



Алфа БК Универзитет

ALFA BK UNIVERZITET  
INSTITUT ZA STRATEGIJSKE STUDIJE I RAZVOJ  
„PETAR KARIĆ“  
I NAUČNO DRUŠTVO ZA UPRAVLJANJE  
ORGANIZACIJAMA



# „ZNAJES IЛИ VEŠTINE“ IЛИ „ZNAJES I VEŠTINE“

TEMATSKI ZBORNIK NACIONALNOG ZNAČAJA



Beograd, 2025.



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Institut za strategijske studije i razvoj „Petar Karić“



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**Institut za strategijske studije i razvoj „Petar Karić“  
i Naučno društvo za upravljanje organizacijama**

## **„Znanje ili veštine“ ili „Znanje i veštine“**

**TEMATSKI ZBORNIK NACIONALNOG ZNAČAJA**

Beograd, 2025

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### **REZIME STAVOVA UČESNIKA OKRUGLOG STOLA**

Znanje omogućava kritičko razmišljanje, rešavanje problema i donošenje odluka.

Veštine su praktične sposobnosti koje omogućavaju pojedincima da primenjuju svoje znanje u stvarnim situacijama.

Savremeni pogled na veštine je da su one ključ za oblikovanje budućnosti.

Proces unapređivanja postojećih i razvoja novih skupova veština odvija se kontinuirano.

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## UVOD

Veliki broj raznovrsnih istraživanja poslova budućnosti pokazuje da poslodavci ukazuju ne samo na potražnju za kreativnošću, kritičkim razmišljanjem, rešavanjem problema i veštine koje se odnose na razvoj i korišćenje tehnologije, već i da stavljaju sve veći naglasak na interpersonalne i socio-emocionalne veštine. Ovo poslednje uključuje sposobnost saradnje, koordinacije i efektivne komunikacije sa drugima. Sticanje ovih veština počinje u ranom detinjstvu, ali se ne završava na studijama. Brzina razvoja novih tehnologija dovodi do ubrzanog zastarevanja velikog broja poslova, a promene u društvenom i prirodnom okruženju dovode do kontinuiranog razvoja novih potreba ljudi, pa time i potrebe za kreiranjem novih poslova i posledično potrebe za celoživotnim učenjem.

Holistički koncept koji uključuje znanje, veštine, stavove i vrednosti nazivamo kompetencijama. Prema projektu „OECD Learning Compass 2030“, kompetencije su više od „veština“. Veštine su preduslov za vršenje kompetencija. Da bi bili spremni i kompetentni za 2030. godinu, studenti treba da budu sposobni da koriste svoja znanja, veštine, stavove i vrednosti sa ciljem da deluju na koherentan i odgovoran način, kojim menjaju budućnost na bolje. Istraživanja pokazuju da bi ulaganje u samo jednu važnu oblast veština – zajedničko rešavanje problema – moglo dodati čak 2,54 triliona dolara globalnom bruto domaćem proizvodu (BDP).

Porast potražnje za ovim veštinama nameće potrebe za usvajanjem holističkog pristupa učenja koji uključuje ne samo konkretne veštine za ekonomski uspeh, već stavove i vrednosti koje podstiču pojedince na učenje tokom celog života. To uključuje prihvatanje međuljudskih i društvene vrednosti koje promovišu koheziju i tolerantnost ekonomije i društva, poštuju i podržavaju integritet njihovih institucija i cene krhkost prirodnog okruženja.

Kompetencija i znanje nisu ni konkurentni niti međusobno isključivi koncepti. Studenti treba da steknu osnovno znanje kao osnovni gradivni blok razumevanja. Oni takođe mogu pokazati kompetencije zasnovane na znanju i koristiti ih za osavremenjavanje, produbljivanje i primenu stečenog znanja. Koncept kompetencija uključuje mobilizaciju znanja, veština, stavova i vrednosti za ispunjavanje složenih zahteva u situacijama neizvesnosti.

Proces formalnog obrazovanja treba da pripremi mlade za ovakvu budućnost. Sistem obrazovanja treba svakom pojedincu da omogući da prihvati i razvija svoje jedinstvene ljudske kvalitete – one za koje je malo verovatno da će ikada biti zamenjeni tehnologijom.

U ovom zborniku objavljeno je pet tematski povezanih radova u kojima se sa različitih stanovišta razmatraju uloga i odnos između znanja i veština. Istaknuta su pitanja upravljanja znanjima i veštinama za upravljanje ograničenim ekonomskim, prirodnim i ljudskim resursima, uloga znanja i veština u eri veštačke inteligencije, odnos znanja i veština u četvrtoj industrijskoj revoluciji i posebno, računovodstvenoj praksi i uloge inovacija kao pokretača razvoja ekonomije. Na samom Okruglom stolu ukazano je i na veliki broj drugih pitanja, kao što su ključna znanja i veštine koje moraju biti uključene u nastavne planove i programe i način na koji je to najbolje uraditi. Odgovore na ta pitanja pokušaćemo da sagledamo na sledećem tematskom skupu o znanjima i veštinama.



# ZNANJE I/ILI VEŠTINE ZA UPRAVLJANJE OGRANIČENIM EKONOMSKIM, PRIRODNIM I LJUDSKIM RESURSIMA

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**Rezime:** Znanje omogućava kritičko razmišljanje, rešavanje problema i donošenje informisanih odluka i temelj je inovacija i napretka u različitim oblastima. Veštine su praktične sposobnosti koje omogućavaju pojedincima da primenjuju svoje znanje u stvarnim situacijama. Masovno povećanje količine znanja koje pojedinci generišu putem novih informacionih tehnologija zahteva napredne veštine i sposobnosti za upravljanje tim znanjem. Dinamično i izazovno poslovno okruženje savremenih organizacija pored odgovarajućih specifičnih znanja, zahteva odgovarajuće saznanje, društvene i fizičke veštine koje omogućuju zaposlenima da tim izazovima upravljaju. Sticanje znanja i veština odvija se kontinuirano, tokom čitavog života, kako formalnim tako i neformalnim putem. U ovom radu skiciran je okvir za celovito sagledavanje potreba za znanjima i veštinama, njihov odnos i način na koji se ta znanja i veštine stiču.

**Cljučne reči:** ekonomske koristi, obrazovanje, ulaganje, saznanje veštine, društvene veštine.

## UVOD

Ljudi su od davnina smatrali da znanje daje čoveku veliku moć. Danas najpoznatija izreka je „znanje je moć“. Ova kratka i poznata izreka ističe kako posedovanje znanja daje osobi moć da menja svet oko sebe. Opšte poznata Konfučijeva izreka da je znanje bez prakse beskorisno, a praksa bez znanja opasna, podvlači važnost kombinovanja teorijskog znanja sa praktičnom primenom (1). Albert Ajnštajn je jednom rekao da je "mašta važnija od znanja, jer je znanje ograničeno, dok mašta obuhvata ceo svet". Ova izreka nas podseća da, iako je znanje važno, mašta i kreativnost igraju ključnu ulogu u stvaranju novih ideja (25, 26). Potrebna znanja i veštine stičemo obrazovanjem. Zahvaljujući obrazovanju u mogućnosti smo da razumemo stvari koje nas okružuju, da objasnimo različite pojave, da iskažemo svoje interesovanje i pokažemo svoje mogućnosti. Zato je potreba čoveka da uči dok je živ potpuno prirodna.

## O ZNANJU I VEŠTINAMA

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Ne postoji jednoglasan dogovor za definiciju znanja. Sistematičan pregled naučnih radova radi razumevanja na znanju zasnovanih pogleda na međunarodni biznis (32) pokazao je da u literaturi postoje značajne varijacije u konceptualizaciji znanja. S jedne strane, imamo mehanistički pristup prema kome se znanje posmatra kao resurs, sposobnost ili imovina, ili kao prećutno ili eksplicitno znanje. S druge strane, znanje se posmatra kao tekući proces konstruisanja stvarnosti. Prepoznate su i neki drugi vidovi konceptualizacije znanja. Istraživanje je pokazalo da su u literaturi proučavani i različiti procesi povezani sa znanjem, kao što su stvaranje znanja, razmena znanja, integracija znanja i upravljanje znanjem. Naučnici su posvetili posebnu pažnju kolektivnom znanju, koje obuhvata i ponašanje i veštine koje su potrebne da bi se osigurala nesmetana komunikacija.

Znanje se uobičajeno shvata kao skup teorijskih informacija o činjenicama koje ljudi stiču kroz proces obrazovanja i iskustvo. Znanje omogućava kritičko razmišljanje, rešavanje problema i donošenje informisanih odluka. Ono je takođe temelj inovacije i napretka u različitim oblastima. Veštine su praktične sposobnosti koje omogućavaju pojedincima da primenjuju svoje znanje u stvarnim situacijama. Na primer, tehničke veštine su neophodne za mnoge profesije, dok su socijalne veštine važne za timski rad i komunikaciju. Bez potrebnih veština, znanje može ostati neiskorišćeno, dok bez znanja, veštine mogu biti ograničene.

Razvoj veština počinje u mladosti. Istraživanja sugerisu da školovanje u ranom detinjstvu i osnovno obrazovanje imaju veliki pozitivan efekat na izgradnju veština koje se zatim umnožavaju kroz učenje kasnije u životu. Nedavno istraživanje Svetskog ekonomskog foruma pokazuje da bi ulaganje u samo jednu važnu oblast veština – zajedničko rešavanje problema – moglo da doda čak 2,54 triliona dolara globalnom BNP-u (34). Značaj ulaganja u razvoj veština prepoznat je i u nacionalnom strategijom razvoja. Tako je Poljska, u skladu sa svojom nacionalnom strategijom, pokrenula projekat sa ciljem integrisanog razvoja veština, usklađen sa stavovima i vrednostima međunarodnog okruženja. Polazna osnova ovog projekta je da su veštine ključ za oblikovanje budućnosti. Za napredovanje u sve više povezanim zajednicama i društvima, koja se sve brže menjaju, potrebno je kontinuirano unapređivanje postojećih i razvoj novih skupova veština (21).

Rast potražnje za veštinama nameće potrebu za usvajanjem holističkog pristupa učenju, koje ne obuhvata samo konkretne veštine za rad, već i stavove i vrednosti koje osposobljavaju pojedinca za celoživotnim učenjem. To uključuje prihvatanje međuljudskih i društvenih vrednosti koje promovišu kohezivne i tolerantne ekonomije i društva, poštuju i podržavaju integritet svojih institucija i cene krhkost prirodnog okruženja. Radi celovitog razumevanja potrebnih znanja i veština Svetski ekonomski forum sačinio je taksonomiju obrazovanja (35). Taksonomija obrazovanja sastoji se od sveobuhvatnog skupa sposobnosti, organizovanih u tri nivoa.

Sposobnosti su apstraktni, prenosivi aspekti učenja, koje se mogu učiti i naučiti, jer nisu urođene ljudske karakteristike. Prvi nivo obuhvata tri grupe aspekta, i to: (1) Mogućnosti i veštine; (2) Stavovi i vrednosti; i (3) Znanje i informacije. Mogućnosti i veštine čine skup procesno orjentisanih sposobnosti koje omogućavaju dostizanje određenih ciljeva. Mogućnosti i veštine su dalje podeljene u tri grupe: (1.1) sazajne ili kognitivne analitičke sposobnosti u koje spadaju kreativnost, kritičko razmišljanje, digitalne veštine i programiranje, rešavanje problema, analiza sistema; (1.2) društvene ili međuljudske sposobnosti, koje obuhvataju saradnju, komunikaciju, pregovaranje, društveno-emocionalnu svest i izdržljivost; i (1.3) fizičke sposobnosti u koje spadaju ravnoteža, koordinacija, svest o položaju i izdržljivost.

Stavovi i vrednosti obuhvataju uverenja koja informišu o ponašanju koje je pod kontrolom pojedinca, kao što je lična motivacija i angažovanje u širem društvu, kao što su moralna ili etička razmatranja. Stavovi i vrednosti su više subjektivne prirode; Stavovi i vrednosti mogu se podeliti u dve grupe: Prvu grupu čine (2.1) samo regulatorne (interpersonalne) veštine u koje spadaju prilagodljivost, savesnost, radoznalost, odlučnost, stav o razvoju i spremnost ka inicijativama. Drugu grupu čine (2.2) društvene

## Znanje i/ili veštine za upravljanje ograničenim ekonomskim, prirodnim i ljudskim resursima

(ekstra personalne) veštine, koje obuhvataju građansku odgovornost, upravljanje životnom sredinom, saosećanje i ljubaznost, pripadanje globalnoj zajednici.

Znanje i informacije odnose se na znanja koja su specifična za datu disciplinu. Znanje i informacije će uvek biti u središtu obrazovanja i učenja. Čak i učenje napamet – metoda učenja koja se praktikuje milenijumima – verovatno će ostati relevantna u određenoj meri u budućim obrazovnim programima. Međutim, nove tehnologije su promenile način na koji ljudi komuniciraju sa sirovim informacijama. S jedne strane, internet i mobilni računarski uređaji doveli su do masovnog povećanja količine znanja i informacija koje generišu i dele pojedinci. S druge strane, količina ovog znanja i informacija je toliko velika da su potrebne nove tehnologije za njihovo prikupljanje, obradu i tumačenje. U tom smislu, ekonomije budućnosti će zahtevati napredne veštine i sposobnosti da upravljaju širenjem novih znanja, kao i odgovarajuće stavove i vrednosti koje će usmeravati njihovo tumačenja. Iz tog razloga, Taksonomija obrazovanje 4.0 daje manji značaj samim znanjima, i ukazuje na njih posredno, kroz druge sposobnosti.

### EKONOMSKE KORISTI OD ULAGANJA U OBRAZOVANJE

Ulaganje u obrazovanje donosi brojne ekonomske koristi, kako za pojedince, tako i za društvo u celini i čini obrazovanje vitalnim faktorom za individualni i društveni prosperitet.

Ključne ekonomske koristi za pojedinca obuhvataju (i) veće mogućnosti za zaposlenje; (ii) veće prihode; (iii) veće mogućnosti za razvoj veština; i (iv) proširenje polja komunikacije. Obrazovani pojedinci imaju bolju konkurentnost na tržištu rada i niže stope nezaposlenosti (22). Ljudi sa višim nivoom obrazovanja obično imaju veće plate u poređenju sa manje obrazovanim osobama. Obrazovanje, takođe, obezbeđuje specifične veštine i znanja potrebna za razne profesije, povećavajući produktivnost pojedinaca. Proces obrazovanja pruža mogućnost za razvoj i obogaćenje mreža komunikacije i broja kontakata.

Podaci na Slici 1 ilustruju učinak obrazovanja na mogućnost zapošljavanja. Podaci pokazuju da najmanje obrazovana lica imaju najmanje mogućnosti da nađu posao. Kako nivo obrazovanja pojedinaca raste, mogućnost nalaženja posla je veća. Najmanje nezaposlenih ima među visokoobrazovanim licima.



Slika 1. Stepen zaposlenosti po vrstama obrazovanja na primeru Republike Srbije

Izvor: Autori.

Tabela 1. Podaci o školskoj spremi stanovništva, 2022.

	Ukupno	Bez školske spreme	Osnovno obrazovanje	Srednje obrazovanje	Visoko obrazovanje	Nepoznato
Stanovništvo staro 15 i više godina prema školskoj spremi*	5,691,551	57,667	1,312,806	3,020,958	1,277,396	22,724
Nezaposlena lica prema školskoj spremi**	427,152	n.p.	136,192	232,312	58,648	n.p.
Udeo	7.5%		10.4%	7.7%	4.6%	

Izvor: Autori na osnovu sledećih podataka:

\*(29)

\*\* (27, 28)

n.p. Nema podataka.

Obrazovanje može olakšati širenje i prenos znanja potrebnog za razumevanje i obradu novih informacija i olakšati uspešnu implementaciju tuđih novih tehnologija, što povratno doprinosi ekonomskom rastu (13). Ključne ekonomske koristi za društvo ogledaju se kroz veći ekonomski rast, pa samim tim i smanjenje siromaštva i povećanje javnih prihoda. Obrazovana radna snaga doprinosi većoj produktivnosti i inovacijama, što vodi ka ekonomskom rastu i povećanju javnih prihoda. Obrazovani pojedinci su skloni boljim zdravstvenim navikama i imaju pristup boljoj zdravstvenoj nezi, što smanjuje zdravstvene troškove za društvo i neposredno poboljšavanja zdravlje zajednice. Obrazovanje povećava inovativni kapacitet privrede, a nova znanja o novim tehnologijama, proizvodima i procesima podstiču istraživanje i razvoj, što vodi ka tehnološkom napretku i inovacijama. Obrazovanje može takođe olakšati širenje i prenos znanja potrebnog za razumevanje i obradu novih informacija i za uspešno sprovođenje novih tehnologija koje su osmislili drugi, što ponovo promovise ekonomski rast. Obrazovanje povećava socijalnu mobilnost, jer omogućuje pojedincima da napreduju kroz društvene slojeve, smanjujući nejednakost. Viši nivo obrazovanja često je povezan sa nižim stopama kriminala, jer obrazovani ljudi imaju bolju perspektivu za zapošljavanje i razvoj karijere. Obrazovanje igra ključnu ulogu u razvijanju kulturne svesti i socijalne kohezije, što može dodatno podstaći ekonomski razvoj.

Ideju o prevođenju stečenih veština u „količinu“ školovanja osmislio je pionir razmatranja karaktera odnosa između ulaganja u ljudski kapital i visine zarada (14, 15). Nakon što je objavljena Mincerova inovativna analiza ljudskog kapitala, izvršen je veliki broj istraživanja koji su dosledno pokazivala da je visina zarade povezana sa dužinom školovanja. Istraživanje ekonomskih koristi koje se ostvaruju od ulaganja u obrazovanje najčešće se odvijaju putem ispitivanja stope povraćaja na sredstva uložena u te namene. Novija istraživanja, koja su izvršena u 160 zemalja, pokazuju da svaka godina školovanja doprinosi povećanju prosečnih zarada za 10% godišnje (16, 17).

Hanushek and Woessmann (9) istraživali su ulogu sazajnih veština u ekonomskom razvoju i utvrdili su da su individualne zarade sistematski povezane sa tim veštinama. Autori su došli do zaključaka da je distribucija veština u društvu usko povezana sa raspodelom prihoda i da na ekonomski rast snažno utiču sazajne veštine radnika.<sup>6</sup>

<sup>6</sup> Nesazajne veštine, iako retko precizno definisane, obuhvataju različite međuljudske dimenzije, uključujući komunikacione sposobnosti, veštine timskog rada, prihvatanje društvenih normi i slično.

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Patrisson i Montenegro procenjivali su učinak obrazovanja na zarade u javnom i privatnom sektoru. Rezultati njihovih istraživanja pokazali su da je učinak obrazovanja na zarade veći u privatnom sektoru, što znači da privatni sektor prepoznaje veću produktivnost obrazovanih radnika. Ovaj učinak je najveći za najviši nivo obrazovanja (univerziteti i visoke škole) (22, 25). Izučavanje „cene“ veština (31) pokazalo je da broj veština po zanimanju u proseku broji oko 80 veština. Zahtevi za vrstom veština po zanimanju dinamično se menjaju, jer tehnološke inovacije dovode do promene potražnje za specifičnim veštinama. Shodno tome, zaposleni postepeno grade svoje veštine, usklađujući ih sa zahtevima tržišta (20).

Prilikom procene ekonomskog prinosa od veština, npr. kao dela visine prinosa ugrađenog u zaradu, naučnici razlikuju saznajne/kognitivne (analitičke) i ne saznajne/ne kognitivne (socijalne i fizičke) veštine. U literaturi postoji opšti konsenzus da ne saznajne veštine više vrede, da se bolje plaćaju i da povećavaju zaposlenost i blagostanje u celini. Istraživanja takođe pokazuju da se ekonomska vrednost veštine povećava sa usvajanjem i razvojem drugih veština, posebno ako se veštine diversifikuju, tj. ako zaposleni poseduju različite veštine, kao i da komplementarnost utiče na tržišnu vrednost veštine.

### TRENDVI U POSLOVNOM OKRUŽENJU I NJIHOV UČINAK NA TRAZNJU ZA ZNANJIMA I VEŠTINAMA

Poslovno okruženje savremenih organizacija odlikuje dinamično dejstvo različitih sila, koje se odražavaju na pojedinačnu organizaciju, na proces upravljanja organizacijom, proces rada u organizaciji i na sve one koji rade u organizaciji ili za organizaciju. Među najznačajnije sile ubrajaju se ekonomske sile, društvene sile, naučni i tehnološki razvoj, geopolitičko okruženje i sile prirodnog okruženja. Suočavanje sa takvim poslovnim okruženjem nametnulo je potrebu za rekonstruisanjem i restrukturiranjem postojećih i pojavu novih oblika organizacija, kao što su mrežne, virtuelne i modularne korporacije. Brzina naučnog i tehnološkog razvoja skoro da ne dopušta sagledavanja novih oblika organizacija, koji mogu svakog trenutka da se pojave.



Slika 2. Okruženje u kojem savremena organizacija deluje/posluje

Razmatrajući osobine lidera u takvim organizacijama, Conger (5) je svojevremeno naveo da će oni morati da budu strateški orjentisani, jer će samo vizionari uspevati da nađu strateške prilike pre konkurenata. Oni će takođe morati da budu svesni zahteva globalnog okruženja, da se suočavaju sa značajnom stranom konkurencijom, da poznaju strana tržišta, globalnu ekonomiju i geopolitiku. Pored toga, novi lideri će morati da budu sposobni da upravljaju visoko decentralizovanom organizacijom, da se usklađuju sa povećanim zahtevima za očuvanje životne sredine (2), da budu fleksibilni i da kontinuirano uče. Veoma raznolika radna snaga će zahtevati lidera koji je izuzetno svestan i osjetljiv na multikulturalna očekivanja i potrebe. U tom smislu, od lidera će se očekivati da grade organizacione zajednice u kojima će članovi organizacije moći da razviju osećaj pripadnosti organizaciji i u kojima će se boriti za ostvarenje njene misije.

Na promene u strukturi zaposlenih značajno utiče i sve veći stepen automatizacije poslovnih procesa. Automatizacija je metoda korišćenja sistema kao što su računari ili roboti za rad različitih procesa i mašina za poboljšanje efikasnosti i sniženje direktnih troškova rada. Automatizacijom proizvodnje, kompanije uklanjaju složene, suvišne faze iz procesa sa ciljem da pojednostave praksu. U suštini automatizacije je zamena rada ljudi mašinskom proizvodnjom. Zamena direktnog rada ljudi mašinskim radom menja strukturu znanja i veština koje poseduje ljudski kapital, i koje su potrebne za odvijanje poslovnih procesa (30). Te promene najrečitije se ogledaju u činjenici da je tokom poslednjih četrdeset godina, došlo je i do promena u strukturi imovine organizacije koja donosi ekonomske koristi, tj. stvara vrednost. Sedamdesetih godina prošlog veka, materijalna imovina (nekretnine, postrojenja i oprema) činila je najveći deo vrednosti kompanije. Danas, najveći deo vrednosti kompanije čini nematerijalna imovine (intelektualni kapital). Na primer, prema Brand Finance, u 2023. godini, 91% vrednosti kompanije iz duvanske industrije, 90% iz industrije interneta i softvera, 89% iz industrije proizvoda za domaćinstvo, itd. potiče iz nematerijalne imovine (4). U tom smislu, pokretač inovacija, prihoda i profita je Intelektualni kapital ili ekonomiji znanja, a ne fizička imovina.

