje. Pastebėjęs neatitikimus, prekių priėmėjas nedelsdamas informuoja vyr. sandėlininką, neatitikimas fiksuojamas CMR ir surašomas laisvos formos neatitikties aktas. Remiantis CMR ar važtaraštyje nurodytomis temperatūromis bei produkto laikymo klase, matuojama krovinio temperatūra - išskyrus atvejus, kai priimama produkcija temperatūrinio režimo neturi. Produktų laikymo klasės bei leistinos temperatūrų ribos nurodytos įmonės procedūroje – BFEPR 1704-02 „BFE temperatūrų matavimo taisyklės“. Išimtis: produktai, kuriems reikalingas stabilizavimo procesas, į sandėlį gali būti priimami -8°C ir laikomi iki pasieks -18°C (apie 14 parų). Esant temperatūriniams neatitikimams prekių priėmėjas prekes perkelia į karantino sritį. Automatiškai suformuotas temperatūrų neatitikimo aktas siunčiamas tos grupės įmonės direktoriui, kokybės vadovui, logistikos vadovui. Prekių priėmėjas patikrina, jog priimamos prekės būtų tvarkingai ir teisingai sukrautos ant paletės: nebūtų išorinių prekės pakuotės mechaninių pažeidimų, pristatytos paletės su prekėmis yra švarios ir neužterštos ir priimamos prekės neturi išsikišti už palečių kraštų, paletės aukštis neviršija leistino aukščio. Prekių priėmėjas, remdamasis krovinio važtaraščiu (Delivery note), sąskaita- faktūra arba CMR, tikrina, ar atvežtos prekės atitinka nurodytas krovinio dokumentuose. Jei priėmimo metu neatitikimų nėra – atliekama priėmimo procedūra. Prekių priėmėjas spausdina BFEPR 1704-08 „Pristatymo detalės“ lapą, kurį kartu su sąskaita-faktūra pristato į apskaitą. Apskaita užpajamuoja prekes

sandėlio valdymo sistemoje Equinox (toliau SVS). Prekių priėmėjas su elektrokrautuvo pagalba padeda paletes į SVS nurodytą sandėliavimo vietą. Prekių priėmimo metu esant neatitikimų prekių priėmėjas fiksuoja pažeidimus ant CMR arba krovinio važtaraščio ir atspausdina BFEPR 1704-05 „Pažeidimų ir trūkumų protokolas“, kuriame nurodo neatitikimą. Dokumentas perduodamas vairuotojui, apie neatitikimus informuojamas vyr. sandėlininkas. Vyr. sandėlininkas nedelsdamas el. paštu informuoja sandėlio vadovą, logistikos procesų vadybininką bei X įmonės kokybės vadovą apie neatitikimus, nurodydamas: užsakymo numerį, prekės kodą, prie laiško pridėdamas BFEPR 1704-05 „Pažeidimų ir trūkumų protokolas“ kopiją. Logistikos projektų vadovas, nedelsdamas organizuoja sprendimo priėmimą, informuodamas atsakingą logistikos vadybininką, produktų grupės vadovą ir X įmonės direktorių.

Prekių ir žaliavų sandėliavimo procesas

Prekės gatavo produkto sandėlyje saugomos (sandėliuojamos) laikantis įmonėje nustatytų reikalavimų. Prekės saugomos tik tam skirtoje patalpoje pagal laikymo sąlygas, nurodytas krovinio važtaraštyje arba CMR, kuris gaunamas iš vairuotojo prekių priėmimo metu: šaldyta produkcija sandėliuojama kamerose, kurių temperatūra ne aukštesnė nei -18 ^{o}C; atšaldyta produkcija – patalpoje, kur vidaus temperatūra 0-+4^{o}C. Sandėliavimo procesas vyksta, griežtai laikantis darbų saugos taisyklių. Visos saugojimo srityje saugomos prekės privalo būti identifikuotos – ant paletės aiškiai matomoje vietoje turi būti priklijuotas paletės barkodas. Prekės sandėliuojamos tik tam skirtose vietose – stelažuose ir lentynose, vadovaujantis *Equinox* nurodytomis sandėlio vietomis. Praėjimuose tarp stelažų prekės gali būti saugojamos tik laikinai ir tik tokiu atveju, jei stelažuose nėra laisvų saugojimo vietų. Atsiradus laisvoms saugojimo vietoms stelažuose – prekės nedelsiant turi būti sudėtos į juos perkeliant prekes iš vienos saugojimo vietos į kitą, tuo pat metu turi būti atlikta perkėlimo operacija sistemoje *Equinox* vadovaujantis „BFE *Equinox* sistemos vartotojo instrukcijos“. Produkcija turi būti sandėliuojama tvarkingai stelažuose ir lentynose neužstatant pravažiavimo kelių. Tačiau įmonėje dėl augančių produkcijos ir pardavimo apimčių ir atitinkamai didėjančių sandėliavimo vietos poreikių, bet per mažo sandėlio, produkcija negali būti sandėliuojama pagal reikalavimus, t. y. ji dedama ten, kur tuo metu yra vietos.

Norit išanalizuoti, kokios problemos kyla dėl sandėliavimo vietos trūkumo, reikia išanalizuoti sandėliavimo procesą ir sudedamuosius veiksmus. Tai leidžia atskleisti, kurie veiksmai gali būti nereikalingi, taip pat padeda nustatyti procese pasitaikančias klaidas. Analizuojamo proceso pradžia yra prekių priėmimas į sandėlį, o pabaiga – prekių pakrovimas į transporto priemonę. Pagrindiniai proceso dalyviai yra prekių priėmėjai, sandėlininkai ir vyr. sandėlininkai. Tokia proceso analizė atskleidžia vieną iš pagrindinių problemų – prekių paletės laikomos praėjimuose tarp stelažų dėl paletinių vietų trūkumo. Į sandėlį patenka didelis srautas prekių iš grupės įmonių, nei jų eksportuojama į užsienio rinkas. Didelis kiekis prekių sandėliuojamas atsargose. Tai sukelia kitą problemą, kad sandėlyje neveikia prekių ir žaliavų išdavimas FIFO metodu, taip pat prailgėja krovinio pakrovimo į transporto priemonę laikas. Kyla klausimas, kas sąlygoja prekių palečių sandėliavimą tarp stelažų ant pravažiavimo zonos? Išanalizuota proceso veiksmų seka leidžia pastebėti svarbų aspektą, kuris ir yra atsakymas į iškeltą klausimą. Produkcijos paskirstymas sandėlyje pagal reikalavimus yra netinkamas, nes jame trūksta vietos ir produkcija sandėliuojama ten, kur tuo metu yra vietos. Galima teigti, kad prekių priėmimo, sandėliavimo ir išdavimo proceso analizė leido pamatyti šio proceso silpnąsias vietas – paletinių vietų trūkumas sandėlyje lemia netinkamą sandėliavimo procesą, netinkamą FIFO metodo naudojimą.

Produkcijos išdavimo procesas

Prekių surinkimas – tai procesas, kurio tikslas – surinkti prekes pagal pardavimo užsakymus ir nugabenti jas į komplektavimo aikštelę, iš kurios prekės bus pakraunamos į transportą. Logistikos vadybininkas suveda pardavimų užsakymus į NAV sistemą, jei reikia, kai pardavimas vykdomas išorės rinkoms, parengia „Krovimų grafiką“, jame įrašo pastabas apie dokumentų komplekto ypatumus ir papildomai paruoštus dokumentus (veterinarinis sertifikatas, prekių kilmės sertifikatas, prekių specifikacijos, sutarčių priedai ir pan.), kurie būtini perduoti vairuotojui. NAV sistemoje užsakymas susiejamas su vairuotoju bei automobiliu ir suteikiamas atkrovimo kodas bei transporto priemonę registruojama KVS sistemoje. Sandėlininkas prekių atrinkėjams darbo užduotis pateikia, remdamasis krovimų grafiku, kurį pildo logistikos vadybininkas (eksporto užsakymai). Prekių atrinkėjui surinkus siuntą, sandėlininkas tikrina, ar visi užsakymai yra surinkti. Sukomplektavus paletes, prekių komplektuotojas atsakingas už dokumento „Pakrovimo lapas“ užpildymą, remdamasis BFEPR1704-03 „Pakrovimo lapų spausdinimo instrukcija“, jį pateikia sandėlininkui bei krovėjui. Sandėlininkas patikrina, ar transporto priemonė turi termografą. Nustačius, kad termografo nėra, produkcija kraunama, tik suderinus su rinkos logistikos vadybininku ir gavus jo patvirtinimą. Patikrinamas transporto priemonės švarumas ir apie tai pažymima BFEPR1704-04 „Transporto priemonės pakrovimo lapas“. Taip pat sandėlininkas patikrina, kad pristatytoje pakrovimui mašinoje būtų įjungtas mašinos šaldymo įrenginys ir nustatytas reikalingas temperatūros palaikymas. Vadovaujantis BFEPR 1704-02 “BFE temperatūrų matavimo taisyklės”, patikrinama temperatūra transporto priemonės šaldytuvo viduje. Tai pažymima BFEPR1704-04 „Transporto priemonės pakrovimo lapas“. Kraunant šaldytą produkciją privaloma laikytis leistinų temperatūros ribų, nurodytų BFEPR 1704-02 “BFE temperatūrų matavimo taisyklės”. Šaldytų produktų krovimas galimas, transporto priemonėje pasiekus – 18 (+-3) °C temperatūrą. Remiantis krovimų grafiku, produkciją kraunama į transporto priemonę. Visi krovimo dokumentai ir krovimo metu atliekami įrašai (Pakrovimo lapas su palečių temperatūra, sandėlio temperatūrų išklotinė, transporto priemonės pakrovimo lapas) saugomi 3 metus ir pagal poreikį pateikiami gamintojui. Visos transporto priemonės, išvykstančios iš įmonės teritorijos, yra plombuojamos. Apsaugos darbuotojas transporto priemonei išvykstant, registruoja plombą „Automobilių plombavimo žurnale“. Dėl jau anksčiau minėtos problemos – erdvės trūkumo sandėlyje, prekių paieška užtrunka ir ne visuomet pavyksta surasti reikiamos partijos ir galiojimo produkciją dėl didelio produktų kiekio, esančių sandėlyje. Visos paletės, sandėliuojamos sandėlyje, įtraukiamos į SVS sistemą ir kiekviena paletė turi savo paletinės vietos numerį. Tokiu atveju, kai dėl paletinių vietų stokos prekės sandėliuojamos pravažiavimuose tarp stelažų, sandėlininkas negali rasti prekės pagal priskirtą paletinę vietą. Sandėlininkas negali į transporto priemonę pakrauti kitos partijos prekių, kurios yra neužkrautos kita produkcija, dėl apskaitos sistemos. Dėl to darbuotojas yra priverstas ieškoti konkrečios prekių paletės, todėl pailgėja mašinos pakrovimo laikas, darbo laikas ir padidėja darbuotojų poreikis.

X įmonės sandėlio struktūra ir sandėlio veiklos analizė

X įmonės sandėlyje yra saugomos žaliavos ir pakuotės, skirtos įmonės produkcijos gamybai, ir visų grupės įmonių pagaminta produkcija. X įmonės sandėlis yra centrinis įmonių grupės sandėlis, skirtas visų gamyklų produkcijai sandėliuoti ir eksportuoti į užsienio rinkas. Tam, kad sandėliuojama produkcija būtų apsaugota nuo fizinio ar cheminio poveikio bei tam, kad išlaikytų visą galiojimo terminą, reikalingi sandėliai, kurie palaiko reikalingą laikymo temperatūrą. Tam įmonėje yra įrengtas sandėlis, kuris įmonėje suskirstytas į RM, RZ ir pliusinę kameras. Pliusinėje kameroje sandėliuojamos atšaldytos prekės ir pakuotės, RM minusinėje kameroje sandėliuojamos prekės, pusgaminiai ir žaliavos, RZ minusinėje

kameroje sandėliuojamos eksportui skirtos prekės. Kiekvienoje kameroje yra pastatyti stelažai paletėms laikyti. Įmonės sandėlis yra pajėgus talpinti 6500 Euro padėklų.

Išanalizavus sandėliavimo procesus X įmonėje – prekių priėmimą, sandėliavimą ir išdavimą, paaiškėjo, kad sandėliavimo procese egzistuoja didelė problema – paletinių vietų trūkumas, kuri sukelia kitas iškylančias problemas, tokias kaip darbuotojų darbo našumo sumažėjimas, transporto priemonės pakrovimo pailgėjimas - greitai nerandama reikiama pakrauti į transporto priemonę produkcija, kadangi dėl didelio produkcijos kiekio ir užkrautų pravažiavimų sandėlyje neįmanoma jos surasti arba prie jos privažiuoti ir pan. Nustačius pagrindinę problemą – paletinių vietų trūkumą sandėlyje, svarbu išanalizuoti paties sandėlio veiklą ir įsitikinti, kad problema buvo nustatyta tinkamai. Todėl pasitelkiant nepriklausomus ekspertus įvertintos iškeltos problemos sprendimų alternatyvos, rezultatai pateikiami 1-ame paveikslėlyje.

Vertinimo kriterijus *Evaluation criteria*		**Reikšmingumas** *Significance*				**Kriterijų reikšmingumas** *Significance of criteria*	**Kriterijų koeficientas** *Coefficient of criteria*	**Rangas** *Rank*
		E1	**E2**	**E3**	**E4**			
k1	Kaina *Price*	25.00%	25.00%	35.00%	40.00%	31.25%	0.31	2
k2	Laikas *Time*	15.00%	20.00%	25.00%	15.00%	18.75%	0.19	3
k3	Paletinių vietų skaičius *Number of pallet seats*	50.00%	40.00%	30.00%	35.00%	38.75%	0.39	1
k4	Darbo jėga *Labor force*	10.00%	15.00%	10.00%	10.00%	11.25%	0.11	4
		100.00%	100.00%	100.00%	100.00%	100.00%	1	

Sprendimo alternatyvos *Solution alternatives*	**Reikšmingumas** *Significance*				**Kriterijų suma** *Sum of criteria*	**Rangas** *Rank*
	E1	**E2**	**E3**	**E4**		
Statyti naują sandėlį *Build a new warehouse*	1	2	1	1	5	1
Nuomotis laikymo vietą išoriniuose sandėliuose *Rent storage space in external warehouses*	3	3	4	3	13	3
Didinti sandėlio plotą gamybinių patalpų atžvilgiu (sumažinti gamybines patalpas, plečiant sandėlio plotą) *Increase the warehouse area in relation to the production premises (reduce the production premises by expanding the warehouse area)*	2	1	2	2	7	2
Sumažinti sandėliuojamų produktų kiekį (atsisakyti dalies klientų) *Reduce the number of products stored (give up some customers)*	4	4	3	4	15	4

1 pav. Problemos ir sprendimo alternatyvų vertinimas
Fig. 1. *Problems and evaluation of solution alternatives*

Nepriklausomų ekspertų grupė, išklausiusi įmonės problemą, įvertino vertinimo kriterijus bei jų svarbumą eilės tvarka. Pagal vertinimo kriterijus buvo įvertinos sprendimo alternatyvos ir išrinkta geriausia – nuspręsta statyti naują sandėlį. Įmonė privalo išspręsti pagrindinę problemą – paletinių vietų trūkumą sandėlio patalpose, atsižvelgdama į padidėjusias produkcijos ir žaliavos apimtis, šiuo metu apimtys viršija esamo sandėlio pajėgumus.

Giluminis interviu su X įmonės vadovais

Atsižvelgus į tai, jog analizuojamos įmonių grupės gamybos įmonių produkcijos apimtys nuolat augo, tai tiesiogiai lemia didėjančius žaliavų kiekius - atitinkamai didėja sandėliavimo vietos poreikiai. Buvo nuspręsta apklausti vadovaujančias pareigas užimančius įmonės asmenis, kaip jie vertina šią kelerius metus besitęsiančią situaciją – kai sandėlis yra perpildomas produkcija. Šiam tikslui buvo pasitelktas struktūrizuotas giluminis vadovų interviu, t.y. jiems iš anksto buvo paruošti klausimai, susiję su minėta problema – sandėliuojamos produkcijos bei žaliavų kiekių ir sandėlio pajėgumų neatitikimai. Interviu dalyvavo X įmonės logistikos procesų vadovas ir įmonės direktorius. Šie asmenys buvo pasirinkti todėl, kad jie yra tiesiogiai atsakingi už procesus, vykstančius sandėlyje, ir dalyvauja sandėlio

veikloje. Abu vadovaujančiąsias pareigas užimantys asmenys apklausos metu teigė, kad pagrindinė problema – paletinių vietų trūkumas sandėlyje. Toliau buvo siekta sužinoti, ar ši problema yra aptariama susirinkimų metu, ar aptariamos pagrindinės problemos, kylančios šalutinės problemos, ar susirinkimuose dalyvauja darbuotojai, dirbantys sandėlyje, ar jie išsako savo pastebėjimus? Interviu metu išaiškėjo, kad susirinkimai vyksta kasdien 9:30 val. ryte, tačiau sandėlio darbuotojai jame nedalyvauja, juos atstovauja sandėlio vadovas. Susirinkimo metu aptariama praėjusi diena – iškrautų ir pakrautų transporto priemonių skaičius, sekamas sandėlio užimtumas, t.y. laisvų paletinių vietų skaičius. Pati organizacija turi būti socialiai atsakinga ir nuolat ugdyti darbuotojų kompetenciją atitinkamose srityse. Informacijos keitimosi greitis, sklandus logistinių operacijų vykdymas teisingai identifikuojant reiškinius, taikant konkurencingus ir suprantamus įkainius. Dažniausiai organizacijose, iš jų ir logistinėse, pridėtinę vertę arba laukiamą produktą sukuria suinteresuoti ir atitinkamai motyvuoti darbuotojai (Šimanskienė, Kutkaitis, 2009). Kitu klausimu buvo prašoma įvertinti dabartinę situaciją sandėlyje. Tiek logistikos procesų vadovas, tiek įmonės direktorius situaciją apibūdino kaip sudėtingą, tačiau stengiamasi prisitaikyti prie esamos situacijos ir darbus atlikti nepriekaištingai. Abu vadovai patvirtino, kad dėl didelio sandėliuojamos produkcijos srauto ir per mažo sandėlio sulėtėja visi procesai nuo prekių priėmimo iki prekių išdavimo ir pakrovimo į transporto priemonę. Dėl šių priežasčių nepavyksta laikytis įmonėje aprašytų procedūrų bei didėja darbuotojų nepasitenkinimas esama situacija. X įmonės vadovai sutaria, kad sandėlio modernizavimas naudojant inovatyvius sprendimus yra būtinas, norint turėti sklandų sandėliavimo procesą ir išspręsti šiuo metu kylančias problemas. Kadangi X įmonė yra įmonių grupės narė, todėl problemos sprendimo įgyvendinimas užtruko, nes būtina gauti pritarimą ir finansavimą iš grupės vadovybės ir akcininkų.

Sandėliavimo proceso problemų identifikavimas

Įmonės sandėliavimo proceso analizė parodė, kad procesas nėra sklandus, jame egzistuoja problemos, iš kurių iškyla papildomų susijusių problemų. Apibendrinus pasitelktus tyrimo būdus, buvo identifikuotos konkrečios sandėliavimo proceso problemos ir jų atsiradimo priežastys (Žr. 1 lentelę).

1 lentelė. Įmonės sandėliavimo procesų problemų identifikavimas

Table 1. *Identification of problems in the company's warehousing processes*

Tyrimo metodas *Research method*	Nustatytos problemos *Identified problems*
Sandėlio veiklos analizė *Warehouse performance analysis*	Darbuotojų darbo našumo mažėjimas. *Decrease in employee productivity* Ilga produkcijos paieška sandėlyje. Long product search in the warehouse Tikimybė gauti baudą už laiku nepakrautą mašiną/*The likelihood of being fined for a machine not loaded on time.*
Sandėliavimo proceso analizė *Storage process analysis*	Neoptimalus produkcijos paskirstymas sandėlyje. *Non-optimal distribution of products in the warehouse* Ilga produkcijos paieška sandėlyje. *Long product search in the warehouse* Sandėliavimo darbo efektyvumo sumažėjimas. *Decrease in storage efficiency*
Giluminis interviu *Depth interview*	Per didelis sandėliuojamos produkcijos ir žaliavų kiekis. *Excessive storage of products and raw materials* Sandėliavimo darbo efektyvumo sumažėjimas. *Decrease in storage efficiency*

Remiantis 1-oje lentelėje nustatytomis problemomis, galima daryti išvadą, kad jų atsiradimą lemia per mažos sandėliavimo patalpos – tai yra pagrindinė įmonės sandėliavimo proceso problema. Produkcijos sandėlio pajėgumai neatitinka sandėliuojamų produkcijos apimčių. Dėl paletinių vietų trūkumo sandėlyje produkcija sandėliuojama netvarkingai, pravažiavimuose tarp stelažų, prekių neįmanoma paskirstyti po sandėlį optimaliai. Toks sandėliavimas sukelia problemų norint įvykdyti prekių išdavimą klientui – nepavyksta greitai

surasti reikiamos paletės, pagal SVS sistemos suteiktą paletinę vietą. Dėl prasto informacijos matomumo ir prieinamumo mažėja sandėlio efektyvumas ir darbuotojų darbo našumas. Dideli prekių kiekiai sandėlyje sąlygoja ir finansinius nuostolius, kadangi ne visą produkciją spėjama surasti ir pakrauti į mašiną laiku. Visas šias problemas galima panaikinti – pastačius naują modernų sandėlį.

Sandėlio patalpų projektavimas ir sandėliavimo proceso tobulinimo sprendimai

Projektuojant naujo sandėlio patalpas svarbu, kad visa erdvė būtų tinkamai ir maksimaliai išnaudota. Tam reikia nusistatyti, kiek paletinių vietų turi būti, kad sandėlyje sutilptų visa sandėliuojama produkcija. Sandėlio kamerų kiekis ir paskirtis turi būti parinkta atsižvelgiant į sandėliuojamą produkciją. Sandėlyje planuojama laikyti dviejų rūšių prekes: žaliavas ir išorinių klientų prekės – sandėliuojamas ilgą laiko tarpą, -18°C temperatūros kameroje ir prekes, skirtas eksportui – produkcija, kuri yra išduodama per kelias dienas, sandėliuojama -18°C temperatūroje. (Fortunato de Sousa, 2020). Šių prekių sandėliavimas šiuo metu vyksta tame pačiame per mažame sandėlyje. Tai sąlygoja prekių pakrovimo laiko ilgėjimą, FIFO metodo laikymosi spragas, taip pat darbuotojų darbo efektyvumo sumažėjimą. Esamas sandėlis talpina 6500 Euro palečių sandėliuojamų prekių, šio paletinių vietų skaičiaus neužtenka, vidutinis reikalingas paletinių vietų skaičiui per praeitus metus – 15 000 paletinių vietų. Sandėlio pakrovimo zonoje yra 9 rampos, iš kurių tik 5 yra skirtos privažiuoti vilkikams. Šiuo metu per dieną pakraunamų mašinų kiekis ribojamas iki 15 mašinų per dieną, o iškraunamų mašinų kiekis ribojamas iki 10 mašinų per dieną. Mašinų kiekis ribojamas dėl per mažo paletinių vietų skaičiaus, neefektyvaus sandėlio darbuotojų darbo. Norint, kad sandėlyje tilptų visa sandėliuojama produkcija ir išorinių įmonių produkcija, planuojama, kad naujas sandėlis bus statomas su 23 000 paletinėmis vietomis. Planuojama įrengti šokinę kamerą tiems atvejams, kai prekių temperatūra yra per aukšta pakrovimui. Tai padės išvengti neatkrovimų ir baudų dėl neatkrovimų dėl per aukštos temperatūros. Taip pat planuojama įrengti vieną pilnai automatizuotą sandėliavimo patalpą, kuri nereikalauja jokio rankinio darbo ir leidžia taupyti sandėliavimo plotą. Daugiau nei 5 tūkst. europadėklų talpinančioje šaldymo kameroje bus sandėliuojamos eksportui skirtos prekės. Kameroje bus įrengti modernūs 3D įvažiuojamieji (Drive-in) stelažai, kurie leis tame pačiame plote sutalpinti net 36 % daugiau padėklų nei tilptų standartiniuose stelažuose. Sandėlyje taip pat bus naudojamos pripučiamos atmosferinį poveikį mažinančios rampos. Jų dėka produkcija neturės jokio sąlyčio su išorine aplinka ir visų pakrovimų metu išlaikys tinkamą temperatūrą. Naujoji kamera išsiskirs ne tik didesniu padėklų kiekiu, bet ir čia įdiegta išmania sandėliavimo sistema. Ji leis gerokai padidinti darbo našumą ir taupyti žmogiškuosius išteklius. Inovatyvi įranga gebės pati nustatyti tuščią vietą sandėlyje ir joje padėti pakrautą padėklą. Tokiu būdu sistema galės sukrauti 60 padėklų per valandą ir net 1200 padėklų per parą. Kadangi įranga reikalaus tik minimalaus žmogaus įsitraukimo, yra galimybė ruošti užsakymus naktį, kurios ryte teliks suvežti ant rampos. Planuojama įrengti 8 rampas, kad nereikėtų riboti iškraunamų/ pakraunamų mašinų srauto. Sąnaudų ir naudos analizė (SNA) yra naudojama norint įvertinti planuojamas projekto sąnaudas ir naudą. Taip pat reikia įvertinti atsipirkimo laikotarpį. Šiuo metu įmonė dalį savo prekių sandėliuoja išoriniuose ir nuomotuose sandėliuose, tai sudaro dideles išlaidas. Todėl pasistačius naują sandėlį, šių paslaugų bus galima atsisakyti. Tada būtų sutaupyta dalis kaštų, padidintas generuojamas sandėlio pelnas – tai padėtų maksimaliai sutrumpinti naujo projekto atsiperkamumo laikotarpį.

Esamas sandėlis neatitinka sandėliuojamos produkcijos apimčių, kadangi jis talpina 6500 Euro palečių. Pastaraisiais metais produkcijos kiekiai vidutiniškai siekia apie 15 000

paletinių vietų. Kaip laikinas problemų sprendimas buvo pasirinktas dalies produkcijos sandėliavimas išoriniuose sandėliuose – tai lemia papildomus karštus. Sandėlyje sandėliuojama tiek trumpalaikio, tiek ilgalaikio saugojimo produkcija, o per mažas paletinių vietų skaičius sukelia nepatogumų ieškant reikiamos produkcijos ir vykdant užsakymus. Todėl yra svarbu parengti naują sandėlio projektą ir kuo greičiau pradėti statyti naują sandėlį, kuriame būti galima efektyviai sandėliuoti įmonės prekes ir padidinti sandėlio generuojamą pelną sandėliuojant išorinių įmonių produkciją.

Išvados

1. Įgyvendinus sandėliavimo procesų tobulinimo projektą, bus daugybė naudingų pokyčių: prekių sandėliavimo vietos padidės iki 23 000 paletinių vietų.
2. Įrengta pilnai automatizuota sandėliavimo kamera padidina sandėliavimo našumus ir sumažina žmogiško faktoriaus klaidos riziką.
3. Nutraukiamos sutartys su išoriniais ir nuomuojamais sandėliais, tai sumažina įmonės sandėliavimo kaštus. Sudaroma galimybė išorinėms įmonėms sandėliuoti savo produkciją naujame įmonės sandėlyje – tai didina sandėlio generuojamą pelną.
4. Įrengta šokinė šaldymo kamera sumažina baudų ir neatkrovimų riziką dėl temperatūrinių režimų neatitikimo. Įgyvendinus projektą, bus panaikinta ne tik pagrindinė iškelta problema, bet ir iš jos kilusios papildomos problemos.
5. Padidės darbuotojų darbo našumas, produkcijos laikymas ir reikalingų prekių paieška taps greitesnė ir efektyvesnė.
6. Įmonė bus užtikrinta, kad ateityje dar sparčiau augant produkcijos apimtims nepritrūks sandėliavimo vietos. Šio projekto įgyvendinimas teigiamai paveiks ne tik sandėliavimo procesą, bet ir įmonės tiekimo grandinę – padidės sandėlyje vykdomų operacijų ir užsakymo vykdymų greitis. Visi šie veiksniai tiesiogiai lemia sandėlio generuojamą pelną – todėl jis turėtų kilti.

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Vaiva Žimontienė, Dalia Perkumienė

Improving storage processes: case of company X

Summary

The analysis of the warehousing process is one of the main steps to identify the problem areas of the warehousing process, the elimination of which can ensure the continuous operation of the warehouse, a constant turnover of stored goods, maximizing the use of warehouse space. Integrating innovative solutions in the warehouse eliminates human error and reduces transaction time.

Company X is a member of the part of a group of companies, which stores the products and raw materials produced by all group companies. Discrepancy between the volume of production and storage products and the capacity of the production warehouse, i.e., lack of storage space.

The analysis of warehousing processes in company X - acceptance, storage and delivery of goods revealed that there is a big problem in the warehousing process - lack of pallet space which causes other problems, such as reduced productivity, prolonged vehicle loading - not found quickly. It is necessary to load the products into the vehicles because due to the large number of products and the loaded passages it is not possible to find them in the warehouse, or to approach them, etc. After listening to the company's problem, a group of independent experts evaluated and came up with evaluation criteria and their importance in order. According to the evaluation criteria, the alternatives of the solution were evaluated and the best one was chosen - it was decided to build a new warehouse. The company must solve the main problem - the lack of pallet space in the warehouse premises, given the increased volumes of production and raw materials, the volumes currently exceed the capacity of the existing warehouse.

The average number of pallet spaces required has increased to 15.000 pallet spaces over the past year. In order for the warehouse to accommodate all the products stored and the products of external companies, we plan to build a new warehouse with 23.000 pallet places. It is planned to install a jump chamber for those cases when the temperature of the goods is too high for loading. This will help avoid charges and fines for failures due to too high a temperature. It is also planned to install one fully automated storage room which does not require any manual work and allows to save storage space. More than 5 thousand. The freezer compartment containing the euro pallets will store the goods for export. The camera will be equipped with modern 3D Drive-in racks, which will allow to accommodate up to 36% more pallets in the same area than would fit in standard racks. Inflatable weather-reducing ramps will also be used in the warehouse. Thanks to them, the products will have no contact with the external environment and will maintain the right temperature during all loads. The new camera will stand out not only with a larger number of pallets, but also with an intelligent storage system installed here. It will significantly increase productivity and save human resources. Innovative equipment will be able to identify the empty space in the warehouse itself and place the loaded pallet in it. In this way, the system will be able to stack 60 pallets per hour and even 1.200 pallets per day. As the equipment will require only minimal human involvement, it is possible to prepare orders at night, which will be left on the ramp in the morning. It is planned to install 8 ramps so as not to restrict the flow of unloading / loading machines.

Keywords: warehousing, pallet space, warehousing process improvement.

DISCIPLINARY LIABILITY IN KAZAKHSTAN

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This article analyzes the disciplinary liability in Kazakhstan. Based on the generalized data accumulated by legal science on this problem, the study and generalization of the current legislation and the practice of its application, the purpose of this work is to comprehensively analyze and study the disciplinary liability of employees in organizations with different forms of ownership and organizational and legal structure. In this paper such research methods as the descriptive method, literature analysis, deductive reasoning were used.

Keywords: *disciplinary liability, disciplinary sanctions, offense, employer, employee, labor discipline.*

Introduction

In the modern conditions of development of Kazakh society, state and law, disciplinary liability is acquiring a particularly important role in regulating social relations in the field of labor, with the predominance of contractual and local legal regulation, the presence of a systemic crisis of production, the problem of illegal use of labor, a shortage of qualified specialists and many other components. For the employer, effective regulation of labor discipline is important because if he does not achieve strict discipline in the enterprise, he risks leading the organization to bankruptcy. For employees, proper legal regulation of labor discipline issues guarantees the protection of their labor rights from abuse by the employer.

The aim of this paper is to analyze the regulation of disciplinary liability of an employee under labor law in Kazakhstan.

The following tasks: is to define the concept and principles of disciplinary liability, as well as identify the types of disciplinary liability. In addition, analyze the procedure for imposing disciplinary penalties in Kazakhstan (Labour code of the Republic of Kazakhstan, 2015).

Concept of disciplinary liability

Disciplinary liability is one of the types of legal liability. Its content is the duty of the subject to be subjected to certain adverse consequences for their illegal actions. Disciplinary liability is applied only in labor relations.

Disciplinary liability is a reaction to an offense in the field of labor relations, manifested in the application of sanctions of an unfavorable nature to violators of the established order. Disciplinary liability is a consequence of non-performance or improper performance of labor duties by a particular employee, that is, non-compliance with labor discipline. For violation of labor discipline, namely non-performance or improper performance of labor duties, disciplinary penalties are applied to the employee.

The Labor Code of the Republic of Kazakhstan (hereinafter referred to as the Labor Code of the Republic of Kazakhstan) establishes the right to apply disciplinary penalties entirely for the employer. That is, he can limit himself to an oral comment and not make it in writing. But it is worth noting that in the case of “negligent” employees, the most effective is still the imposition of a reprimand in writing. Firstly, the presence of a "paper" confirming the error of the employee will be for some a more serious argument in order to continue to perform their work properly. Secondly, the employer has the right to dismiss the employee if he continues to perform his work in bad faith and he has a disciplinary penalty imposed in accordance with the requirements of the law. The direct basis for bringing an employee to

disciplinary liability is such a type of offense, which is called a disciplinary offense in labor law. The content of a disciplinary offense, as well as any other offense, assumes the presence of a set of legal features: the subject, the subjective side, the object, the objective side. In other words, the formal legal basis for bringing to disciplinary liability is the presence of signs of a disciplinary offense in the act of the violator of the legal composition.

The subject of a disciplinary offense is a person (employee) who is in an employment relationship with a specific employer and has violated labor discipline.

The objective side of a disciplinary offense includes harmful consequences, as well as the relationship between them and the offender's action. Any violation of discipline causes harm to society, in some cases significantly, in others less, but the activity of the enterprise is always negatively affected. Also, you should distinguish between misdemeanors that may or may not lead to harmful consequences. For example, a safety violation may or may not lead to harmful consequences. In the latter case, this violation is reflected in the general level of discipline in the team, but it is impossible to determine the real damage from such an offense. Therefore, there is a difference between " material "offenses that cause moral harm and "formal" offenses that harm the rule of law.

The subjective side of a disciplinary offense is characterized by guilt. The fault lies in the fact that the person foresees (or should have foreseen) the harmful consequences of his act and wants them to occur or is indifferent to their occurrence. There are the following forms of guilt: intent (direct or indirect) and carelessness (presumption or negligence).For disciplinary liability, carelessness is more characteristic, although indirect intent, when a person is aware of the illegality of the consequences, does not want, but consciously allows them to occur. For example, in case of violation of safety regulations by officials or in case of a clear violation of other labor laws. Thus, a disciplinary offense in the field of labor relations is a culpable illegal violation of labor duties by workers and employees, for the commission of which a disciplinary sanction contained in labor law can be applied. (Disciplinary responsibility in the labor law: types, order of application, removal of disciplinary punishment, n. d)

Principles of disciplinary liability

The principles of disciplinary liability include:

-The principle of the legality of disciplinary liability.

The principle of legality consists in the requirement to be held accountable only for a guilty, illegal act and only within the limits established by law. Illegality in disciplinary offenses, which are the grounds for disciplinary liability, manifests itself differently than in other offenses. Illegality here means a violation of a positive norm that establishes the labor duties of an employee.

-The principle of reasonableness and fairness of disciplinary liability.

The principle of fairness of disciplinary liability establishes the nature of disciplinary sanctions that establish the need to match the penalty to the degree of guilt and severity of the offense committed, exclude the possibility of strengthening the penalty based on the results of consideration of the complaint of the employee subjected to punishment, and provide for responsibility for their own actions. This principle also includes the requirement to apply one legal penalty for one offense.

-The principle of expediency of disciplinary liability.

The principle of expediency characterizes disciplinary liability as a means to achieve certain social goals. The operation of this principle involves strict individualization of responsibility, considering the characteristics of the offender's personality, the type and nature of his activities when choosing a measure of responsibility.

- The principle of the inevitability of disciplinary liability.

The principle of the inevitability of responsibility means that no disciplinary offense should remain out of sight of the employer. The implementation of this principle should be enshrined in the obligation to initiate a disciplinary case for each case of violation of labor discipline.

- The speed of disciplinary liability.

The principle of the rapidity of the occurrence of disciplinary liability finds practical expression in the establishment of deadlines for the imposition of disciplinary penalties, in the consolidation of requirements for the prompt resolution of issues of bringing an employee to disciplinary liability.

The principles of disciplinary liability are implemented through management decisions and determine the correct direction of disciplinary practice in the field of labor (Понятие и принципы дисциплинарной ответственности. Виды дисциплинарной ответственности и основания ее наступления, n.d).

Types of disciplinary liability

According to paragraph 1 of Article 72 of the Labor Code of the Republic of Kazakhstan, for violation of labor discipline, committing a disciplinary offense, the employer can apply only the following disciplinary penalties:

-remark.

-reprimand.

-severe reprimand.

-termination of the employment contract at the initiative of the employer.

Disciplinary measures do not necessarily have to be applied in the order in which they are in paragraph 1 of Article 72 of the Labor Code of the Republic of Kazakhstan. (Labour Code of the Republic of Kazakhstan,2007)

The procedure for imposing penalties

The procedure for applying disciplinary penalties is described in article 65 of the Labor Code of the Republic of Kazakhstan. Disciplinary punishment is imposed by the employer by issuing an act of the employer.

The first thing an employer needs to do when detecting a disciplinary offense is to request a written explanation from the employee (paragraph 2 of Article 73 of the Labor Code of the Republic of Kazakhstan). The explanatory note is necessary to find out all the circumstances of the commission of a disciplinary offense, as well as the degree of guilt of the employee who committed the offense. This procedure allows the employee to express a position on the situation and explain to the employer the reasons for his actions or inaction in a particular situation, and the employer-to really assess the situation, and to conclude-to apply or not to apply the appropriate measure of disciplinary punishment.

There are cases when employees refuse to give any explanations. However, the employee's refusal to provide a written explanation does not prevent him from applying the penalty. In case of refusal of the employee by representatives of the administration, an Act of refusal to give explanations is drawn up, with which the employee must also be familiar. The act is signed with the participation of witnesses. The employer submits an order for the imposition of a disciplinary penalty to the employee for review, who must confirm it with his signature within three working days from the date of publication. In case of refusal of the employee in the confirmation, the corresponding entry is made in the order on the imposition of a disciplinary penalty. Also, if it is impossible to inform the employee personally,

the employer must send the employee a copy of the order by letter with a notification within three working days from the date of its publication.

The act of the employer on the imposition of a disciplinary penalty on the employee may not be issued during the period of temporary disability of the employee, the employee's release from work for the period of performance of state or public duties, the employee's stay on vacation, the employee's stay on a business trip.

According to article 66 of the Labor Code of the Republic of Kazakhstan, a disciplinary penalty is imposed on an employee immediately upon the discovery of a disciplinary offense, but not later than 1 month from the date of its discovery. The term of the penalty may not exceed six months from the date of its application, except for the termination of the employment contract. (Labour Code of the Republic of Kazakhstan, 2007)

Conclusions

To conduct this research, it was analyzed the concept of disciplinary liability, its principles and types, the procedure for imposing penalties.

In the course of the work, the following conclusions were made:

Disciplinary liability is the obligation of an employee to answer for a disciplinary offense committed by him and to incur penalties provided for by labor legislation. By applying a penalty, an employee who violates labor discipline is punished. However, the role of disciplinary liability as a means of ensuring labor discipline is not only to punish the employee who committed a disciplinary offense, but also to prevent offenses in the future, including by other employees. In other words, along with the punitive function, disciplinary liability also performs a preventive (preventive) function. Disciplinary liability is imposed for the culpable non-performance or improper performance of the employee's labor duties, i.e., the duties assigned to him by the employment contract and the internal labor regulations. In this regard, an employee cannot be brought to disciplinary liability, for example, for refusing to perform a public assignment, for violating the rules of conduct in public places, etc.

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Drausminė atsakomybė Kazachstane

Santrauka

Šiame straipsnyje analizuojama drausminė atsakomybė Kazachstane. Remiantis teisės mokslo sukauptais apibendrintais duomenimis apie šią problemą, galiojančių teisės aktų studijavimu ir apibendrinimu bei jų taikymo praktika, šio darbo tikslas yra visapusiškai išanalizuoti ir ištirti darbuotojų drausminę atsakomybę organizacijose, turinčiose skirtingų formų nuosavybės ir organizacinė bei teisinė struktūra. Šiame straipsnyje buvo naudojami tokie tyrimo metodai: aprašomasis metodas, literatūros analizės metodas, dedukcinis argumentavimas.

Raktiniai žodžiai: *drausminė atsakomybė, drausminės sankcijos, teisės pažeidimas, darbdavys, darbuotojas, darbo drausmė*

THE CONCEPT, TYPES, TERMS AND PROCEDURE OF EMPLOYMENT CONTRACT: CASE OF UKRAINE

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The law equally protects the rights of both the employee and the employer; it does not define the more injured party, but in accordance with the rules and procedures created, it determines the rights and obligations of each of the parties. Here the conditions and types of employment contracts, their features will be set forth, as well as some examples of court decisions will be given.

Keywords: *law, contract, employer, employee, types of contracts.*

Introduction

According to Article 43 of the Constitution of Ukraine, everyone has the right to earn money and free choice of profession. The state, for its part, promotes training, development in the chosen area in various ways, and gives freedom of action.

The basis for the emergence of an employment relationship is an employment contract, which the employee enters with a firm, individual, institution or enterprise.

The object of study is an employment contract and its types, features of the conclusion and procedure (Pravova dopomoga…, 2021). Each of us is faced with the need to conclude an employment contract, but few people know how this should be done correctly. To avoid incorrect actions and problems, we suggest that you familiarize yourself with the information below (Ministry of Justice…, 2021).

The research method was the study of old and new information, laws and procedures, real examples and court decisions were considered, which can help to better understand the situation.

The Labor Code of Ukraine defines an employment contract

So, an employment contract is an agreement between an employee and the owner of an enterprise, institution, organization or a body authorized by him or an individual performing the work specified in this agreement, with subordination to the internal labor schedule, and the owner of an enterprise, institution, organization or authorized person provided by the labor contract, collective bargaining agreements and third-party agreements (Kadrovik, 2020).

Usually, an employment contract is concluded in writing, especially in cases where a minor is hired, when the employer insists on concluding a contract in writing, and in cases if such are the regulations of the organization; in other cases, stipulated by the legislation of Ukraine (Sil'chenko, 2020).

Example: in the period from 09/13/16 to 09/16/16, the regional department of the State Service of Ukraine carried out an unscheduled check of the plaintiff registered as an individual entrepreneur (IE), as a result of which it was discovered that the sole proprietor admitted to the created position "food seller" a person with whom the labor contract was not drawn up, and the notification was not sent to the executive authority on the issues of ensuring the formation and implementation of the state policy on the administration of the single contribution for compulsory state social insurance (Petrusenko, 2016). The court ordered a fine of UAH 85,000 (EUR 2,530.52).

Conditions for concluding a contract. To conclude an employment contract, a citizen must present a passport and workbook, as well as, at the request of the employer, a document on education.

If a citizen is getting a job for the first time, and he does not have a workbook - the presentation of all documents, in particular a document on education or qualification, is required to be presented.

It is advisable to note that the conclusion of an employment contract is formalized by an order or instruction of the owner or his authorized body on the enrollment of the employee to work (Resolution of the CCS VP [2019]).

Before starting work under the concluded employment contract, the owner or his authorized body is obliged to:

1. explain to the employee his rights and obligations and inform the employee on receipt of the working conditions, the presence in the workplace where he will work, hazardous and harmful production factors, if any, and the consequences of their impact on health, his right to benefits and compensation for work in such conditions in accordance with with applicable law and collective agreement;
2. familiarize the employee with the internal labor regulations and the collective agreement;
3. define a workplace for the employee, provide it with the means necessary for work;
4. instruct the employee on safety, industrial hygiene, occupational health, and fire protection.

Types of employment contracts:

1. unlimited, concluded for an indefinite period;
2. for a certain period, established by agreement of the parties;
3. concluded for the duration of a certain work.

A fixed-term employment contract is concluded in cases where labor relations cannot be established for an indefinite period, considering the nature of the work ahead or the conditions for its performance, or the interests of the employee and in other cases provided for by legislative acts.

In addition, it should be noted that labor legislation provides for the conclusion of labor contracts for temporary and seasonal work.

Labor contracts for temporary work are concluded with employees hired for a period of up to two months, and for replacing temporarily absent employees who retain their place of work (position) - up to four months. The order (decree) for employment indicates that this employee is hired for temporary work or indicates the period of his work (Article 36 of the Law of Ukraine "On Labor Contract…, 2020).

Employees can be hired by concluding a contract with them by the owner or by an authorized body, an individual in cases directly provided for by laws.

Today, a contract can be concluded, for example, with a pedagogical and scientific-pedagogical worker, with an assistant lawyer.

Example: In May 2015, he filed a lawsuit against the Church Administration (Episcopate) of the German Evangelical Lutheran Church of Ukraine to declare illegal dismissal, reinstatement at work, payment of wages for the period of forced absence from work and moral damage.

In this decision, the Supreme Court upheld the opinion that dismissal for absenteeism of an employee whose job was not properly recorded would be illegal. Today, this

position does not lose its relevance also in the context of workers' transition to teleworking (The Supreme Court of Ukraine Case No. 814/2156, 2018;).
The Supreme Court ruled on reinstatement at work, having found that appealing against the employer's decision did not amount to government interference in the activities of a religious organization (Resolution of the Supreme Court of January 24, 2019).
The contract provides for:

- the volume of the proposed work, the quality and timing of its implementation;
- contract term;
- rights, obligations, and mutual responsibility of the parties;
- Terms of payment and labor organization;
- grounds for termination and termination of the contract;
- social and living conditions and other conditions necessary for the fulfillment of the obligations assumed by the parties, considering the specifics of the work, professional characteristics and financial capabilities of the enterprise, institution, organization or employer (Goleva, 2018).

An employment contract is concluded in two written copies, one of which remains with the employer, and the other is handed over to the employee. The contract is considered concluded when a decree is issued on the hiring of an employee for a position, and when the employee is admitted to work (Debet-Kredit, 2013).
Grounds for termination of an employment contract.

According to the legislation of Ukraine, an employment contract may be terminated on such grounds:

1.Agreement between the two parties

By agreement of the parties, an employment contract concluded for an indefinite period can be terminated, as well as a fixed-term employment contract. Termination of an employment contract is possible at any time when the owner or an authorized body and employee have reached an agreement on termination of the employment contract. In this case, such an offer can come both from the owner or a body authorized by him and from an employee. If the other party agrees to terminate the employment contract submitted by one of the parties, it is considered that the parties to the agreement to terminate the employment contract, and the employee is released from work (Boyko, 2021).

In the absence of the consent of each party to the proposal for another termination of the employment contract, it arises on the initiative of the employee or on the initiative of the owner or his authorized body.

2.Termination of an employment contract at the initiative of the employee.
Such termination depends on the type of contract that was concluded: for a specific period or a fixed-term contract.

The employee has the right to terminate the contract concluded for an indefinite period, notifying the owner or the authorized body about these two weeks beforehand in writing.

3.Due to the inability to perform work (physically, moving, transfer, etc.)

- termination of an employment contract at the initiative of the owner or his authorized body.
- changes in the organization of production and labor, including the exclusion, reorganization, bankruptcy or re-profiling of enterprises, organizations, reduction of the number or employees.
- identification of the employee's inadequacy for the position held or the work performed, insufficient qualifications or failure to fulfill obligations, an obstacle to the

continuation of this work, if the performance of the duties assigned to him requires access to state secrets.

- systematic by the employee, without valid reasons, the obligations imposed on him by the employment contract or the internal labor regulations, if disciplinary or social labor penalties were previously applied to the employee.
- absenteeism (including absence from work for more than three hours during the working day) without good reason.
- failure to appear for work for more than four months in a row due to temporary disability, not counting maternity leave, if the legislation does not establish a longer period of retention of the place of work (position) in case of a certain disease. For employees who have lost their ability to work due to work injury or occupational disease, the place of work (position) is retained until the restoration of working capacity or the establishment of disability.
- reinstatement of an employee who previously performed this work.
- appearance at work drunk, in a state of narcotic or toxic intoxication.
- the commission of theft (including petty) of the owner's property at the place of work, established by a court verdict that has entered into legal force, or by a decision of a body whose competence includes imposing an administrative penalty or applying social pressure.
- termination of the employment contract with the head at the request of the elected body of the primary trade union organization (trade union representative)
- expiration of the term of the employment contract.
- transfer of an employee, with his consent, to another enterprise, institution, organization or transfer to an elective position.
- the employee's refusal to transfer to work in another locality together with the enterprise, institution, organization, as well as refusal to continue work in connection with a change in essential working conditions.

Example: In April 2017, the applicant filed a lawsuit against the private joint-stock company Kievsky Plant of Sparkling Wines Stolichny, a third party - the executive director of CJSC KZShV Stolichny, for reinstatement at work, collecting average earnings during the forced absence.

The lawsuit is motivated by the fact that the applicant had been in a position in the number of full-time employees for seven years, before the order was received on changes in the staffing table and the reduction of the staff.

In this decision, the Supreme Court confirmed that the employer has the right to independently determine its organizational structure, establish the number of employees and the staffing table, and the discussion of the issue of the expediency of reduction lies outside the jurisdiction of the court.

Conclusions

1. An employment contract is an agreement between an employee and the owner of an enterprise, institution, organization, or a body authorized by him or an individual performing the work.
2. A fixed-term employment contract is concluded in cases where labor relations cannot be established for an indefinite period.
3. Failure to appear for work for more than four months in a row due to temporary disability, not counting maternity leave, if the legislation does not establish a longer period of retention of the place of work (position) in case of a certain disease.

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Darbo sutarties samprata, rūšys, sąlygos ir tvarka

Santrauka

Šiame straipsnyje analizuojama drausminė atsakomybė Kazachstane. Remiantis teisės mokslo sukauptais apibendrintais duomenimis apie šią problemą, galiojančių teisės aktų studijavimu ir apibendrinimu bei jų taikymo praktika, šio darbo tikslas yra visapusiškai

išanalizuoti ir ištirti darbuotojų drausminę atsakomybę organizacijose, turinčiose skirtingų formų nuosavybės ir organizacinė bei teisinė struktūra. Šiame straipsnyje buvo naudojami tokie tyrimo metodai: aprašomasis metodas, literatūros analizės metodas, dedukcinis argumentavimas.

Raktiniai žodžiai: *teisė, sutartis, darbdavys, darbuotojas. sutarčių rūšys*

COMPULSORY MEDIATION IN TURKISH LABOUR LAW

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In legal systems with excessive workload like Turkish Judiciary, cases conclude late. In order to eliminate this situation, alternative dispute resolution methods have been developed and mediation has been made more visible in particular. The aim of labour law is to solve the problems between the employer who has power in the economic field and the employee who depends on the employer, to achieve a balance and to maintain this balance. In order to achieve the mentioned balance,"mediation" in the Turkish Legal System was established on a legal basis in 2012.In this study, we will focus the historical development of mediation, how mediation activities are carried out, the qualities of the mediator and the characteristics that he/she should have were examined.

Keywords: *alternative dispute resolution methods, mediation, mediator, procedural economics, Turkish Judiciary, Turkish Judicial System*

Introduction

One of alternative dispute resolution method is mediation. The most accepted definition is resolution disputes by third party, which is voluntarily neutral. In this context, mediation is not a judicial activity, nor can it perform the actions taken by the judicial activity. Mediation was established on a legal basis in 2012 as an institution that facilitated the work of the Turkish judicial system. The excessive agglomeration that exists in our judicial system is one of the most important problems that violate the right to a fair trial in the first place. In this context, the most important area in which mediation protects the right has undoubtedly been labour law.

We have witnessed that mandatory mediation before litigation is defined as a method in the relevant article in the Labour Courts Law No. 7036, that the concept of mediation is filled in and regulated. When the situation is examined by the law of Civil Procedure, it will be seen that the failure to resort to mediation means that one of the conditions of the case has not been met. In the opposite case, if the plaintiff files a lawsuit without going to the mediator, the court will have to dismiss the case duly. In addition, the plaintiff will not be given an additional period of time that will not be granted the right to correct this situation. During mediation negotiations, it is possible that the parties will waive some rights. The parties do not have to agree as a result of mediation. In the absence of an agreement, of course, the rights to use other legal channels are reserved

Historical development of mediation

In the 1990s, with the increase of global competition and the loss of power of trade unions on the first day, peaceful solutions became even more important. Although it is desirable to resolve disputes by legal means, given the situation in Turkey, it will be seen that there is already an intensity. Because our judicial system is strictly adhered to the terms of the form, it takes 430 days for a case to be concluded in labour courts. One of the ways to eliminate this intensity is to go to alternative solutions. Non-judicial peaceful settlement methods constitute alternative remedies. Alternative solutions have been a developing School in the Far East. But its development began in the US in the 1960s, while its institutional development was slower in continental Europe.

Alternative solution methods used extensively in Turkey are arbitration, conciliation and mediation. But in the first place, alternative solutions began to be discussed in our country, methods such as mediation, arbitration, and then emerged. Peaceful settlement methods in Turkey were on the agenda in the pre-republican period. In 1909, the mechanism

for reconciling holiday with the Ottoman Strike Law was put into operation. If you look at the Republican era, the first Labour Law was introduced in 1936, but the Collective Labour Agreement Strike and Lockout Law No. 275, issued in 1963, was included in mediation. The years in which mediation is more visible are the arrangements made after 1980. In the recent past, the authorities, who signaled that alternative solutions will be focused on in the 10th Development Plan, have accelerated the studies. In this context, the Mediation of Legal Disputes Law (HUAK) No. 6325 on was first enacted, but the concept of mediation was also included in Law No. 7036 in order to see the desired demand for the mediation activities contained in this law.

Basic principles of mediation

In third article of HUAK, the concept of willpower in mediation is clearly explained. Accordingly, ' the parties are free to apply to the mediator, continue the process, conclude or abandon this process.'As can be seen, 3 different stages are mentioned. The aim of its phasing is undoubtedly to allow the current dispute to be resolved on a more comfortable and free ground. The principle of willpower is a principle that is valid and applied at every stage of the mediation institution. Although it is stated that mandatory mediation is contrary to the principle of wills, it should be noted that the parties have the right not to attend the first meeting. The existence of such a right is consistent with the principle of willpower, and it will be seen that the mandatory mediation institution does not fundamentally contradict the principle of willpower.

According to the principle of equality, the parties have equal rights at every stage of the mediation institution. Because of this, any party cannot be treated with privilege, the treatment applied to one party must be applied to the other party. The Constitutional Court also has opinions on this issue. (AYM 11.07.2018. 2017/178-2018/82) When looking at daily life, the worker is in a weaker position, while the employer is in a stronger position. In this judicial opinion, the Constitutional Court emphasized the strengthening of the hand of the worker and the equalization of his conditions with the employer.

The privacy policy has been developed to prevent the information and documents used in the mediation process from being used elsewhere. Since the parties in mediation will reveal all the data they have in order to reach a compromise, this principle is the principle that will eliminate the anxiety caused by this situation. Clear disclosure of the data available in the dispute resolution process will both allow the dispute to be resolved correctly and will play an important role in knowing the interests necessary for the settlement. This principle is clearly stated in 4th article of HUAK. In principle, the parties provide easier communication and prevent a situation against them in a case that may be opened in the future.

Scope and functioning of mediation

Based on the definition of mediation, the third party (mediator) must gather the parties to a table and continue the proceedings in a way that helps resolve the current dispute. It is also useful to note that the resulting solution is not binding.

The scope of mediation is stated in Article 3 of the Labour Courts Law No. 7036. Accordingly, wages, overwork fees, annual leave fees, week holiday fees, national holidays and general holiday fees fall into the category of receivables that can be requested from the employer. Since the subject of rights can be both parties, the employer can also claim compensation from the employee. Accordingly, items such as notice compensation, criminal condition, advance request can be requested from the employee by the employer. Since the issues are usually receivables and compensation axis, there is no specific subject limitation in the

law. Out-of-scope cases are also available. Accordingly, material and moral compensation arising from an occupational accident or occupational disease, as well as mediation in cases of detection, objection and recourse covering these issues, are not covered by the legal requirement. In order to implement mandatory mediation, it is necessary to apply the persons and the matter together with the law.

The mediation process can begin with people applying to mediation offices. Mediation offices are one of the main institutions of the system. The application to mediation offices is explained in the 5th paragraph of Article 3 of the Labour Courts Law No. 7036. Applications can be made to the mediation office at the place where the work is performed, as well as to the settlement of the opposite party. If the counterparty is not the only person, then the transaction can also be initiated by applying to the mediation office in the settlement of any of them. It cannot take into account whether the mediation offices are authorized or not. The party that will appeal is the opposite party. In order for the other party to make an objection to the authority, it is necessary to evaluate the period up to the first meeting at the latest. The mediator must immediately forward the file containing the objection to the other party to the mediation office. After the file is forwarded to the Bureau, the bureau will forward this file to the Civil Court of Peace. After the court has made the necessary examinations, it will make the decision determining the relevant Bureau, and this decision is in the final decision. After the operations are completed, the file is forwarded to the office. The Bureau is obliged to notify this situation to the parties in accordance with the Notification No. 7201. If the authority objection is rejected, the dispute between the parties is transferred to the same mediator. If an objection to authority has been accepted, an application must be made to the mediation office appointed by the court within one week. The competent bureau will assign mediation.

The choice of mediation is also explained in the 6th paragraph of the 3rd Article of the Labour Courts Law No. 7036. Accordingly, the mediator in the first place will be determined by the Justice Commission or the mediation office. But if there is a mediator who has already been determined by mutual agreement, then that mediator will start the proceedings.

During the appointment of a mediator, the parties must submit any information and documents requested to the relevant office. But if the information in the hands of one party is not sufficient, the bureau is authorized to investigate this information or document.

The process of transferring the current dispute to the mediator is specified in the 8th paragraph of Article 3 of Law No. 7036. The relevant office will inform the mediator of the assignment, as well as provide the contact information of the parties. The mediator will begin processing the information transmitted to him, but he has the freedom to investigate it at his own expense, especially when he sees a lack of contact information. The mediator must call the parties and arrange a meeting in the light of the contact information reported to him. An invitation to a meeting is a situation where the mediator is responsible for the task. If one of the parties does not attend the meeting or the mediation activity has ceased, the mediator will take the necessary actions with this data and aleyhe will be able to apply for sanctions.

The mediation period is limited by law to 3 weeks. However, it was considered appropriate to extend this period by no more than 1 Week, taking into account the necessary negotiations for the settlement of the dispute and other situations.

The conclusion of mediation activities is regulated in paragraph 11 of Article 3 of Law No. 7036. Mediation activities may be terminated for 3 different reasons. First, mediation activities will cease when the mediator cannot reach the parties. In addition, the meeting will be terminated when the parties do not participate in the meeting or if no conclusion has been reached in the negotiations.

The Article 3 Paragraph 12 of Law No. 7036 explains the situations that will occur when one of the parties does not participate in the negotiations without justification. Accordingly, when one of the parties does not attend the organized meeting without justification, this party will be responsible for the entire cost of the trial, even if it is completely justified. If both parties did not attend the meeting, then the costs of the trial will remain above the parties. The mediator must evaluate and determine whether the presented excuse is valid together with the specific incident. When the mediator considers the presented excuse to be unwarranted and transfers the situation to the court, the dispute shall not be transferred to the mediator again when the court accepts the presented excuse as valid. The court makes a final decision on the current dispute.

If the parties agree at the end of the mediation activity, the mediator must pay the amount specified in the second part of the mediation minimum wage tariff equally. The amount of payment will be 'at least 2 hours' and no less can be decided.

If the parties have failed to agree on mediation activities, then the fee will be paid in the budget of the Ministry of Justice. This payment will be covered by the Ministry of Justice budget not only in case of failure to agree, but also when the parties do not attend the meeting or the meeting takes less than two hours and the situation of failure to agree in this way. But if the interview lasted more than two hours, but it was not concluded, then the parties must share and pay equally for the part that exceeds two hours.

Two different options have also been prepared to cover the necessary costs incurred by mediation offices. First, if the parties have reached an agreement as a result of mediation activities, then the payment must be made by the parties. If no agreement is reached, then the necessary costs will be covered from the budget of the Ministry of Justice.

According to Law No. 7036, only the parties themselves can participate in the meeting, as well as legal representatives or lawyers with the parties can participate in the meeting. The place where the mediation negotiations will take place is explained in the 19th paragraph of Article 3 of Law No. 7036. But since the provision is not a mandatory provision, the parties can also identify these places differently.

Conditions of being a mediator

The qualifications of being a mediator are specified in Article 20 of the HUAK No. 6325. Accordingly, the person must be a Turkish citizen. He must be at least 5 years senior in his profession and be a graduate of the Faculty of Law. In addition to being in contact with or not being affiliated with terrorist organizations, it is also necessary not to be convicted of a crime committed deliberately in accordance with Article 53 of the Criminal Code No.5237, and not to be dismissed from the profession or public service as a result of a final disciplinary decision. Finally, it is necessary to complete mediation training and succeed in the written and practical examination conducted by the Ministry of Justice.

Qualification of the mediator

In order for the mediator to be neutral, he must not be in a relationship with any of the parties and must not have an interest in resolving the dispute. The mediator's job is to provide the necessary environment for resolving the dispute between the parties and to ensure that the parties are effectively involved in the settlement process. If there is doubt about the mediator's impartiality and strong evidence is present, the mediator must inform the parties. If the parties still want to carry out the same mediation process, then the mediator is obliged to perform his duty.

Conclusions

It can be seen that the workload in the Turkish legal system prevents the proceedings from being held at a fair and appropriate time. Long-term litigation processes and economic difficulties during the litigation process lead citizens to alternative dispute resolution methods and in this context make mediation a more functional system. The Law on Mediation in Legal Disputes No. 6325 was regulated. Mediation is an activity that promises a quick solution, as well as being very economical and peaceful in terms of applicability in daily life. The willingness of the parties to resolve the dispute is one of the most important points that will make mediation successful. In addition, the necessary costs incurred by the mediation offices will be wasted.

Another point is whether mediation is mandatory conflicts with the principle of will, which is one of the principles of mediation. As mentioned, the parties have the right not to come to the first meeting. It is also not necessary for the parties to reach an agreement during the negotiations. Although there are different opinions, the situation specified in Article 36 of the Constitution and the freedom to seek remedies means that the citizen does not meet with an obstacle, is able to seek his right, and applies to legal remedies. Although people do not come to the first meeting to resolve the dispute with their will, they can end the mediation process of their own free will. Although people do not come to the first meeting to resolve the dispute of their own volition, they can again terminate the mediation process of their own volition. If the parties are unable to reach an agreement, they can terminate the mediation process and proceed to the litigation process, and in this context they do not face any obstacles. Mediation is a complementary element of the judiciary, so this element is included in people's access to justice. Mediation cannot be considered independently in the dispute resolution process.

Although mediation is a new way of solving the Turkish judicial system, it is necessary to make it mandatory as a condition of litigation in terms of increasing its preferability, citizens see this process as a procedure and those who see it as an obstacle that must be overcome in order to examine the case in essence is the biggest problem of this system. If this problem is eliminated, it will function in accordance with the purpose of introducing mandatory mediation.

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Privalomoji mediacija Turkijos darbo teisėje

Santrauka

Teisinėse sistemose, kuriose yra per didelis darbo krūvis, pavyzdžiui, Turkijos teismų, bylos trunka gan ilgai. Siekiant pašalinti šią problemą, buvo sukurti alternatyvūs ginčų sprendimo metodai, o tarpininkavimas tapo ypač matomas. Darbo teisės tikslas yra išspręsti problemas tarp darbdavio, turinčio galią ekonominėje srityje, ir darbuotojo, kuris priklauso nuo darbdavio, pasiekti pusiausvyrą ir išlaikyti šią pusiausvyrą. Norint pasiekti minėtą pusiausvyrą, 2012 m. Teisiniu pagrindu buvo įsteigtas „tarpininkavimas“ Turkijos teisinėje sistemoje. Šiame tyrime daugiausia dėmesio skirsime istorinei mediacijos raidai, kaip vykdoma tarpininkavimo veikla, mediatoriaus savybėms. ir savybės, kurias jis turėjo turėti.

Raktažodžiai: alternatyvūs ginčų sprendimo būdai, tarpininkavimas, tarpininkas, procesinė ekonomika Turkijos teismai, Turkijos teismų sistema.

PROTECTION OF IP IN AGREEMENTS AND ITS USAGE

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Nowadays it is vital to protect IP and such protection can be implemented by different means. The most effective is drafting a legal agreement within IP field. This article is devoted to the understanding of the protection of IP rights and the existence of the IP agreements. Furthermore, it includes the usage of the IP agreements in Ukraine. In Ukraine the usage of such IP agreements is possible even though the owners of IP when concluding such agreements face difficulties related to the imperfect legislation and the long procedure of protection of IP in the event of its infringement. The legal obligation to process personal data is applicable if the processing of personal data for the company is established in the legal acts of the EU or the Republic of Lithuania.

Keywords: *intellectual property*, *agreement*, *protection*, *NDA.*

Introduction

The goal of protection of the intellectual property of the partners is handled through collaborative research and development agreements and/or separate intellectual property (IP) contracts (agreements). Such IP agreements define various IP facts like background IP and those IP that are anticipated to be developed through the project activities.[1]

On a contractual basis, personal data may be processed: in order to fulfill the company's contractual obligations, set out in the contract with the customer.

When using IP within the company, the owner may take advantage of different legal agreements such as a nondisclosure agreement, the non-compete agreement and various other documents. Some of the legal agreements enclose the legal protection, such as the trademark although we do recommend drawing the separate IP agreement.

Personal data means any information relating to an identified or identifiable natural person (data subject); an identifiable natural person is a person who can be identified, directly or indirectly, in particular by an identifier such as name, personal identification number, location and internet identifier or by one or more identifiers of that natural person; features of physical, physiological, genetic, mental, economic, cultural or social identity[2].

When the IP documents have been drafted, it is important that the lawyer is hired, and he/she provide the owner of the IP with the necessary documentation. It should be noted that the information should be kept private and confidential. Such move will stop the workers (or other persons in question) from telling the opponents the confidential information that may harm the reputation of the IP owner.

It may be easy to draft the separate IP agreement or quite difficult to do so. This depends on the variety of factors such as the number of employees, the circumstances, and the factors of the IP. The more details the owner provides concerning the situation, the easier it will be for the lawyer to draft the agreement and the more complex this agreement will be, the more details it will encompass. It may be necessary for employees, clients and others to

[1] Law of Ukraine "On intellectual property"

[2] Guidelines for the protection of personal data for small and medium-sized business. Available via internet: https://vdai.lrv.lt/uploads/vdai/documents/files/01_%20SolPriPa%20Asmens%20duomenu%20apsaugos%20gaires%20SMULKIAJAM%20IR%20VIDUTINIAM%20VERSLUI%202019-11-08.pdf, [visited 2021 04 08].

sign additional documents to ensure the secrets and confidential data remain within the company. The lawyer should explain to the owner, that legal representation is generally necessary, when he or she need to make some amendments to the agreement.

Origins of the right to the protection of personal data

The protection of personal data is a growing concern throughout history, but it was not developed in legislative codes until the mid-20th century. It is logical that two or more centuries ago it was difficult to think of possible technological advances, some of which are of such an intrusive nature to human privacy. Thus, "the universalization of information technology, together with the massive, unstoppable and valuable spread of Internet use, with its inexhaustible resources, but also with the widest range of tools, allows almost anyone to invade the Internet with accessible opportunities. citizens, raised general concerns about this phenomenon and emphasized the need for legal regulation "[3].

The true origins of the right to the protection of personal data, notwithstanding what was previously set out in the Universal Declaration of Human Rights or the International Covenant on Civil and Political Rights, should be established from 1960 onwards. lastly, with particular reference to the year 1967, when the Consultative Commission was set up within the Council of Europe, from which Resolution 509 on human rights and new scientific and technical developments was adopted.

Legislative and jurisprudential advances in Spain

It is clearly revealed that the purpose of the fundamental right to the protection of personal data is to protect individuals against the collection of their data, whether automated or not, as they may be disclosed and prejudiced against those individuals, let alone explained later. that there are certain data that require specialized treatment, such as those related to health.

In Spain, this was enshrined in 1978. Article 18 (4) of the Spanish Constitution (hereinafter "CE"). The rule states that "the law will restrict the use of information technology to ensure the dignity, personal and family privacy of citizens and their full use. The Spanish legislature in 1992 adopted a rule with few journeys, which had to be amended shortly after Directive 95/46 / EC. This rule was on October 19th. Organic Law no. 5/1992. Regulation on the automated processing of personal data[4].