Sa dominacijom ekonomije znanja, intelektualni kapital je prepoznat kao sastavni deo procesa stvaranja vrednosti (19). Priroda intelektualnog kapitala je višestruka i kompleksna, jer uključuje nematerijalne resurse koje organizacije poseduju i koriste za stvaranje vrednosti. Ljudski kapital, koji obuhvata znanja, veštine i iskustvo zaposlenih, kao najznačajniji deo intelektualnog kapitala, ključan je za inovacije i razvoj novih proizvoda i usluga (10). Prema informacijama sa sajta INFOSTUD, poslodavci danas traže lica koja imaju duboko stručno znanje u određenoj oblasti i širok spektar prenosivih veština (11).

Istraživanje zahteva navedenih u oglasima koja treba da ispune potencijalni kandidati pokazuje da je znanje najčešće definisano posedovanjem diplome sa fakulteta. Od zaposlenih se očekuju da imaju kognitivne veštine kao što su kreativnost i proaktivnost, da se lako prilagođavaju novim okolnostima i da bez emocionalnih potresa izdrže i iznesu kontinuirane promene. U tom smislu zahtevaju se socijalne (inter-personalne) veštine, kao što su komunikacione veštine, sklonost saradnji i kontinuirano deljenje znanja. Potreba za posedovanjem uži stručnih znanja najčešće je povezana sa zahtevom za posedovanjem određenog radnog iskustva, što ukazuje da se radi o specifičnim znanjima koja mogu da se steknu samo tokom rada. Očekivani stavovi i vrednosti obuhvataju interkulturalnost i odnos prema životnoj sredini.

Istraživanja percepcije važnosti kontinuiranog usavršavanja i edukacije u Srbiji, pokazuje da ispitanici oba pola i svih stepena obrazovanja izražavaju spremnost da prihvate izazove i nove radne zadatke od kojih mogu da nauče nešto novo. Kada je u pitanju odnos prema razvoju veština, veću spremnost za njihovo usvajanje pokazuju kandidati do 40 godina starosti i ispitanici stepena obrazovanja master (24).

### **Poslovno okruženje za privlačenje talenata**

Prirodno je očekivati da su najnaprednije kompanije u globalnom okruženju lideri i u pogledu postavljanja zahteva za znanjima i veštinama koje su im potrebne za očuvanje i unapređenje njihove liderske pozicije. Kompanije koje teže ka angažovanju najtalentovanijih pojedinaca kreiraju svoje poslovno okruženje tako da ispunjava zahteve poslova iz snova (2, 23). Na Forbes-ovoj listi za 2024. godinu, na kojoj je navedeno 100 najpoželjnijih poslodavaca, vodeća mesta zauzimaju kompanije Epic Games (4.350), Microsoft (228.000 zaposlenih), SpaceX (13.000 zaposlenih), Google (2.500 zaposlenih), Apple (164.000 zaposlenih), Mayo Clinic (76.000 zaposlenih), NASA (18.671 zaposlenih), Nike (83.700 zaposlenih), itd. (Forbes (2024) The Full List (8)).

Poslovno okruženje ovih kompanija odlikuje jaka korporativna regulativa, počev od izjava o vrednosnim stavovima kompanije, ukazivanja na vrednost svakog pojedinca koji radi za kompaniju, pa sve do neposrednih koristi koje svaki pojedinac, zaposlen u kompaniji, može da ima ili ima. Tako na

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primer, Microsoft ističe beneficije koje pruža zaposlenima, uključujući i njihove porodice, koje obuhvataju konkurentne zarade, kao i beneficije za zdrav život, a za izuzetne i bonuse i druge povlastice zavisno od rezultata rada. Dodatna odlika poslovnog okruženja kompanije Microsoft je jednakost u visini zarada i mogućnost povezivanja na globalnom nivou. Korporativna kultura Microsoft-a zasnovana je na načinu razmišljanja o rastu, tako što se smatra da svako može da promeni svoje mišljenje i razvija svoj potencijal. Microsoft ističe da je uvek u potrazi za ljudima koji donose nove perspektive i iskustva i da radi na podsticanju tehnološke zajednice koju čine ljudi sa mnogo različitih iskustava, perspektiva i pozadina (12).

Polazna vrednost kompanije Nike je da sa globalnim otiskom, kulturom inovacija i mentalitetom tima, preduzima akcije radi stvaranja budućnosti kontinuiranog napretka za sportiste, sport i ceo svet. Cilj NIKE je da svi zaposleni i lideri u NIKE imaju podršku, kulturnu svest i razumevanje potrebno za uspešnu izgradnju i zadržavanje raznolikih i inkluzivnih timova. U tom smislu, Nike nudi vodeće programe i iskustva u industriji koji osnažuju i omogućavaju njenim zaposlenima da ostvare svoje težnje u karijeri. Širom kompanije, postoje mreže koje formiraju i upravljaju zaposleni kako bi se povezali sa drugim zaposlenim oko zajedničkih iskustava (18).

Na listi najboljih poslodavaca „Top Employers Institut“-a iz Holandije, svetski priznatog eksperta u proceni poslovanja kompanija, koji promovise najbolje prakse u poslovnom svetu, u 2024. i u 2025. godini našlo se po sedamnaest kompanija iz Srbije (33). Po broju zaposlenih, među njima je najveća Delhaize Serbia (13.000 zaposlenih u Srbiji). Na svom sajtu, Delhaze Serbia navodi da je čini raznolika grupa talentovanih pojedinaca, koji zajedno stvaraju snažne timove koji svakoga dana teže da budu bolji u onome što rade (6). Ostale kompanije sa te liste ne daju izjave o vrednostima koje se odnose na ljudske resurse.

### **Kontinuirano stručno usavršavanje i celoživotno učenje – Koncept anticipiranih znanja i veština**

Kontinuirano stručno usavršavanje je proces stalnog unapređenja znanja, veština i kompetencija koje su potrebne za uspešno obavljanje profesionalnih zadataka i omogućava održavanje koraka sa brzim promenama u delatnostima, tehnologijama i najboljim praksama. Uobičajeni način sticanja odgovarajućih znanja i veština za konkretan posao ili konkretnu oblast poslovanja odvija se putem sticanja odgovarajućih profesionalnih zvanja i licenci za obavljanje zadatih poslova. Nosioci profesionalnih zvanja i profesionalnih licenci imaju profesionalnu obavezu da neprestano uče. Kontinuirano stručno usavršavanje uključuje različite oblike edukacije, kao što su učešće na seminarima, radionicama i konferencijama, pohađanje kurseva i trening programa, čitanje stručne literature i istraživačkih radova i rad sa mentorima i stručnjacima iz odgovarajućih oblasti. Profesionalne organizacije koje izdaju profesionalna zvanja sagledavaju koje su to znanja i veštine potrebne u budućnosti i pripremaju odgovarajuće programe razvoja. Na taj način pojedinci mogu da unapređuju svoje profesionalne veštine i nakon sticanja profesionalnih zvanja, da ostanu konkurentni na tržištu rada i daju veći doprinos svojoj organizaciji. Troškove kontinuiranog obrazovanja obično, mada ne i obavezno, snose organizacije u kojima su ti profesionalci zaposleni.

Ilustraciju rezultata istraživanja budućih znanja i veština koja će biti potrebna dajemo na primeru profesije računovođa. Udruženje profesionalnih računovođa u biznisu (*Professional Accountants in Business* - PAIB) obuhvataju značajan deo profesionalaca iz oblasti trgovine, industrijske delatnosti, finansijskih usluga, obrazovanja, javnog sektora i sektora nedobitnih organizacija. Da bi se osiguralo da će računovođe biti u mogućnosti da se uspešno nose sa budućim zahtevima biznisa i javnog sektora koji su suočeni sa rastućim rizicima, počev od geopolitičke nestabilnosti, promene u dinamici tržišta i klimatskih promena do transformativne moći veštačke inteligencije (AI). Savetodavna grupa PAIB-a identifikovala je najkritičnije sposobnosti i potrebe integrisanog razmišljanja i kako se one mogu razlikovati u zavisnosti od faze/uloge u karijeri. Na višem nivou upravljanja, ključni fokus je uspostavljanje jasne organizacione svrhe, postavljanje pravog tona i kulture i podsticanje usklađenih ponašanja i sprovođenje efikasnih odluka na nivou organizacije na osnovu robusnih podataka. Na

srednjem nivou upravljanja, ključna je sposobnost sistemskog razmišljanja koje je preduslov za povezivanje između procesa i između finansijskih i ne finansijskih informacija. Za izvršavanje ovih obaveza potrebna su znanja za usklađivanje procesa sa organizacionom strategijom i raspodela resursa sa ciljevima organizacije, šire razumevanje drugih funkcionalnih oblasti i podsticanje unakrsnog pristupa rešavanju problema. Potrebne ključne veštine obuhvataju kritičko razmišljanje, upravljanje ljudima i projektima i profesionalno prosuđivanje. Važne tehničke veštine, koje treba da budu zasnovane na funkciji i procesu, uključuju analitički pristup i prezentaciju podataka, upravljanje rizicima, upravljanje procesima i tehnologija, izveštavanje i usklađenost. Na početnom nivou, od računovođa se očekuje da poseduju osnovne tehničke veštine i etičku svest računovođa, zatim komunikacione veštine, veštine saradnje, kao i razumevanje strategije i prioriteta organizacije i slično (30).

Značaj ovog vida obrazovanja može se ilustrovati primerima u kojima organizacija ne pruža svojim zaposlenim uslove za kontinuirano usavršavanje. Prema propisima o internoj reviziji koji se primenjuje u javnom sektoru Republike Srbije, dužnost internih revizora je da kontinuirano usavršavaju svoja znanja, veštine i druge sposobnosti. Istraživanje kvalifikacija internih revizora u javnom sektoru Republike Srbije otkriva da oko polovine njih nema pristup kontinuiranom profesionalnom usavršavanju. To je jedan od značajnih uzroka niskog nivoa kvaliteta ove funkcije korporativnog upravljanja u javnom sektoru Republike Srbije (3).

Za razliku od kontinuiranog stručnog obrazovanja koje je uobičajeno za zaposlenih lica, obrazovanje je potrebno i velikom delu odraslih koji nisu u stalnom radnom odnosu. Istraživanja na nivou Evropske unije pokazuju da je u 2016. godini samo 37,4% odraslih učestvovalo u procesu obrazovanja. Pored toga što je nisko, učešće odraslih u obrazovanju je nejednako i veoma je zavisno od statusa lica na tržištu rada, radnog odnosa, veličina kompanije u kojoj radi, ranije stečenog obrazovanje i izloženosti sektora ili zanimanja automatizaciji. Osnovna znanja i veštine koje se smatraju potrebnim uključuju pismenost, matematičku pismenost i osnovne digitalne veštine (7).

### ZAKLJUČNA RAZMATRANJA

Znanje se uobičajeno shvata kao skup teorijskih informacija o činjenicama koje ljudi stiču kroz proces obrazovanja i iskustvo. Znanje omogućava kritičko razmišljanje, rešavanje problema i donošenje odluka. Veštine su praktične sposobnosti koje omogućavaju pojedincima da primenjuju svoje znanje u stvarnim situacijama. Savremeni pogled na veštine je da su one ključ za oblikovanje budućnosti i da je stoga potrebno kontinuirano unapređivanje postojećih i razvoj novih skupova veština.

Obrazovanje je vitalni činilac individualnog i društvenog prosperiteta. Novija istraživanja pokazuju da svaka godina školovanja doprinosi prosečnom povećanju zarada za 10% godišnje. Istraživanja uloge saznavnih veština u ekonomskom razvoju pokazala su da su individualne zarade sistematski povezane sa tim veštinama. Istraživanja takođe pokazuju da se ekonomska vrednost veštine povećava sa usvajanjem i razvojem drugih veština, tj. sa njihovom diversifikacijom.

Velike organizacije koje teže liderskim pozicijama grade interno poslovno okruženje, tj. ambijent poslovanja takav da privlači lica sa specifičnim znanjima i poželjnim veštinama. Velike organizacije obezbeđuju svojim zaposlenima i kontinuirano stručno usavršavanje i druge mogućnosti kako bi ostvarili svoje težnje u karijeri. Za razliku od zaposlenih lica, veliki procenat odraslih ima veoma oskudne mogućnosti za usavršavanje i sticanje novih znanja i veština. Najznačajnije veštine koje su ovim licima potrebe su digitalne veštine.

### LITERATURA

1. Asia Society Confucius Says, *Excerpts from the Analects*, <https://asiasociety.org/education/confucius-says>, pristupljeno 23.12.2024.

2. Beke-Trivunac, J. (2019). Računovodstveni standardi izveštavanja o održivom poslovanju, *Ecologica*, 26 (93), 31-36.
3. Beke-Trivunac, J., Vukelić, G., & Milojević, S. (2024). The capability of the public internal audit function in Serbia to effectively carry out its role, *Oditor*, 10(1), 119-132. doi: 10.59864/Oditor12405BT
4. Brand Finance (2023). GIFT™ 2023 Global Intangible Finance Tracker – an annual review of the World's Intangible Value. <https://static.brandirectory.com/reports/brand-finance-gift-2023-2.pdf>, pristupljeno 18.1.2025.
5. Conger, J. A. (1993). The brave new world of leadership training. *Organizational Dynamics*, 21(3), 46–58. [https://psycnet.apa.org/doi/10.1016/0090-2616\(93\)90070-H](https://psycnet.apa.org/doi/10.1016/0090-2616(93)90070-H)
6. Delhaize Serbia (n.n.). Uvek tu jedni za druge. <https://karijera.delhaizeserbia.rs/o-nama>, pristupljeno 12.12.2024.
7. European Commission (2021). Commission Staff Working Document Impact Assessment Report Accompanying the document Proposal for a Council Recommendation on individual learning accounts, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021SC0369>, pristupljeno 3.2.2025.
8. Forbes (2024). The Full List. [Forbes America's Dream Employers 2025 List](https://www.forbes.com/lists/2025/01/forbes-america-dream-employers-2025/), pristupljeno 12.1.2025.
9. Hanushek, E. A., & Woessmann, L. (2008). The Role of Cognitive Skills in Economic Development. *Journal of Economic Literature*, 46 (3), 607–68. DOI: 10.1257/jel.46.3.607
10. Ilić, D. Đurđijana, Mrdak, Gordana, & Bojić, Marko (2021). Sociološki aspekt apsentizma radne snage. *Oditor* (2021) 7(1) 195-224. DOI: 10.5937/Oditor2101195I
11. Jovanović, A. <https://poslovi.infostud.com/vesti/Da-li-moramoda-ucimo-tokom-celog-zivota-i-zasto/57090>, pristupljeno 9.1.2025.
12. Microsoft (n.n.) Because impact matters, [https://www.linkedin.com/posts/microsoft\\_because-impact-matters-activity-7193265345334251520-rfmL/](https://www.linkedin.com/posts/microsoft_because-impact-matters-activity-7193265345334251520-rfmL/), pristupljeno 5.1.2025.
13. Milojević, S., Zdravković, N., & Knežević, S. (2024). Online teaching and learning amidst the COVID-19 pandemic: Insights from teachers. *International Review*, (3-4), 81-91.
14. Mincer, J. (1970). The Distribution of Labor Incomes: A Survey with Special Reference to the Human Capital Approach. *Journal of Economic Literature*, 8(1), 1–26.
15. Mincer, J. (1974). *Schooling, Experience, and Earnings*. New York: National Bureau of Economic Research.
16. Montenegro, C. E. & Patrinos, H. A. (2021). A data set of comparable estimates of the private rate of return to schooling in the world, 1970–2014, *International Journal of Manpower*, <https://doi.org/10.1108/IJM-03-2021-0184>
17. Montenegro, C. M., & Patrinos, H. A. (2022). *Returns to education in the public and private sectors: Europe and Central Asia* (No. 1155). Global Labor Organization (GLO).
18. NIKE (n.n.). Building and Investing In Our Teams. <https://about.nike.com/en/impact/initiatives/building-and-investing-in-our-teams>, pristupljeno: 28.1.2025.
19. Nikolaj Bukh, P. (2003). The relevance of intellectual capital disclosure: a paradox?. *Accounting, Auditing & Accountability Journal*, 16(1), 49-56. <https://doi.org/10.1108/09513570310464273>
20. Obadić, A., & Viljevac, V. (2023). Labour market tightness and matching efficiency in different labour market segments – do differences in education and occupation matter? (EFZG Working Papers Series 2303). Faculty of Economics and Business, University of Zagreb. <https://econpapers.repec.org/paper/zagwpaper/2303.htm>
21. OECD (2019). *OECD Skills Strategy Poland: Assessment and Recommendations*, OECD Skills Studies, OECD Publishing, Paris, <https://doi.org/10.1787/b377fbcc-en>, pristupljeno 3.2.2025.
22. Patrinos, Harry, & Montenegro, Claudio. (2022). Returns to Education in the Public and Private Sectors: Europe and Central Asia, MPRA Paper No. 114206, posted 17 Aug 2022 10:20 UTC. <https://mpra.ub.uni-muenchen.de/114206/>.

23. Peachman, R. R. (2024). America's Dream Employers, Forbes, [Forbes America's Dream Employers 2025 List](https://www.forbes.com/lists/americas-dream-employers/), <https://www.forbes.com/lists/americas-dream-employers/>, pristupljeno 12.1.2025.
24. Penjišević, A., & Sančanin, B. (2024). Examining the Influence of Human Potential on Organizational Efficiency in the Company. *REVIZOR- Časopis za upravljanje organizacijama, finansije i reviziju*, 27(107), 1-8.
25. Psacharopoulos, G., & H. A. Patrinos. (2018). Returns to investment in education: a decennial review of the global literature. *Education Economics*, 26(5), 445- 458.
26. Quote Origin, Is Imagination More Important Than Knowledge. <https://quoteinvestigator.com/2013/01/01/einstein-imagination/>, pristupljeno 12.1.2025.
27. Republika Srbija Nacionalna služba za zapošljavanje (2023). Mesečni statistički bilten za decembar 2022 - Nezaposlenost i zapošljavanje u Republici Srbiji broj 243, <https://www.nsz.gov.rs/filemanager/Files/Dokumenta/Statisti%C4%8Dki%20bilteni/2023/Bilten%20NSZ%20-%20Decembar%202023.pdf>, pristupljeno 3.3.2024.
28. Republika Srbija Nacionalna služba za zapošljavanje (2024). Mesečni statistički bilten Nezaposlenost i zapošljavanje u Republici Srbiji broj 267, [https://www.nsz.gov.rs/live/dokumenti/statistiki\\_bilteni\\_nsz.cid667](https://www.nsz.gov.rs/live/dokumenti/statistiki_bilteni_nsz.cid667) pristupljeno 3.1.2025.
29. Republički zavod za statistiku (31.07.2023). Srbija Popis 2022. <https://popis2022.stat.gov.rs/sr-Cyrl/5-vestisaopstenja/news-events/20230731-skolska-sprema-pismenost>
30. Rughani, S. (January 8, 2025). Enabling a profession in global transformation: Opportunities for professional accountants in business, <https://www.ifac.org/knowledge-gateway/discussion/enabling-profession-global-transformation-opportunities-professional-accountants-business>, pristupljeno 5.1.2025.
31. Stephany, F., & Teutloff, O. (2024). What is the price of a skill? The value of complementarity, *Research Policy*, 53(1), 104898, <https://doi.org/10.1016/j.respol.2023.104898>
32. Stoian, M. C., Tardios, J. A., & Samdanis, M. (2024). The knowledge-based view in international business: A systematic review of the literature and future research directions. *International Business Review*, 102239.
33. Top Employe Institute (2024). Find a Top Employer. <https://www.top-employers.com/top-employers-global-2024/>, pristupljeno 28.1.2025.
34. World Economic Forum (2022). Catalysing Education 4.0: Investing in the Future of Learning for a Human-Centric Recovery.
35. World Economic Forum (2023). Defining Education 4.0: A Taxonomy for the Future Learning.

## KNOWLEDGE AND/OR SKILLS FOR MANAGING LIMITED ECONOMIC, NATURAL AND HUMAN RESOURCES

**Summary:** Knowledge enables critical thinking, problem-solving, and informed decision-making, and is the foundation for innovation and progress in various fields. Skills are practical abilities that allow individuals to apply their knowledge in real-world situations. The massive increase in the amount of knowledge that individuals generate through new information technologies will require advanced skills and abilities to manage that knowledge. The dynamic and challenging business environment of modern organizations, in addition to appropriate specific knowledge, requires appropriate cognitive, social and physical skills that enable employees to manage these challenges. The acquisition of knowledge and skills occurs continuously, formally and informally throughout life. This paper outlines a framework for a comprehensive understanding of the needs for knowledge and skills, their relationship and how these knowledge and skills are acquired.

**Keywords:** economic benefits, education, investment, cognitive skills, social skills.

## EDUCATION, KNOWLEDGE AND KEY HUMAN-CENTRIC SKILLS IN THE ERA OF ARTIFICIAL INTELLIGENCE<sup>7</sup>

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**Summary:** This comprehensive article explores the importance and role of education, knowledge and key human-centric skills in the era of Artificial Intelligence (AI). AI can be best described as an emerging technology and branch of computer science that relies on machine and deep learning in its attempt to simulate human intelligence by applying special software-encoded heuristic solutions, based on a comprehensive learning process through training data. The modern era is accompanied by numerous challenges in the application of AI, especially from the aspect of education, knowledge and key human skills that are necessary for its ethical and safe application. At its beginning, the article provides basic explanations and the history of the origin of this term, as well as the usual risks and threats of using this new technology. After that, the article is focused towards portraying the role of education and knowledge in the ubiquitous era of the application of Artificial Intelligence. In recent years, contemporary society is facing the unexpected rise of AI in its business, economic, legal, cultural, educational, economic, technological, and many other fields. It has deeply penetrated the sphere of knowledge, education and research and development (R&D) and over time it has been shown that AI has the ability to solve some of the burning problems in the education process, to introduce innovations in teaching practices, to ensure inclusive and equal quality education for all, as well as to revolutionize teaching and learning methods and scientific research processes. However, in an era of pervasive concern about whether or not AI can replace human work and existing jobs, the article concludes that while it can perform some routine tasks and procedures, it cannot replace the systems thinking, humane knowledge and key human skills, otherwise necessary for solving problems and achieving deep scientific truths, knowledge and discoveries. Finally, the article deals with an extensive analysis of key human-centric skills (creativity, critical thinking, communication and cooperation) otherwise crucial for the safe and ethical application of Artificial Intelligence systems.

**Keywords:** Artificial Intelligence, education, knowledge, key human-centric skills, human intelligence, teaching methods and practices, research and development (R&D).

### INTRODUCTION

Artificial Intelligence (AI) is an emerging technology and branch of computer science that relies on machine and deep learning in its attempt to imitate human intelligence by applying special software-encoded heuristics. This notion is based on a comprehensive learning process that enables an intelligent system to learn and adapt in new ways by training data. This term is also often equated with the simulation of human intelligence through computers and computer-controlled robots that are

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programmed to think like humans and to imitate their thoughts, decisions and actions (34). As such, AI allows contemporary computers to use vast amounts of data for decision-making processes or performing routine activities. AI is based on the iterative processing of a large amount of data and intelligent algorithms that enable the software to learn automatically based on training data, as well as on their recognizable patterns. In this process, computer-controlled robots and digital computers perform common tasks normally performed by intelligent beings, while enabling the ability of reasoning, discovering the meaning, generalizing ideas and data, and learning from past experiences (8). In this sense, AI can enable computers and other computerized machines to model and improve the abilities and quality of human thinking (41).