The Spanish Constitutional Court would also begin to configure or describe the existence of a fundamental right to data protection. So his June 20[5] should be mentioned first. Judgment 254/1993, in which he states: "Our Constitution introduced a new constitutional guarantee in response to a new form of specific threat to the dignity and rights of the individual (...) we are against the institution of guaranteeing other rights, in principle honor and privacy, but also which is in itself a fundamental right or freedom, the right to liberty

[3] ACEDO PENCO, A., "El derecho al olvido en internet como componente esencial del derecho al honor en el siglo XX", *Dirieitos Fundamentais Da Pessoa Humana,* (Alteridade, Curitiba, 2012), pp.191-221.

[4] LÓPEZ-MUÑIZ GOÑI, M., "La ley de regulación del tratamiento automatizado de los datos de carácter personal", *Informática y derecho: Revista iberoamericana de derecho informático*, 6, 1994, pp. 93 - 116.

[5] VILLAVERDE MENÉNDEZ, I.,"Protección de datos personales, derecho a ser informado, y autodeterminación informativa del individuo. A propósito de la STC 254//1993", *Revista Española de Derecho Constitucional,* 1, 1994, p.194.

against possible aggression against dignity and the liberty of the individual arising from the unlawful processing of data.

Nondisclosure agreements

Nondisclosure agreements are used to keep the secrets, processes, methods and information of the company confidential and away from the public and competitors. [6]When the person in question signs the above-mentioned agreement, it means that he/she is obliged to keep data secret and its procedures, unless the other party is aware of the details as well. If the person does not comply with the provisions of the agreements, he/she may be taken to court to enforce the contract.

Such actions may lead to the problems caused to a company by a single person. As a result, such damages may encompass economic or financial matters that are revealed to a competitor. It is completely possible that the information, being within the competitors' hands, can destroy and bypass the company, causing great financial troubles to the business entirely.

These nondisclosure agreements are one of the most used and widely copied processes around the country. The nondisclosure agreements may involve trade secret, or patent and copyright issues. [7]Such procedures are very confidential. If the products or services have at least some similar aspects (name, shape) there may be the possibility of including the trademark, while those similar aspects go to a trade secret, i.e. private information within the company.

Patents provide the business with exclusive rights to reproduce the inventions, and copyrights ensure printed works are protected. The persons in question may sign those documents when the information should be kept secret.

Trademark license agreement

While we are aware, that the trademarks and trade secrets are not legal agreements itself, it is possible to use those as such agreements. The reason for that is the registration and documentation of those IPs. Such documentation allows owner to stand against infringement and violation of his rights and at the same time to be able to protect his own rights.

The advantage is that the foreign powers are prohibited from unlawful grant of ownership and thus the business is protected. The prohibition towards foreign authorities leads to the impossibility of selling IP in other countries. The persons in question often sigh the non-compete and other agreements for information to be kept confidential. This may also lead to litigation against employees if they attempt to steal, procure or sell these IPs to competitors or disclose the information to the public.[8]

Legal agreements promote the confidential relationships and contractual agreements between parties. [9]The ways of such promoting is to complete either the nondisclosure agreement or just sign the bilateral contract between two companies as to the trademark IPs and in order to share profits. When signing the paper, it is easier to promote and entail others IP due to the existence of trust under the agreement. It provides the company or owner of IP rights with the information as to the other company IP.[10]

[6] Intellectual property rights, 2020/ CRS Report.
[7] The problem pf intellectual property, 2019/ Marushko M.
[8] Regulation and improvement of intellectual property law, 2020/ Bilous T. I.
[9] The problem of protection of IP rights via Internet, 2020/ Avramova O.S.
[10] Protection of trademark, 2019/ Marusheva O.

Copyright license agreement

Such agreement allows the owner to grant the persons in question the right to exploit the copyright, by the means of reproduce or distribute the original works of the owner. The agreement does not grant the exclusive rights that belong to the owner; however, it provides the terms and conditions of the owner and the possibility to gain profit. Such allowance may be limited by different spheres, for example, time or territory. It may allow only to translate the work or distribute and within particular country.

In exchange for such right, the owner is paid a royalty, or an amount of consideration as agreed upon by the parties. This does not permanently transfer the right of copyright to another person; it is licensed for some duration.

Usage in Ukraine

Speaking about Ukraine and its legislation, it is hard not to mention that now our legislation is moving towards the great developments within the IP field and IP agreements in particular. Thus, the possibility to conclude separate IP agreements is provided in our legislation as well and the level of protection due to such agreements is rather high.

Of course, there are certain disadvantages of the system, such as long term of the protection itself even by the IP agreements in the event of violation of the IP rights. However, the possibilities that those agreements provide, do play greater advantage that some issues that are to be solved.

However it should be mentioned that under current practice in Ukraine, we do pay attention to the fact that it is the freedom of entrepreneurship that exists and NDA limits it to some point. Therefore, we cannot apply it to the full extent.

Usage in Lithuania

From 2018 May 25 introduced in 2016 April 27 Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of individuals regarding the processing of personal data and on the free movement of such data and repealing Directive 95/46 / EC (General Data Protection Regulation). This Regulation sets out the rights of the natural person and the obligations of the data controllers and the data controllers and processors. It also sets out the methods for ensuring compliance with these rules and the application of sanctions for non-compliance.

Personal data processed under a contract and personal data processing operations performed must be necessary, i. y. without processing the personal data provided in the contract, the contract could not be performed. The contract must comply with the requirements set out in the Civil Code of the Republic of Lithuania and other legal acts[11].

The legal obligation to process personal data is applicable if the processing of personal data for the company is established in the legal acts of the EU or the Republic of Lithuania.

Conclusions

To sum up, we should notice that the most reasonable decision is to conclude IP agreement such as Trademark License Agreement or Copyright License Agreement.

[11] Guidelines for the protection of personal data for small and medium-sized business. Available via internet: https://vdai.lrv.lt/uploads/vdai/documents/files/01_%20SolPriPa%20Asmens%20duomenu%20apsaugos%20gaires%20SMULKIAJAM%20IR%20VIDUTINIAM%20VERSLUI%202019-11-08.pdf, [visited 2021 04 08].

Moreover, it should be paid to the attention the fact that the conclusion of the agreement itself is not the whole work. The proper protection of IP rights is possible only due to the everyday monitoring and constant evaluation of the current legislation and the market.

In Ukraine the usage of such IP agreements is possible even though the owners of IP when concluding such agreements face difficulties related to the imperfect legislation and the long procedure of protection of IP in the event of its infringement.

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Elvina Podolian, Violeta Naujokienė, Alejandro Platero Alcón

IP apsauga susitarimuose ir jo naudojimas

Santrauka

Šiais laikais labai svarbu apsaugoti intelektinę nuosavybę ir tokią apsaugą galima įgyvendinti įvairiomis priemonėmis. Veiksmingiausia yra parengti teisinį susitarimą IP srityje. Šis straipsnis skirtas intelektinės nuosavybės teisių apsaugos ir intelektinės nuosavybės sutarčių egzistavimo supratimui. Be to, tai apima IP sutarčių naudojimą Ukrainoje Lietuvoje. Ukrainoje tokias intelektinės nuosavybės sutartis galima naudoti, net jei IP savininkai, sudarydami tokius susitarimus, susiduria su sunkumais, susijusiais su netobulais teisės aktais ir ilga intelektinės nuosavybės apsaugos procedūra pažeidžiant pažeidimus. Lietuvoje Asmens duomenys, tvarkomi pagal sutartį ir atliktos asmens duomenų tvarkymo operacijos turi būti būtinos, t. y. neapdorojus sutartyje numatytų asmens duomenų, sutartis negali būti įvykdyta. Sutartis turi atitikti Lietuvos Respublikos civiliniame kodekse ir kituose teisės aktuose nustatytus reikalavimus. Ispanijoje tai buvo įtvirtinta 1978 m. Ispanijos Konstitucijos 18 straipsnio 4 dalyje. Taisyklėje teigiama, kad „įstatymai apriboja informacinių technologijų naudojimą, kad būtų užtikrintas piliečių orumas, asmeninis ir šeimos privatumas bei visiškas jų naudojimas.

Raktažodžiai: intelektinė nuosavybė, sutartis, apsauga, NDA.

PRINCIPLE OF GOOD FAITH IN INTERNATIONAL CONTRACTS, COURT PRACTISE IN DIFFERENT LEGAL SYSTEMS

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Good faith is the philosophical concept and moral principle, which generally characterized the law through its origin. Today the principle of good faith is the key guiding for the law-making and decision-making process, and important part for the creation and execution of the international commerce contracts, serving as "moral compass" in the realty of commercial relationships, however the good faith principles is not limited by the mentioned categories, and could be applied to each branch of the law. The modern legislation and judicial practise leads to the establishing of well-functioning practise of implying the good faith principle.

Keywords: *doctrine of good faith, international commerce contract, contract law, contracts.*

Introduction

The principle of good faith serving as a moral compass guiding the parties in the commercial relations. Though it`s problematically to define, good-faith principle serves as general guide for the parties, to act properly and fair, due to the limitation of letter of the law. The good faith may seem like an ideal principle, which can close every breach in the law, using the key fundamentals of the legal system- *bono* and *acquiti*[12].

However, from the practical point of view- such principal couldn`t be easily implemented, due to it`s relativity. As far, as some scholars stated, that "good faith" cannot be clearly defined, we even cannot find the clear definition of the good faith concept in the legal documents, which prescribes actus rea and means rea actions in good faith[13].

Purpose of the research is to analyze practical implementation of the good faith principle in commercial contracts.

Legal definition of good faith

Analyzing the good faith principle, the first problems appear, while we try specifically to define the term "good faith" in the scope of the law. There is no specific point about this question in the work of different scholars[14]. Some group of scholars believe that principle of good faith cannot be defined[15], however this point of view mostly related to the academic definition of good faith principal, which mean "the general meaning of the good faith

[12] Burton, S. (1980). Breach of Contract and the Common Law Duty to Perform in Good Faith', 94 Harv. L. Rev. p. 369; Adams, J. and Brownsword, Roger. (1995). Key Issues In Contract. London: Butterworths.

[13] O'Connor, J. F (1990). Good Faith In English Law (Brookfi eld USA: Dartmount Publishing Company.

[14] Summers, R.S. Good Faith" in General Contract Law and the Sales Provisions of the Uniform Commercial Code' (1968) 54 Va. L. Rev. 195, 198. Robert S. Summers, 'The General Duty of Good Faith- Its Recognition and Conceptualization' (1982) 67 Cornell L. Rev. 810.

[15] Natoli, U. (1984). L'attuazione del rapporto obbligatorio: 1l comportamento del debitore [The Performance of the Obligatory Relationship: The Behavior of the Debtor] (2d ed. 1984).

principle"[16]. Related to the commercial, and especially contract law practical usage, we may find the crucial difference between understanding of such principle between different subjects, and different definition in different court cases. The definition of such principle stated in the UNIDROUT Principles of international commercial contracts, Article 1.7, where stated, that (1) each party shall act in compliance with good faith and fair dealing in international trade, (2) party cannot be limited in this duty. As for the United States of America, firstly, the definition of the good faith appeared in the case of Kirke La Shelle Company v. The Paul Armstrong Company et al. 263 N.Y. 79; 188 N.E. 163; 1933 N.Y., where was stated, the general idea of which was that parties in their contractual relations shall avoid from thing, that can harm the interests of the parties in non-fair way. In contemporary American law the principle of good faith are declared in the Section 1-201(19*): "good faith in the case of a merchant means honesty in fact and the observance of reasonable commercial standards of fair dealing in the trade."* In Germany, the principle of good faith (Germant *Treu und Graben)* is stated in the section 242 of German Civil Code (BGB) and related to every contractual relations and obligations[17]. It`s stated, that "*An obligor has a duty to perform according to the requirements of good faith, taking customary practice into consideration*", however, this rule is basically applied for every civil legal relationship, and cannot be applied specifically to commercial law. The principle of good faith is also stated in the Articles 1134 and 1135 of French Civil Code[18]. Through lookup on the definition of good faith principles, we may conclude, that 1) Each legal system has got it`s own definition, and it`s own concept 2) Each of the definitions doesn`t clearly prescribe the meaning of good faith in depth.

Good faith principle in practise

Through the definitions of good faith, arrise important legal issue. The contractors must act with a principle of a good faith concearning all issues, which related to the dealing. Even, if there no clear definition, the good faith are not limited within only the commerce practise. Good faith mean, that all parties shall act reasonably. The good theoretical concept is described in French judicial practise: 1) the Duty of Loyalty and 2) the Duty of copperation[19], where the Duty of layalty is divided into *obligation de moyens and obligation de résultat*. Simply, it`s means that the parties to the contract, shall perform not only in the framework of the contract, but basically in good faith perform the actual purpose of the contract, in good faith, which is fruitfull and benificiary for both or more parties to the contract. The good faith, for example in USA are also related to the pre-contract relations and disclosure information to the parties.This is include disclosure information in honest way, strictly related to the purpose of the contract. For example, in the trade contract, the parties, guided by the principle of good faith must open all information about the state of goods, and risks which related to them. If party don`t do this in proper way, the court may conduct that they weren`t acting in the good faith. Or for, example, the same conclusion of the court may occur, if the Frachiser refuser Francheese, which didn`t get enough profit, to assist in negotiations with investors. Here we can see appliaction of principles form French Law: the Duty of Loyalty, where the parties shall conduct in the way of loyalty to each other,

[16] Stapleton, J. (1999). Good faith in private law. Current Leg. Problems, 52, p.26.

[17] Mason, A. F (2000). Contract, Good Faith And Equitable Standards In Fair Dealing' 116 (Jan) *Law Quarterly Review*, p. 66-94, 69.

2 Cass., 8.4.1987, Bull., III, n 88, p. 53, RTD civ. 1988, 122 noted by J. MESTRE.

and the Duty of cooperation[20]. Basically, we can cocnlcude, that from this point of view, the principle of good faith guiding the merchant relationships, and making them more trustable and oriented at the result.However, it`s impossible to cover all issues, where the good faith principle may be implemented in the contractual realtions practically, due to the nature of commercial relations[21].

Court practise on good faith

Though the good faith principle has got complex nature, it`s quite common in court practise, especially in common law systems. The difference of judgements between the continental and common law system are law in the interpretation of the "implied" terms of the contract. Where contitnental system courts prefer to use the "formalistic" approach, the common law courts are more likely to intepret the judgements on it`s own way[22]. For English law, there is no special definition of the good faith, event there is opinion that common English Law doesn`t recognize common law principle, which very clearly described in *Yam Seng Pte Ltd v International Trade Corporation Ltd.*, however through court of appeal decision *in MSC Mediterranean Shipping Company S.A. v Cottonex Anstalt,* we may clearly see, that there is no clear point in the English law concerning the principle of good faith. As for North America country, the Canada revealed a duty of good faith to all legal contracts in the case Bhasin *v. Hrynew*, 2014 SCC 71, [2014] 3 S.C.R. 494., which was interpreted as "non-obligatory" for all contracts in the case C.M. Callow Inc. v. Zollinger. In the USA, there is a well-established practise for the contracts law. The continental legal system is clear for the good faith principle[23], as it`s stated in the Article 1195 of the French civil code: "if an unforeseeable change of circumstances makes the contract excessively onerous for a party, that party may ask for its renegotiation, and if the renegotiation fails, it may terminate the contract or ask a judge to alter it, provided the party had not accepted to assume that risk under the contract".However, even in the "strict" continental system, there is a problems in interpretation of the good faith. For example, abovemntioned provision on enforceability of the contracts firtstly was declined in court practise in the *Les Maréchaux case,* in 2007.

Conclusions

1. The good faith principle, accordingly to its relativity is hard to be established within the regular court practise. Even in the "strict" continental system the law collisions in inter pretation may occur.
2. Even if the practise is established, there is a problem in interpretation of the principle, because court needs to apply the moral principles, which highly subjective.

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[23] The good faith principle in contract law and the precontractual duty to disclose: comparative analysis of new differences in legal cultures, Clarke, Malcolm, The Common Musy, A.M. Access via the Internet: https://core.ac.uk/download/pdf/6929225.pdf, [21.04.2021].

3. The modern legislation and judicial practise leads to the establishing of well-functioning practise of implying the good faith principle.

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Geros valios principas tarptautinėse sutartyse: teismo praktika skirtingose teisinėse sistemose

Santrauka

Sąžiningumas yra filosofinė samprata ir moralinis principas, kurie paprastai apibūdina įstatymą per jo kilmę. Šiandien sąžiningumo principas yra pagrindinis teisėkūros ir sprendimų priėmimo proceso pagrindas ir svarbi tarptautinės prekybos sutarčių sudarymo ir vykdymo dalis, kuri yra „moralinis kompasas" komercinių santykių srityje, tačiau sąžiningumo principai nėra ribojami minėtomis kategorijomis ir gali būti taikomi kiekvienai teisės šakai.

Raktažodžiai: *sąžiningumo doktrina, tarptautinės prekybos sutartys, sutarčių teisė, sutartys.*

THE CHANGES IN TRADE BETWEEN THE EU AND GREAT BRITAIN AFTER BREXIT

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Brexit undoubtedly influenced trade between the European Union and Great Britain. The Trade and Cooperation Agreement has been provisionally applicable since 1 January 2021, after having been agreed by EU and UK negotiators on 24 December 2020. The new agreement ensures full reciprocal market access for goods and services, public procurement and investment. The goods may be traded duty-free, provided that the rules of origin specified in the contract are met. The aim of the article is to analyze the changes in trade between the EU and Great Britain by presenting the mechanism of shaping the trade policy of the countries belonging to the integration group. The EU-UK Trade and Cooperation Agreement is underpinned by provisions ensuring a level playing field and respect for fundamental rights and provides a basis for preserving longstanding trade cooperation.

Keywords: *Brexit, EU, trade*.

Introduction

On 23 June 2016, the United Kingdom held a referendum in which a majority voted to leave the European Union (51.9% to leave and 48.1% to remain). After three years of negotiations, the EU and the UK agreed on a Withdrawal Agreement setting out the terms for the UK's orderly departure from the Union and providing legal certainty in important areas, including: the protection of citizens' rights, the avoidance of a hard border on the island of Ireland and a financial settlement. The Withdrawal Agreement entered into force on 1 February 2020 and the United Kingdom ceased to be a member of the EU. Nevertheless, the Withdrawal Agreement provided for a transition period lasting until 31 December 2020, during which Union law continues to apply to and in the UK. The EU and the UK used this period of status quo to negotiate a partnership for the future (Council Decision, 2020).

On 1 January 2021, the United Kingdom will leave the EU Single Market and Customs Union, and all EU policies. As a result, it will lose all the rights and benefits it had as an EU Member State, and will no longer be covered by the EU's international agreements. This will bring far-reaching changes, affecting citizens, businesses, public administrations and stakeholders in both the EU and the UK. To limit the disruption insofar as possible, the EU and the United Kingdom have spent the 2020 year negotiating the terms of a new "Trade and Cooperation Agreement" (Kontakt..., 2021).

The new EU-UK Trade and Cooperation Agreement

The EU and the United Kingdom were negotiating the terms of a new "Trade and Cooperation Agreement" to govern their future relations now when the UK is a third country. On 24th December 2020, an agreement in principle was reached at negotiators' level. Both parties advanced with the signature and ratification of the Agreement, in line with their respective rules and procedures, with a view to its provisional application from 1 January 2021 (Brekxit: EU-UK relationship, 20200.

While the new EU-UK Trade and Cooperation Agreement will by no means match the level of cooperation that existed while the UK was an EU member, it goes well beyond

traditional free trade agreements and provides a basis for preserving longstanding friendship and cooperation going forward.

The EU-UK Trade and Cooperation Agreement consists of:

- an unprecedented free trade agreement,
- ambitious cooperation concerning economic, social, environmental and fisheries issues,
- a close partnership for citizens' security,
- an overarching governance framework (Council Decision, 2020).

The Agreement reflects the fact that the UK is leaving the EU's ecosystem of common rules, supervision and enforcement mechanisms, and can thus no longer enjoy the benefits of membership or the Single Market.

It confers rights and obligations on each party, while fully respecting their regulatory and decisionmaking autonomy.

The EU-UK Trade and Cooperation Agreement concluded between the EU and the UK sets out preferential arrangements including trade in goods and in services, digital trade.

The agreement covers not only trade in goods and services, but also a broad range of other areas in the EU's interest, such as investment, competition, State aid, tax transparency, air and road transport, energy and sustainability, fisheries, data protection, and social security coordination.

It provides for zero tariffs and zero quotas on all goods that comply with the appropriate rules of origin. Both parties committed to ensuring a robust level playing field by maintaining high levels of protection in areas such as environmental protection, the fight against climate changes and carbon pricing, social and labour rights, tax transparency and State aid, with effective, domestic enforcement, a binding dispute settlement mechanism and the possibility for both parties to take remedial measures. The EU and the UK agreed on a new framework for the joint management of fish stocks in EU and UK waters. The UK will be able to further develop British fishing activities, while the activities and livelihoods of European fishing communities will be safeguarded, and natural resources preserved. In transport, the agreement provides for continued and sustainable air, road, rail and maritime connectivity, though market access falls below what the Single Market offers. It includes provisions to ensure that competition between EU and UK operators takes place on a level playing field, so that passenger rights, workers' rights and transport safety are not undermined. When it comes to energy, the agreement provides a new model for trading and interconnectivity, with guarantees for open and fair competition, including safety standards for offshore, and production of renewable energy (Council Decision, 2020).

To give maximum legal certainty to businesses, consumers and citizens, a separate chapter on governance provides clarity on how the Trade and Cooperation Agreement will be operated and controlled. It also establishes a Joint Partnership Council, which will make sure the Agreement is properly applied and interpreted, and in which all arising issues will be discussed.

Binding enforcement and dispute settlement mechanisms will ensure that rights of businesses, consumers and individuals are respected. This means that businesses in the EU and the UK compete on a level playing field and will avoid either party using its regulatory autonomy to grant unfair subsidies or distort competition. The agreement foresees the possibility of adopting rebalancing, remedial, compensatory and safeguard measures.

Both parties can engage in cross-sector retaliation in case of violations of the Trade and Cooperation Agreement. This cross-sector retaliation applies to all areas of the economic partnership. Specific suspension clauses apply to the cooperation on law enforcement and judicial cooperation in case a Party breaches its obligations.

The Agreement does not cover the assessment of UK sanitary and phytosanitary regime for the purpose of listing it as a third country allowed to export food products to the EU. These are and will remain unilateral decisions of the EU and are not subject to negotiation.

On 24 December 2020, an agreement in principle was reached at negotiators' level. Both parties advanced with the signature and ratification of the Agreement, in line with their respective rules and procedures, with a view to its provisional application from 1 January 2021.

On 28th April 2021 Parliament formally approves EU-UK trade and cooperation agreement.

The agreement will enter into force on 1 May after Council conclusion.

Parliament voted with a large majority in favour of granting its consent to the agreement setting the rules of the future EU-UK relationship (Parlament Europejski, 2021)

Consequences of the UK's choice to leave the EU, Single Market & Customs Union

When the UK has chosen to leave the Single Market and Customs Union, trade with the EU can therefore no longer be seamless. The EU-UK Agreement nevertheless creates a free trade area, which can provide significant benefits to both sides.

The Agreement is at the cutting edge of modern and sustainable trade policy. It contains detailed principles on State aid to prevent either side from granting unfair, trade-distorting subsidies.

These principles are associated with domestic enforcement and dispute settlement mechanisms to ensure businesses from the EU and the UK compete on a level playing field. The parties have the right to take unilateral measures to safeguard their economies against unfair competition from the other party.

Since 1 January 2021 we can see inevitable changes in trade. For example the free movement of goods ends. Customs checks and controls apply to all UK exports entering the EU. UK agri-food consignments have to have health certificates and undergo sanitary and phytosanitary controls at Member States' border inspection posts. This will cost UK businesses time and money.

Also the free movement of services ends. UK service providers no longer benefit from the country-of-origin principle. They will have to comply with the – varied – rules of each Member State, or relocate to the EU if they want to continue operating as they do today. There will be no more mutual recognition of professional qualifications. UK financial services firms will lose their financial services passports.

The EU-UK Agreement goes beyond recent EU free trade agreements with other third countries such as Canada or Japan, by providing for zero tariffs and zero quotas on all goods. This is especially important for sensitive goods such as agricultural and fishery products. For instance, without the agreement, exports of certain meat or dairy products would have faced tariffs above 40% under WTO rates, or 25% for canned fish – either way. Exports of cars would also have been hit by a tariff of 10% (Pipedrive porządkuje, 2020)

To benefit from these exceptional trade preferences, businesses must prove that their products fulfil all necessary 'rules of origin' requirements. This ensures that the trade preferences granted under the Agreement benefit EU and UK operators rather than 3rd countries, preventing circumvention. To facilitate compliance and cut red tape, the Agreement allows traders to self-certify the origin of goods and provides for 'full cumulation' (meaning traders

can account not only for the originating materials used, but also if processing took place in the UK or EU) (Zakładanie firmy w Anglii, 2020)

Customs procedures will be simplified under the Agreement, as both Parties have agreed, e.g. to recognise each other's programmes for trusted traders ("Authorised Economic Operators"). Nonetheless, as the UK has decided to leave the Customs Union, checks will apply to all goods traded. The Parties also agreed to cooperate on the recovery of customs duties, and in the fight against VAT and other indirect taxes fraud.

The Agreement will prevent unnecessary technical barriers to trade, e.g. by providing for self-declaration of regulatory compliance for low-risk products and facilitations for other specific products of mutual interest, such as automotive, wine, organics, pharmaceuticals and chemicals. However, all UK goods entering the EU will still have to meet the EU's high regulatory standards, including on food safety (e.g. sanitary and phytosanitary standards) and product safety.

On trade in services, the EU and the UK have agreed to a level of openness going beyond the provisions of the WTO General Agreement on Trade in Services (GATS), but reflecting the fact that the UK will no longer benefit from the freedom to supply services across the EU.

Similarly, UK service suppliers in the EU will have to comply with host-country rules in each Member State, and will no longer benefit from the country-of-origin principle, mutual recognition (e.g. of professional qualifications), or passporting rights for financial services. UK service suppliers and investors can also establish themselves in the EU in order to offer services across the Single Market (Transport ciężarowy..., 2020).

The changes in trade in goods are the following:

- UK goods no longer benefit from free movement of goods, leading to more red tape for businesses and adjustments in EU-UK supply chains
- Customs formalities and checks on UK goods entering the EU, with more border delays
- VAT and, where applicable, excise duties (e.g. on alcoholic beverages, tobacco products, etc.) due upon importation (including for online purchases)
- UK producers wishing to cater to both EU and UK markets must meet both sets of standards and regulations and fulfil all applicable compliance checks by EU bodies (no equivalence of conformity assessment)
- UK food exports must have valid health certificates, and (phyto-)sanitary border checks will be carried out systematically

Trade in services, digital and procurement changes:

- UK service suppliers no longer benefit from the 'country-of-origin' approach or 'passporting' concept (e.g., for financial services), which enable automatic access to the entire EU Single Market
- No more automatic recognition of professional qualifications: Doctors, nurses, dentists, pharmacists, vets, engineers or architects must have their qualifications recognised in each Member State they wish to practice in

UK operators no longer free to supply audiovisual services in the EU with UK licence (Transport ciężarowy..., 2020).

Benefits of the EU-UK Trade and Cooperation Agreement

It may seem shocking to some, but the new Agreement may also have some benefits.

In trade in goods are could be the following:

- Zero tariffs or quotas on goods traded, ensuring lower prices for consumers – provided agreed rules of origin are met
- Traders can self-certify the origin of goods sold and enjoy 'full cumulation' (i.e. processing activities also count towards origin, not just materials used), making it easier to comply with requirements and obtain zero-tariff access
- Mutual recognition of trusted traders programmes ('Authorised Economic Operators') ensures lighter customs formalities and smoother flow of goods
- Common reference definition of international standards and possibility to self-declare conformity of low-risk products make it easier for producers to cater to both markets
- Specific facilitation arrangements for wine, organics, automotive, pharmaceuticals and chemicals

In trade in services, digital and procurement:

- Service suppliers or investors from the EU are treated no less favourably than UK operators in the UK, and vice-versa
- Facilitations for short-term business trips and temporary secondments of highly-skilled employees
- Removal of unjustified barriers to digital trade, including prohibition of data localisation requirements, while respecting data protection rules

UK public procurement markets are open to EU bidders established in the UK, on equal footing, and vice versa, also for small contracts (Transport ciężarowy..., 2020).

Conclusions

Despite the new EU-UK Trade and Cooperation Agreement, some big changes have already taken place since 1 January 2021. On that date, the UK left the EU Single Market and Customs Union, as well as all EU policies and international agreements. It will put an end to the free movement of persons, goods, services and capital with the EU. The EU and the UK will form two separate markets; two distinct regulatory and legal spaces. This will recreate barriers to trade in goods and services on both sides. In my opinion, the value of trade between UE and UK could be lower at the beginning of new rules, but in a few years this situation may be normalized.

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Katarzyna Marcinkiewicz-Marszałek

ES ir Didžiosios Britanijos prekybos pokyčiai po „Brexit“

Santrauka

“Brexit“ neabejotinai paveikė Europos Sąjungos ir Didžiosios Britanijos prekybą. Prekybos ir bendradarbiavimo susitarimas laikinai taikomas nuo 2021 m. sausio 1 d. Po to, kai 2020 m. gruodžio 24 d. dėl jo susitarė ES ir JK derybininkai. Naujasis susitarimas užtikrina visišką abipusę prekių ir paslaugų, viešųjų pirkimų ir investicijų patekimą į rinką. Prekėmis galima prekiauti be muitų, jei laikomasi sutartyje nurodytų kilmės taisyklių. Straipsnio tikslas - išanalizuoti prekybos tarp ES ir Didžiosios Britanijos pokyčius, pristatant integracijos grupei priklausančių šalių prekybos politikos formavimo mechanizmą. ES ir JK prekybos ir bendradarbiavimo susitarimas yra paremtas nuostatomis, užtikrinančiomis vienodas sąlygas ir pagarbą pagrindinėms teisėms, ir yra pagrindas išsaugoti ilgalaikį prekybos bendradarbiavimą.

Raktažodžiai: *Brexit, Europos Sąjunga, prekyba.*

THE AGREEMENT AS A FORM OF THE PLEA BARGAINING IN HUNGARY

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The Hungarian law regulates four legal institutions belonging to the broader range of plea bargaining: cooperation with the suspect, the conclusion of an agreement, admission at the preparatory meeting and agreements concluded under the Conservation Program. This study seeks to present the agreement as a form of the plea bargaining in Hungary. In doing so, it covers the mandatory and the possible content elements of the agreement and the process of reaching an agreement between the prosecution and the defense. The study then analyzes in detail the process of court acceptance of the settlement. The conditions for approval of the agreement and the cases of refusal to approve an agreement are analyzed as well. The study concludes with a description of the rules of appeal against the decision made on the subject of the agreement.

Keywords: *plea bargaining, guilty plea, judicial bargaining, confession, cooperation with the suspect, agreement.*

Introduction

The plea bargaining can also take place in the preliminary proceedings (charge bargaining), but also at the trial (sentence bargaining). In the former case, the defence counsel offers to admit the accused in exchange for a corresponding change in the charges (the change in the classification of the charge may also be initiated by the prosecutor). Judicial bargaining can take place in two ways: either the judge himself participates in the bargaining and indicates what punishment he would impose, or the judge waives the right to participate in the bargaining and accepts the motion for punishment filed by the prosecution and the defence (Frankas, 2004).

Research Problem: the Hungarian law regulates four legal institutions belonging to the broader range of plea bargaining: cooperation with the suspect, the conclusion of an agreement, admission at the preparatory meeting and agreements concluded under the Conservation Program. In doing so, it covers the mandatory and the possible content elements of the agreement and the process of reaching an agreement between the prosecution and the defense. The conditions for approval of the agreement and the cases of refusal to approve an agreement are analyzed as well.

Research Aim: The aim is to analyse the agreement as a form of the plea bargaining in Hungary.

Research Object: the agreement as a form of the plea bargaining.

The varieties of plea bargaining

In the USA, in the second half of XIX. century, appeared the plea-bargain based on the broad discretion of the prosecutor. Salzburg defined this as follows: "the accused agrees to plead guilty to the charges against him, trusting that he will receive something from the state in return for all this" (Kelemen, 1990). The plea bargaining can be divided into two stages (Grmela, 1993):

• plea bargaining (unregulated bargaining between the prosecutor and the defense counsel) and

• the guilty plea, which is an admission of guilt in court.

However, a negotiated agreement is only a necessary but not a sufficient condition. In the USA, voluntary and conscious confession is also a requirement (the accused must

make the confession in the knowledge of his/ her rights, ie be aware that he/she has the right not to confess his guilt and then his/her case will be heard by a jury). The judge is not even obliged to accept the confession if it has no factual basis (e.g. contradicts other evidence) or does not agree with the proposed sentence.

In Canada, the plea bargaining is essentially same as the United States form, which was described in the previous paragraph, but with three exceptions (Frankas, 2004):

• the police have a significant influence on plea-bargain positions, as the accusation is usually made by the police.

• the judge is excluded from the plea bargaining: he must take note of the confession (he cannot examine its voluntary nature or factual basis) and impose the sentence on the basis of the prosecutor's motion for a sentence.

• the plea-bargain can be challenged (but only on the issue of guilt, not in the punishment!).

In England, the confession is given priority over the bargain. At the trial, the indictment is read out, and then the judge summons the accused to make a statement: does he/ she wishes to plead guilty before the formation of the jury (plea of guilty)? If so, the judge will make a decision without jurors. Here, the bargain nature of the proceedings is that this confession may be preceded by a statement by the prosecutor waiving certain charges (in the end, therefore, he/she confesses in the hope of a lesser punishment). However, in the English judgment bargain, the prosecutor has no role in determining the amount of the sentence. In Scotland, the accused can make a written offer to the prosecutor as to which charges, he or she is willing to testify in the event of a waiver (Frankas, 2004).

In Italy is an institution like the plea-bargain. In doing so, in the case of an offense punishable by up to three years' imprisonment, the prosecutor and the accused enter into an agreement and jointly request the court to impose a specific sentence. However, the court has no discretion here as to the level of the sentence: the court either imposes the proposed sentence and thus closes the proceedings or continues the proceedings without accepting the plea bargaining.