Artificial Intelligence brings numerous benefits to contemporary society. AI raises the efficiency of business processes and resources and enables analytical processing and automation of complex tasks, thus reducing the operating costs and maintaining business resources. It also increases the organizational fund of human intelligence, the work productivity and knowledge of employees, as well as the possibilities of forecasting, thereby improving creativity, quality and efficiency of business and decision-making processes. Finally, in addition to the exceptional empowerment and development of human resources in modern organizations, AI also leads to an unequivocal increase in quality, differentiation and personalization of services (1). Other sources of the most significant advantages of using AI include the growth of intelligent process solutions, the reduction of human errors during work, its successful applications in healthcare, increasing the efficiency of the decision-making process, raising accuracy and predictability, the use of superior technology and the automation of business processes, digital support, permanent availability, personalization of banking and insurance services, etc. In addition to facilitating the people daily life and work, reducing the effort in finding ideal solutions and increasing the precision of business tasks (35), recently there has been a rising importance of various AI applications for the social and economic development with special emphasis on their financial, industry, production, service, medical, legal, scientific and many other applications. Due to all of the above, the possibilities of profiting from this technology, which offers unique benefits and solutions, are also growing today (33, pp. 78-85).

Artificial Intelligence dates back to the middle of the 20th century when inventors and scientists began to explore the possibilities of creating machines that would simulate human intelligence. This term originates from the 1956 Dartmouth Conference, where the first working AI program called Logic Theorist was demonstrated, while in the early 1960s the first analogical and algebraic problems contained in IQ tests began to be solved. At the same time the precursors of the Internet appeared, even requiring computer literacy from undergraduates. The beginning of the 1970s will be remembered for the scientific turning point in AI, in which the role of knowledge as an important factor in the intelligent beings reasoning was highlighted for the first time. Those times will also stay remembered by the introduction of intelligent robots and the development of computer-based medical diagnostic and therapeutic systems, while the 1980s was noted for the commercialization of AI solutions, including robot pets, emotional robots and smart toys (24, pp. XXVI-XXX.). The first AI based computer program for playing chess was also written at the University of Manchester in 1951 by Christopher Strachey and Dietrich Prinz (45). In later years, researchers began to examine early AI approaches including rule-based systems that mimic human decision-making and reasoning processes, various expert systems, and neural networks. After certain stagnation in the development of modern AI systems, the emergence of machine and deep learning at the end of the 20th century gave impetus to the further improvement and revival of this powerful computer technology (33, pp. 78-79). Today, AI has its immense and indisputable importance for the functioning and performing of tasks in various fields such as: efficiency and automation of business processes; more accurate decision making; processing and analysis of vast data; services personalization within streaming; e-commerce and social media platforms; prediction, diagnosis and treatment of medical diseases; functioning of autonomous systems such as drones, self-driving cars, etc. education; finance; insurance; environmental protection;

scientific research; space research; cyber security; social services and welfare; agricultural production, etc. (37).

### **RISKS OF APPLYING ARTIFICIAL INTELLIGENCE**

Despite its numerous advantages and benefits, the application of Artificial Intelligence carries with itself its own dangers and numerous risks. They mainly relate to the dangers of lack of transparency in decision-making by complex AI systems, growth of unemployment, job losses and economic instability, its malicious and uncontrolled use, growth of dependence on AI, loss of privacy, deepening of social inequalities, as well as the absence of control over this technology that could threaten the functioning and survival of the entire contemporary society. However, as is the case with any other technology, AI can also be used for positive and negative purposes, which is why it must be applied in an ethically responsible, prudential and comprehensively controlled manner. In this sense, modern society has at its disposal several means by which it can exercise control over its application, such as legal regulations and adopted standards, appropriate ethical approaches, audit and accountability, education, human-machine cooperation, and finally rising of awareness, as well as research and development (R&D) (4, pp. 1-2). It is clear that the changing nature of the business environment will certainly require the introduction of more adequate and comprehensive regulatory and protective measures. Other literature sources also in the form of the main dangers of using modern AI technologies state that there is a risk of machines and super intelligence taking power and control over the human factor and threatening the survival of humanity itself (25, p. 2). In this sense, Du and Yuan (7, p. 273) divide all the existing risks of using AI technology in the social sciences into technical, ethical, social and existential risks from the aspects of informatics, economics, philosophy and medicine. Some authors such as Mahmoud (23, p. 2) also mention the cyber security risks of applying AI solutions that are related to the operation of computers, servers and mobile devices. They can be deeply dangerous and cause great consequences. The author divides all these risks into: a) threats that are based on software and/or code being caused by the intentional action of people (malware, malicious bots, computer viruses, etc.) and b) risks of personal interaction that are conditioned by access to personal data and information (social engineering, insider threats, data hacking, etc.).

The risks of innovations in the application of AI are also very significant, the benefits of which must be harvested in an ethically responsible and socially beneficial way. At the same time, these risks can be safely managed only with the implementation of continuous R&D activities, as well as the introduction of new standards, appropriate regulations and policies that would give a unique answer to all challenges related to these issues and ensure the safe use of AI innovations (Centre for Research and Evidence on Security Treats, 2023). These risks are all the greater if we take into account the fact that innovations always bring with themselves some unexplored novelty and uncertainty that must be supported by the active role of the state and society. Namely, since there is no economic development without innovation and technological progress, and therefore also without innovative AI technologies, the role of the state is to ensure an appropriate macroeconomic environment by actively investing in appropriate legal, financial, corporate, educational, scientific-research (19, p. 27), computer and information infrastructure. From the perspective of this analysis, perhaps the most interesting risks are the dangers of AI application in the economy and wider society. Until now, many conducted research studies have been predicted that AI will largely replace existing positions, but also complement human work and existing jobs. Since there are also jobs where AI applications can skilfully perform routine tasks and obviously replace the human work, recently there is growing concern about a possible drop in the demand for work, which could consequently lead to lower wages in certain economic sectors and generally reduced employment. According to International Monetary Fund (IMF) estimates, in extreme cases, some of the current jobs could even disappear. Finally, research indicates that the intensive application of AI could also cause an increase in inequality within modern countries since it affects the level of income and the skills and knowledge of employees (13).

## EDUCATION IN THE ERA OF ARTIFICIAL INTELLIGENCE APPLICATION

In recent years, contemporary society has witnessed the unexpected rise of Artificial Intelligence in its cultural, educational, economic and technological spheres. It has been shown that AI has the ability to solve some of the most pressing problems in the education process, to introduce innovations in teaching practices and to ensure inclusive and equally quality education for all (39). This intention is also known as the Fourth Global Sustainable Development Goal (SDG 4) that supports the decrease of disparities and inequalities in quality and access to educational services for all members of modern society without any discrimination (40). In this sense, AI has greatly transformed the ways of learning and teaching by integrating itself deeper into the educational sector. However, influencing the development of education and modern society itself, AI systems have also influenced the improvement of human development, which can be defined as the process of realizing the basic freedoms, abilities and possibilities of individuals in order to improve their general well-being. This approach therefore includes the enrichment of knowledge, the development of people's abilities and skills, the expansion of their choices, the encouragement of elementary freedoms and the respect of human rights as the basic prerequisites for achieving human development (21, p. 19).

Education can otherwise be described as a process of teaching, training and learning that is usually carried out in formal work environments, i.e. in schools and higher education institutions with the aim of improving the knowledge and developing the skills of pupils and students. In a somewhat broader context, it represents a specific type of teaching, lectures or training aimed at improving the knowledge, skills and business practices of course participants. Education is an essential factor in the economic development and competitiveness and plays a key role in national and wider economic policies (15, p. 133). With the accelerated development of the modern global economy and society, and especially the emergence and development of information technologies (IT), AI and digitization of the economy and society are among the processes that have made lifelong learning a key goal of contemporary education and training policy. Technological progress and international economic integrations are rapidly changing the structure of the global economy, placing increasing emphasis on the need for introducing and developing innovations, mastering new knowledge and skills, increasing productivity, as well as adapting to ongoing structural changes as painlessly as possible. Therefore, today special emphasis is placed on the expectations from individuals to acquire new knowledge, skills and experience as efficiently as possible (16, pp. 124-131), in which AI-based technologies can certainly largely help them. This is all the more true since the prevailing digital technologies have fundamentally changed people's ways of life, their business and behaviour, penetrating all aspects of their daily life (20, p. 145).

Today, AI is ubiquitous in several spheres of education such as AI-based educational games, adaptive learning platforms, automated learning systems, chat bots, intelligent tutoring systems, etc. (9). So far, the European Union (EU) has been the first to adopt legal measures on the application of Artificial Intelligence in various spheres, along with the development of technologies that encourage economic growth, innovations and new jobs creation. In this way, AI has grown into a unique and recognizable feature trend of the modern era of digitalization. It is based on machine and deep learning that recognizes data creation and prediction patterns, as a result of which its application requires a special set of specific knowledge, skills, experience, and talents. In contrast to usual assumptions that are mainly based on the negative effects of AI on the jobs preservation, there are also affirmative predictions about its positive impact on social development and the creation of new jobs. They especially relate to the fields of medicine, education, science, public administration, business processes, industrial production, air transportation, banking and insurance, gaming and entertainment, development, to the use of deep data, etc.

The importance of AI for the development of modern society is all the greater if one takes into account the fact that, according to some predictions, its appearing forms could influence the growth of the

## Education, knowledge and key human-centric skills in the era of artificial intelligence

annual global gross domestic product (GDP) by even up to 7% (39). Consulting agency Goldman Sachs indicates that AI has the potential to accelerate labour productivity<sup>10</sup> and global GDP growth in the coming decades (11). Similarly, the IMF predicts that AI will undoubtedly transform the global economy, bringing numerous benefits, but also challenges for modern humanity, along with certain changes. It is expected that they will affect the reshaping of almost 40% of jobs in less developed countries and 60% of jobs and positions on developed labour markets, either in the form of their completely replacement or in the form of adding a complement to human labour. The IMF also expects that these changes will certainly be more invasive and pronounced in advanced economies that have far more AI-based and digital jobs, as well as those that are abundant in advanced technologies. In advanced economies, the integration of AI in one half of current jobs could increase productivity and work effectiveness, while in the other half of jobs it could lead to the replacement of human work, causing the disappearance of certain jobs, a decrease in wages, the wave of hiring and slowing down employment processes (10).

The application of AI in the education sector can improve learning outcomes and support teaching staff in their daily teaching practice. Positive examples of the application of AI in education are numerous and they range from automatic assessment of assignments, customized curricula, precise prediction of learning outcomes, automation of teaching tasks and creation of smart contents, all the way to personalization of learning systems, chat bots for student support, resource planning, learning support, design and development of teaching curricula, automation of working tasks, AI educational games, specific teaching platforms, as well as decentralized and secure learning systems (29). The effects of integrating AI and digital technologies into the education system were particularly visible and useful during the Covid-19 pandemic, when many educational institutions had to adapt to the new reality by resorting to digitization and automation of their work processes, while working from home, switching to electronic teaching and the like. Conducted research confirmed that the transition to electronic teaching, at least in Serbia, most likely improved the quality, inclusiveness and resilience of teaching processes, as well as expected educational outcomes and results (17, p. 13).

The pandemic otherwise left its dramatic traces and consequences on global economic activity. As a result of its trends and actions, there was a disruption of industrial production, a slowdown in economic growth, a reduction in the volume of trade in goods and services, the volatility of financial markets, disruption of global supply chains and, in general, a decrease in people's income and an increase in general insecurity. All this events have naturally also reflected on the possibility of realizing the global Sustainable Development Goals (SDGs) (43, p. 331). It is well known that the exchange of goods and services is one of the most important areas of economic cooperation, affecting the economic prospects and possibilities of GDP growth (31, p. 83), and thus the economic and social development of each country. At the same time, insufficient exchange of goods and services, especially of strategic and agricultural products, can turn into a kind of trade and development problem, just as is the case with insufficiently developed trade relations between Serbia and the Republic of Armenia (32, pp. 14-15). This is also the case with the exchange of goods between Serbia and the Republic of Kazakhstan, which could be even richer, bearing in mind that it is based on important agricultural and food products. Otherwise, the production of these products in Serbia is supported by an excellent raw material base and has always been a part of the national culture and traditions (30, pp. 86-111). And such circumstances can further affect the quality of the business environment itself, and thus also the possibilities of development of numerous developmental-important areas of modern society, such as education, knowledge, science, R&D activities, digital economy, etc. Also, in return, the quality of education itself can influence economic and trade development by creating basic predispositions for the development of special knowledge, skills and abilities of individuals in the societies to which they belong (36). The great impact of the pandemic

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<sup>10</sup> By 1% in emerging markets, 1.3% in the global market and even 1.5% in developing countries.

was particularly evident and expressed in all sectors of the highly globalized economy, during the introduction of quarantine measures and the closure of countries, and especially in international business (42, p. 589).

Artificial Intelligence has undoubtedly revolutionized the global education sector with its various applications and forms of use, leading to more effective educational outcomes, contents and solutions. Therefore, teachers and educational staff around the world began to rely more intensively on this advanced technology, aiming to build a completely new concept of active learning. According to a survey conducted by the Forbes Advisor agency, 55% of surveyed teachers believe that AI has improved educational outcomes, while only 27% of them believe that it has not or they did not have an answer to this question. The introduction of AI into the teaching process has led to the redefinition of traditional, recapitulation and purely memory learning methods in the direction of developing virtual teaching, mobile digital courses and the concept of active learning, skilfully integrating a contemporary educational surrounding. By personalizing learning practices, automatization of daily tasks and conducting deep data analysis, the integration of AI technology in this area encourages creativity, innovation, involvement and initiative of learners, while teachers and professors themselves now have the opportunity to create and introduce original interactive and dynamic teaching methods and contents such as workshops, case simulations, quizzes, special exercises, etc. In addition to the aforementioned, AI-based education methods have been shown in practice to foster students' critical thinking and problem-solving abilities, ultimately encouraging better learning outcomes for both teachers and students (2). Revolutionary changes in traditional learning methods conditioned by modern AI technologies are described in the following Table 1.

Table 1. Comparative presentation of traditional vs. AI-based learning methods

Aspect of educational process	Traditional learning	AI-based learning
Teaching methods	Mostly lectures based on equal access for all	Personalized and customized learning based on adaptive AI techniques
Engagement of students	Mostly passive – recapitulative learning and purely memorization of knowledge	Interactive learning and active engagement with real-time feedback
Knowledge testing and assessment methods	Periodic standardized tests, essay questions, quizzes and oral knowledge tests	Continuous assessment with instant feedback mechanism and customized tests
Speed of learning	Equal speed in case of all students	Individualized speed adapted to each student individually
Access to information and resources	Limited by available textbooks, teaching contents and classroom materials	Extensive digital resources and online learning platforms
A feedback mechanism on the outcomes of assignments and tests	Mostly slow and/or delayed	Immediate feedback based on demonstrated performances
Flexibility of teaching curricula	Fixed and rigid teaching curricula with little room for optimization and adaptation	Flexible, personalized and customized teaching curricula that are based on the real needs and aspirations of students
Data utilization rate	Minimal usefulness of data for teachers and teaching process	Extensive use of data analytics to improve teaching methods and skills
Development of new skills	Focusing on mere memorization and basic skills	Digital literacy and Emphasis on critical thinking, reasoning and problem-solving skills
Accessibility of teaching processes	Dependence on physical presence	Universal accessibility via internet connection
Teaching staff workload	Large administrative tasks and workloads	Reduction of administrative tasks through AI automation of work processes

Source: (2).

However, the use of advanced AI technologies in the educational process certainly brings with itself certain disadvantages and risks. AI technologies primarily increase the risk of cheating in colloquiums and final exams, as well as of performing plagiarism by students. These issues also raise concerns about the privacy of data related to students' grades, behaviour, and even biometrics. The application of AI in education increases the dangers of excessive dependence on modern technologies, as well as the absence of the human factor in the process of mastering the teaching material. Finally, these technologies can also affect the abolition of the need, displacement or even a cancellation of teachers' jobs, and therefore can cause the degradation of the teaching profession due to the absence of the need for them or the obsolescence of their knowledge and skills (6).

### **KNOWLEDGE IN THE ERA OF ARTIFICIAL INTELLIGENCE APPLICATION**

There is no doubt that AI-based technologies represent a very useful and fast-growing technological field that is based on intelligent algorithms and data systems with the task to perform routine operational assignments and thereby replacing human work to some extent. We have also already seen that these systems can process vast amounts of data and information, determine patterns of data prediction and creation, as well as process pre-programmed information and automate routine tasks. However, despite its amazing capabilities, it is important to recognize the fact that AI still has its shortcomings, risks and objective limitations. Thus, one of the basic limitations of Artificial intelligence is often cited as the lack of creativity, curiosity and independent thinking, which opens up a space for their systematic improvement in solving complex problems. Another limitation of AI is related to the lack of critical thinking and striving for new knowledge. Based on this, it follows that these systems cannot be applied independently without human knowledge and human presence in scientific and professional research. AI technology also lacks the ability to understand abstract and complex concepts, frameworks and ideas, otherwise necessary to motivate and develop scientific knowledge and find new discoveries and inventions (27). Therefore, in the pursuit for new scientific knowledge and truths, and due to the aforementioned shortcomings of AI, it can be concluded that this tool should be combined with human knowledge and experience, since the AI technology itself was created as a product of the human knowledge development and its scientific curiosity.

The modern world is otherwise faced with dynamic information and technological development, as well as with its enormous possibilities for achieving overall economic and social progress. The degree of automation and digitization of the economy and society is growing with the increased adoption of the application of information and communication technologies (ICTs), AI technologies and the increasingly intense transition of economic and social activities to the Internet (various electronic platforms, social networks, digitalization of public administration, e-commerce, etc. ). All these processes naturally lead to the emergence and development of a digital economy based on knowledge and supported by numerous technological inventions and innovations, as well as the pervasive Fourth Industrial Revolution (social networks, mobile communications, cloud computing, Internet of Things, big data analytics, etc.). In such a globalized and turbulent economic environment, natural resources and physical capital no longer have an essential role for economic development and competitive business, but information and knowledge take precedence in the form of basic development resources (44, p. 158).

At the same time, the digital era has long occupied our daily lives, confronting modern society with turbulent and unpredictable changes that now require adapting business models and practices in order to survive in the highly competitive global market. Numerous research studies confirm the positive connection between the digitization of the economy and long-term sustainable economic growth, the economy of knowledge and education, thus encouraging the further growth of creativity, competitiveness, innovation and sustainable profitability (18, p. 181). The digitization of the economy

otherwise has enabled rapid penetration of foreign markets and the internationalization of the global IT sector, especially through the development of computer programming, Artificial Intelligence, IT consulting services, e-commerce and more cost-effective business concepts. In this way, it can be said that the digitization of the economy has caused dramatic changes in the used technologies, digital and management algorithms, big data technologies and cloud computing. Along with the Fourth Industrial Revolution, digitization has grown into an important driver of innovations, modernization of contemporary society, economic growth, competitiveness and comprehensive socio-economic development of every country (22, p. 193).

Despite these technological breakthroughs, discoveries and achievements, the human knowledge and inspiration certainly have retained essential importance for the realization of progress in science and accompanying scientific discoveries. These elements trigger new ideas, inventions and innovations, lead to new scientific knowledge and produce new directions in scientific research. They appear as drivers of numerous scientific innovations and discoveries, often accompanied by human curiosity that encourages them to master new knowledge, experiences, ideas and scientific postulates. Knowledge is a powerful weapon without which it is not possible to further develop modern AI technologies, nor to realize R&D activities in practice. Ultimately, all efforts towards finding a needed solution for a particular problem or challenge can push the boundaries of what is possible, leading to new and inventive approaches to research and development issues. Therefore, although AI can perform some routine tasks and procedures, it cannot replace the systems of thinking, human knowledge and human skills necessary to solve problems and come to profound scientific truths, knowledge and discoveries.

Regardless of the undoubtedly significant penetration of AI technologies, there are also another opinions that AI cannot replace human work and human intelligence since it lacks consciousness, awareness and self-awareness. Namely, modern Artificial Intelligence systems still largely rely on the human factor and supervision, while the process by which they make decisions is rather conditioned by established data patterns and analytics, than by intention or awareness. In order to establish control over AI systems and for them to function in general for the benefit of people and society, it is of crucial importance to insist on the responsible development of AI, the establishment of ethical norms and standards, as well as responsible and effective regulations. There are opinions that Artificial Intelligence will never replace the work of people because, first of all, AI does not possess emotional intelligence, work creativity, empathy, breadth of view, intuition and instinct, the ability to learn dynamically and adapt, nor the ability to make decisions in an ethically grounded way (12). In other words, AI is only the result of the people work and research, while for greater scientific and other social achievements, the presence of the human factor is still necessary. It is about the presence of people, together with their natural curiosity, plans and ideas, awareness, self-awareness, conscience, breadth of understanding, instinct and intuition, work creativity, empathy, as well as other features that make up modern human beings.

Zara (46) also states that although AI systems can very diligently imitate human intelligence in terms of understanding, learning and reasoning, they are unable to replace humans since only humans can use their knowledge, abilities and skills to create and develop AI applications through programming and making appropriate algorithms. AI technologies only serve to facilitate the performance of complex tasks and processes since they are based on automation that replaces manual work. This author also points out the lack of emotional intelligence, their algorithmic work, limited creativity, the need to verify data and the absence of soft skills as the main arguments for which it is believed that AI will never be able to replace human intelligence. Today, humans are the only ones who develop and control AI applications and implement certain security measures, while the future of this technology requires the skilful collaboration of humans and machines on their way to safe use of AI. Although AI technology enables improved problem and task solving through deep data analysis and the application of machine learning algorithms and although it thus improves the user experience, it can still lead to the displacement of jobs and layoffs as some tasks can become automated. Therefore, it is necessary to

accept AI exclusively as a complementary tool, as well as to achieve a balance between it and the human factor in the activities of programming, development and performance of daily tasks and assignments (26, p. 1).

### **KEY HUMAN-CENTRIC SKILLS IN THE ERA OF ARTIFICIAL INTELLIGENCE APPLICATION**

The application of contemporary AI systems also requires from people to possess certain new skills, knowledge and talents that should help them better understand and take advantage of AI technological systems and applications. Numerous literature sources state that these skills primarily include creativity, the ability to critically thinking, communication skills, and the ability to work together and in teams. These skills are equally important both for working with AI applications, as well as for solving numerous ethical, social and environmental issues and challenges caused by the application of Artificial Intelligence. Therefore, it is very important to identify and analyze essential human-centric skills that are of key importance for working with modern AI systems. Human-centric skills are also called "soft" skills, that is, those skills that are based on human characteristics, qualities and knowledge and that are mainly acquired through sharing social experience and interacting with other people. This is mainly about skills that machines cannot learn, acquire and demonstrate, such as unstructured problem solving, active listening and compassion, emotional intelligence, empathy, adaptability to change, creativity, collaboration and cooperation, persuasiveness, communicativeness, analytical reasoning, and etc. (3). Therefore, the four key categories of skills needed to work with AI include and wider known as Four Cs include (38):

- Creativity - as the ability to generate and build new and valuable ideas, products and solutions relevant to a given problem or context. Creativity is, among other things, a key skill that can shape the performance and innovation of AI systems, but also enable people to respond better to the future uncertainties and complexities of the business environment. This feature mainly comes to the fore when identifying problems, collecting and analyzing data, designing models, testing, evaluating and improving new products, processes and services, as well as when searching for new areas of AI application.
- Critically thinking - as the ability to analyze, evaluate and synthesize information gathered from different sources. This is also the ability of applying logic, common sense, good judgment, as well as reasonable use of evidence in order to make informed judgments and decisions. Critical thinking is a key human skill that can improve the quality and reliability of AI technological innovation systems, as well as enable people to better understand them and question their strengths, limitations, and implications. It is used in various stages of AI development and application such as data collection, model validation, error detection, bias mitigation, drawing conclusions and interpreting final results. Critical thinking can also help people assess the credibility and trustworthiness of Artificial Intelligence systems or challenge their authority and responsibility.
- Communicativeness - as the ability to exchange information, ideas or emotions with other people, in an appropriate way and through different information and media. Communicativeness bears the epithet of a key human skill that can facilitate the cooperation and coordination of AI systems, but also enable humans to communicate with them, shape them, and influence them. This skill can be applied in various stages of AI system development and implementation such as data recording, explaining models, gathering feedback, providing user guidance and presenting results. This skill can also help people to express their needs, preferences, and expectations of AI systems, or at least to understand and respond to the outcomes of AI systems.
- Collaboration - as another skill that is necessary in the application of modern AI systems and which refers to the collaboration of people and machines. This also refers to the collaboration of people with other individuals with the aim of effective and constructive work on some common

goal, task or outcome. Collaboration is one of the key human-centric skills since it can improve the productivity, performance, effectiveness and innovation of modern AI systems, as well as enable people to take advantage of the possibilities of combining complementary human characteristics with AI systems. Collaboration can be applied in various stages of AI development and application, such as data and model integration, formation of work teams, assignment and division of tasks, and evaluation of achieved results. It can also help people to coordinate their actions, roles and responsibilities with AI systems or adapt their strategies, behaviours and expectations to the limitations and capabilities of AI systems.

The explained categories of human-centric skills needed to work with modern AI systems are not mutually exclusive, but are mutually related, complementary and overlapping. These are flexible skills that are acquired and developed over time, mainly through the processes of work, education and training. The era of Artificial Intelligence is characterized by rapid and profound changes in market trends, consumer preferences and the business environment. These changes have a significant impact on the internal functioning of any organization, as well as on its employees and work processes, and especially on the demand for complex information, as well as cognitive and data processing skills. They are necessary for understanding, adaptability and implementation of innovations in real life guided by the use of Artificial Intelligence systems. In addition to these skills, other skills needed to master modern AI technologies include data analysis and visualization, systems thinking, design-based thinking, decision-making based on data, agility and continuous learning, leadership, appropriate interpersonal skills, etc.

These skills, in their combination with educational robots, are also mentioned in the meta-analysis of Rapti and Sapounidis (28) performed on the example of 59 scientific articles written and published in the period from 2012 to 2023. This study considers these skills to be crucial for the mastery of knowledge by children in kindergartens and younger students. The authors conclude that robotics can have a beneficial effect on children's cognitive skills and creativity, but that it cannot encourage their mutual relationships and emotional interaction. In this sense, AI has revolutionized educational practices by providing innovative ways to assess students' knowledge, abilities, and these skills, especially in English language classrooms. By using AI technologies such as natural language processing, speech recognition and machine learning, but also by pursuing active ways of checking knowledge such as creative and collaborative projects, learning based on problem solving, role playing, oral presentations, solving complex tasks, visual projects and innovative solutions, teaching staff can recognize the key skills of its pupils and students and at the same time provide them with personalized, active and far more effective and exciting learning experiences. Despite their numerous mentioned shortcomings, the need for the ethical use of AI systems is particularly highlighted in order to ensure their impartial implementation for objective evaluation of knowledge. Finally, the very process of evaluating pupils and students must be aligned with the broader goals of encouraging creativity, critical thinking, communicativeness and striving for lifelong learning (14, pp. 1-4).

## CONCLUSION

Fast progress, the acceptance and application of Artificial Intelligence represent a significant challenge, but also a great opportunity for the development of education, knowledge and human skills in the modern age. As we have seen, modern Artificial Intelligence systems can perform various complex tasks that are normally performed by humans, such as data analysis, decision-making based on vast data, automation of work tasks and business processes, processing and analysis of huge data, personalization of services, development of various business platforms and social media, prediction, diagnosis and treatment of diseases, functioning of autonomous systems, and even understanding foreign languages, etc. However, AI systems also generate new compatible requirements with needed human skills that can upgrade and improve their utilization, such as creativity, critical thinking, communication and collaboration.

## Education, knowledge and key human-centric skills in the era of artificial intelligence

Artificial Intelligence can be described as a kind of computer science branch, but also as a technology for creating machines and systems capable for performing routine tasks that usually require the presence of human intelligence. Recently, AI has experienced an accelerated rise and progress, especially in the spheres of IT, business, education and knowledge, thanks to the availability of significant volumes of data, powerful computers and sophisticated algorithms. Therefore, AI is widely used today in various fields such as healthcare, education, R&D, law, services personalization, business and entertainment, etc. bringing significant benefits to the wider community, as well as opportunities for the development of modern society. However, despite its numerous advantages and benefits, AI still cannot replace human work, system thinking of people, human knowledge and people skills necessary to solve complex problems and to come to profound scientific truths, knowledge and discoveries. Regardless of the undoubtedly significant penetration of AI technologies, they still cannot replace people and human intelligence at the same time since they lack consciousness, awareness and self-awareness. Namely, modern Artificial Intelligence systems still largely rely on the human factor and supervision, while the decision-making process by AI is rather conditioned by established patterns and data analytics than by conscious intention and action. Therefore, in order to establish control over AI systems and for them to function in general for the benefit of people and contemporary society, it is of crucial importance to insist on the responsible development of AI, the establishment of ethical norms and standards, as well as on responsible and effective regulations.

In addition to its indisputable advantages, today AI also poses significant challenges and risks from the aspect of developing and using human skills. AI systems have the ability to perform numerous tasks that traditionally require the specific human knowledge and skills. In this group of tasks, for example, we include accounting, research in the field of law and providing services to users with the possibility to partially or to some extent replace the work of people. The use of Artificial Intelligence also sets new requirements for the Four Cs capabilities that would complement or improve the results of the application of AI technologies and, as we have already seen, in these skills we primarily include creativity, critical thinking, communication and collaboration. These competencies represent an imperative for the successful application of AI systems, but also for solving numerous ethical, social and environmental challenges and issues brought by the development of advanced technological solutions.

It is therefore very important to understand the impact of AI on human capabilities, as well as its implications for education, training and the development of new knowledge and skills. Education and training otherwise represent fundamental instruments for training and enriching people with new knowledge and necessary competencies with the aim of performing work tasks as efficiently as possible and better coping in the era of Artificial Intelligence. However, modern education and training systems still have a long way to go to meet the variable educational needs and changing expectations of all participants in the learning process, employers and wider society in the context of AI application. In this sense, innovative pedagogical approaches and technologies, as well as methods of acquiring new knowledge can improve the effects of using AI in the process of learning and acquiring new skills.

### LITERATURE

1. Accenture (2024). The art of AI maturity: Advancing from practice to performance. Available at: <https://www.accenture.com/us-en/insights/artificial-intelligence-summary-index>
2. Appinventiv (2024). 12 Ways AI in Education is Transforming the Industry, August 8, 2024. Available at: <https://appinventiv.com/blog/artificial-intelligence-in-education/>
3. Australian College of Applied Professions (2024). Human-Centric Skills and the Future of Work. Available at: <https://www.acap.edu.au/newsletters/human-centric-skills-and-the-future-of-work/>
4. Božić, V. (2023). The Dangers of Artificial Intelligence, May 2023. Author's content, 1-4. <http://dx.doi.org/10.13140/RG.2.2.22058.80326>. Available at:

<https://www.researchgate.net/publication/370659879> THE DANGERS OF ARTIFICIAL INTELLIGENCE

5. Centre for Research and Evidence on Security Treats (2023). AI Innovation Risks and Implications, March 7, 2023. Available at: <https://crestresearch.ac.uk/comment/ai-innovation-risks-and-implications/>
6. Clugston, B. (2024). Advantages and Disadvantages of AI in Education, University Canada West, July 19, 2024. Available at: <https://www.ucanwest.ca/blog/education-careers-tips/advantages-and-disadvantages-of-ai-in-education/>
7. Du, Y., & Yaun, C. (2023). A Review of Artificial Intelligence Risks in Social Sciences Research. *A Review of Artificial Intelligence Risks*, PMIS 2022, AHCS 6, 273–293. [https://doi.org/10.2991/978-94-6463-016-9\\_30](https://doi.org/10.2991/978-94-6463-016-9_30)
8. Encyclopaedia Britannica (2024). Artificial Intelligence, August 16, 2024. Available at: <https://www.britannica.com/technology/artificial-intelligence> (Accessed on: August 16, 2024).
9. Forbes Advisor (2024). Artificial Intelligence In Education: Teachers’ Opinions On AI In The Classroom, Jun 6, 2024. Available at: <https://www.forbes.com/advisor/education/it-and-tech/artificial-intelligence-in-school/>
10. Georgieva, K. (2024). AI Will Transform the Global Economy. Let’s Make Sure It Benefits Humanity, *IMF Blog*, January 14, 2024. Available at: <https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity>
11. Goldman Sachs (2024). AI is showing "very positive" signs of eventually boosting GDP and productivity, May 13, 2024. Available at: <https://www.goldmansachs.com/insights/articles/AI-is-showing-very-positive-signs-of-boosting-gdp>
12. Gupta, V. K. (2024). Can AI replace Human Intelligence?, Antino, March 3, 2024. Available at: <https://www.antino.com/blog/why-ai-never-replace-humans> (Accessed on: August 20, 2024).
13. International Monetary Fund Blog (2024). AI Will Transform the Global Economy. Let’s Make Sure It Benefits Humanity, January 14, 2024. Available at: <https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity#:~:text=For%20the%20other%20half%2C%20AI.of%20these%20jobs%20may%20disappear>.
14. Khairi, F. (2024). Integrating Artificial Intelligence in Evaluating the 4Cs -Creative Thinking, Collaboration, Communication, and Creativity-in English Language Classrooms, March 2024, 1-5. <http://dx.doi.org/10.13140/RG.2.2.15455.88488>
15. Madžar, L. (2013). Politika visokog obrazovanja u Evropskoj uniji – Preporuke za Srbiju. *Obrazovanje i razvoj*, Institut društvenih nauka, Beograd, 133-141.
16. Madžar, L. (2019). Uloga znanja i obrazovanja u savremenim održivim demokratskim društvima. *Ekonomski vidici*, 26(3-4), 123-136.
17. Madžar, L., Karić, D., & Paspalj, D. (2021). The Possible Impact of the Online Learning on the Quality of Education in Serbia during the Covid-19 Pandemic. *Studies and Scientific Researches Economic Edition*, No. 34, 13-23. <http://dx.doi.org/10.29358/sceco.v0i34.496>
18. Madžar, L. (2022b). Motives for the Introduction of Agricultural Innovations in Serbia with Particular Accent on Beekeepers: the Application of Logistic Regression. *Economics of Agriculture*, 69(1), 27-41. <https://doi.org/10.5937/ekoPolj2201027M>
19. Madžar, L. (2022a). Stanje digitalne privrede u Srbiji. *Šesta naučno-stručna konferencija Trendovi u poslovanju 2022*, Visoka škola za poslovnu ekonomiju i preduzetništvo „Prof. dr Radomir Bojković“, Kruševac, 181-190.
20. Madžar, L. (2023). The Impact of the Digital Economy on Labour Productivity in Serbia: Application of the ARDL and ECM Approaches. *Glasnik za društvene nauke*, 15(15), 145-166.
21. Madžar, L, Gajić, A., & Kačarević, S. (2024a). The Economic and Environmental Factors Influence on HDI in Southeast European Countries. *Ekonomija teorija i praksa*, 27(1), 19-36. <http://dx.doi.org/10.5937/etp2401019M>

22. Madžar, L., Balaban, S., & Milošević, M. (2024b). The State and Scope of the Digital Sector in the Republic of Serbia. *Second International Scientific Conference "Challenges of Digitalization in the Business World"*, Alfa BK University, Belgrade, 178-197.
23. Mahmoud, M. (2023). The Risks and Vulnerabilities of Artificial Intelligence Usage in Information Security. *The 2023 International Conference on Computational Science and Computational Intelligence (CSCI)*, Las Vegas, Nevada, USA, 1-4. <http://dx.doi.org/10.1109/CSCI62032.2023.00047>
24. McCorduck, P. (2004). *Machines Who Think – A Personal Inquiry into the History and Prospects of Artificial Intelligence*, K. Peters Ltd., Natick, Massachusetts.
25. Müller, V. C. (2015). Editorial: Risks of Artificial Intelligence. *Risks of general intelligence*, CRC Press, London, 1-7.
26. Najmiddinov, A. (2023). Will Artificial Intelligence (AI) Replace a Human in IT?, July 2023, 1-15. <http://dx.doi.org/10.5281/zenodo.8117457>
27. Randieri, C. (2023). Can AI Replace Human Curiosity?, *Forbes*, March 23, 2023. Available at: <https://www.forbes.com/councils/forbestechcouncil/2023/03/22/can-ai-replace-human-curiosity/#:~:text=While%20AI%20can%20replace%20some,outstanding%20results%20in%20scientific%20pursuits.>
28. Rapti, S., & Sapounidis, T. (2024). “Critical thinking, Communication, Collaboration, Creativity in kindergarten with Educational Robotics”: A scoping review (2012–2023). *Computers & Education*, Vol. 210, March 2024. <https://doi.org/10.1016/j.compedu.2023.104968>
29. Shamkina, V. (2024). AI in education: top applications, real-life examples and adoption tips. *Itransition*, March 25, 2024. Available at: <https://www.itransition.com/ai/education>
30. Simić, M., & Stankov, B. (2020). Foreign trade in agricultural products between the Republic of Serbia and the Republic of Kazakhstan: A decade since the signing of the Free Trade Agreement. *Škola biznisa*, January 2020, 2020(1), 86-111. <http://dx.doi.org/10.5937/skolbiz1-30243>
31. Simić, M., Vassileva, A., & Aničić, A. (2021a). Economic aspects of the integration processes of the Republic of Serbia. *Oditor*, 7(2), 83-93. <http://dx.doi.org/10.5937/Oditor2102083S>
32. Simić, M., & Vassileva, A. (2021b). Foreign Trade in Agricultural Products of the Republic of Serbia and the Republic of Armenia – Euro-Asian Integration Processes. *Revizor*, 24(93), 7-15. <http://dx.doi.org/10.5937/Rev2193007S>
33. Slapczyński, T. (2022). Artificial Intelligence in science and everyday life, its application and development prospects. *ASEJ*, 26(4), 78-85.
34. Startech (2022). Veštačka inteligencija, September 19, 2022. Available at: <https://www.startech.org.rs/ve%C5%A1ta%C4%8Dka-inteligencija> (Accessed on: August 16, 2024).
35. T Free Learning Platform for Better Future (2024). Importance of Artificial Intelligence. Available at: <https://www.javatpoint.com/importance-of-artificial-intelligence> (Accessed on: August 16, 2024).
36. Tee, J. H. (2024). Education in trade and sustainable economic development. *Hinrich Foundation*, May 7, 2024. Available at: <https://www.hinrichfoundation.com/research/wp/sustainable/education-in-trade-and-sustainable-economic-development/#:~:text=Education%20can%20influence%20economic%20development,have%20higher%20per%20capita%20incomes.>
37. Thomas, M. (2023). Importance of Artificial Intelligence. Available at: <https://www.slideshare.net/slideshow/importance-of-artificial-intelligencepdf/260290038>
38. Thornhill-Miller, B., Camarda, A., Mercier, M., Burkhardt, J. M., Morisseau, T., Bourgeois-Bougrine, S., Vinchon, F., El Hayek, S., Augereau-Landais, M., Mourey, F, Feybesse, C., Sundquist, D., & Lubart, T. (2023). Creativity, Critical Thinking, Communication, and Collaboration: Assessment, Certification, and Promotion of 21st Century Skills for the Future of Work and Education. *Journal of Intelligence*, 11(3): 54. <https://doi.org/10.3390/2Fjintelligence11030054>
39. UNESCO (2024). Artificial intelligence in education. Available at: <https://www.unesco.org/en/digital-education/artificial-intelligence> (Accessed on: August 17, 2024).

40. UNICEF Data (2024). Goal 4: Quality Education. Available at: <https://data.unicef.org/sdgs/goal-4-quality-education/> (Accessed on: August 17, 2024).
41. Valavanidis, A. (2023). Artificial Intelligence Applications. *chem-tox-ecotox.org/ScientificReviews*, April 2023. Available at: [https://www.researchgate.net/publication/369914014\\_Artificial\\_Intelligence\\_AI\\_Applications\\_The\\_most\\_important\\_technology\\_we\\_ever\\_develop\\_and\\_we\\_must\\_ensure\\_it\\_is\\_safe\\_and\\_beneficial\\_to\\_human\\_civilization\\_I](https://www.researchgate.net/publication/369914014_Artificial_Intelligence_AI_Applications_The_most_important_technology_we_ever_develop_and_we_must_ensure_it_is_safe_and_beneficial_to_human_civilization_I) (Accessed on: August 16, 2024).
42. Vassileva, A., Simić, M., & Stevanović, M. (2020). Implications of COVID-19 for International Business. *Ecologica*, 27(100), 589-596.
43. Vassileva, A., & Simić, M. (2021). COVID-19 Pandemic as a Challenge and Opportunity for Reaching the Sustainable Development Goals. *Ecologica*, 28(103), 331-339. <https://doi.org/10.18485/ecologica.2021.28.103>
44. Vidas Bujanja, M., & Madžar, L. (2019). The Importance of Innovation and Knowledge for Economic Development of the Country and the Competitive Business of Companies. *Glasnik za društvene nauke*, 11(11), 157-173.
45. Wikipedia (2024). Timeline of artificial intelligence. Available at: [https://en.wikipedia.org/wiki/Timeline\\_of\\_artificial\\_intelligence](https://en.wikipedia.org/wiki/Timeline_of_artificial_intelligence) (Accessed on: August 17, 2024).
46. Zara, S. (2023). Can human intelligence be replaced by artificial intelligence?, Karpagam Academy of Higher Education, September 30, 2023. Available at: <https://kahedu.edu.in/can-human-intelligence-be-replaced-by-artificial-intelligence/> (Accessed on: August 21, 2024).

## OBRAZOVANJE, ZNANJE I KLJUČNE HUMANO-CENTRIČNE VEŠTINE U ERI VEŠTAČKE INTELIGENCIJE

**Apstrakt:** Ovaj opsežni članak se bavi proučavanjem značaja i uloge obrazovanja, znanja i ključnih humano-centričnih veština u eri primene Veštačke inteligencije. Veštačka inteligencija se najbolje može opisati kao tehnologija u razvoju i grana kompjuterske nauke koja se zasniva na mašinskom i dubokom učenju u svom pokušaju da simulira ljudsku inteligenciju primenom specijalnih softverski kodiranih heurističkih rešenja, zasnivajući se na sveobuhvatnom procesu učenja putem treniranja podataka. Savremenu eru prate brojni izazovi primene Veštačke inteligencije, posebno sa aspekta obrazovanja, znanja i ključnih humanih veština koje se neophodne za njenu etičku i bezbednu primenu. Na svom početku članak daje osnovna objašnjenja i istorijat nastanka ovog pojma, kao i uobičajene rizike i pretnje korišćenja ove nove tehnologije. Nakon toga članak se usmerava ka oslikavanju uloge obrazovanja i znanja u sveprisutnoj eri primene Veštačke inteligencije. Poslednjih se godina savremeno društvo suočava sa neočekivanim usponom Veštačke inteligencije u svojoj poslovnoj, privrednoj, pravnoj, kulturnoj, obrazovnoj, privrednoj, tehnološkoj i mnogim drugim sferama. Ona je duboko prodrila u sferu znanja, obrazovanja i istraživanja i razvoja (I&R) i vremenom se pokazalo da ona ima mogućnost da reši neke od gorućih problema u procesu obrazovanja, da uvede inovacije u nastavne prakse, da obezbedi inkluzivno i podjednako kvalitetno obrazovanje za sve, kao i da revolucionizuje nastavne metode, metode učenja i procese naučnih istraživanja. Međutim, u eri sveprisutne zabrinutosti u vezi sa tim da li Veštačka inteligencija može ili ne može da zameni rad ljudi i postojeće poslove, članak zaključuje da iako ona može da obavlja neke rutinske zadatke i procedure, ona ne može da zameni sistemsko razmišljanje, humano znanje i veštine ljudi neophodne za rešavanje problema i dolaska do dubokih naučnih istina, saznanja i otkrića. Članak se na kraju bavi i opsežnom analizom humano-centričnih veština (kreativnost, sposobnost kritičkog razmišljanja, komunikativnost i saradnja) inače ključnih za bezbednu i etičku primenu sistema Veštačke inteligencije.

**Ključne reči:** Veštačka inteligencija, obrazovanje, znanje, ključne humano-centrične veštine, ljudska inteligencija, nastavne metode i prakse, istraživanje i razvoj (I&R).

## MEĐUSOBNA VEZA IZMEĐU ZNANJA I VEŠTINA NEOPHODNIH ČETVRTOJ INDUSTRIJSKOJ REVOLUCIJI I RAČUNOVODSTVENOJ PRAKSI

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Ana Anufrijević<sup>12</sup>

**Rezime:** Rad istražuje međusobnu vezu između znanja i veština neophodnih u kontekstu četvrte industrijske revolucije i računovodstvene profesije. Četvrta industrijska revolucija karakteriše se brzim napretkom tehnologije, uključujući veštačku inteligenciju, automatizaciju, internet tokove i velike podatke, što direktno utiče na evoluciju računovodstvenih praksi. Kroz analizu uticaja ovih tehnoloških inovacija na računovodstvo, istražuje se kako se tradicionalne uloge računovođa transformišu, naglašavajući potrebu za novim znanjima i veštinama. Konačno, analizira se kako ova transformacija utiče na ulogu računovodstvene profesije u pružanju dodatne vrednosti organizacijama u dinamičnom poslovnom okruženju.

Ključne reči: Tehnološki razvoj, učinak inovacija na veštine, računovodstvena praksa.

Jel klasifikacija: O19, F63, M41

### UVOD

Četvrta industrijska revolucija predstavlja eru ubrzanog tehnološkog napretka koji transformiše globalno poslovanje u svim sektorima. U ovom turbulentnom okruženju, računovodstvena profesija nije izuzetak, već se suočava sa izazovom prilagođavanja novim tehnološkim paradigmatima kako bi ostala relevantna i efikasna. Ključni faktor koji određuje uspeh računovođa u eri četvrte industrijske revolucije jeste njihova sposobnost da usvoje i primene napredna znanja i veštine koje ovaj tehnološki napredak zahteva.

Ovaj rad istražuje dublju međusobnu vezu između znanja i veština neophodnih u kontekstu savremene četvrte industrijske revolucije i računovodstvene profesije. Fokus je na identifikaciji ključnih tehnoloških inovacija kao što su veštačka inteligencija, automatizacija, internet i analitika velikih podataka, koje direktno utiču na evoluciju računovodstvenih praksi. Posebna pažnja se posvećuje transformaciji tradicionalnih uloga računovođa i naglašava se potreba za novim kompetencijama kako bi se odgovorilo na izazove i iskoristile prilike koje donosi Četvrta industrijska revolucija.

Dalje će se analizirati kako ova transformacija utiče na ulogu računovodstvene profesije u kontekstu pružanja dodatne vrednosti organizacijama u dinamičnom i digitalnom poslovnom okruženju. Kroz pregled relevantne literature ovaj rad treba da pruži uvid u ključne strategije i smernice za obrazovanje, obuku i profesionalni razvoj računovođa kako bi se uspešno navigiralo kroz izazove i mogućnosti koje donosi era četvrte industrijske revolucije. Rad bi trebalo da otvori i nova pitanja za stručnu i naučnu javnost.

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## REZULTATI I DISKUSIJA

Raspravljajući o nalazima, jasno je da računovodstvo ne samo da se prilagođava promenama uzrokovanim četvrtom industrijskom revolucijom, već aktivno koristi ove promene kao mogućnost za unapređenje i rast. Ključni izazov ostaje u balansiranju između tradicionalnih računovodstvenih principa i novih tehnoloških mogućnosti. Važno je da obrazovne institucije i profesionalne organizacije prilagode svoje kurikulume i programe obuke kako bi osposobile buduće generacije računovođa za efikasno upravljanje u digitalnom dobu.