In Spain, the procedure based on the recognition of guilt (conformidad) has been known since the end of the 19th century. In doing so, the prosecutor sends to the accused with the indictment the proposed sentence and its amount (up to 12 years' imprisonment since 1989) (Frankas, 1992). If the accused accepts this punishment or enters a bargain and, as a result of the bargain, reaches an agreement with the prosecution, the court will impose the punishment without conducting further evidentiary proceedings.

In Germany, three types of agreement have emerged (Fakó, 2002). The waiver of prosecution and the criminal order show less plea-bargain (although in the latter case, the prosecutor may offer the criminal order during the bargain in exchange for the defence counsel's promise that he/she will not request a trial). According to the third form, related to the confession of the accused, there is a possibility to negotiate between the prosecutor and the defense counsel before the prosecution (so-called German guilty plea). In return for the confession, the accused can expect a shorter trial and be promised that for some crimes, the prosecution will refrain from prosecuting or propose a lesser sentence in court. In Germany, the plea-bargain appeared without legal regulation in the 1970s. At first it was used only in insignificant cases, today, according to Kertész, 20-30% of the procedures are conducted on a negotiated basis (Kertész, 1993)

In France, there is a correctional institution: if the accused is confessed, the prosecutor can classify the crime as a misdemeanour, so that the district court, rather than the jury, will have the power to adjudicate it (Vókó Gy, 2003)

The institution of simplified negotiation has been introduced in Denmark. If the accused has made a confession, the trial is conducted by a single judge without a jury, and the prosecution is not represented by a prosecutor but by a police officer.

The forms of the plea bargaining in Hungary

The Hungarian law regulates four legal institutions belonging to the broader range of plea bargaining (Szabó Zs, 2017):

1. Cooperation with the suspect: if a person with a reasonable suspicion of committing a criminal offense cooperates in the investigation and proof of the case (or other criminal case) to such an extent that the national security or law enforcement interest in the cooperation outweighs the criminally suspected as an interest in bringing a person reasonably suspected of having committed a criminal offense, depending on the stage of the proceedings, the prosecution rejects the application (Section 382 of the Hungarian Criminal Procedure Code, CPC) or terminate the proceedings (Section 399 of CPC) (Fantoly, 2020).

2. The conclusion of an agreement: before prosecution, the public prosecutor's office and the accused may reach an agreement on the confession of the guilt of the crime committed by the accused and the consequences thereof (Section 407 of CPC) (Békés, 2019).

3. Admission at the preparatory meeting: at the preparatory hearing the accused may plead guilty to the offense for which he has been charged and may waive his right to a trial within the scope of the confession, the accused is also questioned about the circumstances of the sentence, after which the prosecutor and then the defence counsel can speak and then the court can pass judgment.

4. Agreements concluded under the Conservation Program: if the agreement is concluded, the accused will be given a new identity.

In addition, there are even more places to find a legal institution in the Criminal procedure, that bears the character of an agreement. Thus e.g. the prosecution of a "prosecution reprimand"requires the tacit consent of the accused (since if he complains about it, the investigation must continue). The same is true of adjournment, where, in addition to tacit consent, there may be further consensus in the background (eg compensation, reparation, etc. by the accused, the indictment is difficult to imagine without prior consultation of the prosecution and defence, even with the victim involved). And in the same way, there is a tacit agreement in criminal proceedings, and in many cases it can only be brought before a court only because, on the basis of a preliminary discussion and consensus, the accused sees that he or she is quicker (and the practices shows it's comes with a lenient sanction) he/she can expect to be held accountable. Thus, at the beginning of the proceedings, three more accelerating institutions are available (stands before court, penalty order, settlement) and their number decreases over time, and no such separate simplification procedure is possible during a normal hearing (Fantoly, 2018).

The agreement

An agreement governed by the Criminal Procedure is a form of the plea-bargain in the broadest sense. In a narrower sense, however, we can only call it an accusation-like agreement, because there is no agreement on the facts, but only on certain legal issues (Polt, 2020).

Before prosecution, the public prosecutor's office and the accused may reach an agreement on the confession of the guilt of the crime committed by the accused and the

consequences thereof (Section 407). The private prosecutor may not enter into an agreement with the accused (Section 786). The settlement can be initiated by the accused, the defence counsel and the prosecutor's office (even when the prosecutor's office interrogates the accused). The participation of a lawyer is obligatory in the procedure for concluding a settlement.

In order to reach a settlement, the prosecutor's office, the accused and the defence counsel (with the consent of the accused only the prosecutor's office and the defence counsel) may negotiate the admission of guilt and the content of the settlement (except for the facts of the crime and its classification according to the Criminal Code). If the prosecution and the accused have agreed on the content of the settlement, the prosecution will warn the defendant of the consequences of the planned settlement during the interrogation of the suspect and record the settlement in the minutes of the interrogation of the suspect. The minutes shall be signed jointly by the prosecutor, the accused and the defence counsel (Finszter, 2018).

If the public prosecutor's office and the accused have not reached an agreement, the initiative and the related documents may not be used as evidence, and the public prosecutor's office may not inform the court about the initiative to reach an agreement.

The accused may plead guilty to all or even only some of the offenses on which the criminal proceedings are based in the settlement (Section 410). Content of the agreement:

Table 1. Mandatory content and possible content elements of the agreement
1 lentelė. *Privalomas sutarties turinys ir galimi turinio elementai*

Mandatory content elements of the agreement	Possible content elements of the agreement
• the facts of the crime and the quality according to the Criminal Code (as determined by the prosecution) • a statement admitting the guilt of the accused and he/ she testifies to that end • the punishment's (a measure that can be applied independently) the classification, extent and duration of the sentence (it can even mitigated by considering the section)	• the ancillary penalty • a measure that can be applied in addition to the penalty / measure • termination of proceedings (rejection of a report) for certain criminal offenses (eg minor offense, cooperation) • (partial) exemption from criminal costs • other obligations assumed by the accused (cooperates, reimburses the victim, participates in mediation proceedings, other obligations that may be imposed in the framework of conditional suspension by the prosecutor)
The subject of the agreement may not be:	
• compulsory medical treatment • confiscation • confiscation of property • making electronic data permanently inaccessible	

If the public prosecutor's office and the accused have reached an agreement, the public prosecutor's office will prosecute the same facts and classification as the agreement included in the minutes (Section 424) (Bolcsik, 2019). In such a case, the prosecution proposes in the indictment (to which he/she attaches the minutes) that the court

• approve the agreement,

• what penalty should be imposed (apply a measure) in line with the content of the agreement,

• make any other provision corresponding to the content of the agreement.

Special rules apply to the preparation of the hearing and the preparatory meeting in the event of an agreement.

The participation of counsel in court proceedings under the settlement is mandatory (Section 731). At the preparatory meeting, the prosecutor

• describes the essence of the accusation,

• the penalty (measure), and

• a motion for other provisions (Pápai-Tarr, 2019).

The court then informs the accused of the consequences of approving the settlement, in particular that there is no appeal.

• the order approving the agreement,

• finding guilt,

• the facts and classification of the accusation,

• the classification and extent (duration) of the penalty (measure) identical to the one in the agreement, and

• against any other provision identical to that contained in the agreement.

After being informed, the court will ask the accused to state (even after consulting with counsel) whether he or she pleads guilty in accordance with the settlement and waives his or her right to a trial.

Before deciding on the approval of the settlement, the prosecutor and the defence counsel may speak.

The court then decides.

(a) the approval of the settlement; or

(b) its refusal (Gulyásné Birinyi, 2019):

Table 2. Conditions for approval of the agreement and cases of refusal to approve an agreement.

2 lentelė. *Susitarimo patvirtinimo sąlygos ir atsisakymo patvirtinti susitarimą atvejai*

Conditions for approval of the agreement	Cases of refusal to approve an agreement
1. the conclusion of the agreement complied with the regulations 2. the agreement contains the legal supplies 3. the accused understood the nature of the agreement and the consequences of approving it 4. there is no reasonable doubt as to the defendant's ability to set off and his admission on a voluntary basis 5. the accused's statement of guilt is clear and is supported by the case file	1. the indictment or charges of the accuser deviate from the settlement 2. the accused did not plead guilty in accordance with the settlement at the preparatory hearing or waived his/her rights to a trial 3. the conditions for approving the agreement are not met 4. the defendant has failed to fulfil his/her obligations 5. a different classification from the accusation seems to be established

ad (a) If the conditions for approving the settlement are met and there is no reason to refuse approval, the court shall approve the settlement in its non-appealable order at the preparatory hearing and continue the preparatory hearing in accordance with the rules in force if the guilt is admitted.

• bases the accused's guilt on the admission of guilt, the approval of the settlement and the case file,

• may not deviate from the facts, classification, and other motions of the accused in the judgment,

• he/she cannot reject a civil claim,

• in the grounds of the judgment (in addition to the accused's personal circumstances, the facts, and the reasons for rejecting the motions), it is sufficient to refer to the settlement charge, the settlement approval and the applicable law.

ad b) There is no appeal against a court order, refusing to approve a settlement. If the court refuses to approve the settlement, the preparatory hearing will be resumed in accordance with the rules governing non-recognition of guilt. In this case, the agreement is not binding on the prosecution or the accused.

Negotiations can very rarely take place in the event of an agreement.

If all the defendants in the case have not reached an agreement with the prosecutor's office, or if the court has not approved all the agreements between the prosecutor's office and the accused, the court decides on the accusation uniformly by trial (subject to approved agreements). If other conditions for separation exist, the court may separate the matter which is the subject of the approved settlement to reach a judgment.

If a hearing is required after the settlement has been approved, the court will explain the substance of the settlement after the start of the hearing. The court may set aside the order approving the settlement after obtaining the statement of the prosecutor and the accused, if, in comparison with the result of the evidence, it considers that the settlement could have been refused due to a change in the facts or classification. If the court annuls the order approving the settlement,

• the agreement is not binding on the prosecution or the accused,

• the court decides, at the request of the public prosecutor's office, the accused or the defence counsel, to repeat the evidence taken in the absence of the accused, and

• the public prosecutor's office, the accused and the defence counsel may submit their motions indefinitely within 15 days (Section 737) (Békés, 2017)

In the event of a settlement, there is no appeal.

• finding guilt,

• the facts and classifications are same as the accusation,

• due to the classification, extent or duration of the penalty or measure established according to the content of the agreement, and due to other provisions (Section 738).

The court of second instance shall set aside the judgment of the court of first instance and

1. order the court of first instance to reopen the proceedings if

• the court of first instance approved the settlement despite the existence of a ground for refusal,

• the Court of First Instance did not comply with the specific rules of the preparatory hearing,

• the accused would have to be acquitted or the proceedings terminated, but not by the court of second instance,

2. send the files to the prosecutor's office if the prosecutor's office has initiated the proceedings in the absence of legal preconditions (Kiss, 2019).

Conclusions

1. The beginning of the proceedings, three more accelerating institutions are available (stands before court, penalty order, settlement) and their number decreases over time, and no such separate simplification procedure is possible during a normal hearing.
2. An appeal may, within the limits of the settlement, establish a new fact and rely on new evidence, and evidence may be adduced only in that context.
3. The court of second instance may change the provision of the judgment under appeal concerning the finding of guilt only if it can be established without holding a hearing that the accused must be acquitted, or the proceedings terminated.
4. There is no appeal against the annulment order of the appellate court. In the event of annulment, the special provisions of the conciliation procedure shall not apply in the repeated procedure.

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Herke Csongor

Sutartis kaip derybinio susitarimo forma

Santrauka

Vengrijos įstatymai reglamentuoja keturias teisines institucijas, priklausančias platesniam teisminių derybų spektrui: bendradarbiavimą su įtariamuoju, susitarimo sudarymą, priėmimą parengiamajame posėdyje ir susitarimus, sudarytus pagal Gamtos apsaugos programą. Šiuo tyrimu siekiama pateikti susitarimą kaip pagrindą derėtis. Tyrimas apima privalomus ir galimus susitarimo turinio elementus bei procesą, kaip pasiekti prokuratūros ir gynybos susitarimą. Taip pat išsamiai analizuojamas teismo susitarimo priėmimo procesas bei sutarties patvirtinimo sąlygos ir atsisakymo patvirtinti susitarimą atvejai. Tyrimo pabaigoje pateikiamos sprendimo, priimto dėl sutarties dalyko, apskundimo taisyklės.

Raktažodžiai: derybos dėl ieškinio, kaltės pagrindas, derybos teisme, prisipažinimas, bendradarbiavimas su įtariamuoju, susitarimas.

UKRAINE AND THE WTO

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In recent years, the national economies of states have entered into ever closer interdependent relations. International trade actively promotes this process and plays an important role in the economic development of the world. The article is devoted to the problems of formation and implementation of Ukraine 's foreign trade policy. It analyzes the advantages and disadvantages of Ukraine's accession to the WTO, considers foreign experience, substantiates the potential benefits and threats of membership for the national economy. In the sectoral context, ways of adaptation of Ukraine to the requirements of the regulatory trading system are offered.

Keywords: *trade, WTO (World Trade Organization), export, import, adaptation, standardization, harmonization.*

Introduction

After Ukraine's accession to the WTO, the issue of successful adaptation of the country's economy to new conditions became especially relevant. At the time, WTO membership experts presented a range of potential benefits and threats from Ukraine's accession to the WTO. But to this day, these benefits remain largely potential, at a time when most of the threats have already materialized, and the global financial and economic crisis has played a significant role in addition to the usual unpreparedness of the domestic economy. Therefore, in modern conditions, the issue of transforming the potential benefits of WTO membership into real ones is on the agenda.

The purpose of the research is to analyze the problems that have arisen in connection with Ukraine's accession to the WTO, methodically substantiate the formation of proposals for their solution, as well as identify ways to maximize the potential benefits of WTO membership.

Codes and conventions in force in the WTO system are not acceptable to all countries at the same time. Therefore, problems and misunderstandings arise in relations between economically developed countries and countries that have just embarked on their path of development. Ukraine, which has recently embarked on the path of building a WTO member, is no exception.

However, there are already opinions that negatively and positively assess the membership of the state in this organization, while this issue requires a comprehensive consideration with an objective assessment of both the benefits and threats to form a comprehensive model of successful adaptation of Ukraine to new conditions. The objectives of the study are to analyze the principles and mechanisms on which the WTO is based, and to predict the possible consequences of Ukraine's membership in this international organization. The results of the study are necessary for the most effective use of the benefits and neutralization of possible negative consequences of Ukraine's entry into the European space[24].

The research

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In the context of European integration trends, the question of more active participation of our state in addressing issues of foreign economic activity arises. Negotiations on accession began in 1993 and ended only in 2008. During this time, during the discussions between supporters and opponents of accession, many advantages and dangers of Ukraine's accession to the World Trade Organization were considered. In order to develop a model of Ukraine's successful adaptation to the conditions of WTO membership, it is expedient to analyze those that have now become the most relevant.

Table 1. Possible positive and negative consequences of Ukraine's accession to the WTO
2 lentelė*. Galimos teigiamos ir neigiamos Ukrainos stojimo į PPO pasekmės*

• Possible positive consequences of Ukraine's accession to the WTO	
State	• Ensuring the expected trade and economic relations of Ukraine with all WTO members. • Ability to objectively express their views on the main elements and factors of trade and investment policy. • Improving the investment climate and increasing foreign direct investment, capacity utilization. • GDP growth of Ukraine. • Implementation of internal reforms;
Manufacturers	• Facilitated access to foreign markets for goods and services, technologies, capital, etc. • Reduction of losses of Ukrainian exporters from discriminatory measures by other countries. • Increase in profits due to lower trade barriers for Ukrainian goods on the world market. • Increasing the quality of Ukrainian products. • Potential expansion of markets. • General growth of production and employment, improving the welfare of the population. • Introduction of high standards of environmental protection;
Consumers	• Reducing the price of goods and services due to lower tariff and non-tariff barriers. • Expanding the range and quality of goods and services. • Strengthening consumer protection in line with European standards;
• Possible negative consequences of Ukraine's accession to the WTO	
State	• Strengthening the impact of global changes in the domestic market. • Reduction of budget revenues due to the abolition of import duties on European products. • Complications in the field of state regulation of economic development;
Manufacturer	• Unwillingness of domestic producers to fierce international competition. • The need to adapt to new product standards. • Saturation of the market with imported goods. • Possible increase in the cost of resources in the domestic market due to increased exports;
Consumer	• The risk of saturation of the domestic market with low-quality cheap imported goods;

Of these positive consequences for Ukraine, only such as ensuring the expected trade and economic relations of Ukraine with WTO members and the opportunity to objectively express their views on the main elements and factors of trade and investment policy became true. In support of this, it should be noted that Ukraine participates in the work of WTO bodies and in multilateral negotiations of the Doha Development Round, where it has the opportunity to raise various issues and express positions on certain aspects of economic and trade policy of other countries in the framework of bilateral negotiations or meetings.

However, in order to be able to significantly influence decision-making in the WTO, it would be appropriate for Ukraine to join the groups of countries that have common priorities with it. For example, Ukraine, where agriculture is one of the leading industries, could join the Kern Group, which includes the largest agricultural exporters, to protect its interests in this area. As for the improvement of the investment climate and the increase of foreign direct investment after the accession to the WTO, this continues to be only a potential advantage.

But these and other positive consequences for manufacturers can not be fully or even partially realized due to the influence of various negative factors. Thus, the increase in profits due to the reduction of trade barriers for Ukrainian goods on world markets did not occur due to the economic crisis shortly after accession to the WTO. The growth of the quality of Ukrainian products and the introduction of high standards of environmental protection cannot occur due to difficulties in adapting Ukrainian enterprises to new product standards.[25]

Ukraine has experience resolving certain issues through the use of a trade dispute settlement mechanism. Thus, Ukraine challenged Russia's illegal measures to restrict transit traffic from Ukraine to Kazakhstan and started a dispute over Russia's restriction of imports and transit of products originating in Ukraine.

The World Trade Organization granted Ukraine's complaint against the lost decision in the case concerning the ban imposed by the Russian Federation on the export of Ukrainian cars and railway equipment. Ukraine filed a lawsuit against the WTO in 2015. According to the government, as a result of Russian restrictions, Ukrainian exports of railway products to Russia from 2012 to 2016 decreased more than 20 times - from $ 2.6 billion to $ 95 million. In the case, Ukraine argued that the suspension of certificates of conformity and non-acceptance of the application for certification resulted in unjustified barriers to trade and against the established rules for estimating the conformity of goods.

The low level of domestic standards first makes Ukrainian products uncompetitive, hence the unwillingness of domestic producers to fierce international competition and increases the risk of saturation of the market with imported goods.

But adopting high product standards is worthless if domestic companies are unable to adhere to them. Therefore, it would be useful to use the experience of Canada to help raise product quality standards, particularly for agricultural enterprises. Yes, Canadian farmers work effectively by joining an association. For example, there is an association of beef producers. The association is engaged in marketing, sales, all administrative matters, protects the national producer. The farmer only needs to engage in production and all this costs him $ 3 tax on each cow sold.

[25] Zerkalov, D. International trade law: Handbook / D. Zerkalov. Kirichenko, O. (2003). Management of foreign economic activity: Textbook. manual / Alexander Kirichenko.

In our country, in order to create an effective association, it is necessary for it to have at least 50 market participants, plus to go through the Antimonopoly Committee, which is constantly changing its conditions.

Review of disputes in which Ukraine has participated

The first positive experience of Ukraine in resolving the dispute in the WTO can be considered the case DS411 "Armenia - measures affecting the import and domestic sales of cigarettes and alcoholic beverages", which ended at the level of consultations. As a result, Armenia lifted the discriminatory tax.

The second attempt was to resolve the controversial issue of Moldova's collection of the environmental tax - case DS421 "Moldova - measures affecting the import and domestic sale of goods (environmental tax)". The case did not go further than the request for the establishment of a Group of Experts, as Moldova filed a counterclaim against Ukraine regarding discriminatory taxation of imported alcohol. The dispute remained unresolved.

Case DS434 "Australia - Trademark Measures and Requirements for Typical Tobacco Packaging", in which Ukraine was involved, was one of the most high-profile and scandalous. Ukraine was initially declared a plaintiff, but in June 2015 it was forced to suspend its participation under the pressure of the anti-tobacco movement and due to lack of economic interest. Moreover, some developed countries expressed concern during bilateral meetings about possible lobbying by Ukraine for large tobacco companies, which had a negative impact on its image.

In 2015, Ukraine was forced to abolish a special duty on the import of cars in connection with the loss in the DS468 case "Ukraine - special measures for certain types of cars." During the trial, Japan was able to prove a number of violations committed by the Ministry of Economic Development in the investigation and application of special duties. This case is so far the only loss of Ukraine in the WTO.

Conclusions

Thus, analyzing the main pros and cons of Ukraine's membership in the WTO, I have come to the conclusion that among the potential benefits only a small part of them is actually achieved, the rest are neutralized by a number of negative factors that became relevant after Ukraine's accession to the WTO.

Among the main problems of successful adaptation of the country to the conditions of WTO membership are the need to improve the investment climate, the need to improve the commodity structure of exports, the need to raise domestic product standards and, consequently, ensure the competitiveness of domestic products.

Therefore, to ensure Ukraine's successful adaptation to WTO membership, one should not blindly rely on the promised benefits of free trade, but instead actively address structural externalities and institutional shortcomings by using direct and indirect methods of state regulation that hinder the full use of WTO membership.

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Ukraina ir PPO (WTO)

Santrauka

Pastaraisiais metais valstybių nacionalinė ekonomika užmezgė vis glaudesnius tarpusavio santykius. Tarptautinė prekyba aktyviai skatina šį procesą ir vaidina svarbų vaidmenį pasaulio ekonominėje raidoje. Straipsnis skirtas Ukrainos užsienio prekybos politikos formavimo ir įgyvendinimo problemoms spręsti. Joje analizuojami Ukrainos stojimo į PPO privalumai ir trūkumai, atsižvelgiama į užsienio patirtį, pagrindžiama narystės galima nauda ir grėsmė nacionalinei ekonomikai. Sektorių kontekste siūlomi Ukrainos prisitaikymo prie reguliavimo prekybos sistemos reikalavimų būdai.

Raktažodžiai: *prekyba, PPO (Pasaulio prekybos organizacija), eksportas, importas, pritaikymas, standartizavimas, derinimas.*

SHAREHOLDER AGREEMENT AS A NEWLY INTRODUCED MEAN OF EQUITY INVESTMENTS PROTECTION IN UKRAINE

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The Corporate law is the area of law most commonly relating to the Relationship between different types of legal entities and shareholders. The parties to a corporate agreement can be several members of the company, as well as all participants. SHA is designed for members of a particular company. The parties to a corporate agreement can be several members of the company, as well as all participants. Also, each participant is allowed to be a party to several SHA at the same time. Purpose of this article is to analyse SHA as a mean of equity investments protection in Ukraine. For today, there is a certain revival in the use of SHA under Ukrainian law, which may be regarded as a positive tendency. It is obvious that business has already understood the benefits of structuring contractual relations in accordance with the provisions of Ukrainian law. The emergence of SHA in Ukraine will be useful for both local and international business owners. The case-study arising from the SA gives grounds to assert the effectiveness of such an investment protection mechanism.

Keywords: shareholder agreement, protection of shareholders' rights, LLC Law, JSC Law.

Introduction

The emergence of the concept of "corporate agreement" in Ukrainian legislation has led to a considerable wave of optimism in the context of shareholders' rights protection (Corporate Insolvency Law…, 2009). The introduced mechanism has become a domestic alternative to the popular shareholders' agreement (SHA) under the law of England and Wales, which are usually concluded between business partners for the management of Ukrainian assets. In 2018, a number of amendments to the Ukrainian laws on LLC and JSC came into force. These changes relate to a number of issues, including the corporate agreement (so-called SHA itself); provisions that may be include in SHA; and the issuance of an irrevocable power of attorney Corporate governance and initial public offerings…, 2012).

Purpose of this article is to analyse SHA as a mean of equity investments protection in Ukraine.

The relevance of the study: the provisions of SHA, by their significance, play the role of a guarantee for ensuring the principle of shareholder equality and protection of their rights. This topic is especially relevant for Ukraine, given the equity investment protection in the times of swift legislation changes. One of the main points of this topic relates to the limited subject matter of SHA (realization of the rights and powers of the participant; withholding from sale; conditions of sale of shares; etc.) and the complexity of protection against violations of the SHA. The proposed topic is mostly relevant for small / local businesses (which currently do not need to develop a complex corporate agreement under foreign law) and foreign businesses that have no intention in complication of their legal relations by the means of foreign law (Mergers, 2018).

The following basic methods were used in my research:

1. Analysis of legal documents (study and processing of the content of respective laws);

2. Analysis of court practice (study and processing of the content of relevant court practice in Ukraine);

3. Systematic-legal method (determination of regularities and connections between the essence of the provisions on SHA and the purposes of their application in practice); and

4. Generalization method (formulation of own conclusions on the basis of the processed sources).

The purpose of SHA

SHA - an agreement under which the members of the company undertake to exercise their rights and powers in a certain way or refrain from their implementation, is free of charge and is made in writing. SHA that does not meet these requirements is void.

SHA is designed for members of a particular company. The parties to a corporate agreement can be several members of the company, as well as all participants. Also, each participant is allowed to be a party to several SHA at the same time. The most important thing is that these agreements do not contradict each other. It is important to note that in accordance with Part 6 of Article 7 of the Law of Ukraine "On Limited and Additional Liability Companies" (LLC Law) and Article 26-1 of the Law of Ukraine "On Joint Stock Companies" an agreement entered into by a party to a breach of such a SHA is void if the other party to the contract knew or should have known about such breach (The law of Ukraine "On Joint Stock Companies"…, 2021).

The question is – "Who requires such type of agreement?". In the event of a conflict between the partners, their business may suffer, as neither of them will be able to resolve certain issues on their own, such as a change of director who does not perform his duties or acts in his own interests, increase or decrease the authorized capital. And in the presence of a corporate agreement, the likelihood of conflict between partners, which can result in business problems, can be reduced to a minimum if appropriate provision is wisely prescribe.

As to the benefits of SHA, they may be formed in the next way:

- Destabilization and flexibility of company participants' regulation. That is, SHA regulates the rules of conduct of the participants and fills certain procedural gaps in the charter. It is important to note that a SHA cannot replace the company's charter.
- The confidentiality of SHA is that only the parties to such an agreement have access. Unlike the company charter, which is subject to registration and is available to the contractor. Despite the fact that SHA is confidential, there is a certain exception that will allow third parties to read SHA. For example, an exception is the situation when the party to SHA is the state, territorial community, state or municipal enterprise, provided that there is a share in the authorized capital of 25% or more, which belongs to the listed entities.
- The availability of a SHA is that such an agreement does not require large monetary costs to draw it up; and
- Security is that any changes or additions to the SHA are possible only with the consent of each party to such agreement.

Provisions that may be provided in SHA

As mentioned above, under SHA, the members of the company undertake to exercise their corporate rights in the manner prescribed by such agreement, or refrain (refuse) from their implementation. In particular, SHA can oblige the members of the company: a)

to vote in one way or another at the general meeting; b) it is agreed to carry out other actions related to the management of such a company; and c) to buy or sell shares in the authorized capital of the company at a certain price or subject to the circumstances specified in the contract.

Minority shareholder can specify the provisions in the corporate agreement: 1) the possibility of vetoing certain actions of other participants, if they are parties to the agreement; 2) the possibility of taking part in important management decisions; 3) the possibility of selling its share together with the majority participant. That is, if the majority is sold by the majority, the minority will have the right to demand the purchase of its share on the same terms, and the buyer will be obliged to redeem the entire share offered to him by the minority.

Majority participant in SHA can prescribe a provision in respect of which he will be able to restrain the minority from the sale of its shares or vice versa - to require him to sell his share with yours.

A corporate agreement can be both fixed terms, i.e. its provisions can be valid until the occurrence of a certain event, and indefinite (The Global M&A Tango…, 2011).

When drawing up a corporate agreement, in addition to the basic provisions, you can prescribe a provision that provides for sanctions for breach of corporate agreement. Such sanctions may include fines, damages, certain damages, etc. This will allow you to influence the unscrupulous party and force them to fulfill their responsibilities. At the same time, the rights and interests of the party performing his duties in good faith will be protected.

In order to impose sanctions on a party that violates the terms of a corporate agreement or performs its duties in bad faith, it is probably necessary to go to court. In turn, the person whose rights and interests have been violated will have a better chance of winning such a case. After all, a corporate agreement in this case will be a strong argument and proof of the legitimacy of the requirements (Court ruling in the case "№ 916/1444/19, 2019).

Ukrainian law also provides for a mechanism of irrevocable power of attorney, it is a power of attorney issued to fulfill or ensure the fulfillment of obligations of the parties to the SHA. The subject of the latter should be the rights to a share in the authorized capital or the powers of the participants.

And secondly, the principal states in the power of attorney that before its expiration it cannot be revoked without the consent of the representative or can be revoked, but only in cases provided for in the power of attorney.

When preparing a corporate agreement, it is also important to consider the following:

- The corporate agreement must be gratuitous.
- Although the law does not require this, based on practical considerations, the corporate agreement must comply as much as possible (or at least not directly contradict) what is written in the statute. Discrepancies between the charter and the corporate agreement always led to disputes and corporate conflicts; and
- Duplication of the provisions of the statute is not only not prohibited, but also recommended, because in this case the parties receive contractual remedies in addition to the methods provided by law (eg, invalidation of decisions in case of violations of the statute and penalties under the corporate agreement) (Article "Судовий краш-тест корпоративного договору…, 2021).

Court practice

The possibility of conclusion of SHA is provided since 2018. Please note that there is still a small number of relevant Ukrainian court cases regarding the issues arising from recently introduced regulations of SHA.

For today, the most obvious case is № 916/1444/19.

The two partners owned several companies equally, and in order to regulate their relations, they entered into a corporate agreement in which, in particular, they confirmed that the companies had loans for a fixed amount in N USD. Under the agreement, Partner-1 undertook the raise of funds in order to repay specified amount, as well as to return to the other Partner-2 the half of the amount that the partners raised to develop their business. Thus, the Parties have valued the business in the total amount of liabilities (The law of Ukraine "On limited Liabilities Companies"…, 2021).

The corporate agreement stipulated that if during the spring of 2019 the Partner-1 attracts these funds, the Partner-2 will receive the appropriate number of shares in the authorized capital of joint ventures and the rest will be the sole participant.

In order to guarantee the fulfillment of mutual obligations for the transfer of shares under the SHA, the parties have issued to each other 2 identical irrevocable powers of attorney.

In May 2019, Partner-1 challenged Partner-2 and demanded to invalidate the terms of the SHA, which obliged Partner-1 to transfer theirs, to declare the powers of attorney invalid on the grounds that Partner-2 resorted to fraud.

The court rejected the claims, confirmed the legality of the agreement and stated that corporate agreements are legal instruments and that more substantial evidence should be provided to invalidate them, as required by the general corporate and civil legislation of Ukraine (Article "Корпоративні договори в Україні: практика 2020 року та очікувані новели..., 2021).

The main conclusion from it is as follows: SHA is binding on the parties, and fulfillment of its terms leads to the consequences that the parties have defined in the agreement.

Conclusions

1. SHA is an agreement under which the members of the company undertake to exercise their rights and powers in a certain way or refrain from their implementation is free of charge and is made in writing. SHA that does not meet these requirements is void. When preparing the relevant agreement, it's recommended to take into account the specifics of a particular business. SHA may include not only management issues, but also the terms of the sale of shares or a ban on its sale.
2. For today, there is a certain revival in the use of SHA under Ukrainian law, which may be regarded as a positive tendency. It is obvious that business has already understood the benefits of structuring contractual relations in accordance with the provisions of Ukrainian law. The emergence of SHA in Ukraine will be useful for both local and international business owners.
3. The case-study arising from the SA gives grounds to assert the effectiveness of such an investment protection mechanism.

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Akcininkų sutartis kaip naujai įvesta investicijų į nuosavybę priemonė Ukrainoje

Santrauka

Įmonių teisė yra teisės sritis, dažniausiai susijusi su skirtingų tipų juridinių asmenų ir akcininkų santykiais. Korporacinės sutarties šalys gali būti keli bendrovės nariai, taip pat visi dalyviai. SHA yra skirtas tam tikros įmonės nariams. Korporacinės sutarties šalys gali būti keli bendrovės nariai, taip pat visi dalyviai. Taip pat kiekvienam dalyviui leidžiama būti kelių SHA vakarėliu vienu metu. Šio straipsnio tikslas yra išanalizuoti SHA kaip investicijų į nuosavybę Ukrainoje apsaugos priemonę. Šiuo metu pagal Ukrainos įstatymus SHA vartojimas yra atgaivintas, o tai gali būti vertinama kaip teigiama tendencija. Akivaizdu, kad verslas jau suprato sutartinių santykių struktūrizavimo naudą pagal Ukrainos įstatymų nuostatas. SHA atsiradimas Ukrainoje bus naudingas tiek vietos, tiek tarptautinio verslo savininkams. SA atliktas atvejo tyrimas suteikia pagrindo teigti tokio investicijų apsaugos mechanizmo veiksmingumą. Raktiniai žodžiai: akcininkų sutartis, akcininkų teisių apsauga, LLC įstatymas, UAB įstatymas.

Raktažodžiai: *tobulinimas, logistikos paslaugos, paslaugų kokybė, logistikos rinka, Nigerija.*

THE PILLARS OF DEVELOPMENT FOR A SUSTAINABLE SUPPLY CHAIN

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There has been a continuous debate on the pillars of sustainability. The three main pillars: Social, Economic and Environmental. But due to continuous research and advancements their pillars have been continuously developed and changed into different other factors. The aim of the paper is to analyse the three main pillars and prove their inter-dependability on each other. An in-depth interview was conducted with an organization to understand the role of these three pillars in the development of sustainable supply chain management, along with that an online survey was conducted to assess the importance of each of these pillars. After evaluating all the analogies along with some literature review a framework was developed that helps in understanding the importance of all these three pillars in an easier method. The result helps in making further discussions and helps in formulating a hypothesis to understand the impact and role of these 3 pillars. It shows an interrelation between all these 3 variables for sustainability, hence social, economical and environmental; all these three pillars have an interrelation with each other for creating a sustainable supply chain. Furthermore, it also talks about how one factor is important to another factor in overall growth of the supply chain and the organization.