Osim toga, etički aspekti korišćenja tehnologije, kao što su pitanja privatnosti podataka i bezbednosti, zahtevaju pažljivo razmatranje i regulaciju kako bi se osiguralo integritet finansijskih informacija i poverenje javnosti.

Konačno, uloga računovodstvene profesije kao ključnog stuba informacionog sistema preduzeća se dalje naglašava. Integracija tehnoloških inovacija omogućava računovođama da postanu strateški partneri u donošenju poslovnih odluka, pružajući vredne uvide i podršku za dugoročni uspeh organizacija u dinamičnom i konkurentnom poslovnom okruženju Četvrte industrijske revolucije.

## ZNANJE KAO NAJVAŽNIJI RESURS

Još u XVII veku čuveni engleski, filozof, pravnik i državnik Frensis Bejkon (engl. Francis Bacon) je proglasio da je „znanje moć“. On je još tada porepoznao potencijal znanja da da osnaži i unapredi pojedince i društva. Verovao je da sticanjem znanja i razumevanjem sveta ljudi mogu da steknu kontrolu nad njim i da iskoriste njegove resurse u svoju korist. Svoj stav Bejkon je temeljio u verovanju da znanje nije samo teorijsko ili apstraktno, već da ima i svoje praktične implikacije. Drugim rečima, omogućava pojedincima ili društvu da donose adekvatne odluke, rešavaju probleme i ostvaruju svoje ciljeve.

Vremenom, znanje je sve više dobijalo na značaju, pa je tako postao veoma važan resurs zajedno sa fizičkim resursima (materijalna dobra), kapitalom, zemljištem i sl. Koncept znanja predstavlja jednu široku oblast koja se sastoji iz velikog broja različitih komponenti i koja se neprestano menja i iz tog razloga još uvek ne postoji jedinstvena definicija. Različiti autori, na različite načine, odnosno iz različitih perspektiva definišu znanje. Iz perspektive epistemologije, grane filozofije koja se bavi ljudskim saznanjem, znanje je isto što i svest (1). Po drugoj grupi autora, znanje je isto što i iskustvo, odnosno znanje se posmatra kao zbir ljudskog kognitivnog iskustva. Iz perspektive ontologije, znanje je poseban resurs proizveden interakcijom između žive i nežive materije.<sup>13</sup> Iz perspektive ekonomije kao nauke, znanje se posmatra u odnosu na ljudski kapital i informacija na mikroekonomskom nivou, dok se na makroekonomskom nivou uglavnom posmatra u odnosu na tehnološke faktore koji se pojavljuju u pozadini teorije rasta (11).

Znanje se tradicionalno definiše kao istinsko opravdano verovanje (10). Oksfordski rečnik ndefiniše znanje kao (i) informacije, razumevanje i veštine koje se stiču obrazovanjem ili iskustvom, (ii) saznanje o određenoj činjenici ili situaciji (znanje o nečemu) i (iii) informacije, koje se smatraju resursom koje se koristi i isporučuje industrijama umesto proizvodnje dobara (16). Prema Vebsterovom rečniku, znanje je „činjenica ili uslov da se nešto zna sa poznavanjem stečenim kroz iskustvo ili povezivanje (14).

Koncept znanja je prodoran, evaluativan, agentivan i objektivn (19). Prodoran se odnosi na sve prisutnosti da se sa njim upoznajemo od malih nogu. Evaluativnost se odnosi da na to da posedovanje određenog znanja podrazumeva ispunjenost određene norme ili standarda. Sledeća karakteristika

## Međusobna veza između znanja i vještina neophodnih četvrtoj industrijskoj revoluciji i računovodstvenoj praksi

pretpostavlja postojanje agentata koji se bave kognitivnim zadacima i praksama. Konačno, objektivnost se pogleda u postojanju objektivnog odgovora.

### Tipovi znanja

Širina koncepta znanja uslovljava je i razlikovanje više različitih tipova istog (21):

- Eksplicitno znanje
- Implicitno znanje
- Prećutno znanje
- Proceduralno znanje
- Deklarativna znanja
- A Posteriori znanje
- A priori znanje

Eksplicitno znanje je znanje koje pokriva teme koje je lako sistematski dokumentovati (pismeno) i podeliti u velikom obimu. Implicitno znanje su, u suštini, naučene veštine ili znanja. Stiče se uzimanjem eksplicitnog znanja i primenom na određenu situaciju. Prećutno znanje je nematerijalna informacija koju može biti teško objasniti na direktan način, kao što su stvari koje se često „razumeju“ a da nisu nužno izgovorene, a često su lične ili kulturne. Ova vrsta znanja je neformalna, naučena je iskustvom tokom vremena i obično se odnosi na određenu situaciju. Deklarativno znanje koje se može shvatiti i kao propoziciono znanje, odnosi se na statične informacije i činjenice koje su specifične za datu temu, kojima se može lako pristupiti i preuzeti. Proceduralno znanje se fokusira na 'kako' iza čega stvari funkcionišu, i demonstrira se kroz nečiju sposobnost da nešto uradi. Aposteriori znanje je subjektivna vrsta znanja koja se stiče iz individualnog iskustva. Ova vrsta znanja daje pojedincima mogućnost da upoznaju svoje prednosti i slabosti koje proizilaze iz njihovog iskustva. Apriorno znanje je suprotno od posteriornog znanja i stiče se nezavisno od iskustva ili dokaza. Ova vrsta znanja se često deli putem logičkog zaključivanja, ili nečije sposobnosti da razmišlja apstraktno.

### Tipovi i karakteristike veština

U 21. veku i savremenom turbulentnom poslovnom tržištu i poslovanje i obavljanje poslova zahtevaju određeni nivo veština. Skup veština je lista sposobnosti ili mogućnosti da se određeni posao efikasno obavi. Istorijski gledano, termin „veština“ se koristio za označavanje stručnosti i tehnologija zanatskih radnika (1). Veštinama se smatra sve od čitanja, preciznosti u pisanju, komunikaciji, zaključivanju, rešavanju problema, pa do motivacije i samopouzdanja, rasuđivanja, vođstva, timskog rada, orijentacije na kupca, samokontrole i kontinuiranog učenje (17).

Pre više od pedeset godina Knapp (12) je definisao veštine kao naučenu sposobnost da se postignu unapred određeni rezultati sa maksimalnom sigurnošću; često sa minimalnim utroškom vremena ili energije ili oboje. Veština se koristi za označavanje stručnosti koja je razvijena kroz obuku i iskustvo, a uključuje trgovačke i zanatske veštine stečene obukom, kao i visok nivo učinka koji se nalazi u mnogim domenima, kao što su profesionalna praksa, umetnost, igre i atletika.

Razumevanje razlike između znanja i vještina je ključno za lični i profesionalni razvoj. Znanje se odnosi na informacije i razumevanje stečeno učenjem i iskustvom. To uključuje poznavanje činjenica, teorija i konceptata o predmetu. S druge strane, veštine su praktična primena znanja za efikasno obavljanje zadataka. Razvijaju se kroz praksu i iskustvo i uključuju sposobnost primene znanja u stvarnim situacijama.

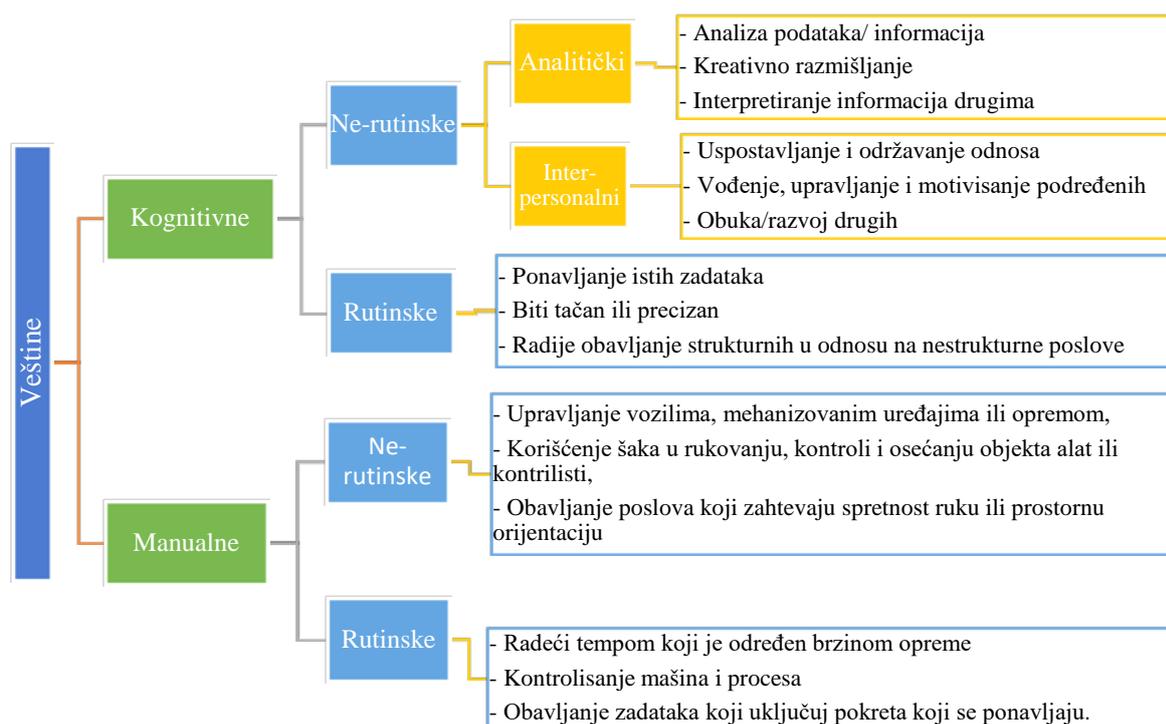
Dok znanje pruža osnovu i razumevanje konceptata, veštine omogućavaju pojedincima da izvršavaju zadatke i postignu specifične rezultate. Na primer, u profesionalnom okruženju, poznavanje teorija upravljanja projektima (znanja) se razlikuje od stvarnog upravljanja projektom (veština). Isto tako, razumevanje principa kodiranja (znanja) se razlikuje od pisanja programa (veštine).

Važni su i znanje i veštine. Znanje pruža teorijski okvir, dok veštine to znanje pretvaraju u delo. Poslodavci često traže kandidate koji ne samo da poseduju relevantno znanje već i pokazuju praktične veštine koje mogu doprineti ciljevima organizacije.

Ukratko, znanje je ono što znate i razumete, dok su veštine ono što možete da uradite sa tim znanjem. Oboje su suštinske komponente kompetencije i uspeha u različitim aspektima života.

Složenost današnjeg sveta, između ostalog, ogleda se i u hiperkonektivnosti. U takvom svetu posedovanje spleta različitih veština od suštinskog je značaja za opstanak i uspeh svakog pojedinca, jer sposobnost definisanja, razvoja i korišćenja nečijih veština smatra se vitalnim delom ličnog i profesionalnog afirmisanja. U tom kontekstu neophodno je napraviti distinkciju između različitih veština. Danas u stručnoj literaturi mogu se naći različite klasifikacije veština.

Klasifikacija koju predlaže Svetska Banka (2) sve veštine razvrstane su u dve velike grupe: kognitivne i manuelne. U odnosu na način korišćenja kod obe grupe se razlikuju po dve grupe pod veština: ne-rutinske i rutinske. Kognitivne ne rutinske mogu da budu analitičke i interpersonalne. Detaljan tipologiju veština i podveština koje primenjuje Svetska Banka, kao i karakteristične aktivnosti prikazani su u slici 1. Ovaj uspeh u velikoj meri zavisi od sticanja i održavanja i mekih i tvrdih veština.



Slika 1. Vrste veština i podveština

Izvor: Prilagođeno prema (2).

Druga tipologija, koja se često sreće u literaturi, temelji se na stavu da se veštine odnose na nivo performansi pojedinca na određenom zadatku ili sposobnost da dobro obavi posao koji se može podeliti na tehničke elemente i elemente ponašanja (15). Tehnički elementi predstavljaju tvrde veštine, dok elementi ponašanja čine meke veštine. Tvrde i meke veštine predstavljaju ključne komponente zaokruženog skupa veština koje pojedinci koriste u obavljanju svojih profesionalnih aktivnosti.

## Međusobna veza između znanja i veština neophodnih četvrtoj industrijskoj revoluciji i računovodstvenoj praksi

Razumevanje razlika i sinergije između ove dve vrste veština je od suštinskog značaja za lični i profesionalni razvoj.

Tvrde veštine se odnose na specifične, poučne sposobnosti koje se mogu kvantitativno izmeriti i definisati. Ove veštine se obično stiču kroz formalno obrazovanje, programe obuke, sertifikate i praktično iskustvo. Primeri teških veština uključuju:

- Analitičke veštine - veština vezanih za analizu podataka i upravljanje njima: prikupljanje podataka, analiza podataka, sumiranje i kategorizacija, izveštavanje, pretraga podataka, vizuelizacija podataka, veb analitika.
- Prodajne veštine - veštine koje se fokusiraju na prodaju i njene aspekte obuhvataju: prodajne prezentacije i prodajne demonstracije, poznavanje proizvoda, angažovanje klijenata, aktivno slušanje, upravljanje konfliktima, prodajne prezentacije, razvoj proizvoda, poslovna komunikacija.
- Marketinške veštine - marketing predstavlja široki ublast koja zahteva ovladavanje velikim brojem veština: optimizacija za pretraživače (SEO), copywriting, društveni mediji, marketing društvenih medija, sistemi za upravljanje sadržajem.
- Tehnološke veštine – one zahtevaju napredno znanje i sertifikate. Primeri tehnoloških veština: mašinsko učenje, obrada prirodnog jezika, HTML, Javascript, CSS, blockchain.
- Kompjuterske veštine – odnose se na pznavanje rada na računaru i one obuhvataju: optimizacija operativnog sistema, obrada teksta, kreiranje prezentacija, izveštavanje, komunikacija preko različitih platformi.
- Finansijske veštine – oblasti koji utiču na izgradnju finansijske stručnosti su: finansijsko modeliranje, finansijski sistemi, obrada podataka, analiza troškova, smanjenje troškova, prognoziranje, analiza rizika.
- Veštine upravljanja projektima - uobičajene veštine upravljanja projektima: projektno planiranje, analiza poslovanja, zakazivanje, postavljanje ciljeva, delegiranje, kontrola projekta
- Jezičke veštine – poznavanje stranih jezika.

Za razliku od tvrdih veština, meke veštine se obično ne stiču kroz formalno obrazovanje i obuku i često zahtevaju posvećenost, samorefleksiju i samousavršavanje (13). Ove veštine su manje opipljive i često ih je teže kvantifikovati u poređenju sa tvrdim veštinama. Meke veštine su afektivne sposobnosti koje osoba poseduje pored sposobnosti da se savlada formalno intelektualno tehničko ovladavanje nekom naukom koja nekome olakšava da bude prihvaćen u društvenom i radnom okruženju. Meke veštine su afektivne sposobnosti koje osoba poseduje pored sposobnosti da se savlada formalno intelektualno tehničko ovladavanje nekom naukom koja nekome olakšava da bude prihvaćen u društvenom i radnom okruženju (8). U literaturi se ova grupa veština naziva osnovnim veštinama.

U osnovne meke veštine spadaju (5):

1. Slušanje - primanje, zadržavanje i obrada informacija ili ideja
2. Govor – usmena komunikacija informacija i ideja
3. Rešavanje problema – sposobnost pronalaženja rešenja za situaciju ili izazov
4. Kreativnost – korišćenje mašte i generisanje novih ideja
5. Ostati pozitivan – sposobnost da se koriste taktike i strategije za prevazilaženje neuspeha i postizanje ciljeva
6. Visoko postavljeni ciljevi - sposobnost postavljanja jasnih, opipljivih ciljeva i osmišljavanja robusnog puta za njihovo postizanje
7. Liderstvo – podržavanje, podsticanje i razvoj drugih da postignu zajednički cilj
8. Timski rad - rad u saradnji sa drugima na postizanju zajedničkog cilja.

Meke veštine su ključne za negovanje pozitivnog radnog okruženja, izgradnju jakih odnosa i povećanje ukupne produktivnosti i morala unutar organizacije. Često se smatraju jednako važnim kao i čvrste veštine, posebno u liderskim ulogama i pozicijama koje se suočavaju sa klijentima gde međuljudske interakcije igraju značajnu ulogu.

Dok tvrde veštine pokazuju tehničku kompetenciju, meke veštine ih dopunjuju tako što poboljšavaju međuljudsku efikasnost i ukupnu dinamiku radnog mesta.

Znanja i veštine u Industriji 4.0 i veza sa znanjima i veštinama u oblasti računovodstva

Industrija 4.0 označava pametnu fabriku u kojoj sajber-fizički sistemi prate fizičke procese i kreiraju virtuelnu temu fizičkog sveta koja je od pomoći za donošenje decentralizovanih odluka. Termin industrija 4.0 nastao je iz projekta nemačke vlade za visokotehnološku strategiju za promovisanje kompjuterizacije fabrika. Industrija 4.0 je sinonim za IV industrijsku revoluciju.

Industrija 4.0 pokriva tri osnovna aspekta:

1. Digitalizaciju i povećanu integraciju vertikalnih i horizontalnih lanaca vrednosti: razvoj prilagođenih proizvoda, digitalne porudžbina kupaca, automatski prenos podataka i integrisani sistemi za korisničku podršku.
2. Digitalizaciju ponude proizvoda i usluga: potpuni opisi proizvoda i povezanih usluga putem inteligentnih mreža.
3. Uvođenje inovativnih digitalnih poslovnih modela: visok nivo interakcije između sistema i tehnoloških mogućnosti razvija nova i integrisana digitalna rešenja. Osnova industrijskog Interneta je integrisana dostupnost i kontrola sistema u celom preduzeću u realnom vremena.

Osnovna odrednica IV industrijske revolucije je ublažavanje, a u nekim slučajevima skoro i potpuno brisanje granica između fizičkog, digitalnog i biološkog sveta.

Pre svega, Industrija 4.0 predstavlja integraciju inteligentnih digitalnih tehnologija u proizvodne i industrijske procese. Obuhvata skup tehnologija koje se baziraju na digitalizaciji i uključuju Internet stvari, veštačku inteligenciju, velike podatke, nanotehnologiju, robotiku. Industrija 4.0 u proizvodnom procesu koristi nove vrste poslovanja između mašina i ljudi koristeći kombinaciju starih i novih tehnologija kategorisanih u tri kategorije (9):

- Hardver robotika, koboti (kolaborativni roboti), 3D štampači;
- Softver – veliki podaci, veštačka imteligencija i
- Povezivanje – internet stvari, aktuatori i senzori.

Prelazak na Industriju 4.0 pruža brojne mogućnosti, ali istovremeno ukazuje na jaz u znanjima i veštinama koji se mora prevazići.

U Beloj knjizi, Roland Berger (20) navodi da postoji podela kvalifikacija i veština na „više fokusa” i „manje fokusa”. Segment važnih kvalifikacija i veštine za industriju 4.0 formirane su u segmente i podsegmente (Slika 2).

Znanje o IKT	Sposobnost rada sa podacima
<ul style="list-style-type: none"> <li>– Osnovna znanja o informacionim tehnologijama.</li> <li>– Sposobnost korišćenja i interakcije sa računarima i pametnim mašinama kao što su roboti, tableti itd.</li> <li>– Razumevanje komunikacije između mašina, IT bezbednosti i zaštite podataka.</li> </ul>	<ul style="list-style-type: none"> <li>– Sposobnost obrade i analize podataka i informacija dobijenih od mašina.</li> <li>– Razumevanje izlaznih vizuelnih podataka i donošenje odluka.</li> <li>– Osnovna statistička znanja.</li> </ul>
Tehničko znanje	Lične veštine

## Međusobna veza između znanja i vještina neophodnih četvrtoj industrijskoj revoluciji i računovodstvenoj praksi

<ul style="list-style-type: none"> <li>– Interdisciplinarno i opšte znanje o tehnologiji.</li> <li>– Specijalizovano znanje o proizvodnim aktivnostima i procesima na mestu.</li> <li>– Tehničko znanje mašina za obavljanje aktivnosti vezanih za održavanje.</li> </ul>	<ul style="list-style-type: none"> <li>– Prilagodljivost i sposobnost promene.</li> <li>– Odlučivati.</li> <li>– Rad u timu.</li> <li>– Komunikacione vještine.</li> <li>– Promena načina razmišljanja za doživotno učenje</li> </ul>
Veći fokus	Manji fokus

Slika 2. Znanja i vještine za Industriju 4.0

Izvor: (20).

Detaljan prikaz kompetencija dat je u Tabeli 1.

Tabela 1. Primer liste vještina za industriju 4.0 u primernim akademskim i istraživačkim studijama

Reference	Vještine/Kompetencije/Kapabilnosti	
Klement, Strambach, 2019	<ul style="list-style-type: none"> <li>– Učenje razmišljanja pomoću softvera</li> <li>– Sposoban da razume mrežne strukture</li> <li>– Naučite kako da savladate tehnologiju velikih podataka</li> <li>– Naučite kako da radite sa različitim formulama podataka</li> <li>– Razume i ovlada procesom ili sprovođenjem radnih aktivnosti</li> <li>– Naučite da preuzmete više odgovornosti u svakom poslu</li> <li>– Naučite da budete komunikativni i kooperativni radnici</li> <li>– Naučite kako da imate visoku inovativnost i inicijaciju</li> <li>– Fokus na razvijanje osjetljivosti na životnu sredinu i društveni život kroz tehnološki razvoj i inovacije</li> </ul>	
Rozmirez-Montoya et al, 2022	<ul style="list-style-type: none"> <li>– Poznavanje informacione i proizvodne tehnologije</li> <li>– Poznavanje softverskih struktura</li> <li>– Razumeti funkciju hibridne vežbe</li> <li>– Iskustvo u mehatronici</li> <li>– Izoštavanje vještina u socijalnoj oblasti kolega radnika</li> <li>– Izoštavanje sposobnosti korišćenja softvera</li> <li>– Mogućnost promene programa</li> <li>– U stanju da izvršava zadatke merljivo</li> <li>– Sposoban da donosi odluke</li> <li>– Stručnjak u svojoj oblasti najmanje 2 godine</li> <li>– Mogućnost korišćenja interneta i ručno i korišćenjem podataka</li> <li>– Široko i usmereno znanje</li> <li>– Stručnjak za proces i upotrebu tehnologije</li> <li>– Imajte optimističan duh</li> <li>– U stanju da čita i proceni upotrebu podataka na uređaju ili mašini koja se koristi</li> </ul>	
Passig, Cohen, 2013 Sloane, 2011	<ul style="list-style-type: none"> <li>– Digitalne vještine u oblastima: Industrija 4.0 programiranje i softversko inženjerstvo, nauka o podacima, analiza podataka i velikih podataka, vizuelizacija, Internet stvari, IT arhitektura, bezbednost</li> <li>– Vještine koordinacije projekta: upravljanje proizvodima, upravljanje više projekata, lanac snabdevanja i usluge podrške, logistika</li> <li>– Meke vještine: kreativnost, dizajn, inovativnost, liderstvo, radni tim</li> </ul>	
Xiaoguang, 2022	<b>Zaposleni:</b> <ul style="list-style-type: none"> <li>– Tehničke vještine</li> <li>– Sposobnost rešavanja problema</li> <li>– Sposobnost korišćenja IT sistema</li> <li>– Analitički kapacitet</li> </ul>	<b>Menadžersko osoblje:</b> <ul style="list-style-type: none"> <li>– Doživotno učenje</li> <li>– Vještine društvenih medija</li> <li>– Veza tehnički i vještine upravljanja</li> <li>– Sposobnost rada u timu</li> <li>– Otvorenost za promene</li> </ul>

	<ul style="list-style-type: none"> <li>– Komunikacija</li> <li>– Doživotno učenje</li> <li>– Tehničke i upravljačke veštine</li> <li>– Sposobnost rada u timu</li> <li>– Otvorenost za promene</li> <li>– Otvorenost za digitalizaciju</li> <li>– Otvorenost za automatizaciju</li> </ul>	<ul style="list-style-type: none"> <li>– Otvorenost za digitalizaciju</li> <li>– Težnja ka kontinuiranom poboljšanje</li> <li>– Učešće</li> <li>– Otvorenost za automatizaciju</li> <li>– Kreativnost</li> <li>– Kreativno razmišljanje</li> <li>– Samodisciplina</li> <li>– Samoupravljanje</li> </ul>
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Izvor: Prilagođeno prema (6).

U okruženju karakterističnom za Industriju 4.0, sinergija između znanja i veština je od suštinskog značaja za uspeh u karijeri i napredovanje. Poslodavci često pozitivno gledaju na pojedince koji poseduju ravnotežu između ovedve komponente jer mogu efikasno da doprinesu i individualnim zadacima i zajedničkim naporima unutar timova.

Iako je veoma izvesno da na prvi pogled veza između četvrte industrijske revolucije i računovodstva nije očigledna, ona permanento vrši uticaj i na oblast računovodstva. Napred navedene karakteristike 4. Industrijske revolucije direktno utiču na računovodstvo na nekoliko načina:

1. Automatizacija procesa
2. Analitičke sposobnosti
3. Blockchain tehnologija
4. Veštačka inteligencija
5. Menadžment rizika.

Načela rada koja su primenjivala ranije u značajnoj meri ostala su nepromenjena, ali se rad računovođa značajno menja sa razvojem informacione tehnologije i neophodno je kontinuirano praćenje i prilagođavanje promenama koje se dešavaju. Upotreba računovodstvenih programa značajno je olakšala i napredila rad računovođa (19). Svedoci smo da su danas u upotrebi elektronska dokumenta, da se knjiženje obavlja pomoću računovodstvenih programa, kao i prijave i plaćanja poreza i doprinosa. Računovodstvo se sve više automatizuje uz pomoć softvera koji mogu samostalno obavljati rutinske zadatke poput knjiženja transakcija, izrade izveštaja ili obračuna plata. Ovo oslobađa računovođe da se fokusiraju na analitičke i strateške aktivnosti.

Veliki podaci omogućavaju računovodstvu da analizira ogromne količine podataka kako bi identifikovalo obrasce i trendove koji mogu uticati na finansijsko poslovanje organizacije. Sa aspekta forenzičkog računovodstva na primer Anufrijeva (3) ističe kako se danas od forenzičkih računovođa sve više očekuje posedovanje analitičkih sposobnosti, ali da se dodatno očekuje da raspolažu specijalizovanim i stručnim znanjima poput osnova računovodstva, upravljačkog računovodstva, ekonomije, bankarstva, prava i pravnih regulativa, poreza, kriminalistike i određenih istražnih radnji. Cilj je da se na osnovu mera i sprovedenih radnji, uz primenu forenzičkih alata i tehnika obezbede kvalitetne i nesporne informacije i/ili validni materijalni dokazi, koji bi bili neophodni u sudskim procesima donošenja objektivnih zaključaka i sudskih presuda. U liku profesije forenzičkog računovođe, danas se nalaze registrovani stalni sudski veštaci iz ove važne oblasti.

Kada je u pitanju blockchain, on je u stanju da izvrši revoluciju u načinu na koji se vode i verifikuju finansijske transakcije, smanjujući potrebu za posrednicima i povećavajući transparentnost. Prema Horvatić i Tafra (7) mogućnosti sprimjene BC tehnologije su brojne: od protokola u evidentiranju i čuvanju podataka o poslovnim događajima<sup>3</sup> do digitalizacije važnih poslovnih operacija (engl. supply chain management).

## Međusobna veza između znanja i veština neophodnih četvrtoj industrijskoj revoluciji i računovodstvenoj praksi

Veštačka inteligencija može pomoći u predviđanju budućih finansijskih rezultata, optimizaciji poreznih strategija ili čak otkrivanju prevara. Koristeći veštačku inteligenciju u analizi procesa i kontrola u organizacijama, moguće je raznim alatima identifikovati slabosti koje bi mogle da dovedu do potencijalnih prevara (3). Obzirom na sofisticirane informacione tehnologije koje se koriste u organizacijama Četvrte industrijske revolucije, ova povezanost je od ključne važnosti, jer sa razvojem veštačke inteligencije rastu broj, volumen i tehnologija načina obavljanja prevara i one su podložne se brzom transformaciji i menjanju.

Računovodstvo može koristiti tehnologije Četvrte industrijske revolucije za bolje upravljanje rizicima, pružajući realno vreme informacije i analize koje pomažu u donošenju odluka. Prema Anufrijeva (4) i ključna komponenta upravljanja rizicima je ispitivanje uticaja koji se odvijaju izvan preduzeća, odnosno eksternih elemenata iz okruženja preduzeća. Ti elementi uključuju novu konkurenciju na tržištu i broj ukupnih konkurenata u određenoj industriji. Takođe, indikatori rizika na primer mogu biti i broj propalih transakcija, stope prometa po zaposlenom i učestalost i/ili ozbiljnost grešaka i propusta (22).

Sve ove promene zahtevaju da računovođe i finansijski stručnjaci budu spremni da usvoje nove tehnologije i prilagode se novom načinu rada. Dakle, četvrta industrijska revolucija direktno utiče na razvoj i transformaciju računovodstva, čineći ga efikasnijim, preciznijim i sposobnijim za pružanje dodatne vrednosti preduzeća.

Dakle, era četvrte industrijske revolucije suočila je računovodstvo sa potrebom za različitim znanjima i veštinama kako bi efikasno odgovorilo na promene koje donose napredne tehnologije. Stoga se danas od profesije računovodstva očekuju tehnološka pismenost na visokom nivou, analitičke veštine, veštine u upravljanju podacima, veštine u upotrebi softvera, sposobnost proučavanja poslovnih modela, razvijene veštine u komunikaciji i saradnji, visok nivo moralnih i etičkih standarda. Premisa za posedovanje ovih veština neophodnih savremenom računovođi jeste znanje, ali možemo takođe istaći i permanentna spremnost da se znanje nadograđuje, što treba da omogućiti da se računovođe brže prilagođavaju novim zahtevima i iskoriste prednosti tehnoloških inovacija četvrte industrijske revolucije u praksi računovodstva.

### ZAKLJUČAK

U eri Četvrte industrijske revolucije, brz tehnološki napredak postavlja nove zahteve za znanjem i veštinama koje su ključne za uspeh u različitim profesijama i sektorima. Veštačka inteligencija, automatizacija, internet, analitika velikih podataka transformišu način na koji posluujemo i interagujemo sa tehnologijom.

Ključna znanja u ovoj eri obuhvataju razumevanje naprednih tehnoloških sistema i njihovu primenu u svakodnevnim poslovnim procesima. To podrazumeva sposobnost analize i interpretacije velikih količina podataka kako bi se donosile informisane odluke. Takođe, važno je razviti veštine u upotrebi specijalizovanih softverskih rešenja za efikasno obavljanje poslovnih funkcija.

Četvrta industrijska revolucija predstavlja neizbežnu transformaciju i za računovodstvenu profesiju, zahtevajući adaptaciju znanja i veština kako bi se iskoristile prednosti naprednih tehnologija. Ključni izazov za budućnost računovodstva leži u sposobnosti integrisanja tradicionalnih principa sa novim tehnološkim mogućnostima, što omogućava računovođama da postanu ne samo pouzdan izvor finansijskih informacija, već i strateški partneri u donošenju ključnih poslovnih odluka. Kontinuirana edukacija i prilagođavanje profesionalnih praksi su ključni za uspeh u dinamičnom poslovnom okruženju Četvrte industrijske revolucije, osiguravajući da računovodstvo igra centralnu ulogu u podršci organizacionom rastu i inovacijama u digitalnoj eri.

## LITERATURA

1. Abdel-Wahab, M.S., Dainty, A.R.J., Ison, S.G., Bryer, L., & G. Hazlehurst, (2005). Productivity, skills, and training: a problem of definition?, Proceedings of the Second Scottish Conference for Postgraduate Researchers of the Built and Natural Environment (PRoBE), 207-215.
2. Aedo, C., Hentschel, J., Luque H., & Moreno, M. (2013). From Occupations to Embedded Skills - A Cross-Country Comparison - Background Paper to the 2013 World Development Report, The World Bank, Development Economics Office of the Senior Vice President and Chief Economist August.
3. Anufrijević, A., & Marjanović, N. (2024). Aspects of forensic accounting for detecting financial fraud .2nd Link IT and ED Tech
4. Anufrijević, A. (2024). Potrebe za jačanjem uloge forenzičkog računovodstva u savremenim poslovnim sistemima u cilju brzog otkrivanja prevara, *Naučni skup "Accounting and audit in theory and practice"*, Banja Luka, Bosna i Hercegovina, 205-217.
5. Craig, R., & Stewart, G. (2024). Essential Skills Tracker 2024, Skills Builder Partnership.
6. Gajdzik, B., & Wolniak, R. (2022). Smart Production Workers in Terms of Creativity and Innovation: The Implication for Open Innovation, *Journal of Open Innovation: Technology, Market, and Complexity* 8, no. 2: 68. <https://doi.org/10.3390/joitmc8020068>
7. Horvatić, H., & Tafra, V. (2022). Identifikacija komercijalne blockchain tehnologije te izazovi i opasnosti primjene kroz konkretne primjere. *Obrazovanje za poduzetništvo-E4E: znanstveno stručni časopis o obrazovanju za poduzetništvo*, 12(2), 105-120.
8. Ibrahim, R., Boerhannoeddin, A. & Bakare, K. K. (2017). The effect of soft skills and training methodology on employee performance. *European Journal of Training and Development*, 41(4), 388-406. <https://doi.org/10.1108/EJTD-08-2016-0066>
9. Javeed, I. (2023). The Impact of Industry 4.0 on Employability and the Skills Required in India, *Global Economics Science*, Special Issue "Industry 4.0, Skills Gaps and Labor Market" DOI: <https://doi.org/10.37256/ges.4320231593>
10. Johansson, L. G. (2016). Knowledge. In: Philosophy of Science for Scientists. Springer Undergraduate Texts in Philosophy. Springer, Cham. [https://doi.org/10.1007/978-3-319-26551-3\\_2](https://doi.org/10.1007/978-3-319-26551-3_2)
11. Kešeljević, A. (2013). Understanding of Knowledge from Economist's Perspective, *Journal of Knowledge Management. Economics and Information Technology*, 3(3), June -18/12
12. Knapp, B. (1963). Skill in sport: the attainment of proficiency. Routledge.
13. Lamri, J., & Lubart T. (2023). Reconciling Hard Skills and Soft Skills in a Common Framework: The Generic Skills Component Approach. *Journal of Intelligence*, 11(6):107. <https://doi.org/10.3390/jintelligence11060107>
14. Merriam Webster dictionary (2024). opširnije na: <https://www.merriam-webster.com/dictionary/knowledge>.
15. Noe, R. A., Hollenbeck, J. R., & Gerhart, B. (2015). Fundamental of Human Resource Management. New York: McGraw-Hill. 22/15
16. Oxford Advanced Learner's Dictionary (2024). opširnije na: <https://www.oxfordlearnersdictionaries.com/definition/english/knowledge?q=knowled>
17. Payne, J. (1999). All things to all people: Changing perception of 'Skill' among Britain's policy makers since the 1950s and their implications. SKOPE Research Paper No.1, Warwick University – 24 /19
18. Skill Development for Industry 4.0 BRICS (2016) Skill Development Working Group; FICCI: New Delhi, India; Roland Berger: Munich, Germany.
19. Šarić, D., & Banda, I. (2022). Uticaj digitalizacije poslovanja na računovodstvene procese. *Evropska revija*, 67-78.
20. Vega-Encabo, J. (2016). The Concept of Knowledge: What is It For? *Disputatio*, 3(43)/2.
21. Whelan, M. (2024). The 7 Types of Knowledge: Definitions, Examples & More, opširnije na: <https://www.getguru.com/reference/types-of-knowledge>, posećeno 28.05.2024. godine.
22. Živković, A. (2019). Kvalitet upravljanja operativnim rizicima u finansijskim institucijama. *Akcionarstvo*, 25(1), 5-32. -29.

## **THE INTERCONNECTION BETWEEN THE KNOWLEDGE AND SKILLS NECESSARY FOR THE FOURTH INDUSTRIAL REVOLUTION AND ACCOUNTING PRACTICE**

**Summary:** The paper explores the mutual relationship between knowledge and skills necessary in the context of the Fourth Industrial Revolution (4IR) and the accounting profession. The Fourth Industrial Revolution is characterized by rapid technological advancement, including artificial intelligence, automation, Internet of Things, and big data, which directly influences the evolution of accounting practices. Through an analysis of the impact of these technological innovations on accounting, the study investigates how traditional roles of accountants are transforming, emphasizing the need for new knowledge and skills. Finally, it analyzes how this transformation affects the role of the accounting profession in providing additional value to organizations in a dynamic business environment.

**Key words:** Technological advancement, impact of innovation on skills, accounting practice.

**Jel classification:** O19, F63, M41



## COMMUNICATIONS, FINANCIAL LITERACY AND REQUIRED CORE SKILLS IN THE FINANCIAL INDUSTRY<sup>14</sup>

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**Summary:** This comprehensive and extensive article represents an attempt to synthesize and sublimate all the core skills that are necessary for successful, efficient and effective work in the field of finance, and therefore for contemporary financial and other companies. More precisely, with this work we draw attention to the importance and role of financial literacy, as well as the most important financial skills required for the successful work of every professional in the field of finance. The article first focuses on defining the concepts of financial skills and financial literacy, as well as describing their importance for the innovative, sustainable and successful business of every company. While financial skills can be described as those skills, knowledge and abilities that are aimed to solve a specific financial problem, financial literacy is the ability to perceive, evaluate, understand and effectively use various financial information, knowledge and skills with the aim of effective management of financial resources. The article further deals with the study of key skills (critical thinking, problem solving, communication, ability to process and analyse information, self-awareness and adaptability) needed at the household level to achieve financial literacy of individuals. In the continuation of the analysis, the article provides a detailed and comprehensive overview of general and, after that, of finance-specific skills that are necessary for successful financial operations of every modern organization. At the end of the paper, instead of a conclusion, the importance of financial education is highlighted as a basic prerequisite for acquiring the necessary financial skills and mastering financial literacy. Financial education provides basic knowledge in the areas of savings, budgeting, financial planning, expenditures planning, risk analysis and investment strategies with the aim of achieving financial stability and security, wise money management and prevention of losses. The article finally concludes that financial education and financial literacy are key determinants of financial stability, as well as of achieving the desired financial success and well-being of each organization and every individual.

**Keywords:** financial skills, financial literacy, communication, managing money, financial education, financial health.

### INTRODUCTION

Financial skills are all those skills that are necessary for performing specific tasks and jobs in the field of finance, including working positions in accounting and auditing; banking and insurance jobs; public and private investments; managing personal finances; business management; financial analytics; financial management, etc. Financial skills can be also described as skills, knowledge and abilities

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aimed to understand the solution of a certain financial problem so as to solve it for the benefit of the person who possesses them and who makes a decision (2). Human beings certainly learn and acquire these skills through the traditional, formal and informal system of financial education, as well as through self-study, years of experience in financial affairs, seeking professional advices and networking. Financial skills can also be defined as the abilities of understanding, evaluating and managing financial resources that are necessary for the development of innovative, successful and sustainable business practises of every contemporary company. Finally, these are both those hard and soft skills that involve understanding, evaluating and managing financial opportunities in order to achieve the desired success in the field of financial industry. Alternatively, it is about the appropriate skills and relevant knowledge that are necessary to understand relevant financial problems and manage financial circumstances with the aim of transforming them into successful business ventures (10).

Financial skills belong to the group of business accumen skills that enable a person to understand, handle and establish control over various business situations and problems. Business accumen skills represent a combination of knowledge, competences and abilities acquired through practice in performing work tasks and through working experience, that imply knowledge of key business problems, ways of applying that knowledge in practice, as well as having self-confidence in carrying out actions and making appropriate decisions. It is about the skills of contextual perception of reality, as well as the ability to generalize concepts and events, that is, to perceive the broader picture of situational circumstances (5). Business accumen skills mainly include problem solving skills, decision making skills, communication, strategic and analytical thinking, leadership, analytical reasoning, emotional intelligence, market analysis, empathy, risk management, organizational knowledge and behaviour, knowledge of business models, learning from consumers, delegation of work tasks, organizational ability, financial analysis and literacy, focus on problems, ability to skilfully commercialize innovations, products and services, etc. Commercialization can otherwise be described as a set of skills, capabilities attitudes, business manners and ways of behaving that aims to encourage the successful market placement of a given product, process or service, all in order to maximize their value, marketability and market penetration (12). Commercialization is also very present in modern sports industry as well, owing to the continuous growth of the popularity of sports events, which is paradoxically based on the general lack of respect for "real" sports competencies and values in the growing mass consumer society. Today, this phenomenon is usually condemned as an unwanted process in the sports industry with the claim that it commonly nullifies the very essence, meaning and intrinsic values of sports itself (20).

The importance of financial skills is all the greater if one takes into account the fact that without them it is not possible to achieve ultimate success in the financial industry, nor in personal life. In the context of this analysis, we are primarily interested in investigating those financial skills that are contained under the term of financial literacy. Financial literacy can best be described as the ability to perceive, evaluate, understand, and effectively use a variety of financial information, data, knowledge, and skills that provide each individual with an essential foundation for prudent and wise financial and money management. These abilities usually include a number of specific financial skills such as personal finance management, financial management, financial planning, budgeting, decision-making and making the choice of investment. A financially literate person usually has an extremely responsible attitude towards money and hisher financial goals, such as saving for education or retirement, responsible borrowing, monitoring personal spending, and prudent business management (7).

Today, financial literacy is considered an independent and necessary skill that improves an individual's financial position, reduces his dependence and uncertainty, and promotes his sense of security and safety. This concept includes several components, but above all the skills of budgeting, saving, prudent investing, careful retirement planning, prudent borrowing, risk management, as well as good knowledge of financial products and key financial concepts (36). Financial literacy leads to the growth

of the fund of financial knowledge, financial skills, and therefore financial self-sufficiency, stability and self-confidence needed to make adequate financial decisions. These skills mainly include the abilities to efficiently locate financial resources, as well as capabilities of correct evaluation and right use of information, data, resources and services for making quality, informed and educated decisions (34).

Many literature sources, brochures, and manuals mainly list similar components of financial literacy, paying close attention to responsible relationship to money, as well as to achieving an independent financial future. Thus, the Métis Nation of Ontario (22) highlights budgeting, cost management, credit and debt management, savings and investments as the main topics of financial literacy (22). On the other hand, Rabbior (30) in the form of the main components of financial literacy lists making decisions about money, earning money, taking control over spending money, managing taken credits and loans, saving and investing money, as well as protecting assets and responsible planning of an individual's financial future. At the same time, it is noticeable that this topic is present to a much greater extent in Western literature, where it receives a lot of attention, especially in Canada and the United States of America (USA). However, regardless of the predominant literature source, financial literacy is very important since it leads individuals to a more secure financial future and well-being, increasing their financial awareness, confidence and overall ability to manage money (21). The following sections of this extensive article will be devoted to the specific knowledge and skills that are necessary to master financial literacy.

### **CORE SKILLS THAT ARE ESSENTIAL FOR GAINING FINANCIAL LITERACY AT THE HOUSEHOLD AND BUSINESS LEVEL**

It is well known that individuals differ from each other according to the way they apply their financial knowledge and skills, but also to their aspirations and needs, their life circumstances and habits. This section is dedicated to learning elementary skills that can enrich an individual's financial knowledge and well-being, mostly at the household level. At the same time, financial well-being can be achieved in the case of establishing active control over everyday finances, having the capacity to absorb financial shocks, setting adequate financial goals and having financial freedom to make free choices in life. Sharkey (34) states that what is key for achieving financial literacy is the ability to apply some basic skills that positively affect making informed decisions in the household and the planning of appropriate future activities, while leading an individual to ultimate financial self-reliance. These core skills on the household level mainly include:

- Critical thinking – as the ability to think logically and reasonably and to judge the possible consequences of the undertaken activities; this is also about the compliance of the undertaken actions with personal values, goals, aspirations and circumstances. The essence of this skill is to correctly perceive the possible consequences of financial and non-financial choices made.
- Solving financial problems – as the skill of adequate money management at household level that requires making appropriate informed decisions with the aim of solving certain financial issue.
- Communicativeness – as the ability to interact smoothly with other members of an often multi-personal household with the aim of successfully solving some financial problem. This skill often requires harmonizing verbal language and non-verbal signs of communication, active listening to the interlocutor, expressing patience, as well as the requirement for clear and concise convey of needs and expectations.
- Processing and analysing information – as the ability to collect relevant data and information from credible external sources with the aim of making reliable and informed decisions.
- Self-awareness – as having an active awareness of personal values, preferences, goals, desires and life circumstances that can help an individual in the realization of his/her defined goals on his/her way to personal progress.

- Adaptability – as the ability to adjust spending and insurance plans to changing life circumstances and trends such as retirement, changing jobs, changing the number of household members, etc.
- In this context, it is still possible to make a clear distinction between financial literacy, that is, financial education intended for adults and the notion of personal financial education from the aspect of their constituent components, which we show in the following Table 1.

Table 1. Required components of financial education for adults and of personal financial education

Components of financial education for adults	Components of personal financial education
Money management	Earning income
Taking a loan	Spending money
Borrowing management	Savings
Risk management	Investing
Investment management	Management of credit borrowing
Retirement planning	Risk management

Source: (34).

At the organizational level, key financial skills are also important since they can lead to organizational success, facilitate the financial planning process, help in making critical financial decisions, improve business profitability, and ensure its financial stability (11). In addition, preparing to work in the financial industry, including performing complex calculations, preparing accounting and auditing financial statements and identifying financial opportunities, certainly requires the possession of a whole range of specific financial and interpersonal skills (29). The continuation of this article is dedicated to the analysis and description of general and very specific financial skills that are crucial for achieving success in financial business practices.

## GENERAL SKILLS

**Analytical Thinking.** Analytical thinking can be explained as the ability to collect, review, analyse, synthesize and interpret available financial data and figures with the aim of identifying their common patterns, matching and discrepancies (29). Analytical thinking is a method of problem analysis, as well as of processing and decomposition of complex information, which is carried out in order to find its solution, while it is often identified with the causal links or relationships among two or more phenomena. Unlike analytical thinking, critical thinking involves the application of sound judgment and adequate interpretation of available information in order to reach a conclusion. Thus, analytical thinking uses facts to support evidence, helps to find solutions to complex problems and applies logic and sound reasoning to various situations, leading us to some important conclusions in the behaviour of available data and information. Jobs where analytical thinking is most commonly applied include business analysts, criminologists, economists, software developers, accountants and auditors (11).

**Verbal Communication.** We can safely say that communication is a process in which messages, information, ideas, or verbal and non-verbal symbols are exchanged among two or more persons, i.e. communicators. These information or symbols form the very essence of the human communication process. Good communication is a prerequisite for efficiency, whether for an individual or a group one, while in order for communication to be successful, it is necessary to communicate correctly, that is, to understand the content that we send, as well as the content that we receive. At the same time, the need for cooperation and collaboration is one of the most important human needs that confirms a given individual as a social being, and also represents the most important purpose of the communication process (28).