Keywords: *sustainability, social, economical, environmental, supply chain management.*

Introduction

Sustainable supply chain management considers all steps in the value chain for goods and services from an economic, social, and ecological point of view. The aim is to eliminate or at least minimize negative effects and to promote responsible corporate management. To do this, the entire life cycle of a product must be taken into account: from the extraction of raw and starting materials through production and sale to use and disposal. In order to be able to positively change the supply chain and minimize risks, all actors along the supply chain must be involved. Relevant stakeholders must be motivated to create a responsible social environment and to use resources consciously (Seuring, Gold, 2013). In addition, they must commit to complying with the relevant framework conditions and national and international standards. The concept of sustainability emerges from the United Nations report: *"Our Future"*, where *Sustainable Development* is defined as: "Development that meets the needs of the present without compromising the ability of future generations to meet their own ". On the other hand, the three sustainability pillars are also defined: Economic Growth (Profitability); Environmental Protection (Planet); and Social Equality (People). There is a familiarity with the economic aspect, which is the fundamental element to ensure the survival of the company; however, short-term profitability is insufficient to measure a business. The value that a company generates (or eliminates) for society in the long term, that is, "doing the right thing", must also be considered. An approach that considers the natural and social environment in which a company operates and the impact it has on it completes its total contribution to society. There are already organizations that carry it out and includes it in its values by calling the relationship with customers, employees and the community its "license to operate". Putting sustainability on the agenda represents attractive opportunities that are explained throughout the research. But while it is said that the worst thing we can do is "do nothing", inaction on this issue brings considerable risks for companies, some of which are: Damage to the brand and loss of trust of customers and or consumers, due to an event that could have been foreseen. Examples: complaints from non-

governmental entities for polluting processes in the chain, suppliers with bad practices, the identification of toxic ingredients within products, or accidents in the chain that impact entire ecosystems. Legislation. There is a growing common understanding of the issue, and more and more governments include these issues in legislative discussions.

Research Problem: Organization are into the concept of economical sustainability but are still quite amibigious realted to social and environemntal sustainability. There is is huge difference in implementation of all these three pillars properly in organizations, as social sustianability is usually sidelined by the organization.

Research Aim: The aim is to analyze the three main pillars of sustainability and to prove an interrelationship among them.

Research Object: To comprehend the the three pillars in small and medium enterprises.

Research Tasks:

1. Evaluate the importance of the three pillars in supply chain management.
2. To analyze the benefits of the three pillars on sustainable supply chain.
3. To understand the gradual development of the three pillars of sustainabiity.
4. Providing an interrelationship between the three pillars for development of organizations.

Research Methods:

1. Literature Review.
2. Evaluation of the data.
3. Identification of the problem by in depth interviews and online surveys.
4. Analysis of the obtained result and formulation of conclusion.

Sustainable supply chain: the new value generator

Supply chains that start their path to sustainability sooner rather than later benefit in the future when regulation is stricter on carbon emissions and related issues; those that remain in reactive mode risk fines or forced and hasty investments. The effects of this movement towards a sustainable culture that is permeating the government have already been seen in some countries. The Sustainable Supply Chain becomes particularly relevant when we recognize that in its processes, we are directly responsible for the use of materials, energy and water, as well as important generators of pollution emissions (Wang, Sarkis, 2013). It is not without foundation that we find, in the literature and the collective understanding of society, assertions such as: "The most commonly perceived enemies of environmental protection are manufacturing and production operations". If the supply chain seeks to deliver the best service at the lowest possible cost, completing the concept to "sustainable" means doing so while minimizing environmental impact and ensuring a positive social impact. In addition to being a company's contribution to the solution, a sustainable supply chain is also a very good business because a sustainable supply chain helps in:

1. Efficiently consume your fuels.
2. Optimize the productive and logistical assets that you have (such as warehouses, transportation, factories, inventory, etc.).
3. It designs its products with the complete life cycle and its total impact on the environment in mind.
4. It establishes commitments with its commercial partners to have common goals of waste and cost reduction, as well as improvements in service and quality.

These points positively impact the profitability of the business, turning the Supply Chain into a generator of value, as well as being a very powerful message to customers and society in general. A sustainable supply chain involves taking a holistic approach to the

environmental, social, economic, and legal concerns. This can include issues such as carbon emissions, water use, waste, working conditions, and the health and safety of the people making products or services throughout the supply chain, as well as worker exploitation. Having a sustainable supply chain means taking responsibility for the steps that a product or service goes through before it gets to the consumer. This could include product design and development, material selection, manufacturing, waste handling, packaging, warehousing, transportation, and distribution (Pezhman et al., 2019). Through this research we have four key elements of sustainability that companies need to think about Labor: The expectation for companies to operate in compliance with legal and customer requirements for providing their workers with fair, safe and humane working conditions (Thornton et al., 2013). It includes managing issues such as forced and child labour, the payment of fair wages, overtime, discrimination, freedom of association and collective bargaining, and no violence, harassment and harsh treatment. Health and Safety: The expectation that companies will provide a safe and healthy work environment, including issues such as fire safety, chemical safety, the use of dangerous machinery, and PPE and first aid. Environment: The expectation for companies to operate in compliance with legal requirements and in a way that protects the environment by limiting any negative impacts on the environment and on local communities. Examples include lower energy consumption, reduction of carbon footprint, water and waste management, biodiversity conservation, and responsible management of raw material extraction and natural resources depletion. Business Ethics: The expectation for companies to operate in compliance with legal requirements by following a set of moral standards, for example around issues like bribery and corruption. *Statement Formulated*: There is a positive interrelation between social, economic, and environmental dimensions with sustainability.

Benefits and paths to a sustainable supply chain

In addition to the obvious contribution to the environment, a Sustainable Supply Chain has real benefits with financial impact (Saeed, Kersten, 2019). These come mainly from the key concept of sustainability that deals with reducing inefficiencies and waste, and that applies throughout the production and logistics processes: a more efficient product distribution is one of the greatest sources of benefits, others are the lower consumption of materials and lower unit production costs. The approach towards the total life cycle of the product, from the design of its composition and its manufacturing process, allows incorporating recycled materials or reusing components at the end of the useful life, thus reducing input costs. There are also intangible benefits such as differentiation from the consumer and the strengthening of brands by having products oriented to the environment. Another benefit is the administration and reduction of risks associated with the possibility of new legislation on the subject. This reality makes turning a supply chain sustainable, it is a business decision that has benefits and a true return on investment, and not just good citizenship. Hence, Once the management team of company and its council contemplate sustainability, considering it as a relevant element of the business strategy. Below we outline the steps to follow. By having Executive Sponsorship, we can consider that we have covered the first relevant element. If we did not have it, decentralized and non-integrated initiatives would be generated that would decrease the effectiveness of efforts and would not go in the same direction. To avoid finding this situation, it is necessary to have a central mandate, aligned with the global business strategy, which provides the necessary resources for the road ahead. The next immediate step is creating a strategy that leads us towards sustainability (Bhinge et al., 2015). The exercise is the same as any other strategy setting:

1. **Define the strategic guidelines**- In the case of a sustainable supply chain, these will revolve around:

- Manage the carbon footprint, that is, understand the origin of our emissions, the options to reduce them and their measurement.
- Work with human organizations around the business: suppliers, clients, communities, internal human capital.
- Include sustainability ideas in the company's value creation processes. For example: in consumer goods, the design of products that maximize recycling; in construction, design elements that comply with international certifications - LEED -; in the retail trade, reward suppliers with sustainability certifications, etc.

2. **Define the goals to be achieved.** This implies being clear about the indicators that will be included, the measurement of the current base and on which we will see the improvement, the levels of the key indicators that we will seek to reach, and the horizon in time.

3. **The definition and priority of the change initiatives** that will land the strategy into actions and that will be the ones that generate the impact on the Supply Chain.

4. As in the business strategy, the definition is only the initial step, the real impact in the day to day needs continuous and consistent monitoring at the highest level of the implemented strategy, it also requires ensuring quality in the allocation of resources (technologies for the collection of information, personnel with the responsibility of measuring, interpreting, and communicating results, budgets for capital required by the initiatives, necessary external support, etc.).

5. As in any other business area that seek to improve, the actions required to have a Sustainable Supply Chain start from having indicators that help us measure them. To build them, the first thing to do is to identify which are the elements of our chain that are under our control and have the greatest impact on the environment, or in other words, contribute more to the company's carbon footprint. We can consider 4 major categories: Energy Consumption, Water Consumption, Materials Consumption and Waste Generation. Some examples are: transportation, production, packaging, raw materials, among others, which give us indicators such as: consumption of fossil fuel, liters of waste water, production efficiency, percentage of biodegradable materials in packaging, etc.

6. Based on this understanding and the defined strategy, set improvement goals that impact on the reduction of emissions in each area and, associate the initiatives so that we achieve these goals and, in this way, reach our destination: an authentic Supply Chain Sustainable. The execution of initiatives is only possible when in a company, sustainability becomes a value that is lived on a day-to-day basis and decision by decision (Kiel et al., 2017).

7. The ideal objective is to arrive at the concept known as " *net zero carbon footprint* " and which refers to reducing and / or compensating the carbon that is released into the environment by the operation of the chain, so that the net total is zero ; the reduction is achieved through renewable energy uses and the compensation is made through programs that seek to reduce emissions in other parts of the world, a simple way is by planting trees. We can all get involved in this practice, either as an organization or as individuals.

8. Not only must we be aware of carbon dioxide emissions, but the measurement must also include other greenhouse gases converted to their equivalent in CO2 with international standards.

In an entrepreneurial sense, sustainability is described according to the 3-pillar model and is accordingly divided into three categories: Environmental, economy and social are the pillars of sustainability in this model. Environmental, economy and social issues form

the three pillars of sustainability in companies, societies, countries and around the world. The EU named this model explicitly in its 1997 Treaty of Amsterdam and identified sustainability as an important achievement in environmental protection, in business, politics and society. In the original model, the three pillars are understood as being of equal value and of equal priority. In the meantime, numerous modifications and additions to the 3-pillar model have been developed. As part of Corporate Responsibility (CSR), the 3-pillar model describes the levels of a company at which sustainability should be implemented. The three areas are understood to be of equal value, both in terms of the economy as a whole and on a corporate and political level, and therefore of equal importance. Even if the originator and origin of the 3-pillar model are not clearly clarified, the principle was widely publicized at the latest when it was explicitly mentioned in the Treaty of Amsterdam of the European Union. In connection with the 3-pillar model, the EU named, among other things, democratic structures in states and a fair distribution of income. "Protection of people and the environment" also describes the concept of sustainability and defines it as an important, future-oriented development of human existence in the economic, ecological and social dimensions. The three areas must therefore be in equilibrium with one another in the long term and influence one another.

Environmental, social, economic sustainability and modification of three pillars of sustainability

Environmental sustainability means the preservation of nature - both by avoiding overexploitation of the environment and by increasing natural resources. Ecological sustainability can be lived and promoted in very different ways - including in the context of personal lifestyle and in the use of the amount of resources in which they can regenerate. Examples of ecologically sustainable action in the economy would be resource conservation through higher energy efficiency, the use of renewable energies, the reduction of hazardous and toxic substances for the environment and the increased use of environmentally friendly products (also in the manufacturing process). Social sustainability is defined as intergenerational fairness of distribution, which among other things deals with the fight against poverty, the coverage of basic needs and equal opportunities, e.g. concerned with access to information and resources. Social sustainability can be anchored globally, within society and politics as well as within a company - for example as part of increasing human capital through the promotion of further training or the creation of jobs and training positions. Social sustainability continues to place a large focus on gender equality. as regards, among other things, salaries and the fair distribution of work and the fight against unemployment with a focus on the poorer countries of the world. Economic sustainability describes an economic system that is not entirely geared towards profit, but rather focuses on ensuring that, for example, a high quality of life is possible for current and future generations. This includes, among other things, the promotion of knowledge and learning opportunities. Accordingly, economic sustainability means when banks and credit institutions offer discounted credit conditions for environmental or human protection projects. Another example is the integration of "fair trade" into one's own economic cycle.

The principle of the three areas of Environmental, economy and social affairs, which define the sustainability of a company, a society, a country, has been applied in different ways over the years. A common example is a sustainability triangle in which the three categories each represent the corners, or the use of three circles that intersect and whose central area represents the "ideal form" of sustainability. Since the possible interpretations are different, their informative value is controversial. One could assume, for example, that

treating the three areas on an equal footing is not possible or only very difficult to achieve. In fact, this also applies to practice in business, society and politics. Only the framework conditions of the actors and interest groups are different in the countries of the world. And even within national borders, it is a difficult undertaking to implement ecological, economic and social aspects equally. Experts now agree that a weighted representation of the 3-pillar model of sustainability would be better. They see Environmental as the basis for sustainable development in the economy and society, as both are dependent on natural resources and the environment.

Criticism of the three-pillar model

Operational feasibility and Unclear weighting in the objective: strong and weak sustainability: The three-pillar model is controversial in the professional world. Above all, critics complain that it is difficult to operationalize and that hardly any practical consequences can be derived from it. The study commission of the German Bundestag has not determined whether the model of sustainable development will continue to primarily serve the preservation of natural capital or whether these long-term goals are always linked to actually feasible short-term goals in order to preserve the current development model. The Advisory Council for Environmental Issues (SRU) denied the orientation function of the three-pillar model in its 2002 report because it degenerated into a three-column wish list in which every actor could enter his or her concerns. However, this leads to a "hyper complexity that overwhelms the political system based on the division of labor". From the point of view of many critics, the model describes economic, ecological and social sustainability as being on an equal footing; in fact, on the other hand, the goal of ecological sustainability must have priority, since the protection of natural living conditions is the basic requirement for economic and social stability. The scientific discussion about sustainability distinguishes between "weak" and "strong" sustainability . "Weak sustainability" describes the idea that ecological, economic and social resources can be balanced against each other. In the context of weak sustainability, for example, it would be acceptable for natural resources and thus natural capital to be exhausted if the appropriate amounts of human or physical capital were created for this purpose . Economy and ecology are of equal importance here. Strong sustainability means that natural capital is only very limited or cannot be replaced by human or physical capital. This approach corresponds the environmental space concept, the well-known ecological footprint or the "guard rail model". Accordingly, the ecological parameters that ensure stable living conditions on earth in the long term form a development corridor that must be observed. Only within this corridor is there scope for the implementation of economic and social goals. From the point of view of critics, the three-pillar model of weak sustainable development speaks for itself. The Council of Economic Experts criticizes the fact that the three-pillar model calls for the mutual integration of economic, ecological and social issues. It thus contradicts the so-called cross-sectional principle of environmental policy , which was also anchored in the Amsterdam Treaty and which initially called for the integration of environmental concerns into all policy areas. In 2002, the SRU therefore recommended abandoning the three-pillar model and instead using the "more manageable" principle of integrating environmental concerns. This takes into account the fact that in environmental protection there is the greatest pent-up demand compared to the implementation of economic and social goals and with regard to the long-term stabilization of the ecological basis there are the greatest deficits. The SRU also criticized the fact that the isolated application of the concept of sustainability to the sub-areas of ecology, economy and social issues aroused the idea that ecological, economic and social sustainability could be achieved

independently of one another and thus undermine the integrative function of the sustainability idea.

Missing global dimension and basic criticism of the sustainability discourse: As part of a study by the Karlsruhe Research Center , the study commission's concept was supplemented: “In contrast to the operationalization approach of the Enquete Commission, which was limited to Germany from the start, the HGF project initially tries to formulate minimum requirements for sustainable development that are independent of the national context. Since these minimum conditions should be globalizable, they must consistently take into account both objectives of the model, i.e. both the preservation and development perspectives " In general, sustainability is about aligning human action more closely not only with intergenerational justice, but also with global justice. In view of this orientation, whether it is really appropriate to speak of “three pillars” (and whether essential parts of the “economic” and “social” side have nothing to do with sustainability) is not the only point of contention. The current debate is also accused of ignoring the background question of why future generations and people in other parts of the world should receive more attention.

Persistent base : Despite the frequent criticism of the three-pillar model, no other model has so far been able to establish itself. In almost all definitions of sustainable development, the three pillars as well as inter- and intra-generational justice are the greatest common denominator. Many important implementations are also aimed at the three pillars, for example the world community with point of the Johannesburg implementation plan (World Summit for Sustainable Development) or the European Community in Art. 1 of the EC Treaty (Treaty establishing the European Community). It can therefore be stated that the three pillars still represent an important starting point for many sustainability discussions, as they are pragmatic and find great consensus as a magical set of goals for sustainable development. According to the Johannesburg Conference (World Summit for Sustainable Development), the goals should always be pillars that are independent but mutually support one another (“interdependent and mutually reinforcing pillars”) (Kuruvilla et al., 2020).

Integrated sustainability approach and representation: The three-pillar model was further developed by the Karlsruhe Research Centre as part of a large study. Central here is the expansion of the institutional dimension, the operationalization, cross-dimensional sustainability goals such as "safeguarding human existence", "preserving societal productive potential" and "preserving development and action opportunities", as well as the integration of intra- and intergenerational aspects of Justice: “The starting point is not the limited perspective of the individual dimensions, but - in an integrating perspective - three general, cross-dimensional sustainability goals are projected onto the dimensions and conveyed with the 'intrinsic logic' of the individual dimensions - embodied in various discourses (Rodríguez-Serrano et al., 2017). The result are operationalizations of the general goals with regard to sustainability-relevant constitutive elements of the individual dimensions in the form of "rules". The general sustainability goals in detail are “securing human existence”, “maintaining societal productive potential” and “preserving opportunities for development and action”. They represent both fundamental normative principles of justice of sustainability in the preservation or development dimension as well as their most general analytical-functional premises. Intra- and intergenerational aspects of justice are seen in this context as equal and from an anthropocentric perspective”.

If the three-pillar model is retained, however, it must be adapted to the requirements of an integrated representation. In this sense, we must bid farewell to the idea of three isolated pillars. Instead, the pillars are to be understood as dimensions to which sustainability aspects can be continuously assigned. For example, eco-efficiency as an economic-

ecological concept affects two dimensions equally (50% economy + 50% ecology), while biodiversity is primarily to be viewed as an ecologically dominated topic (approx. 100% ecology). The central field stands for a position with three explanatory contributions, about the same size. All possible combinations can be represented in the integrating sustainability triangle. This integrating method of presentation enables a much more differentiated analysis, more targeted integration of other concepts (e.g. eco-efficiency) and at the same time a synoptic compilation. Compared to earlier approaches for a magic sustainability triangle, the integrating sustainability triangle uses the inner surface and emphasizes the interaction of the three sustainability dimensions. It is for many other uses such as Sustainability assessment, collection of indicators or content structuring

Table 1. *Research method and identified problems*
1 lentelė. *Tyrimų metodas ir nustatytos problemos*

Research method	*Identified problems*
Survey Analysis	Sustainable practices are one of the essential features Enterprises should not involve brand malpractices Strict sustainable measures by the government should be imposed Reusing and refurbished products are important
Litera-ture review analysis	Importance of consumer and enterprises for sustainability Devicing a logical framework for a better model for the three pillars Applicability of the pillars is a crucial element for profits
Depth interview	Malpractices is an important reason Environmental sustianability is the only key element looked upon. Social and Economical are often overlooked while talking about sutainability Lack of awareness Complex structure to impose

Sustainable Practices: For promoting companies, sustainable supply chain is considered as the most pivotal factor in its growth. The word Sustainability has been devised in many ways, to inter-generational to multi-dimensional term in businesses (Pezhman et al., 2019). In some cases, researchers have used carbon account, reverse logistics, green logistics, environmental, lean management, environmental. Though, most of the researchers are biased to environmental matters, though with time gradually moving on, they have adapted to the triple bottom line, the theory given by Elkington which consist of environment, social and economic approach. Since, it signifies the resiliency of the enterprise over the period so that the enterprises are in better position to respond to external and internal drivers. Hence, all the literature is closed to the definition of sustainable development means making development that meets the needs of the present generation without compromising the needs of the future generation. Therefore, SSCM is a concept of supply chain management in addition with various other prospects such as operations, business ethics, technology, economics, corporate social responsibility, law and environmental science are combined to evaluate a multi-dimensional aspect (Kumar, 2020). Sustainability is an incredible concept to increase environmental productivity and lessen the environmental impacts. Major environmental impact is associated with the phases of cycle in a supply chain. The objective is to make clean and efficient production process to minimize waste, human health hazard and adverse impact

on environment, which can be attained by lean practices. Application of lean practices helps in environmental efficiency and reduce impact on the environment impact thru better use of resources in an efficient way. Hence, innovation in technology is also seen as one of the most important approaches to achieve sustainability in supply chains. Organization should include sustainability in their corporate strategy. Furthermore, Srivastava study, attempted to create and authenticate tool for green supply chain management practices and it discovered 3 additional validated dimensions, which include environment management, investment, and customer cooperation. Investment includes practice on sales of excessive inventory and material.

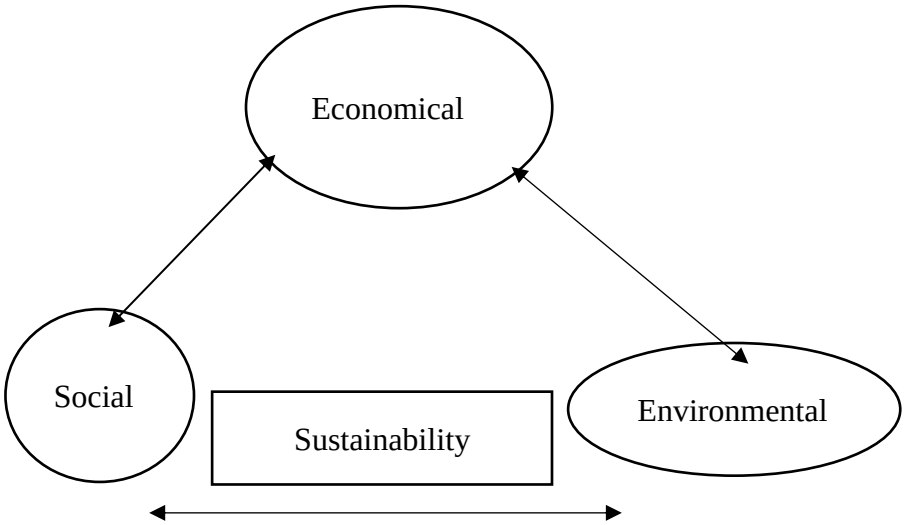

Fig.1 Positive interrelation between all 3 dimensions with sustainability (Authors compilation).
1 pav.. *Teigiama trijų tvarumo dimensijų sąveika (sudarė autorius)*

Customer cooperation revolves around eco design, less energy during product transportation and green packaging. Positive and promising results are realized while practicing sustainability supply chain (Duarte, Cruz-Machado, 2018). Continuous improvement is the main factor in sustainability in supply chain because continuous improvements leads to improvisation of supply chain productivity. Hence, the previous researches related to green packaging, innovation, lean practices etc. all leads to high level of supply chain productivity. However, many other fields also act as major influence for sustainability leading to supply chain productivity.

Conclusions

1. There is a fact that we must accept, sustainability is here to stay, it is not a fad, it is not something unimportant that society and the government will forget in a short time: we have to learn to incorporate the concept into our daily reality.
2. As it happened with the concept of quality in the 70s, companies that are proac tive in their incorporation into the business will achieve significant benefits. The question then is not a trade-off between sustainability and profitability, the cor rect question is: How to be sustainable, positively (or at least neutrally) affecting profitability.
3. Inaction, on the other hand, puts the company at risk of bad publicity or future legislation that compels hasty action. Defining a comprehensive sustainability strategy that is aligned with the overall business strategy is essential to initiate an effort that will undoubtedly touch many elements of the company.
4. At the same time, emphasis should be placed on inserting the concept into the cultural, strategic and operational fabric of the business so that it becomes some thing every day and familiar.
5. The first steps will require learning new concepts, generating new indicators with information usually ignored, and replacing a traditional approach to a for ward-thinking one. The result, however, will be profitable and, above all, very satisfying and comforting by contributing to the well-being of future genera tions.

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Tvarios tiekimo grandinės raidos ramsčiai

Santrauka

Nuolat diskutuojama apie tvarumo ramsčius. Trys pagrindiniai apibrėžti ramsčiai yra socialinis, ekonominis ir aplinkosauginis. Tačiau dėl nuolatinių tyrimų ir pažangos jų ramsčiai buvo nuolat kuriami ir keičiami į kitus veiksnius. Straipsnio tikslas yra išanalizuoti tris pagrindinius ramsčius ir įrodyti jų tarpusavio priklausomybę. Buvo atliktas išsamus interviu su organizacija, siekiant suprasti šių trijų ramsčių vaidmenį plėtojant tvarų tiekimo grandinės valdymą, taip pat buvo atlikta internetinė apklausa, siekiant įvertinti kiekvieno iš šių ramsčių svarbą. Įvertinus visas analogijas ir literatūros apžvalgas, buvo sukurta sistema, padedanti lengviau suprasti visų šių trijų ramsčių svarbą. Rezultatas padeda užmegzti tolesnes diskusijas ir suformuluoti hipotezę, siekiant suprasti šių 3 ramsčių poveikį ir vaidmenį. Tai rodo visų šių 3 kintamųjų sąsają dėl tvarumo, taigi ir socialinio, ekonominio ir aplinkosauginio; visi šie trys ramsčiai yra tarpusavyje susiję kuriant tvarią tiekimo grandinę. Be to, joje taip pat kalbama apie tai, kaip vienas veiksnys yra svarbus kitam viso tiekimo grandinės ir organizacijos augimo veiksniui.

Raktažodžiai: *tvarumas, socialinis, ekonominis, aplinkosaugos, tiekimo grandinės valdymas.*

THEORETICAL CONCEPTUALIZATION OF FREIGHT TRANSPORTATION PROCESS AND THEIR IMPROVEMENT POSSIBILITIES USING LEAN METHODOLOGY

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Transportation plays a big role all the world moving goods from one place to another, connecting every country and making it possible to trade goods in a more efficient way. The constant and fast changes in freight transportation services force the transportation companies to pay attention to the customer's needs, to seek opportunities to improve their services while fulfilling customers' needs and also make better financial results of company. The article describes the concept of road freight transportation and the different stages in its process as well as the basics of Lean and its principles. The main idea of the article is to disclose the freight transportation process improvements opportunities using Lean methodology. The article mentions and explains how these tools can be applied in the different stages of freight transportation and the benefits each tool provides to the process in order to make it more efficient.

Keywords: freight transportation process, lean principles, lean tools, lean logistics, 5S.

Introduction

The primary purpose of a business is to maximize profits for its owners or stakeholders while maintaining corporate social responsibility, to achieve this, companies are constantly looking for new ways to become more competitive usually by maintaining lower prices than the competence, this can be a complete challenge, taking in mind that every year all expenses tend to rise, fuel gets more expensive, wages are constantly rising, among other factors making it hard to keep with a competitive price. When a company faces this scenario, they tend to look for alternatives, some try to find cheaper suppliers, lower expenses or layoff of personal in order to reduce the service cost. All these solutions, apart from not being sustainable at the long run, they usually end up with a decrease in quality service. This is where Lean comes in, bringing new way of thinking, instead of rising the price or cutting expenses. Lean offers a big variety of tools that can help saving money in all process by making more with less by reducing time and resources in each operation, this also benefits the client since the company will be able to not just keep a competitive price but also increase quality service, making it possible to deliver all products in a shorter time (Villarreal et al., 2016; Ramasahayam, 2016; Villarreal et al., 2017; Pinho et al., 2019).

A big problem in freight transportation are the high prices and keeping up with a good customer service. Lean methodology is known for its big percentage of success when it comes to improvement of customer service, cutting costs and competence development. Applying the Lean principles into road freight transportation could help reducing the biggest threats read freight transportation companies are dealing with.

The aim of the paper is to disclose the freight transportation process improvements opportunities using Lean methodology.

Research methods are the analysis of scientific literature, logical analysis and conclusion formulating.

The concept of road freight transportation process

Kunaka et al. (2014) explain how in most of the regions, road transport (trucking) is the dominant transport mode for moving freight along corridors. In fact, more than 80

percent of overland trade traffic is by road, and nearly all trade freight is carried by road at some point. Efficient delivery of road transport services is hence essential for the unimpeded movement of freight and people along corridors.

Road infrastructure is one of the most important factors that can affect the performance of trade and transport corridors. It often is a top priority among investments of developing countries, partly based on the assumption that investments in road infrastructure alone will significantly reduce transport prices.

According to Esper et al. (2007), Sandberg et al. (2011), economic growth in separate economy sectors is impossible without transport and logistics companies. The reason of these is because most of the companies and industries require transportation services in order to make and sell a product, from getting the raw materials to distributing the goods to stores or end user. According to Cornejo et al. (2020), the quality of services is a key condition for successful competition in the market of transport and logistics services.

A freight transportation process can differ depending on the origin and destination of the goods, the process can take some extra steps if the destination of the goods is for a different country or continent. The process of freight transportation can start from the moment the clients start to look for possibilities to move his goods from one place to another, and it can end at the moment goods reach the final destination.

According to March1 (2018), Pinho et al. (2019), Villarreal et al. (2016), the process can be divided in 6 stages:

Stage 1 – export haulage: The movement of items from a shipper's location to the freight forwarders warehouse is called export haulage. This usually requires the help of a truck or train to move the them. How long it takes depends on the distance, geographical location and what the items are. This first stage can take anywhere from a few hours to a few weeks.

Stage 2 – items checkpoint: Immediately following the export haulage stage, freight forwarders receiving the goods will check to see and ensure everything was transported without incidents.

Stage 3 – export customs clearance: Before items can be shipped off it requires clearance from the country of origin. This process is performed by customs brokers. They are required to submit details about the cargo and any supporting documents that are needed. Usually, an agreement is established between the shipper and consignee who is responsible for this process. If a freight forwarding company does not offer this service, it is required to find a third-party customs broker service.

Stage 4 – import customs clearance: Once the shipment arrives, authorities in the destination country are required to check import customs documents. The secret to this stage is that it can begin before the cargo even arrives. It is the responsibility of the freight forwarder or nominated customs broker to perform this clearance by the time the cargo arrives.

Stage 5 – destination arrival and handling: This stage involves a number of different processes once the cargo arrives. At this point, freight forwarders will receive all documents for the cargo, including outstanding documentation, carrier bills and more. This process is always taken care of by the freight forwarder.

Stage 6 – import haulage: Almost identical to export haulage, this process transports the cargo from the warehouse to the final destination of the intended receiver. This process can be facilitated by freight forwarders or the consignee can choose to collect the cargo themselves.

The relationship between the cost of transport and the level of demand for freight can be explained by a case of production and consumption of a market goods (Villarreal et

al., 2016; Kawamura 2016). Substantial transportation economics studies have attempted to assess the impacts of distance, time and elasticities on freight flows (Button, 2010). Those impacts can be quantified further through four core elements according to Hesse & Rodrigue (2004):

- Transport cost (metrics: distance, time, composition, transshipment, decomposition).
- The organization of the supply chain (number of suppliers, number of distribution centers, amount of parts/variety of components).
- The transactional environment (competition, (sub-)contracting, inter-firm relationships, power issues and (de-)regulation.
- Physical environment (infrastructure supply, road bottlenecks and congestion, urban density, urban adjustments).

The demand for freight is determined by factors such as:

- Economic growth (e.g., GDP) with gross output or added value of a region.
- Resources, goods and services (e.g., products, cultural trade and tourism services).
- The supply of transport infrastructure and services (e.g., capacities, speed, safety, comfort) and technology (e.g., ITS).
- Vehicle technology (e.g., containerization, automation, handling and interchange systems) and packaging of goods.
- The spatial structure of cities or region.
- The ongoing economic process of globalization with intermodal and combined transport (i.e., free market zones).
- The design of spatial organization of inventories, warehousing and just-in-time (JIT) practices.

Lean conception and principles

Lean is an integrated system of principles, practices, tools, and techniques which assumes the expenditure of all types of resources for any purpose other than the creation of value for the end customer to be wasteful, and therefore a target for exclusion. The elimination of non-value-added activities reduces costs and cycle time, which results in agile, customer-responsive and more competitive organizations (Siva et al., 2017; Cornejo et.al., 2020; Alukal, 2003).

Lean methodology was first created for the manufacturing industry, but in the last years it has been growing to new sectors including Lean Logistics. The idea would be to implement and adapt the main principals of the methodology into freight transportation. For this it is worth understanding some of the basic lean principals that can help any company to start putting in practice the lean methodology.

Cornejo et al., (2020), Siva et al. (2017), Crawford (2016) and other explain 5 core the Lean principles (see figure 1):

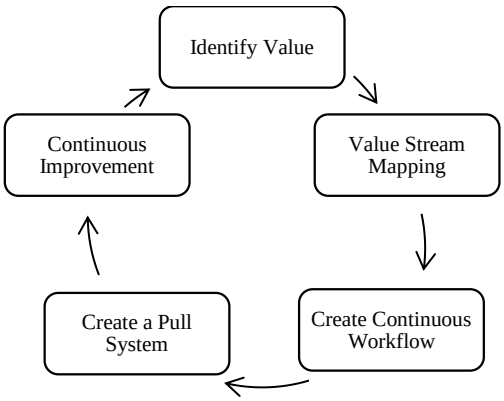

Fig. 1. The five core Lean principles
1 pav. *Lean metodologijos principai*

1. Identify Value: To offer a service that a customer is ready to pay for. To do so, a company needs to add value defined by its customers' needs. The value lies in the problem you are trying to solve for the customer. More specifically, in the part of the solution that your customer is actively willing to pay. Any other activity or process that doesn't bring value to the end product is considered waste. So is important to first identify the value company wants to deliver and then proceed to the next step.

2. Value Stream Mapping: This is the point where the workflow of the company needs to be mapped. It has to include all actions and people involved in delivering the end product to the customer. By doing so, the company will be able to identify what parts of the process bring no value. Applying the Lean principle of value stream mapping will show where the value is being generated and in what proportion different parts of the process do or do not produce value. With a value stream map, it will be much easier to see which processes are owned by what teams and who is responsible for measuring, evaluating, and improving that process. This big-picture will make it enable to detect the steps that don't bring value and eliminate them.

3. Create Continuous Workflow: After the value stream map is achieved, it's important to make sure that each team's workflow remains smooth. This may take a while. Developing a service will often include cross-functional teamwork. Bottlenecks and interruptions may appear at any time. However, by breaking up work into smaller batches and visualizing the workflow, makes it easier to detect and remove process roadblocks.

4. Create a Pull System: Having a stable workflow guarantees that the team can deliver work tasks much faster with less effort. However, in order to secure a stable workflow, it is important to make sure to create a pull system when it comes to the Lean methodology. In such a system, the work is pulled only if there is a demand for it. This lets you optimize resources' capacity and deliver services only if there is an actual need.