Verbal communication implies the use of words and accompanying sounds during the communication process, including the tone of voice, its articulation and associated signs and sighs. Therefore, verbal

## Communications, financial literacy and required core skills in the financial industry

communication is the use of spoken words that takes place with the aim of conveying thoughts, conclusions, attitudes, ideas and emotions. The verbal communication certainly requires extensive thinking before expressing thoughts and attitudes, the knowledge of the interlocutor, precision and conciseness, clear speech, as well as willingness to making compromise and mutual understanding. Unlike non-verbal communication, verbal communication is definitive, discrete, clear, unambiguous and one-channelled (3). Verbal communication is also a form of communication in which the sender transmits messages orally, actively using language and words with the aim of conveying information to its recipient. This form of communication is generally considered the most effective since it leads us to a quick exchange of ideas and information and to a feedback loop, leaving less room for potential misunderstandings. Verbal communication can be formal or informal in its nature. While a predefined channel for the information transmission characterizes formal communication, informal communication rather implies the absence of official communication channels (28). Verbal communication is especially important in finance because it enables and enriches teamwork on identifying risks, recording financial data and creating a budget plan (29).

In addition, a clear and concise form of communication prevents misinformation and related misunderstandings. Otherwise, verbal and non-verbal communication are essential for modern business practice within which business communication can be attributed both to the employees themselves and to all individuals who communicate with their companies actively. At the same time, daily communication activities are usually not given much attention because they become a manifestation of the built organizational or personal culture. While the business success of a given company is directly conditioned by targeted actions that can form a healthy corporate organizational culture, it is more important to strategically develop the communication skills of employees in order to develop the organizational culture of the given company, which further leads to its positive and successful business (27). Therefore, effective business communication, whether internal or external, is very important for every organization. It is also important for all employees to develop their communication skills that lead to effective business communication in order to improve their performance and job satisfaction, and thus enable the realization of the organizational goals and mission themselves (26).

**Persuasiveness.** Employee persuasiveness represents a very important method of communication in financial business since it allows individuals to convince their colleagues, bosses and managers of the usefulness of their ideas and attitudes such as proposed financial strategies or budgeting tactics they advocate. Persuasiveness also enables understanding of one's thoughts, as well as the adoption of one's views and proposals by others. Persuasiveness usually leads to increased motivation among participants in some communication process, while it can occur in a noticeable or less noticeable form. Finally, this skill can motivate employees to direct their efforts towards the achievement of organizational goals (6), while also representing a very useful practice in interaction with customers, consumers and users of financial services. Many financial companies use this skill to gain the favour of their target markets and the general public in their quest for new market segments for their financial products and services.

**Problem Solving.** The skill of immediate solving of problem enables people to successfully, efficiently and quickly enough solve and react to current urgent and complex financial problems and situations. In any case, this skill requires from individuals to have a good knowledge of the subject and expertise, but also a courage, determination and extensive experience in performing this or similar tasks. In addition, employees who possess this skill directly contribute to the adaptability, competitiveness and profitability of their working environment, while it also implies teamwork, possessing analytical and critical thinking skills, persuasiveness and decision-making, leading to better business results and indisputable organizational success. This skill is essential for achieving positive and desirable organizational outcomes, while it also appears as a common criterion for the success of organizational staff in their workplaces (33).

**Making Decisions.** The decision-making process can be defined as a structured approach to solving complex and urgent problems through careful consideration of evidence and data, research of alternative approaches and possibilities, and finally, through making of informed and educated choices, which ultimately leads the organization to profits or business losses (24). The decision-making skill is in direct connection with the ability of solving problems. This skill enables the evaluation of the effectiveness of a made decision in terms of the alignment of its results with its expected outcomes. Individuals engaged in managerial or executive positions in finance usually make key decisions with the aim of gaining competitive advantage in a highly competitive and globalized financial environment. In this sense, it can be expected from individuals engaged in these working positions that they should make difficult decisions, including those related to budget cutting and salary reductions, downsizing, closing affiliations or investments that could threaten or even harm the company's financial position. In this sense, decision-making capability reflects an individual's ability to make educated and informed business decisions in an efficient and effective manner (29).

In addition, it is well known that the ability to make decisions directly encourages innovation, improves communication, contributes to better risk management and continuous organizational growth, improves the efficiency and effectiveness of business processes, and contributes to the growth of profitability, motivation and teamwork of employees, ultimately leading to indisputable organizational successful results. Making decisions usually includes several phases and tasks such as problem identification, gathering information, evaluating possible options, making choices, implementing decisions and finally evaluating results, leading to business clarity, increased organizational efficiency, fostered accountability, business risks mitigation, but also to life-long learning as a key determinant of organizational success (24). Over time, lifelong learning has become one of the key goals of modern education and training policy. Globalization and the growth of the knowledge-based economy means that today, individuals are increasingly required to constantly and lifelong improve their knowledge and working skills, all in order to be able to face the challenges of the contemporary globalized world as successfully as possible. Therefore, today, special emphasis is placed on individuals to acquire new knowledge, skills and experiences as efficiently as possible (15).

**Detail-Oriented Skill.** Detail-oriented is another skill that is important for all those persons who deal with finance, since the majority of their working tasks are based on entering, synthesizing, analysing, calculating and interpreting the otherwise sensitive company's financial data. This skill also includes working on financial, accounting and audit reports, making balance sheets and profit and loss statements, developing financial strategies, and carrying out financial modelling. Thus, this skill enables individuals to identify discrepancies in data and errors made in accounting, auditing and other financial reports. Therefore, this is one of the key skills that implies the competence of individuals to perform tasks in finance, since it contributes to financial accuracy and clarity (29), and thus to the organizational success of every company.

**Interpersonal Skills.** Interpersonal skills are also of critical importance to all those individuals involved in finance for several reasons. This is primarily because finance professionals typically have to handle complex financial data and present it to their clients, team members, managers, colleagues and other stakeholders. Then, responsible performance of tasks in the field of finance usually requires the building of close and credible cooperation within which interpersonal skills lead to the establishment of trust, building positive relationships and effective teamwork. Finally, but not least, excellent communication and interpersonal skills enable easier interaction and mutual understanding of individuals from diverse cultural backgrounds and origins (2).

**Business Ethics.** The term ethics comes from the ancient Greek language, from the original word *ethos*, which meant custom, habit, or character. Ethics is a philosophical discipline that examines the goals and meaning of moral values and socially acceptable behaviour. Ethics and morality are often equated, or used as synonyms. The reason for this is that ethics and morality are related to customs, habits, characters, ways of acting and behaviour. However, most authors still make a clear distinction

between ethics and morality. There are two understandings in this distinction. According to some of them, morality is a universal phenomenon and is related to generally accepted rules that represent the basis of human actions, behaviour and relationships. These rules allow the individual to recognize good and bad behaviours. Humans accept them, obey them and thus live in society. Morality is a regulative idea that significantly affects the development of individual and social life, that is, the establishment of order, security and stability. Where the majority of people accept and live by moral rules and principles, society is more orderly, order is more stable, while individuals are safer. In this way, ethics rather means the application of moral rules by persons, as well as values that the individual has freely accepted and adopted to achieve his/her goals, tasks and daily contacts. According to another group of authors, understanding ethics is the science of morality, the subject of which is dealing with the rules of moral behaviour and making judgments about what is good and what is bad (25, 27). Today, the concept of ethics appears in many professions and areas of human action, such as business, medical, legal, sports, journalistic, professional, expert ethics, etc.

Business ethics is essential for all those individuals who deal with finances, since managing other people's money and making investment decisions in someone else's name and for someone else's account certainly requires great trust, understanding, having a character and responsibility. Here, it is crucial for all financial experts to avoid conflicts of interest, to protect confidential information and sources, to perform their work activities credibly, as well as to make financially responsible, correct and ethical decisions. Given that legal and regulatory bodies insist on adherence to strict ethical norms and codes of conduct, it is of great importance for all financial professionals to cultivate their solid and sound ethical skills in order to fit the demands of their workplace (2). In addition, given the fact that the main purpose of financial reporting is to disclose reliable information about the financial conditions and performance of modern companies, it is necessary for financial professionals to gain the trust of the public, which appears as an important factor in the market economy (35). This is all the more true since recent research indicates that the absence of ethical norms and social responsibility in financial business causes great damage to contemporary companies, and at the same time to the economy as a whole. However, despite the existence of numerous areas and jobs that are ethically debatable in themselves, such as the ethics of corporate finance, the dilemma of consulting work, ethical aspects of investment, insider trading, etc., it seems that there is still an ethical and socially responsible dimension in modern financial business today (4).

**Analytical Skills.** Analytical skills are based on the analysis of large amounts of data, as well as the use of complex financial models, techniques and tools. They enable financial experts to collect, process, correctly interpret and analyse the available financial data, then to identify trends, risks and opportunities, as well as to make adequately informed decisions about the operations of their organizations (Bay Atlantic University, 2024). Analytical skills can also be described as intellectual skills that enable an individual to identify and analyse problems, as well as to find creative, innovative and workable solutions. Among other things, this group of skills includes research skills, data collection skills, data analysis and interpretation skills, risk analysis, creativity, etc. (13).

### **SPECIFIC FINANCIAL SKILLS**

**Financial Planning.** So far, we have covered general abilities and skills that should be possessed by every competent individual who is dealing with financial affairs and tasks, and which largely overlap with the requirements of other business areas. However, from this section we focus on the explanation of sector-specific skills in finance, which primarily represent the result of obtained knowledge, acquired experience, competences gained in the field of finance, and years of work spent in financial activity. Thus, the skill of financial planning is specific to the financial industry and suggests that the employee is able to create a comprehensive plan of short-term and long-term business goals, as well as a detailed plan for achieving and maintaining financial stability. In addition to creating financial statements, financial strategies and financial plans, this skill also implies conducting financial

reporting and financial analysis (29). However, financial planning should not be identified with the concept of budgeting. In contrast to financial planning, which implies the ability to draw up a comprehensive financial strategy, plan and analysis with the aim of achieving long-term financial goals, budgeting is a narrower term that enables effective cash flow management by monitoring income and expenditure flows, usually on a weekly, monthly or annual basis. Every financial plan should include concrete steps for the realization of defined financial goals, while the process of financial planning itself can contribute to the reduction of tax obligations, liabilities based on debt and loans, better management of financial risks, wiser retirement planning and general to lowering of various expenses (14).

**Budgeting.** As already indicated, budgeting is important for all those who are engaged in accounting and auditing, but also for financial planners and analysts, financial consultants, financial risk analysts, as well as for managers and all those who work in executive finance positions. Budgeting refers to the ability to carefully manage and handle usually large sums of money, as well as to accurately monitor income and expenditure flows, and to allocate financial resources to certain time frames and areas of business (Puthiyedath, 2023). Thus, budgeting can also be described as a periodic practice of allocating financial resources to meet various expenses, while this process can help in understanding the key components and various types of expenses, starting from fixed and variable expenses, all the way to unwelcomed personal and company expenses (14).

**Financial Risk Analysis.** Financial risk analysis means the ability to study a company's financial documents, as well as to identify potential risk factors that could threaten its solid and sound operations. The skill of risk detection is mainly useful for those individuals that are engaged in jobs within finance and risk management positions. Risk analysis also refers to the assessment of the probability of the occurrence of any adverse events and/or negative effects that could threaten the profitable, solvent and liquid operations of the given firm. Conducting a risk analysis can help any company in evaluating the actions it should take to reduce its financial risk, while this skill and activity is mainly performed by risk analysts. Unlike quantitative risk analysis, which mainly relies on mathematical and statistical models and simulations, qualitative risk analysis usually uses the subjective judgment of the risk analyst itself with the aim of detailing and identifying a given financial risk. The utilization of this skill also consists of several phases such as risk identification, determination of uncertainty, impact assessments, building an analysis model, analysing the obtained results and applying the appropriate solution (8).

**Cash Flow Management.** Cash flow management can best be described as the ability to accurately and credibly organize and monitor a company's cash flows' trends at any point in time. This skill also refers to the individual's ability to estimate the amount of cash that the company will need in the future to operate liquidly and solvent, bringing obvious benefits to everyone who works in accounting, auditing, financial reporting, credit analysis, financial strategies preparation, etc. (Puthiyedath<sup>2023</sup>). Cash flow analysis also helps in assessing the financial health of any company, providing deep insights into the liquidity, operational efficiency, solvency, profitability and stability of its business that derive from its operational efficiency. While positive cash flows indicate effective cash management and the possibility of reinvestment in business volume growth, negative cash flows indicate fundamental problems in financial management, as well as the risk of default. Financial stability and solvency are usually assessed based on cash flow analysis, debt management and estimated investment capacity. The assessment of the achieved business results also includes a comparison of actual with projected cash flows with the aim of adjusting the adopted financial business strategies. Cash flow management is also very important for making various financial decisions since it directly affects investment decisions, budgeting and financial plans, as well as the assessment of the financial health of each company (23).

**Specific PC Skills.** In addition to all these mentioned skills, computer skills and knowledge of working with modern computer programs are often mentioned in the financial literature. It is

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especially a case with the computer program MS Excel, which indicates the ability to calculate, to process and organize financial data in a digital format. Namely, today any successful career in finance requires excellent computer knowledge. Since most of the financial documentation today is created through available computer programs and software packages, some of the digital tools that financial professionals must master include spreadsheet software, accounting software, financial analysis software packages, data visualization tools, and collaboration tools (2).

**Accounting Skills.** It is also well known that accounting is based on analytical, precise and effective analysis of financial data. The knowledge of accounting techniques and frameworks enables the assessment of the company's financial performance, determination of its earnings trends, forecasting of its future financial performance, assessment of its financial needs, management of its financial risks, as well as adapting of its operations to the current financial regulations. Therefore, accounting skills are necessary for preparing financial statements, conducting financial analysis, budgeting, financial planning, ensuring regulatory compliance, and managing financial risks (2). In addition to knowledge and expertise, compiling financial reports also requires the possession of some specific skills needed for advancement in this profession. A professional accountant must first know and understand the needs of his/her external and internal users in order to be able to meet their needs in the best possible way. Some of the key characteristics that every professional accountant should possess are expertise, clarity, precision and focus. Namely, in order for the users of accounting information to gain an insight into the business and financial performance of the company, the data in the financial reports must be clear, unambiguous, with special attention to details. A professional accountant is expected to be resourceful in unexpected situations, as well as to be willing to take risks and make sacrifices. The ability to correct mistakes in the shortest possible time and to remain composed in those moments represents important qualities, especially for written communication. It is also of great importance for every accountant to consult with his older and more experienced colleagues, while he is expected to be up-to-date and speedy enough in collecting data, as well as in their correct interpretation. Finally, of no less importance are appropriate communication skills, which are perhaps crucial for the professional development and guarantee of business success of every modern professional accountant (31).

**Financial Reporting.** The skill of financial reporting is also one of the most important skills for any individual who is engaged in finance because it enables the analysis of the financial position, financial performance and achieved results of the company. Given that financial reports are based on the information on income, expenses, business results and cash flows of the company, educated and well informed investment decisions are made based on them. Possession of this skill certainly requires a good knowledge and understanding of basic accounting methods and principles, as well as financial reporting standards, including the preparation of balance sheets, income statements and reports on cash flows trends. This skill also requires a good knowledge of financial analysis tools and techniques. More precisely, financial analysis includes various tools and techniques for processing and interpreting financial data, such as ratio analysis, trend analysis, cash flow analysis, comparative analysis, scenario analysis, sensitivity analysis and discounted cash flow analysis, all with the aim of analysing and correctly interpreting available financial data, as well as obtained financial results. Financial analysis is otherwise a process of creating financial reports of a company, which is carried out with the aim of assessing its financial health and performance. Its importance cannot be underestimated as it serves investors, financial analysts, creditors and other interested parties as a reliable basis for making informed decisions about investing, borrowing or doing business with a given firm. In this sense, financial analysis is of key importance for assessing the company's financial position, forecasting its operations and identifying potential risks and opportunities (32).

**Project Management Skills.** The skill of managing projects successfully belongs to the group of critical financial skills since it includes almost all the mentioned specific financial skills, including financial planning, budgeting, analysis of financial data and decision-making on the allocation of available financial funds. Project management can otherwise be described as a framework that helps

individuals to manage and organize their project tasks with the aim of achieving the best possible results. Project management is also the application of processes, specific methods, knowledge, skills and experience in achieving specific project goals, within agreed parameters and deadlines. Project management is normally characterized by a limited time and budget, while it differs from mere management in that it brings with itself a tangible final result. Therefore, all those individuals involved in project management tasks must possess a wide range of specific skills and knowledge with special emphasis on technical skills, specific financial skills, human resource management skills and good business conscience (1). Effective project management can certainly help everyone involved in finance in achieving defined business goals by completing the project on time, within the defined budget and with expected outcomes, which can further improve the overall financial results of the organization itself.

**Quantitative and Qualitative Risk Analysis.** Ultimately, all financial experts must possess both quantitative and qualitative risk analysis skills in order to be able to assess potential risks in their organizations' operations and decision-making processes. These skills certainly enable them to identify the biggest and most dangerous risks, as well as to develop appropriate business strategies in order to mitigate or avoid them, all with the aim of conducting long-term successful financial operations. It has already been said that quantitative risk analysis relies on various mathematical tools and statistical methods to estimate the probability of occurrence and negative effects of prevailing risks, while qualitative risk analysis mainly relies on expert opinion and subjective assessment of risk analysts (2).

#### **INSTEAD OF A CONCLUSION – THE ROLE AND IMPORTANCE OF ADEQUATE FINANCIAL EDUCATION**

In this article, we have tried to draw attention to the importance and role of financial literacy, as well as the most important financial skills required for the successful work of every professional in the contemporary financial industry. In this sense, the article made an attempt to comprehensively and in detail present the core financial skills that are essential for successful, ethical, credible, reliable and responsible financial business. It is clear that it is not possible to master financial literacy, as well as to achieve the desired financial skills without appropriate financial education. Therefore, in this final part of the analysis, we focus on the role and importance of adequate financial education in the modern financial services industry.

Financial education provides the basics of knowledge in all mentioned skills, such as areas of savings, budgeting, financial planning, expenditure planning, risk analysis and investment with the aim of achieving financial stability and security, wise money management and prevention of loss. Financial education also provides elementary knowledge of the core advantages and disadvantages of using various financial products and services, including bank loans, credit cards, debt management, credit management and various investments, enabling people to make good risk assessments and make educated and informed financial decisions. In this sense, it can encourage all aspects of the financial success of both individuals and contemporary organizations (39). When it comes to spreading financial knowledge in practice, unlike traditional teaching methods, the *Covid-19* pandemic caused many educational, financial and other institutions to gradually shift their business operations and educational content to new ways of implementation, with a special emphasis on the implementation of electronic teaching and electronic training courses (19).

Today, financial literacy education goes beyond most of the described financial skills, including some innovations that are introduced in financial literacy programs round the world. We are witnessing not only the immense evolution of the science of financial education, but also its innovative and broad contents that indicate a holistic approach to the financial health and solvency of every modern company. Innovations can otherwise be defined as the application of new ideas, solutions and technological practices that improve goods, goods, services and business processes. They emerge as the most important drivers of economic progress and lead to greater productivity and efficiency, and

thus to better business outcomes and solutions (17). Innovation can also be described as the use of new idea related to a product, process, service, technique or any organizational activity that leads to the process of their successful commercialization (16). In this sense, financial innovation in a narrower sense is any newly introduced financial product, service or strategy, but also in a broader sense it is a process of creating new financial instruments, technologies, institutions and markets that makes their use simpler, more accessible and timely.

Current trends in financial literacy are slowly but surely moving in the direction of personalization and customization, all with the aim of meeting the individual needs of students, learners and participants of ongoing courses and various training programs. This trend is further encouraged by the development of the modern digital economy, the increased integration of advanced information and communication technologies (ICTs), the introduction of innovations and Artificial Intelligence (AI) systems, the use of various professional online platforms, but also mobile applications that have largely revolutionized the ways of teaching and learning processes. At the same time, digitalization has greatly changed and revolutionized our private and business lives, penetrating almost all aspects of our daily life. Digital transformation is present in all spheres of modern business life, changing business strategies and models, the way of life, decision-making process, as well as people's behaviour, work, habits, perception and daily routine (18).

Today's digital economy is based on knowledge and is additionally supported by numerous technological innovations, especially those related to disruptive digital technologies and the Fourth Industrial Revolution. All these changes fundamentally redefined the contemporary business environment and opened up new opportunities, but also risks at the micro and macro level of business (37), leading us to redefined modalities and ways of doing business in many areas, including finance and education. Recently, increasing emphasis has also been placed on the inclusion and diversification of financial literacy contents and programs, as well as on the role of behavioural economics in the field of financial literacy, highlighting the importance of psychological factors in making ultimate financial decisions and implementing appropriate strategies for financially sound business (9).

Given that this paper is dedicated to the study of key skills in the financial industry, it might not be amiss to say a few words about the required skills and occupations for which there are estimates that will be most in demand in the nearest future. The labour market is changing faster than ever before, while many existing jobs are expected to disappear soon. Also, a recent study by the World Economic Forum (WEF) from Davos predicts that the greening of the economy, the automation of jobs, as well as the rapid development of new technologies such as big data sets analytics, Artificial Intelligence (AI) and cloud computing will change the landscape of the actual labour market itself. However, this also implies the creation of some new jobs and workplaces, as well as increasing the efficiency of existing ones, with a high possibility that in the next five years, as much as a quarter of existing occupations will change radically. The most important skills that are considered to be always, and especially in the future, needed in every work branch include technical literacy, computer skills and the basics of programming languages; knowledge in the fields of mathematics, engineering, informatics, new technologies and natural sciences; analytical thinking and analytical skills; lifelong and independent learning; high English language proficiency; creativity in science, engineering, design and arts; communication and empathy, especially in the era of AI applications; teamwork; and finally communicativeness. The importance of effective communication is especially evident in the era of increased use of AI, machine learning, contemporary information technologies and robotics in the workplace, as well as of remote work and the development of technologies that allow us to easily connect with people around the world. All these trends, of course, directly affect the required skills in the financial industry as well.

Eventually, in the business world, achieving financial education and mastering financial literacy appear as a basic assumption and prerequisite of any stable and financially secure venture and successful business activity. These financial concepts help individuals, employees and organizations in

making their timely, prudent and wise decisions about the management of available financial resources, enabling them to realize corporate financial goals, to avoid financial risks, to offer adequate financial products and services, to prepare appropriate financial reports, and to formulate adequate financial plans and strategies. Defining financial goals, conducting adequate financial planning, determining the budget and respecting basic financial concepts and principles are key factors in making adequate financial decisions the way to the ultimate financial security and stability of every organization and individual. In this sense, financial education is a key factor and essential determinant of maintaining financial stability and achieving the desired financial success and well-being.