5. Continuous Improvement: this step can also be called "perfection", after going through all previous steps, the Lean management system is already built. It is important to always remember that the system created is not isolated and static. Problems may occur at any of the previous steps. This is why it is important to make sure that employees on every level are involved in continuously improving the process. There are different techniques to encourage continuous improvement. For example, every team may have a daily stand-up meeting to discuss what has been done, what needs to be done, and possible obstacles—an easy way to process improvements daily. Crawford (2016) mentions that Lean experts often

say that a process is not truly lean until it has been through value-stream mapping at least half a dozen times.

Lean tools for improvement of transportation and their application

Lean relies on practices such as Just-in-Time (JIT), Total Quality Management (TQM), Total Productive Maintenance (TPM), pull, flow, and others, to reduce waste and increase efficiency (Yang et al., 2011). Forrester et al. (2010) considers lean as the most influential new paradigm in manufacturing however, the reduction of waste and improvement of efficiency in the road transport sector has been addressed through different perspectives and using other approaches. For example, Rodrigues et al. (2014) suggest that avoiding extra travel in road freight operations is vital as these operations are characterised by low-profit margins. For this reason, they proposed a measure, called "Extra Distance", which intends to reduce the additional operational costs associated with transport disruptions.

In a case study made by Villarreal et al (2016), the improvement of the road transport operations from a Mexican organisation was addressed by following a sequential three stages: (1) Analysing the value stream of the road transport operations, (2) Identifying the Seven Transportation Extended Wastes (STEWs) inherent in the road transport operations, and (3) Defining and implementing a strategy for the elimination of the STEWs.

Seeing Lean as a tool to reduce waste, it could be state, that it as a way of creating value for the customer that can been seen in the following ways:

- Value is created by eliminating internal wastes and wasteful activities.
- Value also could be increased with additional benefits, which will be important for the customer, such as a shorter lead time which will not incur additional costs.

In the scientific literature (Pinho et al., 2019; Cornejo et al., 2020; Siva et al., 2017) are presented several Lean tools namely, Jidoka, Poka-Yoke, 5S, Just in Time, Kaizen, amongst others. Lean tools help to improve transportation quality, reduce cost and lead time, meeting the customer need and providing high quality services.

A grand majority of the tasks in freight transportation are taking place in an office, all the freight forwarders, managers and planners are making decisions every day with a limited amount of time. The 5S tool can help in eliminating all actions which are not adding value in the everyday tasks (Silva, 2009). This tool is focused on the organization of the workplace, standardizing working processes and combining efforts to make work more efficient by eliminating obsolete instruments and materials, identifying materials, constantly cleaning the workplace and building a work environment that provides both physical and mental health, providing as well the will to keep the order in the place and to build the continuous improving motivation (Pinho, 2019). The methodology is easy to understand and it doesn't involve a high cost. 5S stands by:

1. Sort – classify and organize any kind of materials according to its nature.
2. Set in Order – keeping the place tidy is indispensable to keep the place organized, to organize the materials, optimize the space, providing better access and to contribute to increase efficiency.
3. Shine – during the cleaning actions emerge opportunities to detect abnormal behaviours on the machines, instruments or any kind of equipment's or technologies.
4. Standardize – to standardize or to create standards on the ways of doing things, we need to develop systems that keep the place organized and that keep monitoring the process continuously.
5. Sustain – to sustain or keep the changes we need to induce the ability and the discipline to do things right as they should be done.

Value analysis is a set of complete techniques, for the solo purpose of efficiently identifying unnecessary costs before, during and after the fact. It consists in analysing each sub process providing details on where improvement is possible and how value can be increased. Recording and document time date will help the team or company to understand the trends in the process. In typical lean thinking most of the processes have 70 percentage of waste. Comprehensive time value analysis will provide target areas in transportation process (Ramasahayam, 2016).

Conclusions

Lean is an integrated system of principles, practices, tools, and techniques which assumes the expenditure of all types of resources for any purpose other than the creation of value for the end customer to be wasteful, and therefore a target for exclusion. The elimination of non-value-added activities reduces costs and cycle time, which results in agile, customer-responsive and more competitive organizations. The Lean methodology can bring solutions to the main problems freight transportation faces, to provide quality service, reduce lead time and suggest competitive prices, while saving time and effort in each operation. In the scientific literature are presented several Lean tools namely, Jidoka, Poka-Yoke, 5S, Just in Time, Kaizen, amongst others. An analysis of the scientific literature revealed that not every lean tool is suitable for freight transportation, but the gran majority of them can be adapted to the transportation industry. It is interesting to see the case study of many transportation companies joining this trend and sharing their results after the adaptation and implementation of the Lean methodology. It could be concluded by saying that there is always room for improvement in every activity and process we do, Lean thinking is the belief that everything can be improved. As Henry Ford once said -If you always do what you always did, you will always get what you always got.

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Teorinė krovinių gabenimo proceso konceptualizacija ir jo tobulinimo galimybės naudojant „Lean" metodologiją.

Santrauka

Kokybiškas krovinių transportavimas vaidina svarbų vaidmenį visame pasaulyje, pristatydamas krovinius iš vienos šalies į kitą ir suteikdamas galimybę efektyviems prekių mainams. Augantys klientų poreikiai ir didelė konkurencija rinkoje verčia transporto įmones ieškoti būdų tobulinti teikiamas paslaugas, tenkinant klientų poreikius, o taip pat gerinti įmonės finansinius rezultatus. Šiame straipsnyje aprašoma krovinių gabenimo keliais samprata ir svarba, atskleidžiami transportavimo proceso etapai, o taip pat „Lean“ metodologijos pagrindai ir principai. Pagrindinė straipsnio idėja yra atskleisti krovinių gabenimo proceso tobulinimo galimybes, taikant „Lean“ metodiką. Straipsnyje analizuojama, kaip “Lean” metodiką galima pritaikyti siekiant tobulinti krovinių gabenimo procesą, kokius “Lean” įrankius galima naudoti, kad transportavimo procesas būtų kuo efektyvesnis.

Raktažodžiai: krovinių gabenimo procesas, Lean principai, Lean įrankiai, 5S.

OPPORTUNITIES FOR SUSTAINABLE TRANSPORT DEVELOPMENT IN LOGISTICS: THEORETICAL ASPECTS

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Sustainability has become an important factor in competitive advantage for companies. Society requires industries to develop sustainable practices throughout their manufacturing, supply and distribution operations. As transportation is a core element of all logistics, it is challenging and important to better understand the role of sustainability in the development of logistics activities. This article focuses on the theoretical aspects that determine the opportunities to develop the sustainable transport in logistics companies. Take into consideration the rules of the environmental world, it is definitely connected to the business flow in the world and the last decade has showed that. In the current economic, social and environmental context, the implementation of the concept of "sustainable transportation" in logistics organizations is treated as a means of increasing the competitiveness of the organization. This encourages to research the principles of sustainability in today's world.

Keywords: sustainability, sustainable transport, logistics management, freight transportation.

Introduction

Global economic development and continuous growth of the world population are the major factors which cause growth of energy consumption and increasing volumes of greenhouse gas emissions. Attempts to achieve sustainable energy development are still not successful. The future of transportation can be significantly influenced by the concept of sustainability (Ogryzek et al., 2020; Ren et al., 2019; Leuenberger et al., 2014). Transportation as one of the core factors that influences all activity aspects is considered as the activity with higher impact in sustainability causing the majority of problems. Global concerns about climate change, energy use, environmental impacts, and limits to financial resources for transportation infrastructure require new and different approaches to planning, designing, constructing, operating, and maintaining transportation solutions and systems (Pilinkiene et al., 2016). Improving sustainability standards within the transportation industry involves significant adjustments in how communities move around, how products and goods are shipped and how future transportation routes are designed. Increasing the efficiency of movement in the transportation industry is the ultimate goal, which will also reduce emissions and increase public awareness of sustainability issues.

There are many opportunities to use sustainable transport and positively influence environmental impact. Active debate and growing interest in the development of sustainable logistics have led to a broader theoretical analysis of the possibilities to develop sustainable transport.

The aim of this research is to identify the opportunities to develop of sustainable transport in logistics companies.

Research methods: analysis and synthesis of scientific literature.

Sustainable logistics conception

Deckert (2018) indicates globalization and liberalization of world trade as main reasons of increasing logistical activities and as a result appearance of sustainability in logistics all over the world. Logistics has negative impacts on the environment concerning resource consumption and emissions of harmful substances (see Fig. 1). Resources which are consumed can be energy, raw materials, water, air and space. Emissions of logistical activities can

appear as pollutants (e.g. exhaust fumes or greenhouse gases), waste, noise and disfigurement of the landscape.

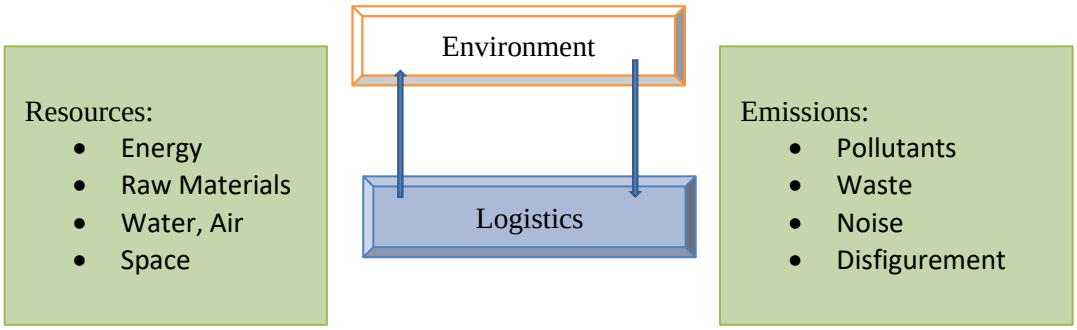

Fig 1. Impacts of logistics on the environment
1 pav. *Logistikos įtaka aplinkai*

Straube F. and Doch S. (2011) consider the most well-known definitions of sustainability is the one of the World Commissions on Environment and Development initiated by the UN General Assembly in 1983 (United Nations 1983) – a development is to be recognized as sustainable if it meets the needs of the present without compromising the ability of future generations to meet their own needs. Mehmet Soysal et al. (2017) consider that sustainability evaluated to a new fast-growing concept called sustainable logistics management (SLM), that enables the organizations to fulfil market demand by providing the right product, at the right price, at the right store, with the right quantity, to the right customer, at the right time while being as sustainable as possible. Sustainable logistics is characterized as an important component of current production systems, as it strives to quantify and control the negative sustainability impacts of production activities in companies (Martins et al, 2020).

The above-mentioned authors are proposing some approaches to increase environmental friendliness of transportation, that you may see in comparative Table 1. In this table 1 are shown how the authors of the chosen articles, see the way out – their searches, views and ideas. But the interesting idea is that the reduction of transport can be achieved by the reduction of the number of transport and the reduction of the length of routes, the reduction of the length of routes can be achieved on a strategic level by the design of the supply chain network.

Martins et al. (2020) indicate that most companies around the world concentrate their logistics activities on road transport. And the choice of transport modal is important to minimize negative sustainability impacts - transport modal choice is fundamental for the achievement of sustainable goals. With the constant search for providing more sustainable services, aiming to meet new demands of customers, it is highlighted that the establishment of logistical freights must also take into account environmental and social aspects in addition to economic issues.

Table 2. Comparative of approaches to increase sustainability or environmental friendliness of transport in logistics
2 lentelė. *Logistikos transporto tvarumo arba ekologiškumo didinimo metodų palyginimas*

Author	Approach
C. Deckert (2018)	Avoidance of transport Reduction of transport Reduction of harmfulness of transport The relief of the strain on the transport infrastructure The reduction of (direct) emissions Bundling of transports and matching of the flows of goods Rectification in Space and Time Use of Environment-friendly Means of Transport
M. Soysal and J.M. Bloemhof-Ruwaard (2017)	Identify the topics that matter most the business To focus strategic priorities For example, Air France – its targets related to carbon footprint, biofuels, noise, local air quality, waste, energy, and biodiversity
F.Straube and S.Doch (2011)	Reduction of greenhouse gas emissions Increasing the share of renewables for end user energy consumption Reducing primary energy consumption To analyze logistics processes Systematically identify optimization possibilities An accurate calculation of the actual emission Improvement of green supply chain management
V.W.B. Martins, R. Anhlon, I.S. Rampasso, Dirceu da Silva and André Cristiano Silva Melo (2020)	The choice of transport modal Vehicle programming and routing Freight definition and pricing Using the systemic thinking approach on the sustainable performance of service providers

Soysal et al (2017) research addressed recent business trends and challenges in logistics and their implications for sustainable logistics management and presented several practice examples in sustainable logistics management from transportation business companies. The authors showed that the logistics sector is committed to sustainable development and continually looks for ways to be environmentally and socially responsible and more efficient right across the organizations.

Sustainable transport development in companies

Common concept that is related to the sustainable development, is based on three equivalent levels: economic, ecologic and social (Seroka-Stolka, 2014). This proves that the implementation of the concept of sustainability in a particular enterprise should be supported by the principles of economic, ecologic and social responsibility. According to Vasiliauskas et al., (2013), the goals provided on every level are of different efficiency and importance, such situation allows making a conclusion that every single enterprise should create its own strategy for implementing such concept, thus considering different internal and external

factors affecting its performance. Therefore, the process of implementing the concept of sustainability is complicated and multiple, and requires a close collaboration between state entities, society and business. The scientists (Ogryzek et al, 2020; Ren et al, 2019; Straube et al, 2011) indicated the following aspects:

1. The adoption of political decisions according to environmental impact.
2. The continual development of high technologies (business field takes a leading role in technology development).
3. Investment and integration (integration of necessary logistics functions in order to assure efficient distribution).
4. The efficient management and policy of the organization based on the principles of green logistics (establishment of business processes in accordance with economic, social and environmental factors).

The action of implementing the concept of sustainability in logistics begins with reengineering the logistics system of the company. This is particularly the case of the road transport sector. Road freight carriers are highly criticized for causing various externalities. As concern for the environment rises, enterprises must take more care of logistics activities associated with climate change, air pollution and accidents. The deployment of IT applications can contribute to positive changes in the field of the above introduced problem.

As distinguished Deckert (2018), the core issues of sustainable transportation are fuel consumption and emissions into the air, i.e., exhaust fumes and greenhouse gas emissions. In addition, there are noise emissions. The necessary infrastructure leads to land use and impacts on flora and fauna, e.g., soil sealing through roads or destruction of natural habitats through the construction of canals. Further emissions into air, water or ground are possible in case of accidents. In case of global supply chains, the problem of bio-invasions can arise as animals travel "as stowaway" alongside the freight or ballast water in ocean vessels. This contribution mainly focusses on the effects of the failure-free use of different modes of transportation and neglects impacts of infrastructures and accidents. In political decisions on transport infrastructure as well as in risk analyses of transportation these, of course, have to be additionally taken into consideration.

According to scientists (Ogryzek et al, 2020; Arvidsson et al, 2013), the main parameters which affect the environmental friendliness for transportation are modal split, average handling factor (as a measure for the number of changes of transportation mode), average length of haul, average load on laden trips, average percentage of empty runs, other externalities per vehicle-km and per unit of throughput (e.g. noise, accidents), energy efficiency (of transportation vehicle) and emissions per unit of energy.

The environmental friendliness of transportation can thus be increased by the following approaches:

1. Avoidance of transports;
2. Reduction of transports (number of transport or length of transport routes);
3. Reduction of harmfulness of transports.

The avoidance of transports can be achieved by digitalization and remote transmission of products which has already been achieved for products such as software, music, books and movies. Through the increased use of 3D-printers this trend might also spread to other product categories albeit the effects might be limited. The sharing of goods might also contribute to the avoidance of transports.

The reduction of transports can be achieved by the reduction of the number of transports and the reduction of the length of routes. The reduction of the number of transports can

be achieved by bundling volumes (e.g., through milk runs), by matching goods flows and reducing empty runs and by increasing the capacity utilization, e.g., through optimized use of stowage space.

The reduction of the length of routes can be achieved on a strategic level by the design of the supply chain network. Possible approaches are e.g., relocation of offshored activities and nearshoring, optimized warehousing levels and number of warehouses as well as different distribution of production activities to facilities. On a more operative level approaches can be improved by transport routing and use of intelligent transport system (ITS) to track and trace deliveries and vehicle fleets.

Conclusions

Sustainability is a core question for suppliers as well as for the customers. Transports is traditionally a sector in which commercial factors are decisive, but already for a long time the aspect of sustainability is increasingly value and this increases the pressure to challenging port authorities around the world to find ways of operating and managing their ports efficiently and effectively in terms of economic, social, as well as environmental development, in a nutshell in a more sustainable way. The analysis of sources presenting different scientific literature has revealed that the term of sustainable development in logistics is associated with the concept of sustainability and based on 3 equivalent levels – economic, ecologic and social. Scientists emphasizes on the importance of cooperation and connection between not only economic and environmental factors, sectors, but social and political. One of the main strategic issues in modern-day common European transport policy is the creation of a more efficient, safe and environmentally-friendly transport system. Therefore, much is done in the sector of road freight transport, since this particular field is recognized as the harmful one. On the other hand, it is also accepted as the most flexible and promising area for reaching decisions based on the latest innovative technologies. Despite all attention given to the sector of road freight transport, there are no exact models and recommendations for implementing the concept of green logistics.

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Ella Rahulina, Milita Vienažindienė

Darnaus transporto plėtros galimybės logistikoje: teoriniai aspektai

Santrauka

Pastaruoju metu darnumas tapo vienu svarbiausiu įmonių konkurencinio pranašumo veiksniu. Visuomenė suinteresuota, kad verslo atstovai plėtotų darnią praktiką logistikos operacijose. Transportas yra pagrindinis logistikos elementas, todėl labai aktualu geriau suprasti darnumo plėtros vaidmenį logistikos veikloje. Šiame straipsnyje daugiausia dėmesio skiriama teoriniams aspektams, kurie svarbūs siekiant darnaus transporto plėtros logistikos įmonėse. Ekonominiame, socialiniame ir aplinkosauginiame kontekste, darnaus transporto vystymas logistikos organizacijose traktuojamas kaip priemonė padidinti organizacijos konkurencingumą. Tai skatina tyrinėti darnaus transporto plėtros galimybes šiuolaikiniame pasaulyje.

Raktažodžiai: darnumas, darnus transportas, logistikos valdymas, krovinių transportavimas.

THE IMPROVEMENT OF THE QUALITY OF LOGISTIC SERVICES IN NIGERIA

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In this present age of globalization coupled with a dynamism in customer's preferences, advance information technological innovations as well as infrastructural development; the quality of logistic services in Nigeria are far below expectation compared to developed countries in the world. The purpose of this research is to suggest possible solutions to the improvement of the quality of logistic services in Nigeria. To guide the study, an analysis of the present situation of the logistic market in Nigeria, factors affecting delivery of quality logistics and possibilities for improvement was discussed. The qualitative research approach was adopted for this study using analysis of scientific literature The study reveals that of infrastructure and technical facilities, strategies for transportation cost reduction, , effective supply chain collaboration, information technology (IT) infrastructure incorporation in logistic processes, quality human resource, and quality customer service among others are possible solutions for improving the quality of logistic services.

Keywords: *improvement, logistic services, service quality, logistics market, Nigeria*.

Introduction

In today's world, logistic services have become an integral aspect of most business companies and has been recognized as a vital tool for competitive advantage among companies when affectively managed. In line with this, Abimbola, et al cited in Sharma, and Khanna (2020) stated that in the logistic sector the rate of technological innovation and fluctuation in consumer demands are among the factors that have increased the dynamism of the competitive environment to has become an issue of concern for organizations providing logistics services.

Consequently, this study focuses on the ways through which logistics organization can improve the quality of services offered to customers. The research study also helps to look at what is quality logistics service, the factors (problems) that are responsible for low or poor quality of logistics service, and the solutions that can be provided to help enhance the quality of logistic services provided by logistics organizations.

Practical problem of the research: Logistic sector in Nigeria has gradually been recognized as a major driving force for economy growth. It plays an increasing role both as a supplier of commodities and as a consumer market for products from other different parts of the world. Thus, it is vital to understand logistics services operations and possibilities for improving quality of logistics services in Nigeria.

Subsequently, The International Trade Administration (2020) reports that huge infrastructure deficit and anti-business, government policies, poor road network, unstable electricity, multiple taxation, etc. has led to the logistics service sector not being able to achieve its full potential, with local stakeholders unable to meet financial obligations, transferring costs and charges to end-users thus making them uncompetitive, and making room for foreign owned operators with the financial capabilities to absorb higher levels of business risk to enter into the market, entrenched corruption, and others being additional factors.

Therefore, this study investigates the logistic market in Nigeria, analysis scientific literatures in other to ascertain impeding challenges and determine solutions for the improvement of quality of logistics services.

The object of the research: Quality of logistics services.

Research aim: To present possible solutions to the improvement of logistics services.

Research objectives:

1. To present the relevance of logistic service quality improvement and to evaluate the logistics services market in Nigeria.
2. To present a theoretical analysis of factors affecting logistics service quality and suggested solutions for the improvement of the quality of logistic services.

Research methods: The quantitative research method will be adopted for this research through the use of analysis of document content, and critical analysis of the scientific literature: finally, conclusion on findings is drawn and recommendation for improvement.

The relevance of improving logistics services

Logistics deals with managing the flow of goods from a business firm's suppliers, through its facilities, and onto its customers. According to Dare, Aubyn, and Boumgard (2019), logistics as the careful planning, organizing, and controlling of all necessary activities in the material flow, beginning from the raw material up until the final consumption and reverse flows of the manufactured product, with the aim of satisfying the customer's needs and wishes. Logistics encompasses all of the information and material flows throughout an organization. It includes everything from the movement of a product or from a service that needs to be rendered, through to the management of incoming raw materials, production, the storing of finished goods, its delivery to the customer and after-sales serv ice‖ (Ittmenn and King, cited in Jepherson, Ngugi, and Moronge, 2021) .

It is understandable that logistics organizations around the world undergo different challenges while providing their services. These challenges are sometimes within their control while most of the factors that generate the challenges are beyond what the organizations can control or regulate (Centobelli, Cerchione, and Esposito, cited in Arfara, and Samanta, 2020). Irrespective of the challenges that these organizations encounter, they would have to find ways to offset the challenges, if they actually want to run their businesses effectively and stay relevant. Hence, the need for any logistics organization (planning to run its business for a longer period of time, expand, and maximize its profits) to conduct necessary and effective research on the political landscape, market structure and business environment of the country where it operates (Crovini, 2019).

Fernandes, Moori and Filho (2018) conducted a study on logistic service quality as a mediator between logistics capabilities and customer satisfaction. The purpose of the study was to estimate the quality of logistical service as a mediator factor in the relationship between logistics capabilities (LC) and customer satisfaction (CS). Findings, from this research, indicated that the quality of logistics services totally mediates the relation between the logistic company capacity and the satisfaction of customers. This implies that improving the quality of logistic services can positively affect customer satisfaction and also shows the level of capacity of logistics companies. Therefore, the capacity of logistics company can determine and help to improve the quality of logistic services; as well as meet customers' demands. This also elaborates on the need for companies to strategically focusing on ways to improving their capacity in terms of rendering quality services in other to meet customers satisfaction.

Similarly, Uvet (2020) conducted an empirical study on the importance of logistics service quality in customer satisfaction. The objective of the study was to investigate how logistics services affect customer satisfaction. Results shows there was a significant relationship between the analyzed constructs which included, timeliness, order condition, personnel contact quality, operational information sharing and perception of customer satisfaction in

logistics services. These constructs provide knowledge the on factors to be considered useful to improve logistics services. Uvet's study focused on the importance of improving value in logistics services to meet the expectations of customers in other to sustain competitiveness in the market. A unique aspect of this research described various factors in relations to customer expectation (timeliness, order condition, personnel contact quality, operational information sharing) used as measures for quality of logistic services. According to the author, it was the first time the effects of "operational information sharing" on customer satisfaction in logistics services was investigated under the logistic service quality context.

Furthermore, Simanová1 and Stasiak-Betlejewska (2019) researched on monitoring and improvement of logistic processes in enterprises of the Slovak republic. The objectives of the study were to discover the use of new concepts and methods for improving logistics processes and their impact on return on equity (ROE). Simanová1 and Stasiak-Betlejewska's study provides an understanding on the need for consistent monitoring and improvement of logistics processes. It also pinpoints the facts that some logistics companies are yet to prioritize regularly monitoring of the quality of services delivery to their customers. However, the study also shows significant level of growth on logistic companies that implored new concepts and methods for improving logistics processes. Although the sample for study focused on enterprises in Australia, research can be good reference for logistics services companies. Conclusively, analysis of literature sources has shown that the quality logistics services are essential for the development and sustenance of logistic service businesses especially in the present ever changing market environment. The quality of logistic services is not just relevance to company performance growth but in improving customer satisfaction.

Exploration of logistic services market performance in Nigeria

The logistic sector of Nigeria appears to be an effective prospect industry sector of for the country (Bukie, 2017). The logistic sector is also known to be among the fastest growing industries present in Nigeria, although still in its emerging stage. As of the year 2018, the Nigeria's logistic sector had a value that was estimated to be around $699 million US Dollars (₦250 billion Naira), which was an increase from $140 million (approximately ₦50 billion) from the year 2017 figure (Dare, Aubyn, and Boumgard, 2019).

The Nigeria logistic market has been on the trend of slow growth for the last many years; however, the market is projected to grow or develop at a Compound Annual Rate (CAGR) of approximately 4% in years to come (Dioha and Kumar, 2020). For more than few years ago, Nigeria as an economy has been slowed down due to logistical issue and poor infrastructure in addition to congestion on the road and delayed custom procedures. Due to this, Nigeria was rated 145th from 190 economies in the year 2018 with the ease of engaging business index and rated 112 in the LPI (Local Performance Index) (Evangelista, Santoro, and Thomas, 2018). The present growth and development experienced in Nigeria Logistic Market owes it to the improvement of the foreign ties with other countries, development of infrastructure in Airways and Railway, development of the manufacturing and the export sector, and the rising of the sector of e-commerce (Evangelista, Colicchia, and Creazza, 2017).

A poor network of road, anti-business government policies as well as enormous infrastructure deficit, multiple taxation, unstable electricity, etc. have resulted to the logistic sector not to be able achieve its full potential (Ezenwa, Whiteing, Johnson, and Oledinma, 2020). This makes local stakeholders incapable of meeting their financial obligations, to transfer charge and costs to end-users and as a result making them to become uncompetitive, giving the opportunity for foreign operators with massive financial capacities in absorbing

higher levels of business risk in entering into the Nigeria's market, rooted corruption and others being added factors (Oyebamiji, 2018).

Table 1: Market overview of the Nigeria's logistics sector in 2017, 2018, 2019 and 2020. (Compiled by the authors)

1 lentelė: *Nigerijos logistikos sektoriaus rinkos apžvalga 2017, 2018, 2019 ir 2020 m. (Sudaryta autorių)*

Overall market size = (sum of local production + total imports) – (total exports). *Bendras rinkos dydis = (vietinės produkcijos ir viso importo suma) - (visas eksportas).*				
	Unit: USD (United States' Dollar) Million			
	2017	2018	2019	2020
Overall Market Size *Bendras rinkos dydis*	133,990	132,988	141,000	300,000
Sum of Local Production *vietinės produkcijos suma*	4,000	6,000	6,000	3,000
Total Imports *viso importo suma*	130,000	133,000	135,000	195,586
Total Exports *visas eksportas*	10	12	12	0
Exchange rate: 1 USD *Valiutos kursas*	367	362	360	379.5

A survey conducted by LCCI (Lagos Chamber of Commerce and Industry), one of the foremost stakeholders in Nigeria's OPS (Organized Private Sector), indicated that the Nigeria economy lost an estimated yearly revenue of about ₦3.5 trillion as a result of poor infrastructure, corruption at most ports and poor implementation (Suvittawat, 2020). ₦3 trillion are losses of corporate earning spanning across the various sector of the Nigeria's economy. Based on the report gathered, corporate profit margins entities that use certain numbers of Nigeria's main infrastructure, specifically the Apapa port, have progressively decreased as the cost of logistics has risen significantly (Oyesiku, Somuyiwa and Oduwole, 2020).

Nigeria as an import-centric country with a massive potential for growth needs a renewed attention on the development of its infrastructure (Ndukauba, Chigozie, Agwu, Onyinyechi, and Ebere, 2018). With the immense nature of the logistic sector as well as the sub-sectors that are contain within the sector, local and foreign operators need pooled resources in engaging government to help provide and enhance the general network of infrastructure in Nigeria (Rai, Verlinde, and Macharis, 2018). This is because it is the foundation that carries every business and helps them thrive. Any country without good or effective systems of transportations as well as infrastructure, which supports it will stay underdeveloped.

Subsequently, according to experts of the logistic sector/industry, infrastructure appears to be critical to the objectives of logistics services' provision (Faruna, Akintunde, and Odelola, 2019). The wellbeing of available infrastructures as well as the integration level between them directly influences logistics access, cost, cycle-time, and reliability. The maintenance of a competitive logistics ecosystem needs a strategic and constant upgrade of regional mix of infrastructure (Faruna et a., 2019). This also requires high performing skills, financing, and government institutions. Hence, logistics can be said to be attributed to be the

key indicator of the advancement of an economy, which is boldly expressed in business competitiveness and trade facilitation (Gupta, Singh and Mangla, 2021)

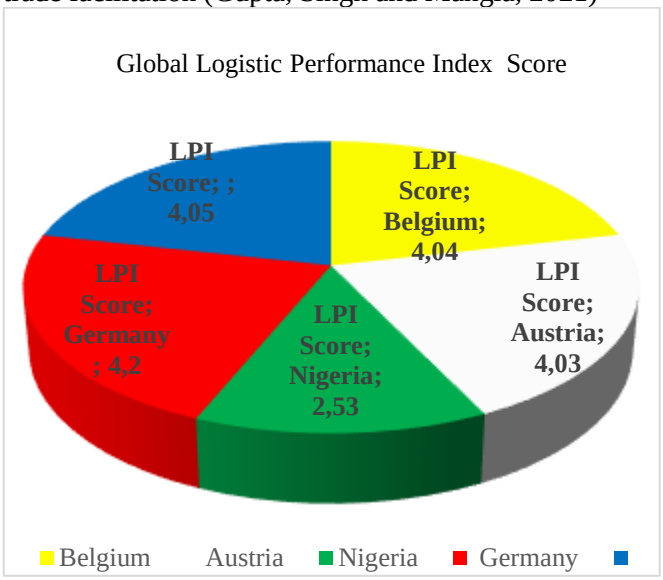

Fig 1. According to the most recent report of Logistic Performance Index (2018) Nigeria is poorly ranked 110 out of 160 in Global Logistics Performance Index (LPI). (Compiled by authors).

1 pav. *Remiantis naujausia „Logistic Performance Index" (2018 m.) ataskaita, Nigerija yra prastai įvertinta 110 iš 160 pagal „Global Logistics Performance Index" (LPI) (sudaryta autorių).*

Furthermore, from a global point of view, report on Logistic Performance Index LPI (2018), shows Nigeria with ranked 110 with a score of 2.53 among bottom countries categorizes among mostly low-income and lower-middle-income countries in Africa; in which economies is mostly affected by armed conflict, natural disasters, and political unrest or naturally faced by geography or economies of scale in connecting to global supply chains. While high-income countries included Germany at the top, scoring 4.20. The scores of the following nine countries are in a tight interval, with Sweden in 2nd with a score of 4.05 and Finland in 10th with a score of 3.97. Consequence of the reveals the need for Nigeria to adopt a national logistics strategy that has its focus on these areas: transportation and distribution sector/industry, road infrastructure, transportation and distribution workforce, road congestion, interstate high access, road conditions, railway access, vehicle feed and taxes, air cargo access, water port access, etc. to make sure there is efficient innovation in the development of infrastructure logistics cycle (Somuyiwa, Oduwole, and Babatunde, 2020). Subsequently, to ensure the growth of the logistics sector and its services in Nigeria, it is expected that the country's free trade and bilateral trade agreements with different countries as well as its involvement in initiatives like AGOA (African Growth and Opportunity Act) and ECOWAS (Economic Communities of West African States) are likely to enhance trade significantly (Somuyiwa et al., 2020). With the free trade agreement of African continent, Nigeria presently has free access to all African market thereby enhancing the trade and its relationship between the bordering countries and to impact the logistics industry in the future.

In conclusion, Nigeria has experienced an inconsistent growth in logistic development over the years; having been faced with economical and infrastructural and political challenges among others, logistics companies have managed to strive, using various strategies in ensuring the delivering of services. Moreover, with the rate of technological innovation and fluctuation in customers' demands logistic in Nigeria is yet to measure up to global standard. This as a result, has increased the dynamism of the competitive environment to which logistics companies must respond to (Abimbola, Charles, and Esther 2014).

Factors Affecting the Quality of Logistic Services

The effective provision of logistics services by any logistic company is the measure of the ease with which the logistic company is able to provide the services to logistics users or customers (Rai et al., 2018). In the process of providing logistic services to users, the companies that provide these logistics services are always on the trail of making sure the most preferable services are provided most especially to the needs most required by the users of the services and their needs (McKinnon, Flöthmann, Hoberg, and Busch, 2017). This is why most logistics services provided by logistics companies or providers are always eager to meet up with the expectations of the services users to ensure that the users are effectively satisfied.

Services can be referred to as commercial activities engaged to provide value and satisfaction to customers at a certain time and a certain place as a result of meeting demands of customers or response to customer requests (Oliveira 2009). In line with the study of Hai and Thuong (2016) Service quality is the extent of distinction found in what customers expect and what they know about the services rendered. These authors also argued that service quality is as results of the effects of different aspects ranging from the trust, ability to respond, ability to serve, access, politeness, courtesy, communication, credibility, security, customer knowledge, tangibles; and grouped further into reliability as the ability to provide the necessary services in a timely manner, responsiveness of showing the level at which service employees are dedicated to attending to customers in good time; also assurance indicating the level of competence of service employees and tangibles, which describes the facial expression exhibited by services employees and the availability of adequate facilities for services. As a result, services quality can be described as compound term encompasses many aspects and linked to many factors. (Hai and Thuong, 2016).

For most organizations in the logistics sectors, which aimed at providing effective services for its ever-increasing services, they are always faced with the one to three basic challenges when it comes to managing and handling the services provided to their users or customers an ensure that it is a quality one (Evangelista, Santoro, and Thomas, 2018). The first that that they face is the need to achieve the need of constant provision of quality services to their customers. There is always increase in demands from the users of the services from their respective service providers especially when they continually patronize a particular logistics company or provider. The more the users use the service provided by their organization and observe little changes in the services of other organization, they would always want to ensure that have the same changes or differences in their logistics services they receive from the logistics services providers (Ejem et al. (2017).

According to LPI (2018) it shows that service quality promotes logistics performance in practically all economies, however, logistics services are generally affected by the different environment of service operations. Reports shows that services operations that support

global trade, such as air and maritime transport and supportive services, experiences high rating even with limited infrastructure capacity. While low scores occur among low-income countries which service operation focuses on road freight and warehousing. Service quality can differ substantially at similar levels of perceived infrastructure quality. Overall, the direction of service operations can highly affect perceived quality of logistics services despite the use of specialized skills and efficient business and administrative practices.

Fig 2. Showing the relationship link of planning logistic processes on quality logistic service and logistics service cost. (compiled by authors from factors that influence logistics decision making in the supply chain of the automotive industry 2020)

***2 pav**. Logistikos procesų planavimo sąsaja su kokybiškos logistikos paslaugos ir logistikos paslaugų sąnaudomis (sudaryta autorių iš veiksnių, turinčių įtakos logistikos sprendimų priėmimui automobilių pramonės tiekimo grandinėje 2020 m.)*

In a study investigation by Škerlič (2020) it was noted that planning logistic processes is a factor that considered to affects the quality of logistic services. When logistic activities are not properly controlled; this in turns affects the level of logistics service as well logistic cost. The author proposed that proper management of logistic processes should attain a level of reduction logistic cost and maintain quality of services. Similarly, Pajic and Kilibarda (2019) is of the opined that major aim of logistic activities such as sales and distribution of products is to attain the highest possible quality of services at lower cost; and these are issues that has to be addressed with goal of the best possible solution.

Furthermore, Nguyena (2020) in study of sustainable development of logistics in Vietnam in the period 2020–2021, analyzed possible factors affecting logistics services; The author outlined that the issue of transportation cost is subject of concern in the logistics chain especially through freight forwarding which accounts for more than a third of total logistics costs. Subsequently, Li et al., (2018) stated that majorly of logistic businesses should focus on delivering services to customers at the right time, in the right location and for the lowest cost. Thus, this will result to management of inventories, efficient service delivery and considerably reduce logistics costs. In addition, level of market awareness is another factor that influences service quality. The knowledge of business environment enables logistic firm to not only survive but thrive in the market, this is because the firm will be able to understand the changes in its external environment. The major point of this, is to control its operations centered on its customers, which involves the desire to offer customers service quality in the most excellent way. to fully meet their needs (Nguyena, 2020).

Another factor to emphasis that affects service quality is the administration of logistics activities without efficient inspection and supervision of factors surrounding service delivery will not achieve the set goals. Logistics managers are usually at the forefront of managing activities including ensuring service quality. Therefore, logistics managers are required to acquire knowledge on various modes of transportation, transport charges, the challenges of warehousing, the issues of supply and production of products, distribution, and

marketing (Nguyen and Nguyen, 2018). Thus, the issue of proper coordination logistics operations with other services relating to businesses and customers should be considered as regards service quality. in the business, as well as with businesses and customers (Phuong, 2018). Nguyena (2020) also mention is issue of human resource management and training of personnel. Having qualified personnel to effectively handle operations is considered a vital factor in Logistics presently. Training programs for employees, if not properly developed to suit with the general logistics activities of companies' business goals will cand be affected and subsequently service quality. Finally, other factors that affects logistics service quality includes technology, informatics, organization, location, customer relationship, human factor, among others (Kilibarda, Andrejić and Popović 2019)

Based on the literature review, it can be concluded that the quality of logistics is affected differences in service operation environment, inadequate planning of logistic operations, transportation cost, inefficient administration of logistic activities, also inadequate human resource management and personnel training programs, among others.

Possible solutions for improving the quality of logistic services

There is no doubt that logistics has played an important role in improving the economy and trade performance of many nations as well has business establishments over the last few years. Thus, resulting to increased standard of living, job opportunities and better access to production and consumption markets on both national and global level. Therefore, the improvement of logistic services will have a great impact in increasing production, business operations to reach a level of high-quality services (Nguyen 2020).

In suggesting possible solutions for improvement of the quality of logistic services, Nguyen (2019) stated that a major requirements for enhancing the quality of for logistics service lies in Infrastructure and technical facilities. Although, transportation can be considered a life blood of logistics operations, poor transportation as factor affecting logistic services remains a global issue. However, in other to improve logistic services the use of a synchronic and modern facilities is crucial, which can be described to comprise a structure of river, road, sea, and rail, with a connection to seaports, railway stations, airports, warehouses, and yards and also equipment for loading and unloading goods and containers at different point of delivery (Phuong and Pham, 2019). Consequently, logistic companies can properly analyze transportation situation in other to reduce transport expenses, this will in turn help to improve faster and efficient delivery of services. Some strategies to reduce transportation cost includes ascertaining the best and safest delivery route and packaging goods using safe and cost-effective materials that is characterized by less volume and weight (GlobalTranz Resources, 2017)

Also, in a study of Kempa, Tanuwijaya, and Tarigan (2020) , effective supply chain collaboration was proposed to improve the quality of logistics services especially among companies in relations with third party logistic. This will occur only when there is a good logistic relationship coupled with collaborative decision-making process and information sharing between both companies. Results from shows reduction in 15 % of logistics cost, 25 % fixed asset investment in logistic and 11 % inventory costs achieved as a result of effective collaboration with 3PL.

Another, possible solution to improving quality of logistic services is the incorporation of Information Technology (IT) infrastructure into the logistics service processes. According to Nguyen 2020, there is the need for the establishment of a centralized electronic information technology exchange system between the government and enterprises, and among business enterprise. The author also stated that bureaucracy of customs clearance

processes, procedures required for import and export documentation should be addressed after electronic verification has been conducted. It is necessary for nations to invest more in the research and application of information technology, training of competent IT professionals, creating good conditions for the operation of logistics services enterprise. Also, proposed is the creation of e-commerce programs that promotes smooth running of logistics processes .

Furthermore, for the improvement of the quality logistic service, the development of quality human resources involved in handling logistics services is paramount and should be adopted as a long- term strategy goal for logistic companies. Also, a continuous upgrade of logistic employee 's knowledge on logistic industry is recommended. Because this will help increase the professional skills for to deliver quality service (Nguyen 2020). In line with is this, is the need for employees to focus on optimize the quality of customer services. These days, the logistic markets have become dynamic, faced with a more complex supply chains and constant changes of customer expectations experienced. This means that to improve service quality logistic companies must focus on meeting the demands of customers while enabling growth in a competitive market and offering excellent services across all channels of communication with customers (Keshavdas 2021).

Finally, according to Yin (2018) another vital approach to improving the quality of logistic services is to establish a service performance measurement, evaluation, and feedbacks necessary to determine level of service quality and areas for further improvement. Various form of measurement that could be used in logistics includes the cycle time metrics such as production cycle time and cash-to-cash cycle, the cost metrics such as cost per shipment and cost per warehouse pick, service quality metrics such as on-time shipments and defective products and the asset metrics such as inventories.

Summarily, literatures reviewed in this study provided possible solutions for the improvement of the quality of logistic services such as the use of infrastructure and technical facilities, strategies for transportation cost reduction, , effective supply chain collaboration, the incorporating information technology (IT) infrastructure in logistic processes, among others.

Conclusions

In this changing periods characterized by a highly competitive, global, and technological inclined market. It has become a paramount for logistic companies to focus on improving the quality of services offered, in order to acquire large market share, gain competitive advantage that will in turn increase profitability, increase production, and ultimately be recognized world-wide. Thus, this study assessed the situation analysis of logistic market in Nigeria, while literature reviews on factors affecting the quality of logistics services and possible solutions for the improvement of the quality of logistic services were also investigated.

From the study it can be discovered that, In Nigeria, the logistics service sector is one of the fastest growing industries although still in its nascent stage, it has now been recognized as one of the driving pillar of economic growth. However, report shows that logistic performance globally is far low compared to other countries of the World. The Nigeria's logistics market has also experienced a drastic fall in the past two years due to low rate in tracking and tracing capacity, clearance process, a high cost of procuring, poor IT infrastructure, and time delays in delivery, among others.

Some of the factors identified from analysis of literatures that affects the quality of logistics service are as follows, service operation environment, inadequate planning of

logistic operations, transportation cost, inefficient administration of logistic activities, also inadequate human resource management and personnel training programs, among others.

Finding from literatures also outlined various possible solution for improving the quality of logistics service these includes, of infrastructure and technical facilities, strategies for transportation cost reduction effective supply chain collaboration, the incorporating information technology (IT) infrastructure in logistic processes, quality human resource, quality customer service and service performance measurement. A detailed analysis of the findings of this study shows that despite identified challenges, the quality of logistics service can be improved. However logistic service companies need to flexible in operations, and consistently upgrade in technology, people and strategies.

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Agbonmere Osamede, Dalia Perkumienė

Logistikos paslaugų kokybės gerinimas Nigerijoje

Santrauka

Šiame globalizacijos amžiuje kartu su klientų pageidavimų dinamiškumu, pažangiomis informacinių technologijų naujovėmis ir infrastruktūros plėtra; logistikos paslaugų kokybė Nigerijoje yra daug žemesnė nei tikėtasi, palyginti su išsivysčiusiomis pasaulio šalimis. Šio tyrimo tikslas yra pasiūlyti galimus logistikos paslaugų kokybės gerinimo sprendimus Nigerijoje. Tyrimui atlikti buvo aptarta esamos logistikos rinkos Nigerijoje situacijos analizė, veiksniai, turintys įtakos kokybiškos logistikos pristatymui ir tobulinimo galimybės. Šiam tyrimui buvo pritaikytas kokybinis tyrimo metodas, naudojant mokslinės literatūros analizę. Tyrimas atskleidžia infrastruktūros ir techninių priemonių, transporto išlaidų mažinimo strategijas, efektyvų tiekimo grandinės bendradarbiavimą, informacinių technologijų (IT) infrastruktūros integravimą į logistinius procesus, kokybiškus žmogiškuosius išteklius ir, be kita ko, kokybiškas klientų aptarnavimas yra galimi sprendimai gerinant logistikos paslaugų kokybę.

Raktiniai žodžiai: *tobulinimas, logistikos paslaugos, paslaugų kokybė, logistikos rinka, Nigerija.*

ILLEGAL STRIKE IN TURKEY

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The means of struggle that workers use to improve their working conditions against the employer is called a strike. Although the right to strike is a protected right within the constitutional and legal framework, the exercise of this right has not been given as absolute, since the exercise of the right to strike affects the other interested parties in the market, who are in contact with the employer and the employee. The use of the right to strike in the law has been referred to the specific purpose and procedural conditions and the strike that does not meet these requirements is called an illegal strike.

According to our legislation, the right to strike is used to resolve the conflict of interests arising during the collective bargaining agreement. The aim of the strike must be to improve the economy and working conditions of workers. Again in the law, some conditions were determined before the strikes were implemented and the work and workplaces where the strike could not be applied by law were also stated. Acts that do not comply with the procedures and conditions of the exercise of the right to strike, but which satisfy the conditions of the strike, are called the illegal strike.

Keywords: *strike, conflict of interests, illegal, Labour Law.*

Introduction

In the face of the rapidly increasing number of workers and workload with the industrial revolution, the problems related to the working conditions and economic conditions of the workers also increased. Workers, who are in a weak position against the employer, have started to use the means of unionization and getting the employer's demands accepted by joining forces. In this context, the strike, which can be described as the work struggle of the workers, has entered the legal life. Although the strike was initially banned with the understanding of a damaging act, it has risen to the level of a constitutional right until today when the liberal economy has spread.

While strike, a constitutional right, is used as a pressure on the employer to impose workers' demands, it also has consequences for other interested parties in the market that are affected by the production of the workplace. The legislator did not regulate the right to strike as an absolute unlimited right, and subjected it to certain procedures, in order not to worsen the situation of the employer altogether and to protect the rights of other concerned persons. While a strike carried out in accordance with the procedures has constitutional protection within the framework of the right to strike, a strike made without complying with the procedures will be an illegal strike and will not benefit from a legal protection.

In our study, the procedures and principles determined for legal strike in the legislation were examined one by one and it was determined under which conditions they would be considered as an illegal strike instead of legal strike. Accordingly, it is stated in our law that the strike can be applied for conflicts of interest that arise during collective bargaining negotiations, and the decision to strike is only allowed by workers' organizations. Apart from these limitations, there are also procedural restrictions such as applying to the mediator before the strike decision is taken, the decision to strike within 60 days from the delivery of the dispute report, and the initiation of the strike on condition that the strike is notified 6 days in advance. If these restrictions are not adhered to, the strike will be illegal. For example, if a strike decision is made by skipping the mediation phase, even if all other conditions are fulfilled completely, the decision taken is an illegal strike decision and the

workers who started to strike after this decision cannot be evaluated within the framework of the exercise of their right to strike.

In our legislation, also taking into account the public effects of the strike, strike bans are regulated for some businesses and workplaces. In these situations where the interests of the society are placed above the protection of the constitutional right of the worker, the decision to strike despite the prohibition of strike and compliance with it will result in an illegal strike even if it fulfills all the procedural conditions and the condition of purpose. In some cases where natural disasters are experienced, if necessary, temporary strikes may be banned by administrative decision. Temporary prohibition of strikes has the same result as the striking bans during this period.

The importance of whether the strike is illegal or not is important for the employer affected by the strike, and for the workers' organization and workers involved in the strike. First of all, the employer will be able to terminate the employment contracts of workers participating in illegal strikes based on just cause. There are also administrative fines for workers who encourage and participate in illegal strikes and, if any, for the organizing workers' organization. In addition, if the employer has suffered a loss due to illegal strike, if the employee organization has taken the decision to strike, the employee organization; If the workers have agreed to strike, the workers participating in the strike have to compensate for this damage. These acts may also constitute the crime of violating the freedom of work and employment and the crimes of damaging property within the scope of the Turkish Penal Code.

In our study, firstly, the concept of strike was mentioned and then the framework of the legal strike was drawn in our legislation and it was stated under which conditions the strike would be considered an illegal strike. The consequences to be encountered in case the act applied is counted as an illegal strike is also discussed.

The strıke

The working class, which emerged with the industrial revolution, developed various tools to protect their situation, including their working conditions and financial situation. Unionization, collective bargaining are tools for workers to join forces and overcome their weaknesses vis-à-vis the employer. Another way that the worker can get out of weakness against the employer is strike. The strike, the employer's expectation from the worker and the act of doing business that will ensure the continuation of his earnings; it is the state that workers are stopped until their demands are met. Thus, the employee will not be in a weak, oppressed position for the employer who wants to guarantee the continuation of his earnings; on the contrary, their demands will be taken into consideration by the employer. Undoubtedly, the most effective way to get the employer to accept workers' demands is to leave workers[26].

Economic life is not a system that exists solely based on the actions of business owners. Another group that will affect economic life at least as much as business owners are undoubtedly workers[27]. In this respect, the strike action of the workers in order to impose

[26]BOZKURT YÜKSEL, Armağan Ebru, Sicil İş Hukuku Dergisi, *"Hukuki Grev Kavramı",* S.20, İstanbul 2010, p.112. / CANBOLAT, Talat, Çalışma ve Toplum Dergisi, "*6356 Sayılı Kanunda Barışçıl Çözüm Yolu Olarak Arabuluculuk",* S.39, İstanbul 2013, p.248.

[27] KAYA, Pir Ali, Karatahta İş Yazıları Dergisi, *"Anayasa Mahkemesi'nin 6356 Sayılı Sendikalar Ve Toplu İş Sözleşmesi Kanunu'nun Bazı Hükümlerinin İptaline İlişkin 22 Ekim 2014 Tarihli Kararının Sendika Özgürlüğü Açısından Değerlendirilmesi*", S.1, Ankara 2015, p.228.

their demands will create a dynamism in the economic life[28]. In fact, not only the employers will be affected by this action of the workers, but also everyone who interacts economically with the employer will be affected. Such a large effect also increases the pressure on the employer[29].

The right to strike, which gives the worker the opportunity to reach a strong position, is protected by law[30]. On the other hand, in previous times, the same right to strike was prohibited by law; We can also state that it is not seen as a right[31]. However, in developing liberal economies, workers' rights came to the fore and workers started to be protected in order to improve their economic and social relations with employers. Again, as a requirement of democracy, strike has been presented to the workers as a right and freedom and has become an element of social balance.

Thanks to the right to strike, workers can achieve their goals by putting pressure on the employer on values that the employer would not want to lose[32]. However, the legislator that provides this guarantee to the workers will bring some restrictions on the right to strike in order to protect the situation of the employers. Because the use of any rights is not unlimited[33]; The party whose situation worsens with the exercise of the right must also be protected by law[34]. It should not be forgotten that the strike will contribute to the peace of work when the desired working environment is finally achieved, while paying attention to the issues of not harming the society during the exercise of the right to strike, and ensuring the balance for the employer whose property and administration rights are restricted.[35]

The right to strike appears as the legally protected form of the employee's failure to fulfill his main act of doing work. It is a means of struggle that workers resort to to resolve conflicts. The use of the right to strike has been subjected to certain procedures in order to protect the economic life that will be affected as a result of the strike due to the legal protection of this means of struggle, which is effective in resolving workers' disputes.

Considering the value of protecting the interests of the worker for the procedures for the right to strike, which differ according to the laws of each country, it will be understood that as a general rule it should be based on a free form of use. In addition to being free, it must also have the necessary security by law. In this framework, it should be noted that the right to strike is recognized as a constitutional right.

When the employee, who has the constitutional right to strike, uses this right in accordance with the prescribed procedures, his actions arising from the employment contract will be suspended. Therefore, workers cannot be sanctioned for not carrying out these

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[28] SEÇER, H. Şebnem, Çalışma ve Toplum Dergisi, "*Endüstriyel Uyuşmazlık Biçimi Olarak Grevin Sosyolojik Açıdan Değerlendirilmesi",* S.23, İstanbul 2007,p.15.

[29] SUR, Melda, Çalışma ve Toplum Dergisi, *"Siyasi Grev",* S.23, İstanbul 2009, p.11.

[30] ARISOY, İbrahim & YAPRAK, Şenol, Ekonomik Bilimleri Dergisi, *"Türkiye'de Grevlerin Belirleyicileri",* S.2, İzmir 2016, s.104./ ÜNSAL, Engin, Türkiye Barolar Birliği Dergisi, *"Grev Hakkının Geleceği",* S.92, İstanbul 2011, s.423. / KÜÇÜKKAYA, Hande Gül, Legal İş Hukuku ve Sosyal Güvenlik Hukuku Dergisi, *"Kanun Dışı Grev",* S.44, İstanbul 2014, p.22.

[31] BOZKURT YÜKSEL, p.113

[32] CANİKLİOĞLU, Nurşen, Çalışma ve Toplum Dergisi, "*6356 Sayılı Kanuna Göre Grev Yasakları ve Grevin Ertelenmesi",* S.4, İstanbul 2013, p.290.

[33]NANECİ ARICI, Aslı, Erciyes Üniversitesi Hukuk Fakültesi Dergisi, *"Türk Hukukunda Kanuni Greve Katılma Serbestîsi Ve Kanuni Grevde Tarafların Hak Ve Yükümlülükleri"*, S. 2 , Kayseri 2016, p.4.

[34] DEMİR, Fevzi, Sicil İş Hukuku Dergisi, *"Grev Uygulamasının Önemi ve Uygulaması",* S.22, İstanbul 2011, p.121.

[35] ÜNSAL, p.427. / BOZKURT YÜKSEL, p.113

actions, nor are they punished for participating in a strike. The right to strike justifies the worker not to work. Employers' stipulation that the right to strike is waived in order to prevent possible strikes at the time of the employment contract does not mean that the worker cannot use his right to strike. Because the right to strike is a constitutional right and the conditions that it cannot be used are also superfluous[36].

When we look at the development of the right to strike in Turkish law, it is seen that the industrial revolution and thus the working class becoming effective is late in our country compared to Europe. For this reason, the seeking of the workers and their struggle by acting together was delayed. The first strike movement in the Ottoman period was carried out by the Istanbul Shipyard workers between 1873-1875. Afterwards, the prohibition of strikes started to be applied in 1908 with the Holiday-i Eşgal Law, which was introduced as a solution to the strike wave that surrounded the Ottoman Empire. In the Republican period, while the strike was not included in a legal regulation until 1936, the definition of the strike was made in the Labor Law numbered 3008 and it was again banned and considered a crime. The strike ban ended with the 1961 Constitution and became a constitutionally protected right. The right to strike was regulated in the Collective Bargaining Agreement, Strikes and Lockouts Law No. 275, followed by the 1982 Constitution, the Collective Labor Agreement Strike and Lockout Law No. is settled in our law. In Article 54 of our Constitution, the right to strike has been recognized as a constitutional right and it is stated that the procedures and principles will be regulated by law in accordance with the constitutional character. However, in Turkish law, the right to strike is not taken from the result of the workers' movements as in Europe; It should be said that it is a right given to workers by law[37].

The right to strike should be kept as wide as possible in the regulations stipulated by the International Labor Organization within the scope of the right to strike to develop and advance the standards; In the restrictions placed on this right, it was emphasized that while the interests of other persons, which the exercise of the right to strike would have an effect on, should be protected, the interests of the workers from the strike should not be prevented. However, considering the regulations made within the scope of the right to strike in Turkish law, it is seen that we have regulations that are far from the criteria of the International Labor Organization. Although the right to strike is more protected in every updated law, it is not possible to say that it is at a sufficient level.[38]

Illegal strıke

The right to strike has been subjected to legal procedures in order to both protect and define its limits. The right to strike used in accordance with these procedures will be protected by the constitution and law. However, a strike that is carried out without complying

[36] BOZKURT YÜKSEL, p. 111.

[37] ÖKÇÜN, Gündüz, Tatil-i Eşgal Kanunu, Belgeler, Yorumlar, Ankara 1982, s.132. / OĞUZ, Özgür & KARABACAK, Emre, Legal İş Hukuku ve Sosyal Güvenlik Hukuku Dergisi, "*Anayasa Mahkemesinin İptal Kararı Işığında Grev Hakkı ve Sınırlamaları",* S.49, İstanbul 2016, p.69.

[38] KILIÇOĞLU, Mustafa, "*Örgütlenme Özgürlüğü Ve Toplu Pazarlık Açısından Anayasa Değişikliği İle Sınırlı Genel Bakış Ve Değişikliğin Getireceği Olası Sorunlar",* www.anayasa.gov.tr (son erişim tarihi 7.4.2019), s.2. / CENGİZ URHANOĞLU, İştar & MANAV, Eda, Türkiye Adalet Akademisi Dergisi, "*Türk Hukuku'nda Grev Yasakları",* S.5, Ankara 2011, s.217. / KABAKCI, Mahmut, Toplu Pazarlık Sürecinde Ortaya Çıkan Uyuşmazlıkların Çözüm Aracı Olarak Grev Ve Lokavt, İstanbul 2004, p.65

with the procedures in the law will be called an illegal strike and will no longer be protected as a right to strike[39].

Both procedural and purpose conditions are stipulated in our law for the strike. Failure to comply with any of these conditions is enough to make the strike action illegal. The determination of the illegal nature of the strike is of benefit to both the worker, the employer and the union. Because while the strike is protected as a right by the constitution and laws and no sanctions are stipulated, it is possible for the illegal strike to be subject to some sanctions, although it does not have such protections. In addition, there will be different practices for workers who do not participate in illegal strikes[40].

As can be seen in the definition of illegal strike, the determination of the procedures in the law will serve as a cornerstone in understanding the illegal strike. For this reason, in our study, the elements of the strike in accordance with the law will be examined one by one and how the strike has become illegal will be explained through these elements[41].

Purpose of the strike

The aim of the strike in the Turkish legal order, as stated in Law No. 6356, is to improve and improve the economic and social conditions of the workers and their working conditions. However, the right to strike used for this purpose may be within the scope of legal protection. Strikes made for purposes other than these will not be under the scope of legal protection and will be in the nature of illegal strikes. In this context, politically motivated strikes, solidarity strikes and general strikes are not included in Turkish labor law; We can say that these types of strikes will result in illegal use of rights. Violation of the purpose of the strike is not related to the violation of the rules of goodwill, the contradiction here is that the aim of the strike, which does not comply with the specified framework, automatically makes the strike illegal.

Political strikes are strikes against the state rather than occupational strikes that aim to change the direction of the politics of the state. In worker strikes, the addressee is the employer and the demand is to provide conditions suitable for the interests of the workers. In the Turkish Constitution, the right to strike is given within the framework of the disputes arising in the collective bargaining agreement and it is a right foreseen for the disputes between the employer and the workers. Political strike has the status of illegal strike for Turkish law, both because it does not fall within the framework of the Constitution and because it does not regulate the working life in the law numbered 6356. In comparative law, too, political strikes are not considered lawful as a means of labor struggle.

Solidarity strikes are strikes in support of a strike against another employer in another workplace. Workers performing strikes in solidarity strikes do not act to resolve a dispute between their employers and their employers. For this reason, as soon as they are implementing strikes within the framework of the right to strike under Turkish law, solidarity strikes are illegal strikes when they do not fall within this framework. However, there is no

[39] ÇİFTER, Algun, İstanbul Üniversitesi Hukuk Fakültesi Mecmuası, "*Yasadışı Grev ve Sonuçları",* S.1, İstanbul 2005, p.473. / CANBOLAT, p.249. / OĞUZ&KARABACAK, p.71.

[40] ÇELİK, Nuri & CANİKLİOĞLU, Nurşen & CANBOLAT, Talat, İş Hukuku Dersleri, İstanbul 2017, p.947.

[41] KÜÇÜKKAYA, p.21. / BOZKURT YÜKSEL, p.112. / GEREK, s.2. / OĞUZ & KARABACAK, p.73. / TUNÇOMAĞ, Kenan & CENTEL, Tankut,İş Hukukunun Esasları, İstanbul 2013, p.485. / AKTAY, Niza-mettin, Toplu İş Hukuku, Ankara 2015, p.367.

regulation that prevents other workers' organizations from providing financial aid to workers who implement the strike decision.

The general strike is the cessation of workers for professional or political reasons in many workplaces or businesses across the country, which can be regarded as significant. The fact that the labor movements that started in Europe can give positive results in a short time has been thanks to the pressure created by the general strikes. However, due to the current position of trade union activities, they tend to focus on professional struggles rather than class struggle, which has also reduced the use of the general strike. The general strike that does not fall within the framework of the right to strike in Turkish law will also be considered as an illegal strike.

It is clearly stated that political strike, solidarity strike and general strike are illegal strike in the article in which the definition of strike is made in the Collective Labor Agreement, Strike and Lockout Law No. 2822. However, this section does not exist in the Law No. 6356 on Trade Unions and Collective Bargaining, which is the next law enacted. The fact that this part is not included in the text of the law does not mean that they will fall under the scope of legal strike. Because the framework drawn by the legislator for the legal strike is very clear and the general strike, solidarity strike and political strike are not included in this scope. However, the idea that the legislator acted in order to allow these strikes to be abolished in the next law, while it was included in the previous law, was included in the doctrine.

Strikes made to impose a legally prohibited provision on the employer will also be of the nature of illegal strikes[42].

Strikes based on the Workers Union decision

When we examine the definition of a strike, we see that in order for an action to be in the nature of a strike, workers have to agree with each other for certain purposes or act with the decision of a worker organization[43]. However, the legal strike will only be subject to compliance with the strike decision taken by a worker organization, that is, a trade union[44]. Due to the limitation of the strike regarding the disputes arising during the collective bargaining negotiations[45], the trade union that can take the decision must be the authorized trade union[46].

If the workers comply with the strike decision they have agreed upon, the workers participating in the strike will not be deemed to have exercised their right to strike and will not be protected within the framework of the law. Considering that the strike affects not only employee-employer relations but also the economic life, it can be seen that the decision to strike will be made in agreement with the workers, leaving the market open to unexpected dangers. For this reason, the legislator only considered the strike taken by the trade union's decision as a legal strike; The strike decision taken by the workers in agreement with each other will be deemed as an illegal strike.

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[42] SUR, Melda, Sicil İş Hukuku Dergisi, *"6356 Sayılı Sendikalar ve Toplu iş Sözleşmesi Kanunu'nda Grev Hakkı"*, S.28, İstanbul 2012, p.164. / BOZKURT YÜKSEL, p.118. / KÜÇÜKKAYA ,p.25.

[43] CANİKLİOĞLU, s.292. / TUNCAY, A. Can & SAVAŞ KUTSAL, Burcu, Toplu İş Hukuku, İstanbul 2016, p.428.

[44] SUR, Siyasi Grev, p.12. / NARMANLIOĞLU, Toplu İş İlişkileri, p.678.

[45] SEÇER, p.152. /NARMANLIOĞLU, Toplu İş İlişkileri, p.680.

[46] URHANOĞLU CENGİZ, s.216. / NARMANLIOĞLU, Ünal, İş Hukuku II Toplu İş İlişkileri, İstanbul 2013, p.587.

Since the workers leave their jobs without obeying any union decision or without an agreement, it will not be given the nature of an illegal strike. Again, the strike decision taken by a confederation or association other than the trade union will also be described as an illegal strike.

Leaving the job collectively

For the strike to occur, the worker must quit. Since the strike requires the unity of the workers for its purpose, the act of quitting should be done collectively. Here it is said to leave the job collectively, but there is no rate given. When it is analyzed in terms of achieving what is expected from the strike, it is understood that the number of workers who will leave their jobs should be a majority that will put pressure on the employer. Since the act of leaving the job that does not meet the majority that will create such pressure will not fulfill the purpose of the strike, it will be considered within the scope of illegal strike[47].

The person who will use his right to strike and quit his job must have the title of worker. The leave of employment of civil servants, apprentices and interns will not be evaluated within the scope of the exercise of the right to strike. Likewise, the person who has resigned or has been dismissed and has lost his job as a worker will not have used his right to strike[48]. Their action will be evaluated within the framework of illegal strike. Even though the strike actions of these people are actually included in the definition of sociological strike, our law will not be able to take the title of legal strike because it is not protected. When the comparative law is examined, it is seen that there is a right to strike for public employees, namely civil servants, except for some areas where public safety may be endangered, and this situation is regulated in accordance with the principles of the International Labor Organization[49].

The worker does not have to be a member of the union that took the decision in order to comply with the strike decision taken by the trade union. It is sufficient to have the title of worker. In addition, it is not enough for the workers to declare that they will comply with the strike decision, they must actually quit their job. However, a worker who is on leave only does not come to work during his leave cannot be considered as participating in the strike practice. If the employee's leave of absence is only suspended from the duty of work and other actions are considered to be continuing, the employee's acting contrary to his other actions and showing that he has participated in the strike practice while on leave will be deemed to have exercised his right to strike, as stated in a decision made by the Supreme Court in 2008. If the strike he has participated in is an illegal strike, he may be the addressee of the relevant sanctions. However, another view in the doctrine states that all actions of the worker are suspended while he is on leave, so any action he does while on leave cannot be considered as participating in a strike[50].

Workers quitting is not just about not doing what they are responsible for. Workers should not be in the workplace while they are on strike. In this framework, the type of strike, which is called the sitting strike, without leaving the workplace, does not fit the legal definition, so it will be described as illegal strike. In addition, in illegal strikes, the employer may request the employee to leave the workplace.

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[47] CANİKLİOĞLU, s.296. / NARMANLIOĞLU, Toplu İş İlişkileri, p.680.

[48] ŞEN, Murat, 6356 Sayılı Yasa Bakımından Grev ve Lokavt, 2017, p.4.

[49] SÜTÇÜ, Nezih, Legal İş Hukuku ve Sosyal Güvenlik Hukuku Dergisi, "*Kamu Çalışanlarının Toplu Pazarlık ve Grev Hakkı",* S.17, İstanbul 2008, p.93.

[50] SUR, Melda, Sicil İş Hukuku Dergisi, *"İzinde Olan İşçinin Yasadışı Greve Katılması",* S.14, İstanbul 2009, p.230.

In order for the right to strike to be exercised in accordance with the law, the worker must leave the job on the duly notified starting date. The act of the worker who quits work after the announced date will be covered by an illegal strike. However, there are opinions that the worker who cannot quit the job on the date stated in the doctrine may be involved in the strike application later. According to this view, the obligation of the worker to leave the job on the declared date is to reduce the danger of encountering a surprise strike in terms of the employer and other affected persons. However, if the strike action started with the participation of other workers on the announced date, the participation of the workers who did not participate in the strike after this date can be considered as the use of the right to strike in the legal framework[51].

Considering that the right to strike is a constitutional right, it is not appropriate that a situation that is not explicitly prohibited beyond the purpose of the law should not be accepted as a ban. In addition, it will result in the absence of a constitutional right for the worker whose job interview is concluded after the strike implementation date. Again, for workers who are not union members, taking a strike decision will rightly cause hesitation, because union members can get union assistance during the strike. However, it will be difficult for workers who are not members of the union to be able to take a strike decision without any financial assistance, so it is important that the right can be exercised later[52].

Conflict of collective interest

In Turkish law, the right to strike is regulated within certain limits. One of these limits is the dispute in which the right to strike can be exercised. Accordingly, only the right to strike can be used for conflicts of interest. Disputes of rights between the employee and the employer will not be protected within the scope of the right to strike. Because the legislator has kept the judicial path open for rights disputes. Since the relevant right dispute can be resolved in the judiciary; No strike will be applied for rights disputes.

The types of disputes in labor law are divided into two as rights and interests, that is, conflicts of interest. Rights disputes are disputes that arise as a result of non-implementation or incomplete implementation of existing rights recognized by law or collective labor agreement. Since the protection of existing rights is provided by law, the way to strike is not open for these disputes. However, for the disputes arising during the change of an existing right or the recognition of a new right, the name conflicts of interest has been used. While examples of rights disputes such as wages and severance pay can be given, we can give examples such as increasing the wage of the worker and reducing the weekly working time for disagreements of interest[53].

It should be said that our legislation stipulates for conflicts of interest arising during collective bargaining agreements by limiting the function of the right to strike that can be used for conflicts of interest. However, this limitation of the right to strike is not correct according to the principles of the International Labor Organization. For this reason, in the doctrine, there is an opinion that, apart from the negotiations of collective bargaining, strikes in which workers express their dissatisfaction with their economic and social conditions should be evaluated within the framework of the right to strike.

[51] OĞUZMAN, Kemal, Hukuki Yönden İşçi İşveren İlişkileri, İstanbul 1984, s.226. / NANECİ ARICI, p.7.
[52] ALP, Mustafa, Sicil İş Hukuku Dergisi, *"Greve Sonradan Katılmanın Sonuçları",* S.6, İstanbul 2007, p.144.
[53] ÇELİK& CANİKLİOĞLU & CANBOLAT, p.933. / NARMANLIOĞLU, Toplu İş İlişkileri,p.496.

Although it is against the principles of the International Labor Organization as clearly stated in Article 54 of the Constitution where the right to strike is legitimized and Article 58 of the Law on Trade Unions and Collective Labor Agreement No.6356, which regulates the scope of the right to strike, the right to strike in our law is only legitimate for conflicts of interest arising in collective bargaining negotiations. Accordingly, a strike for a dispute without a conflict of interest can be considered as an illegal strike. Likewise, even if the dispute is a conflict of interest, if it is not a dispute arising during collective bargaining negotiations, it will be evaluated within the framework of illegal strike.

Application to peaceful remedies

Considering the path the relationship between the worker and the employer has taken since the industrial revolution, the existence of a legal order in which the worker and the employer can freely determine the economic and social conditions rather than the prohibitions imposed by laws in collective labor law is necessary. In a legal order where the determination of economic and social conditions is ensured by the freedom of collective bargaining, strong pressure ways such as strikes and lockouts are foreseen for any disputes that may arise. However, considering that strikes and lockouts have consequences not only for the workers and employers, but also for those concerned in the market, the importance of trying to resolve the dispute by other means has become evident before the use of these means. Other solutions that can resolve the dispute appear as peaceful solutions in Turkish labor law. Mediation and arbitration are examples of these peaceful solutions.

In our law, the peaceful solution that is expected to be applied before taking a strike is determined as mediation. Accordingly, it is a procedural condition to try a mediation solution before taking a strike decision for a dispute of interest arising during collective bargaining. As we have stated before, a strike carried out without complying with the terms of procedure and purpose specified in the law will not be within the scope of the right to strike protected by law and will become an illegal strike. Accordingly, a worker who complies with a strike decision taken by skipping the mediation phase will not be deemed to have exercised his right to strike and will bear the consequences of the illegal strike[54].

Other conditions stipulated in the Law

While drawing the framework of the legal strike, we made the definition of the application of the strike performed in accordance with the procedures and purposes in the law. As a result of this, there is no doubt that the strike movement that does not comply with the procedure or purpose will also be an illegal strike.

If the dispute could not be resolved during the mediation phase foreseen for the conflicts of interest arising during collective bargaining agreements, the resolution of the dispute can now be duly resolved by taking a strike decision. The decision to strike must be taken by the trade union within 60 days from the date of notification of the mediation report, where the dispute cannot be resolved. The strike can be implemented within this 60-day period with 6 days' notice. The strike made in accordance with the strike decisions taken without complying with the specified deadlines will not be evaluated within the framework of the legal right to strike, it will be in the nature of an illegal strike. Again, even though the deadlines have been duly notified, if the strike practice has not been initiated on the specified date, the right to strike will be forfeited, and it will not be possible to talk about the use of the legally protected right to strike after this date. The decision to strike must be announced

[54] KUTAL, Metin, İstanbul Üniversitesi İktisat Fakültesi Mecmuası, *"Türk Toplu İş Hukuku'nda Barışçı Çözüm Yolları",* Prof. Dr Sabri F. Olgener'e Armağan, İstanbul 1987, p297

immediately in the workplaces. If not made immediately, the announcement will result in an illegal strike[55].

According to the law numbered 2822, we see that the new law has been amended in the time when the strike decision is taken. Considering the criticisms made by the International Labor Organization regarding the 6-day strike decision period in the old law, the new law envisioned 60 days, but it cannot be said that it fully responded to the criticisms of the International Labor Organization. Because the criticism of the Organization about time is in the direction of evaluating the use of a constitutional right to be subject to a time limit.

The decision to strike must be announced by the trade union in the workplaces where the strike will be carried out. In addition, the date of the strike is submitted to the notary public and a copy to the authority in order to be notified to the other party. In practice, notification to the notary public is sufficient within the time limit and the fact that the notary public has announced the application date and does not take place within this period does not make the strike illegal[56].

Even if the strike initiated by the workers in order to protect or improve the economic and social conditions and working conditions complies with all the procedural conditions specified in the law, if the workers work in the sections where the strike is prohibited, the strike to be applied cannot be a legal strike.

The strike practice affects not only the worker and the employer, but also other concerned parties in the market. However, in some cases, the strike damages the interests that must be protected such as safety and health, that is, the interests of the public in general. For these situations, the legislator has consistently prohibited the practice of strikes in some areas. In some areas, it is possible to temporarily ban the strike, taking into account the conditions required by the situation. The right to strike, a constitutional right, does not provide workers with an unlimited right of use; This right of the worker may be limited when there is a higher benefit than the protected interest of the worker.

The situations in which the practice of strikes are prohibited should be determined in a measured manner since the right to strike is a constitutional right. In this framework, the cases where the practice of strikes are prohibited has been narrowed in the law numbered 6356, which is the new law compared to the law numbered 2822. This restriction was undoubtedly made in order to comply with the principles of the International Labor Organization on strike. According to the International Labor Organization, in order for an area to be subject to a strike ban, if a strike is made in that area, this strike must interrupt basic services in a way that endangers the life, safety of the person or the health of the whole or a part of the population. However, even in the current law, the existence of much wider prohibitions than required by the principles of the organization can be seen.

According to our legislation, in saving life and property; in funerals and cemeteries; In petrochemical works starting from city water supply, electricity, natural gas, oil production, disposal and distribution and naphtha or natural gas; In workplaces operated directly by the Ministry of National Defense, the Gendarmerie General Command and the Coast Guard Command; Strikes and lockouts cannot be made in firefighters and hospitals

[55] KUTAL, s.300. / ŞAHLANAN, Fevzi, Legal İş Hukuku ve Sosyal Güvenlik Hukuku Dergisi, "*2821 Sayılı Sendikalar Kanunu İle 2822 Sayılı Toplu İş Sözleşmesi Grev ve Lokavt Kanununda Değişiklik Öngören Kanun Ön Tasarılarının Değerlendirilmesi",* S. 4, İstanbul 2004,p.1286. / NARMANLIOĞLU, Toplu İş İlişkileri, p.503

[56] NARMANLIOĞLU, Toplu İş İlişkileri,p.604.

run by public institutions. In the first regulation of the law, banking services and in-city public transportation services were also considered among the businesses and workplaces covered by the strike prohibition. However, as a result of the application made to the Constitutional Court on the grounds that the strike ban, which is also the principle of the International Labor Organization mentioned above, should not be used extensively in non-compulsory situations, these two areas have been excluded from the scope of the strike prohibition. Again, it is seen that some special laws also apply prohibition of strikes. As an example, the regulation in the Capital Market Law can be given. Strikes will not be made in the services carried out by the stock exchanges and other organized marketplaces, central clearing institutions, central custody institutions and MKK.

Even in workplaces where strikes are prohibited and not covered by workplaces, temporary strikes may be banned by the President in some cases. It is possible to impose a strike ban during the continuation of this situation when deemed necessary in places where natural events that significantly affect the general life take place. Within 60 days after the removal of this temporary ban, the strike can be continued, provided that the other party is notified 6 business days in advance.

Strikes in workplaces where strikes are permanently prohibited or in workplaces where strikes are temporarily banned by the President's decision will be illegal strikes during the period of the ban without complying with this prohibition.

The strike, which is put into practice, even though the strike vote is not made or the strike vote is negative, will also bear the consequences of the illegal strike[57].

Evaluatıon of slowıng busıness and droppıng busıness effıcıency

Workers may sometimes behave like slowing down the work, engaging in deeds that will reduce the efficiency of the work, poor performance in order to reveal their reactions to the employer or to ensure that their demands are fulfilled, and decrease production. However, these actions cannot be considered within the scope of a strike since they will not result in the employee leaving the job and leaving the workplace. Since it cannot be considered within the scope of a strike, it cannot be regarded as a legal right to strike or an illegal strike. These verbs can only be described as strike-like verbs.

In our previous law numbered 2822, it was regulated that the results of the illegal strike would be applied to the behaviors such as slowing down work and reducing work efficiency. However, there is no such regulation in our current law, Law No. 6356. It will no longer be possible to implement the consequences of the illegal strike unless there is a special regulation for such acts that cannot be qualified as a strike. Accordingly, for such actions, an evaluation is made in the context of contradiction to the duty of loyalty and care of the worker within the framework of the Labor Law No.4857 and termination for a justified or valid reason; If it is included in the contract, consequences such as disciplinary punishment or no sanction can be achieved. However, when the actions taken are evaluated according to the concrete incident, if they are in accordance with the definition of a general strike but do not meet the legal strike conditions, they may also be described as illegal strikes. In this case, these acts may also be subject to the consequences foreseen by law for the illegal strike[58].

[57] SUR, Grev Hakkı,p.164. / OĞUZ& KARABACAK, s.77. / UÇUM, Mehmet& OKCAN, Necdet, Legal İş Hukuku ve Sosyal Güvenlik Hukuku Dergisi, "*2822 Sayılı Toplu İş Sözleşmesi Grev ve Lokavt Kanununda Değişiklik İçeren Ön Tasarının Hükümleri ve Genel Değerlendirmesi",* S.2, İstanbul 2004, p.415.

[58] KÜÇÜKKAYA, p.25./ SUR, Grev Hakkı ,p.116. /NARMANLIOĞLU, Toplu İş İlişkileri, p.682.

The consequences of the illegal strıke

It is important for both the employer and the employee to determine whether the strike being implemented is a legal strike or an illegal strike. For this reason, one of the parties can always file a determination case in order to determine the nature of a strike action. As a precaution, the judge may decide to stop the strike as a precaution in a determination case filed while the strike is still in progress. The determination case must be filed against the trade union, but if the strike decision is taken with the agreement of the workers who have not been taken by the union, the defendant will be the workers participating in the strike. In cases to be filed as a result of the illegal strike, the court in charge is the labor courts, and the competent court is the district court where the workplace is subordinated; If the workplace is in more than one region, Ankara Courts will be authorized.

If there is a strike that is found to be illegal, the most important right granted to the employer is the right to terminate the employment contracts of the workers who participated in the illegal strike. Employers will also have the right to terminate their employment contracts for a just cause, as well as workers who encourage the decision to take a strike, encourage participation in the strike and encourage them to continue the strike. In fact, this behavior of workers participating in illegal strikes is absent from work; the behavior of the employees who encourage them can be interpreted as being in violation of the duty of loyalty and in a way that the employer can terminate the employment contract for a justified reason according to the Law No. 4857. However, since Law No. 4857 regulates individual cases, Law No. 6356, which regulates collective relations, must be implemented.

In the old law numbered 2822, in the same regulation, the term of termination was used without the need for a notice of termination and without any compensation. There is no doubt that this concept also points to the concept of rightful termination, but a notice of termination is also required for a rightful termination, only a notice period is not required. It was appropriate to correct this mistake in use in the new law and to use the concept of rightful termination.

The termination period of the employment contracts of the workers participating in the illegal strike by the employer is not specified in the Law No. 6356. However, it can be evaluated under the heading of violation of moral and good faith rules by looking at the Labor Law No.4857, where the concept of justified termination is regulated for individual cases, and it can be concluded that it is used within 6 working days from the day after the end of the strike; For workers covered by other laws, the periods specified in their own laws should also be taken into account. However, according to another opinion, the termination right should be exercised in accordance with the provisions of the Turkish Code of Obligations without discrimination. Accordingly, a period of time to be determined according to the rules of goodwill should be taken into consideration as per Article 435 of the TPC.

Those who participate in illegal strikes, those who encourage illegal strikes, those who have decided to strike illegally are also punished with administrative fines within the framework of Law No. 6356. In the former Law No. 2822, a penalty restricting freedom was stipulated for the same persons. However, in case of illegal strikes, it is not always possible to say that they are acted in bad faith and with the intention of causing harm; For this reason, it is not appropriate to impose a liberty binding penalty on a person who intends to exercise his constitutional right without any discrimination. In our current law, converting this sanction to administrative fines has been appropriate in line with the views of the International Labor Organization.

If there is a regulation on disciplinary penalties in the collective bargaining agreement or in the labor contract, the employer may not use his right to terminate for a just cause for the workers who participated in illegal strikes or encourage the strike, and may be contented with only imposing disciplinary penalties. It is also at the discretion of the employer that no sanctions are imposed.

If the employer suffered a loss due to this strike during the illegal strike application, the employee organization that took the illegal strike decision has to pay the damage. The illegal strike decision was not taken by the labor organization; If the decision is taken with the agreement of the workers, the damage will be borne by the workers participating in the strike. As this responsibility of the workers organization or workers is a contractual responsibility, it will be subject to a general limitation period of 10 years. However, if the damage is caused by tort, a period of 2 years from the date the act, which is the statute of limitation for the tort, is learned, and in any case, a 10-year period is applied. When the compensation of the damage is evaluated according to the concrete act, it is possible for tort and contractual liability to compete; The employer can file a claim for compensation based on whatever he wishes.

During the statutory strike practice, the employer does not have the right to ask workers who are on strike or locked out to leave the dwellings provided by them. Since it is clearly stated in the law regulation that this protection is granted to the workers who exercise their right to strike, in case of an illegal strike, the employer can request the workers who participate in the illegal strike and encourage them to leave the house provided by them. Although it is forbidden to recruit a new employee to replace the workers who exercise their right to strike, if the strike is illegal, the employer may hire new workers instead of these workers who do not continue their work.

Damages caused during an illegal strike constitute the crime of damaging property within the scope of the Turkish Penal Code. Even in the relevant article, damaging in case of a strike constitutes the quality of the crime and the penalty can be increased up to two times. Again, illegal strikes may constitute the crime of violating the freedom of work and employment in the Turkish Penal Code. In this case, a penalty restricting freedom or a judicial fine may be imposed upon the complaint.

In order for these situations, which we have stated as the consequences of the illegal strike, to arise, it should be noted that it is not sufficient that the decision to strike has been taken first, and that the illegal strike should actually be implemented.

Since whether a strike is illegal or not will be determined as a result of violation of the procedures and principles specified in the law and some procedural conditions cannot be expected to be known by the workers participating in the strike, it will not be sufficient to be exposed to the mentioned consequences; There are opinions stating that it is necessary to determine whether the worker is at fault or not. In this case, only the worker who complied with the strike decision of the union should not be subjected to sanctions unless it is found to be at fault. However, even though the employer warned that the strike was unlawful, the workers participating in the strike should be considered at fault. In this case, the determination that the worker is at fault belongs to the employer; However, if there is an illegal strike in the workplace that causes a complete cessation of activity, the worker must prove himself that he cannot find the opportunity to start work. In the opposing view, it is stated that the employee's participation in an illegal strike will constitute a fault in itself, if the irregularity of the union is not known by the worker, but the employee should be deemed perfect with the determination of this situation. In the assessment to be made on the basis of the concrete incident, workers who participate and encourage the illegal strike are expected

to bear the consequences, provided that the worker knows or needs to know the nature of the illegal strike[59].

Although there is an illegal strike in the workplace, it is also possible that there are workers who did not participate in this strike. Employment and other obligations of the employer for workers who do not participate in the illegal strike will continue. However, if the workplace has become unable to produce due to an illegal strike and the worker is unable to work for this reason, as a rule, the employer has no fault and if the strike lasts for more than one week, the workers may demand a half allowance from the employer for a week. Because this state has now become a temporary impossibility. If the strike is still going on, workers can now terminate their contracts for justifiable reasons. Since the relevant situation is not regulated in the Law No. 6356, it will be decided according to the general provisions.

Conclusions

With the industrial revolution, the economic and social conditions of the working class, which increased in number, were in a very bad situation due to the weakness of the worker against the employer. The working class has joined forces to meet the employer's demands for the improvement of economic and social conditions, and by entering the path of unionization, it escaped its weak position vis-à-vis the employer. The use of strikes as a means of pressure by workers, who express their demands through collective bargaining, to impose the demands on the employer, is also part of the struggles of workers to improve their economic and social conditions. In some countries, these rights gained through class warfare appear as a right given to workers by law in our country.

Right to strike, which has a constitutional guarantee in our legislation, is regulated by the Law No. 6356 on Trade Unions and Collective Bargaining Agreement. Like every constitutional right, the right to strike has its limitations as well as guarantees. Undoubtedly, there will not be an absolute right of use for this right, which affects not only the employer but also other interested parties in the market if it is used. According to this, the boundaries of the strike, which is a constitutional right, have been drawn as a purpose and procedure with the Law No. 6356. A strike made without complying with the specified conditions will appear as an illegal strike.

As can be seen in the definition of illegal strike, we considered it appropriate to examine the terms of the legal strike as a strike that does not contain the conditions, and we examined the conditions that the law seeks for a legal strike one by one and focused on the absence of these conditions. In this context, we first examined the purpose of the strike implemented. The strike should be carried out in order to protect or improve the economic and social conditions and working conditions of the workers as specified in the law. A strike done outside of this purpose would be an illegal strike. For example, although political strikes, solidarity strikes, and general strikes are sociologically defined as strikes, they will be in the nature of illegal strikes in terms of our legislation.

Since strike is a recognized right for disputes arising during collective bargaining negotiations, it is the workers' organization that must take the strike decision. It is possible to say that only the authorized trade union can take a legal strike decision, since it is a practice area limited by collective bargaining agreements. In this context, to the strike

[59] ÇİFTER, p.474. / NARMANLIOĞLU, Ünal, *"Kanun Dışı Grevin Uygulanması Dolayısıyla Ortaya Çıkan Zararlardan Sorumluluk",* Marmara Üniversitesi Hukuk Fakültesi Prof. Dr Nuri Çelik'e Armağan, İstanbul 2001, p.1650.

decision taken by the workers in agreement; It is clear that workers who complied with the strike decision taken by the unauthorized trade union did not use their legal right to strike. Because in these cases the strike is in the nature of an illegal strike.

Since the strike is a means of pressure in which workers equalize their weapons against the employer, there should be the support of the majority of the workers who will put pressure on the strike. In addition, since the right to strike is a right granted to the workers, the strike of the civil servants, apprentices and interns will not be considered as a strike in the legal sense.

What is meant by quitting a job collectively is to quit the job and leave the workplace. In this context, sitting strikes without leaving the workplace are not considered legal strikes. Leaving work without leaving the workplace will count as an illegal strike. Again, acts such as slowing down the work without leaving the job and decreasing the productivity will not be considered as a strike since they do not fit the general definition of strike. In this case, it will not be possible to qualify as a legal or illegal strike.

The scope of the legal strike is limited by the conflicts of interest arising during the collective bargaining negotiations in our legislation. Although the right to strike given for such a narrow area in the principles of the International Labor Organization is against the purpose of the strike, it will not be possible to use the right to strike for rights disputes in accordance with our legislation.

In our legislation, it is obligatory for parties to conflict in collective bargaining to use the alternative solution method of mediation. It was an appropriate arrangement for everyone affected to try to negotiate once again before the strike, which affects not only the employer but also the other stakeholders in the market, and even the public. If the parties do not reach a solution during the mediation phase, within 60 days from the notification of the dispute report, the workers' organization will be able to start the strike practice provided that it is notified 6 days in advance. However, when there is a dispute during the collective bargaining agreement, the strike decision taken without resorting to mediation will be in the nature of an illegal strike. Likewise, acting without complying with the terms specified in the law will make the strike illegal.

Since the right to strike that does not start on the date the strike is declared will be lost, the strike that starts after the announced date will be in the nature of an illegal strike. This regulation has been introduced to prevent the employer and other concerned parties from encountering a surprise strike. For this reason, joining a strike afterwards can be evaluated within the framework of using the legal right to strike.

As mentioned above, it is possible that the strike will cause damage not only for the employer who is a party to the collective labor agreement, but also for other employers in the market and even for the public. In cases where the public interest outweighs the interests of the worker over the constitutional right to strike, the legislator has introduced prohibitions to strike. Temporary strike bans may also be imposed by the President when strikes are not prohibited, but when natural events that significantly affect the general life occur. The strike to be applied for businesses and workplaces with temporary or strict strike prohibitions will be an illegal strike.

Participating in an illegal strike, taking an illegal strike decision and encouraging it to be decided or to participate in such a strike have been linked to some consequences by our legislation. First of all, the determination of whether the strike applied is illegal or not will be determined by a determination case that can always be opened by the parties.

The employer will be able to terminate the employment contracts of the workers who participated in and encouraged the illegal strike on just cause. However, the employer who does not want to terminate the employment contracts will not impose any sanctions and

if there is a provision in the collective labor agreement or labor agreement, they may disciplinary punishment.

If the employer has suffered a loss due to the illegal strike, the employer has to pay the damage. However, if the illegal strike decision was not taken by the workers' organization, if the workers agreed to take this decision, it would be the workers who participated in the illegal strike and encouraged the strike.

Workers who participated in and encouraged the illegal strike were also stipulated, contrary to the old law, an administrative fine rather than a penalty binding on freedom.

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Özgür Oğuz

Neteisėtas streikas Turkijoje

Santrauka

Kovos priemonės, kurias darbuotojai naudoja gerindami savo darbo sąlygas prieš darbdavį, vadinamos streiku. Nors teisė streikuoti yra saugoma teisė konstitucinėje ir teisinėje sistemoje, naudojimasis šia teise nebuvo absoliutus, nes teisės streikuoti įgyvendinimas turi įtakos kitoms suinteresuotoms rinkos šalims, kurios bendrauja su darbdaviui ir darbdaviui. Teisėje streikuoti naudojamasi konkrečiu tikslu ir procesinėmis sąlygomis, o šių reikalavimų neatitinkantis streikas vadinamas neteisėtu streiku. Pagal Turkijos įstatymus, teisė streikuoti naudojama siekiant išspręsti interesų konfliktą, kylantį per kolektyvinę derybų sutartį. Streiko tikslas turi būti pagerinti darbuotojų ekonomiką ir darbo sąlygas. Vėlgi, įstatyme kai kurios sąlygos buvo nustatytos prieš įgyvendinant streikus, taip pat nurodyti darbai ir darbo vietos, kuriose streiko įstatymai negalėjo būti taikomi. Veiksmai, neatitinkantys naudojimosi teise streikuoti tvarkos ir sąlygų, tačiau atitinkantys streiko sąlygas, vadinami neteisėtu streiku.

Raktažodžiai: *streikas, interesų konfliktas, neteisėta veikla, darbo teisė.*

REIKALAVIMAI MOKSLINIAMS STRAIPSNIAMS RENGTI

1. Bendrieji reikalavimai

1. Moksliniai straipsniai turi būti tokios struktūros:
   - straipsnio pavadinimas;
   - autoriaus vardas, pavardė;
   - autoriaus reprezentuojama institucija;
   - straipsnio anotacija originalo kalba (ne daugiau kaip 200 žodžių), jos pabaigoje - ne daugiau kaip 5 straipsnio turinio esmę nusakantys prasminiai žodžiai;
   - įvadas (nurodant tyrimų objektą ir tikslą);
   - tyrimų metodika (metodai);
   - rezultatai;
   - aptarimas;
   - išvados;
   - literatūra;
   - santrauka – jeigu straipsnis rašomas lietuvių kalba, santrauka turi būti anglų kalba;
2. Mokslinio straipsnio apimtis – 3-4 puslapiai. Paskutinis puslapis turi būti užpildytas ne mažiau kaip dviem trečdaliais puslapio.

2. Reikalavimai straipsniui rengti kompiuteriu

Šie reikalavimai parengti laikantis Lietuvos mokslo tarybos kolegijos 2000 m. vasario 23 d. nutarimo Nr. V-3 priedo, papildant jame išdėstytus reikalavimus straipsnio teksto tvarkymo nuorodomis (>xx pt – tarpo tarp pastraipų dydis)

Reikalavimai programinei įrangai

Straipsniai turi būti parengti Microsoft Word programine įranga.

STRAIPSNIO PAVADINIMAS (Cambria, 11 pt, Bold)

>11pt

Autoriaus (-ų) Vardas Pavardė (Cambria, 11 pt, Bold)

Autoriaus reprezentuojama institucija (Cambria, 11 pt, Italic)

>10 pt

Anotacijos tekstas per visą puslapio plotį (Times New Roman, 10 pt, Normal, First line 1,2 cm)

Raktažodžiai (Times New Roman, 10 pt, Italic, First line 1,2 cm)

>5 pt

Įvadas (11 pt, Bold, lygiuojama kairėje puslapio pusėje)

>5 pt

Puslapio formatas

Straipsnis (tekstas, formulės, lentelės, paveikslai) maketuojamas B5 JIS (182 x 257 mm) formato lapuose su tokiomis paraštėmis: viršuje – 20 mm; apačioje – 20 mm; kairėje ir dešinėje – 20 mm.

Straipsnio informacijos išdėstymas ir tvarkymas

Straipsnio pradžioje atskiromis pastraipomis pateikiami: pavadinimas; straipsnių autorių nesutrumpinti vardai ir pavardės; darbovietė ir anotacija. Straipsnio pagrindinis tekstas 1 intervalo eilėtarpiu spausdinamas Times New Roman, 11 pt, Normal šriftu ir išdėstomas viena skiltimi, Pirma eilutė atitraukiama 1,2 cm.

Visų struktūrinių dalių (skyrių) pavadinimai (išskyrus"*Summary"*) rašomi 11 pt, Bold. Lygiuojama prie kairiojo skilties krašto. Skyrių pavadinimai nuo teksto atskiriami 1 eilutės intervalu. Poskyrių pavadinimai rašomi iš naujos eilutės 11 pt, Italic, Bold tekstą tęsiant toje pačioje eilutėje. Formulių pagrindiniai simboliai rašomi 11 pt, Italic, o jų indeksai – 11 pt. Formulės centruojamos ir numeruojamos arabiškais skaitmenimis lenktiniuose skliaustuose dešinėje kraštinėje skilties dalyje. Parašius formulę rašomas taškas, jei joje naudojami dydžiai neaiškinami, jei aiškinami, – kablelis ir naujoje eilutėje be įtraukos rašomas žodelis "čia", kiekvienas dydis paaiškinamas.

Lentelės ir paveikslai turi būti įterpti tekste po nuorodų į juos, pasibaigus pastraipai, tačiau negali būti spausdinami po išvadų. Didesnio formato paveikslai ir lentelės gali būti spausdinami per visą puslapio plotį. Grafikai ir brėžiniai braižomi kompiuteriu. Nuotraukos turi būti tik geros kokybės, tinkamos reprodukuoti. Parašai po paveikslais, lentelių pavadinimai ir pastabos po jų rašomi centruotai 11 pt šriftu lietuviškai ir santraukos kalba. Lentelėse lietuviškas tekstas rašomas – 11 pt, Bold ir santraukos kalba 11 pt, Italic. Paveikslai ir lentelės nuo teksto atskiriami 1 eilutės intervalu.

Šaltinių nuorodos tekste pateikiamos skliausteliuose nurodant autoriaus pavardę (be vardo raidės) ar šaltinio pavadinimo pirmą žodį (kai autorius – institucija) ir šaltinio publikavimo metus, pvz., (Petraitis, 2001), (Peterson, 1988), (Valstybės…, 2004, (Кресникова, 2005). Jei literatūros šaltinis parašytas daugiau kaip vieno autoriaus, nurodoma tik pirmojo autoriaus pavardė, o po jos rašoma tekste lietuvių kalba "ir kt.", o anglų kalba "et al", pvz., (Jonaitis ir kt., 1999), (Johanson et al., 2003). Skliausteliuose galima nurodyti tik publikavimo metus; naudojamos citatos rašomos su kabutėmis papildomai nurodant šaltinio, iš kurio paimta citata, puslapio numerį, pvz., Kadangi Peterson (1988) įrodė, kad …, "tai atitiko vėliau gautus rezultatus" (Kramer, 2003, p.15).

Literatūros sąrašas sudaromas abėcėlės seka – pagal autorių pavardes ar šaltinio pavadinimo pirmą žodį. Pirmiausiai dėstomi bibliografiniai aprašai lotyniškais rašmenimis, po to kitais (pvz., kirilica).

Keletas to paties autoriaus darbų surašomi chronologiškai. Kai vieno autoriaus leidiniai išleisti tais pačiais metais, rašoma taip: 2003a, 2003b ir t.t.

Sąraše sutrumpinimai nenaudojami – čia pateikiamos visų šaltinio bendraautorių pavardės ir visas pavadinimas. Visi įrašai sužymimi arabiškais skaitmenimis ir numeruojami iš eilės.

Po literatūros sąrašo per visą puslapio plotį spausdinama santrauka, duomenys apie autorių originalo ir anglų kalbomis (žr. pavyzdį).

>5 pt

Literatūra (11pt, Bold)

> 5 pt

1. Čekanavičius A. Pastatų išorės sienų, apšiltintų iš vidaus, drėgminė būsena. Daktaro disertacijos santrauka. KTU, 2003.

2. Čekanavičius A., Stankevičius V., Montvilas E. Pastatų išorinių sienų, apšiltintų iš vidaus, drėgminė būklė. Kaunas, Technologija, 2004.

3. Rapcevičienė D. Daugiabučių namų renovacijos efektyvumo vertinimas. Mokslas – Lietuvos ateitis, 2010, 2 tomas, Nr. 2.

>10 pt

[Santrauka anglų kalba:]

Autoriaus (-ų) vardas (-i), pavardė (-s) (11 pt, Bold)

>5pt

Straipsnio pavadinimas anglų kalba (11 pt , Bold)

>5pt

Summary (11 pt, Italic)

>5pt

Santraukos tekstas (11 pt, Normal, First line 1,2 cm)

Keywords: (11 pt, Italics, First line 1,2 cm)

INSTRUCTIONS FOR AUTHORS

1. General requirements for manuscript preparation

1. Manuscript structure:

- Title;
- Full author‘s first name(-s) and surname(-s);
- Affiliation;
- Annotation (no more than 200 words) with up to five keywords at the end;
- Introduction (including brief presentation of a study object and main aim);
- Materials and Methods;
- Results;
- Discussion;
- Conclusions;
- References;

2. The paper normally should not exceed 4–5 printed pages. At least two thirds of the last page should be filled with text.

2. Text formatting requirements

Requirements for computer software

Manuscripts should be prepared using Microsoft Word.

Text formatting (example):

MANUSCRIPT TITLE (ALL CAPS, Cambria, 11 pt, Bold)
>11 pt (>xx pt – font size of an empty space between lines)
Author name (-s) surname (-s) (Cambria, 11 pt, Bold)
Affiliation (Cambria, 11 pt, Italic)
>10 pt
Abstract (Times New Roman, 10 pt, Normal, First line 1,2 cm)
Keywords (Times New Roman, 10 pt, Italic, First line 1,2 cm)
>5 pt
Section Heading (Introduction, Materials and Methods, Results, Discussion, Conclusions or References - 11 pt, Bold, justified to the left)
>5 pt
Text

Page formatting

The page (including text, equations, tables, figures) should be formatted using B5 JIS (182 x 257 mm) standard with a 20 mm top and bottom margins; and 20 mm left and right margins.

Manuscript design (page layout)

The following information should be provided on the first page of the manuscript: manuscript title; full (unabbreviated) author name(-s); author affiliation(-s) and a brief annotation of the presented manuscript. The main body text of the manuscript should be in Times New Roman 11 pt Normal font using line spacing 1.0. The first line of each paragraph should be indented by 1.2 cm.

Section headings should be in 11 pt **Bold** font, and aligned to the left margin of a page. Section headings should be separated from the body text by a blank line (5 pt font). Subsection headings start from a new line and should be in 11 pt ***Italic Bold*** font followed by the body text on the same line (11 pt Normal). The main symbols in equations should be in 11 pt *Italic* font, while indices – in 11 pt Normal font. The equations should be center-aligned and numbered using Arabic numbers in parentheses on the right-hand side of the page. A full stop is put after the equation when the variables are not explained. If the variables are explained, a comma sign is put after the equation and a word „here“ is placed below the equation starting from a new line without indentation, followed by explanation of each relevant variable.

Figures and tables are to be inserted into text below the paragraph where they are mentioned for the first time in text, although figures and tables should not be placed after Conclusions section. Figures and tables of a larger format may occupy an entire page. Graphs and drawings should be produced using computer software. Photographs should be of good resolution, suitable for reproduction. Captions for figures should be placed below the figures, and table titles – above the tables. Figure captions, table titles and table footnotes should be typed using 11 pt font and centered. Text in tables should be in 11 pt font. Figures and tables are separated from the main body text with an interval of one blank line.

Citations in text are to be given in parentheses, e.g. (Peterson, 1988); if the author is an institution, given is the first word of its name followed by three dots, e.g. (State…, 2004). Citations of sources in Russian are given using Cyrillic script, e.g. (Кресникова, 2005). For citations of a source written by multiple authors only the first author‘s name is given followed by „et al.”, e.g. (Johanson et al., 2003).

References are listed fully in alphabetical order according to the last name of the first author (or institution name) and numbered. Sources in Latin script are listed first followed by sources in Cyrillic script.

Papers with one author only are listed first in chronological order, beginning with the earliest paper. Papers with dual authorship follow and are listed in alphabetical order by the last name of the second author. Papers with three or more authors appear after the dual-authored papers and are arranged chronologically.

Names of all authors of a respective source should be listed. Journal titles should not be abbreviated.

A summary of the presented study is prepared in Lithuanian by editor‘s office and placed below the reference list. Below presented is an example of a reference list:

>5 pt

References (11 pt, Bold)

> 5 pt

4. Cotte J., Ratneshwar S. Choosing leisure services: the effect of consumer timestyle. Journal of Services Marketing, 2003. 17 (6), 558-572.

5. Mallen C., Adam, L. Sport, Recreation and Tourism Event Management. Theoretical and Practical Dimensions, Brock University, USA, 2008.

6. Jackson E. L., Scott D. Constraints to leisure. In E. L. Jackson & T. L. Burton (Eds.), Leisure Studies: Prospects for the Twenty-First Century (pp. 299-332). State College, PA: Venture Publishing, Inc., 1999.

7. Выдрин В. М, Джумаев А. Д. Физическая рекреация – вид физической культуры. Теория и практика практической физической культуры, 1989. Nr. 3, с. 2-3.

>10 pt

For more information on manuscript layout please visit Journal‘s homepage at www.kmaik.lt/miskininkyste-ir-krastotvarka

KAUNO MIŠKŲ IR APLINKOS INŽINERIJOS KOLEGIJA
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MIŠKININKYSTĖ IR KRAŠTOTVARKA
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