## LITERATURE

1. Association for Project Management (2024). What is project management? Available at: <https://www.apm.org.uk/resources/what-is-project-management/> (Accessed on: August 29, 2024).
2. Bay Atlantic University (2024). 10 Essential Finance Skills, February 23, 2024. Available at: <https://bau.edu/blog/finance-skills/#:~:text=Essential%20finance%20skills%20include%20budgeting,understanding%20of%20the%20economic%20landscape.> (Accessed on: August 27, 2024).
3. Dease, J. P. (2023). Verbal & Nonverbal Communication | Definition, Skills & Examples, November 21, 2023. Available at: <https://study.com/learn/lesson/verbal-nonverbal-messages-communication-types-skills-examples.html#:~:text=Verbal%20communication%20is%20the%20words,%2C%20gestures%2C%20and%20facial%20movements.> (Accessed on: August 28, 2024).
4. Dušanić Gačić, S., & Agić, Z. (2021). Važnost poslovne etike i društvene odgovornosti u oblasti finansija. *Zbornik radova Etika u medijima i poslovanju*, 213-220. DOI 10.7251/ZREMP1601213DG 4
5. Elgood (2024). Business Acumen Definition : Who Needs it and Why. Available at: <https://www.chris-elgood.com/business-acumen-definition/> (Accessed on: September 17, 2024).
6. Farland, B. (2023). Persuasion in Business | Importance, Traits & Examples. Study.com, February 23, 2023. Available at: <https://study.com/academy/lesson/persuasion-in-business-importance-examples.html#:~:text=In%20a%20business%20environment%2C%20persuasion,will%20lead%20to%20business%20success.>
7. Fernando, J. (2024). Financial Literacy: What It Is and Why It Is So Important To Teach Teens, *Investopedia*, June 29, 2024. Available at: <https://www.investopedia.com/terms/f/financial-literacy.asp#:~:text=A%20strong%20foundation%20of%20financial,debt%2C%20and%20track%20personal%20spending.> (Accessed on: August 27, 2024).
8. Hayes, A. (2024). Risk Analysis: Definition, Types, Limitations, and Examples. *Investopedia*, February 26, 2024. Available at: <https://www.investopedia.com/terms/r/risk-analysis.asp#:~:text=Conducting%20a%20risk%20analysis%20can,between%20risks%20and%20risk%20reduction.> (Accessed on: August 28, 2024).
9. IGrad (2023). Bridging the gap between financial literacy and financial capability, April 29, 2023. Available at: <https://www.igradfinancialwellness.com/blog/the-future-of-financial-literacy-trends-and-innovations-in-higher-education> (Accessed on: August 29, 2024).
10. Indeed Editorial Team (2023). Analytical Thinking vs. Critical Thinking (Plus Jobs that Use Them), August 1, 2023. Available at: <https://www.indeed.com/career-advice/career-development/analytical-thinking-vs-critical-thinking> (Accessed on: August 28, 2024).
11. Indeed Editorial Team (2024). A Guide to Finance Skills: Definition and Examples, February 11, 2024. Available at: <https://ca.indeed.com/career-advice/resumes-cover-letters/finance-skills> (Accessed on: August 27, 2024).
12. Indian Institute of Management Ahmedabad (2024). Developing Commercial and Financial Skills for Strategic Business Decisions. Available at: <https://exed.iima.ac.in/programme-details.php?id=MTA2Ng> (Accessed on: September 17, 2024).

13. Koprena, I. (2024). Transverzalne veštine – Veštine koje Vam mogu osigurati poslovni uspeh. Center for Career Development by LINK Group. Available at: <https://www.razvoj-karijere.com/transverzalne-vestine-vestine-koje-vam-mogu-osigurati-poslovni-uspeh>
14. Lee, D. (2024). Budgeting vs. Financial Planning: What's a Difference? Indeed, August 16, 2024. Available on: <https://www.indeed.com/career-advice/career-development/budgeting-vs-financial-planning>
15. Madžar, L. (2019). Uloga znanja i obrazovanja u savremenim održivim demokratskim društvima. *Ekonomski vidici*, 26(3-4), 123-136.
16. Madžar, L. (2022a). Motives for the Introduction of Agricultural Innovations in Serbia with Particular Accent on Beekeepers: The Application of Logistic Regression. *Economics of Agriculture*, 69(1), 27-41. <https://doi.org/10.5937/ekoPolj2201027M>
17. Madžar, L. (2022b). The Innovation Paradox in the Serbian Economy: The Granger Causality Approach. *Acta Economica*, 20(37), 9-27. <https://doi.org/10.7251/ACE2237009M>
18. Madžar, L. (2024). The Impact of the Digital Economy on Labour Productivity in Serbia: Application of the ARDL and ECM Approaches. *Glasnik za društvene nauke*, 15(15), 145-165.
19. Madžar, L., Karić, D., & Paspalj, D. (2021). The Possible Impact of the Online Learning on the Quality of Education in Serbia during the Covid-19 Pandemic. *Studies and Scientific Researches. Economics Edition*, 34(2021), 13-23. <http://dx.doi.org/10.29358/sceco.v0i34.496>
20. Madžar, L., & Perović, A. (2024). Economic Cartels and Anticompetitive Behavior in the Sports Industry. *Management in Sport*, 15(2024), 59-82.
21. McGurran, B. (2024). What is Financial Literacy? Available at: <https://www.experian.com/blogs/ask-experian/what-is-financial-literacy-and-why-is-it-important/#:~:text=Financial%20literacy%20is%20important%20because,money%20for%20the%20future>
22. Métis Nation of Ontario (2023). Financial Literacy Basics for Adults. Available at: <https://www.metisnation.org/wp-content/uploads/2022/01/Financial-Literacy-Basics-for-Adults.pdf> (Accessed on: August 28, 2024).
23. Morris, K. (2024). Understanding Cash Flow Analysis: A Comprehensive Guide. Fathom, February 2, 2024. Available at: <https://www.fathomhq.com/blog/understanding-cash-flow-analysis#:~:text=Cash%20flow%20analysis%20helps%20you%20measure%20the%20financial%20health%20of,cash%20flow%20from%20operating%20activities>. (Accessed on: August 28, 2024).
24. Nelson, L. (2023). The Importance of Decision-Making Process in Business. AFA Education, August 7, 2023. Available on: <https://afaeducation.org/blog/the-importance-of-decisionmaking-process-in-business/> (Accessed on: August 28, 2024).
25. Perović, A., Joksimović, A., & Ljesar, I. (2017). Sport, društvena odgovornost i etika. *Menadžment u sportu*, 8(1), 89-102.
26. Perović, A. (2023). Značaj efikasne poslovne komunikacije za performanse zaposlenih. *Revizor*, 26(101), 57-69. <https://doi.org/10.56362/Rev23101057P>
27. Perović, A., Šiljak, V., Jovanović, D., & Đukić, S. (2023). Značaj poslovne komunikacije za razvoj korporativne kulture. *Glasnik za društvene nauke*, 15(15), 167-194.
28. Perović, A., & Đukić, S. (2024). Značaj komunikacije u sportu. *Management in Sport*, 14(2023), 103-118.
29. Puthiyedath, V. (2023). Finance Skills: Definition and Examples. Indeed, August 1, 2023. Available at: <https://www.indeed.com/career-advice/finding-a-job/finance-skills> (Accessed on: August 28, 2024).
30. Rabbior, G. (2018). *Money and Youth – A Guide to Financial Literacy*. Canadian Foundation for Economic Education, Ontario, Canada. Available at: <https://moneandyouth.com/wp-content/uploads/2018/11/Money-Youth-2018-EN.pdf>
31. Radosavljević, M. (2015). Koje komunikacione veštine smatram najbitnijim za profesionalni razvoj u računovodstvu i reviziji. WordPress.com, June 12, 2015. Available at: <https://milicaradosavljevic.wordpress.com/2015/06/12/koje-komunikacione-vestine-smatram-najbitnijim-za-profesionalni-razvoj-u-racunovodstvu-i-reviziji/> (Accessed on: August 28, 2024).

32. Rayaka, L. (2023). What is financial Analysis? Tools, Techniques, Process and Application. LinkedIn, May 1, 2023. Available at: <https://www.linkedin.com/pulse/what-financial-analysis-tools-techniques-process-lalitkumar-rayaka#:~:text=Financial%20analysis%20involves%20different%20tools.and%20discounted%20cash%20flow%20analysis>. (Accessed on: August 29, 2024).
33. Schwencke, B. (2024). Why Problem Solving is Important in the Workplace. Test Partnership, July 9, 2024. Available at: <https://www.testpartnership.com/blog/why-problem-solving-important.html#:~:text=Employees%20skilled%20in%20problem%20solving.improved%20outcomes%20and%20organisational%20success>. (Accessed on: August 28, 2024).
34. Sharkey, S. (2023). Financial Literacy, National Endowment for Financial Education. Available at: <https://lincs.ed.gov/sites/default/files/TSTMFinancLiterBrief-rev-508.pdf> (Accessed on: August 27, 2024).
35. Stojanović, R. (2015). Profesionalna etika kao imperativ pouzdanosti finansijskog izveštavanja. *Singidunum University International Scientific Conference Finiz*, 53-61. DOI: 10.15308/finiz-2015-53-61 Available at: <https://portal.finiz.singidunum.ac.rs/Media/files/2015/53-61.pdf>
36. Tamplin, T. (2023). Why Financial Literacy Is Important And How You Can Improve Yours. *Forbes*, September 21, 2023. Available at: <https://www.forbes.com/sites/truetamplin/2023/09/21/financial-literacy--meaning-components-benefits--strategies/>
37. Vidas Bujanja, M., & Madžar, L. (2019). The Importance of Innovation and Knowledge for Economic Development of the Country and the Competitive Business of Companies. *Glasnik za društvene nauke*, 11(11), 157-173.
38. Yohannis, M. (2022). Definition of Verbal Communication. Available at: [https://www.academia.edu/35753612/Definition\\_of\\_Verbal\\_Communication](https://www.academia.edu/35753612/Definition_of_Verbal_Communication)
39. Zoe Talent Solutions (2023). The Importance of Financial Education, April 27, 2023. Available at: <https://zoetalentsolutions.com/importance-of-financial-education/> (Accessed on: August 29, 2024).

## KOMUNIKACIJE, FINANSIJSKA PISMENOST I POTREBNE KLJUČNE VEŠTINE U FINANSIJSKOJ INDUSTRIJI

**Rezime:** Ovaj sveobuhvatni i opsežni članak predstavlja pokušaj sinteze i sublimacije svih ključnijih veština koje su neophodne za uspešan, efikasan i efektivan rad u oblasti finansija, a samim tim i savremenih finansijskih i drugih kompanija. Preciznije, ovim radom skrećemo pažnju na značaj i ulogu finansijske pismenosti, kao i na najznačajnije finansijske veštine potrebne za uspešan rad svakog profesionalca u oblasti finansija. Članak najpre usmerava pažnju na definisanje pojmova finansijskih veština i finansijske pismenosti, kao i na opisivanje njihovog značaja za inovativno, drzivo i uspešno poslovanje svake kompanije. Dok se finansijske veštine mogu opisati kao umeća, znanja i sposobnosti rešavanja nekog finansijskog problema, finansijska pismenost je sposobnost sagledavanja, evaluacije, razumevanja i efektivnog korišćenja raznih finansijskih informacija, znanja i veština sa ciljem efikasnog upravljanje finansijskim sredstvima. Članak se dalje bavi izučavanjem ključnih veština (kritičko razmišljanje, rešavanje problema, komunikativnost, sposobnost obrade i analize informacija, samosvesnost i prilagodljivost) potrebnih na nivou domaćinstva za postizanje finansijske pismenosti pojedinaca. U nastavku analize članak daje detaljan i opsežan pregled najpre opštih, a nakon toga i za finansije specifičnih veština neophodnih za uspešno finansijsko poslovanje svake savremene organizacije. Na kraju članka se umesto zaključka ističe značaj finansijskog obrazovanja kao osnovne pretpostavke za sticanje potrebnih finansijskih veština i savladavanje znanja iz finansijske pismenosti. Finansijsko obrazovanje pruža osnovna znanja iz oblasti štednje, budžetiranja, finansijskog planiranja, planiranja izdataka, analize rizika i strategije ulaganja sa ciljem ostvarivanja finansijske stabilnosti i bezbednosti, mudrog upravljanja novcem i sprečavanja gubitaka. Članak na kraju zaključuje da finansijsko obrazovanje i finansijska pismenost predstavljaju ključne determinante finansijske

## Communications, financial literacy and required core skills in the financial industry

stabilnosti i ostvarivanja željenog finansijskog uspeha i blagostanja svake organizacije i svakog pojedinca.

**Ključne reči:** finansijske veštine, finansijska pismenost, komunikacije, upravljanje novcem, finansijsko obrazovanje, finansijsko zdravlje.



## INOVACIJE KAO POKRETAČ RAZVOJA EKONOMIJE

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**Rezime:** Razvoj inovacija vezanih za poslovanje kompanije može doprineti boljoj unutrašnjoj organizaciji kompanije, smanjenju troškova u poslovanju i brojnim drugim mogućnostima. Dok, razvojem inovacija koje utiču na proizvode i usluge, preduzeća mogu pridobiti nove kupce i ostvariti veći udeo i profit na određenom tržištu. Danas većina kompanija prepoznaje pozitivan uticaj koji inovacije mogu omogućiti, ali se mogu pojaviti određeni problemi, kao što je nemogućnost finansiranja realizacije određene inovacije ili finansiranje razvoja novog inovativnog proizvoda. Ovaj problem je posebno izražen kada je reč o preduzetnicima u Srbiji, koji se rešava finansiranjem iz alternativnih izvora. Iz navedenih razloga autori su odličili da ovaj rad sadrži dva dela: teorijski i istraživački kako bi sedobila potpuna jasnoća o inovacijama kao pokretača razvoja ekonomije.

**Ključne reči:** inovacije, ekonomija, troškovi poslovanja, istraživanje i Srbija

### POJMOVNO ODREĐIVANJE INOVACIJA

Inovacije predstavljaju jedan od najznačajnijih faktora konkurentnosti preduzeća u savremenim uslovima poslovanja. Inovacija se definiše kao proces stvaranja nove (i diferencirane) vrednosti za kupca na tržištu, koja može stvoriti održivu konkurentsku prednost. Cilj inovacija predstavlja formiranje uspešnije budućnosti preduzeća ali uspešnost se ne dešava sama po sebi već je neophodno izvršenje inovacionog procesa – koji zahteva na prvom mestu planiranje svih faza i podprocesa. Kada je reč o inovacijama, primarni akcenat je na pojedincima koji imaju znanja i veštine i mogu ih koristiti za razvoj novih inovacija. Mala i srednja preduzeća i preduzetnici se u mnogim zemljama predstavljaju glavne aktere u pokretanju nacionalnog i regionalnog razvoja. Značaj ovog sektora je prepoznat zbog njegovog doprinosa zadovoljavanju različitih socijalno-ekonomskih ciljeva, poput većeg rasta zaposlenosti, proizvodnje, unapređenja izvoza i dr. Njihova uloga posebno je značajna u zemljama u tranziciji koje se suočavaju sa problemima visoke nezaposlenosti, niskog stepena privredne aktivnosti, nedovoljne konkurentnosti i nedostatka investicija i u kojima su još uvek prisutna velika, neefikasna državna preduzeća (7). Inovacija predstavlja poseban tip pozitivnih promena koja počiva na procesu usvajanja novih ideja sa cilju ostvarivanja što boljih rezultata, bilo da se radi na nivou preduzeća ili sa ciljem celokupnog društva u celini. U ekonomiji koju karakteriše globalizacija, brze tehnološke promene, promene preferencija potrošača, dominantnost znanja i potreba za kvalitetnim informacijama, kraći životni ciklus proizvoda, inovacija postaje sve značajniji pojam (4). U ekonomiji inovacija počinje pojedinačni i grupni uticaji na direktan ekonomski razvoj celokupnog privrednog društva. U novonastaloj situaciji kada su promene zastupljene predstavljaju bitan faktor konkurentne prednosti za svaku privrednu u kojoj postoji inovativnost. Upravo iz tih razloga vođena

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privredna inovacija može na globalnom tržištu imati konkurentsku prednost i smatrati se novim inovativnim razvojem.

Pre šezdesetih godina prošlog veka, proučavanje inovacija je bilo vrlo retka pojava, s izuzetkom austrijskog ekonomiste Šumpetera, koji je u svojim delima Teorija ekonomskog razvoja i Kapitalizam, socijalizam i demokratija, kao i u nekim naučnim člancima i esejima dao osnove pojma inovacija sa ekonomskog aspekta. Znanje možemo posmatrati kao najvažniji faktor razvoja inovacija. Današnja privredna dešavanja počivaju na znanju, veštinama i informacijama jer na taj način se povećava udeo u proizvodnji koji je zasnovan na znanju. Sam proces inoviranja bazira se na osnovu organizacionih, ekonomskih, socijalnih i drugih veština koja su bazirana na znanju (16). Po njemu inovacije su predstavljene kao nove potrošačke proizvode, proizvodnju starih proizvoda na nove načine, inovirani transport, osvajanje novih tržišta, otkriće novih sirovina, oblikovanje novih vrsta organizacije itd (6).

Isto tako Agion i Hovit (1). nastavljaju sa razvojem modela endogeno pokretanog rasta, pri čemu naglasak stavljaju na vertikalne inovacije za privredni rast i razvoj. Autori vide inovacije kao Šumpeterov proces kreativne destrukcije, jer konkurencija među preduzećima koja se bave istraživanjem, dovodi do nastanka inovacija. Inovacije omogućavaju efikasnije poslovanje, tako sa su preduzeća motivisana za kreiranje inovacijama visokim zaradama, posebno ako ih patentiraju (1).

Krajem XX. veka dogodile su se promene u procesu inovacija na taj način što se orijentacija preusmerila na eksploataciju fonda znanja kojiveć postoji na jedan specifičan način kroz stvaranje novih kombinacija i primene delova tog stečenog znanja.



Slika 1. Linearni model inovacija

Ogroman uticaj na razvoj inovacija ima ekonomska politika koja na osnovu posebnih mera treba da pokrene inovativnu pokretljivost. U skladu sa strategijom Evropa 2020 Evropska unija je veliku pažnju poklonila izvorima i aktivnostima namenjenim inovacijama kao značajnoj komponenti dostizanja bolje konkurentnosti. Promena inovacionih aktivnosti je, takođe, jedan od važnijih zadataka. Rezultat promena može se pronaći pod radnim nazivom sistema inovacionih pokazatelja EU (Innovation Union Scoreboard). Na samom početku, Evropska unija je na osnovu Lisabonske strategije uspostavila sistem EIS (European Union Scoreboard), koji je od 2001. do 2009. sadržao različite pokazatelje inovativnih aktivnosti država članica EU i susednih evropskih država sa kojima EU tesno saraduje. Naslednik ovog sistema, IUS, idealno je oruđe za pomoć pri prihvatanju implementacije Strategije Evropa 2020 i za dostizanje konkurenata u svetskoj privredi, kao što su SAD i Japan.

Tabela 1. Sistem inovacionih pokazatelja EU

Kategorija pokazatelja		Opis	Pokazatelji
Aktivatori		Osnovni činiooci koji omogućavaju kreiranje	Ljudski izvori - Novi doktori nauka - Stanovnici sa visokim obrazovanjem (30 – 34) - Stanovnici sa srednjim obrazovanjem (20 – 24)

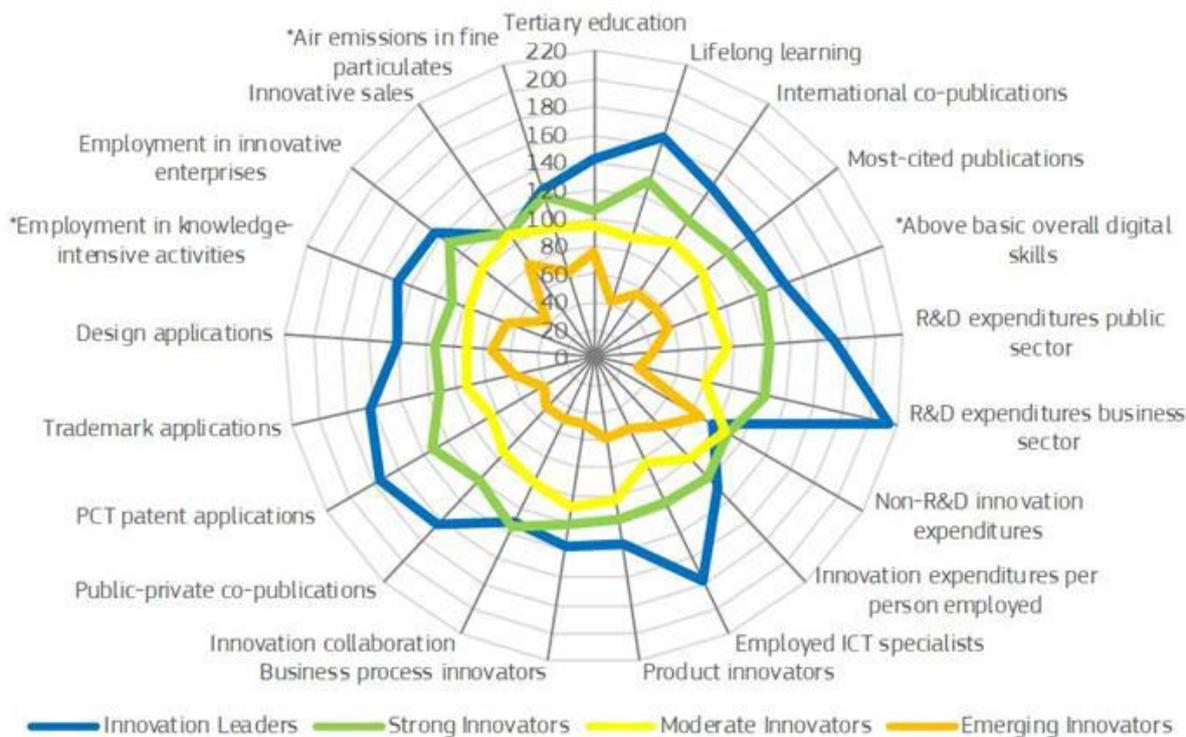
## Inovacije kao pokretač razvoja ekonomije

Kategorija pokazatelja		Opis	Pokazatelji
		inovacija	<p>Otvoreni, izvrsni i privlačni istraživački sistemi</p> <ul style="list-style-type: none"> <li>- Naučne objave o međunarodnoj saradnji</li> <li>- Publikacije među 10% najcitiranijih u svetu</li> <li>- Udeo doktoranada izvan EU</li> </ul> <p>Finansije i podrška</p> <ul style="list-style-type: none"> <li>- Troškovi javnog sektora za IR</li> <li>- Pokretni kapital</li> </ul>
Aktivnosti preduzeća		Inovacione aktivnosti u evropskim preduzećima	<p>Zadaci preduzeća</p> <ul style="list-style-type: none"> <li>- Zadaci u IR</li> <li>- Ostali inovacioni troškovi</li> </ul> <p>Povezanost i preduzetništvo</p> <ul style="list-style-type: none"> <li>- MSP koji imaju sopstveni IR</li> <li>- Inovativna MSP koja saraduju sa drugima</li> <li>- Naučne objave o saradnji privatnog i javnog sektora</li> </ul> <p>Intelektualna dobra</p> <ul style="list-style-type: none"> <li>- Patentne prijave</li> <li>- Prijava patenata u vezi sa društvenim izazovima</li> <li>- Robne marke</li> <li>- Oblici zaštite</li> </ul>
Rezultati		Pokazuju kako se prethodni elementi pretvore u prednosti za privredu u celini	<p>Inovatori</p> <ul style="list-style-type: none"> <li>- MSP sa inovacijama proizvoda ili procesa</li> <li>- MSP sa tržišnim ili organizacionim inovacijama</li> <li>- Inovativna preduzeća visokog rasta</li> </ul> <p>Ekonomski učinci</p> <ul style="list-style-type: none"> <li>- Zaposlenost u delatnostima zasnovanim na znanju</li> <li>- Izvoz srednje i visoke tehnologije (proizvoda)</li> <li>- Izvoz usluga zasnovanih na znanju</li> <li>- Udeo inovacija novih za tržište i preduzeće u ukupnom dohotku</li> </ul>

Izvor: (17, str. 21-22).

Na osnovu opisanih pokazatelja sve države se uvršćuju na skalu i u odnosu na udaljenost od proseka EU njihov IUS razvrstava se u četiri grupe (slika u nastavku):

1. Inovacione vođe (Innovation leaders);
2. Inovacioni sledbenici (Innovation followers);
3. Umereni inovatori (Moderate innovators); i
4. Skromni inovatori (Modest innovators) (5).



Slika 2. Skala inovacionog indeksa u odnosu na prosek EU za 2021. godinu

Izvor: (19).

Na osnovu sistema inovacionih pokazatelja EU, može se videti da su inovacioni lideri u Evropi: Belgija, Danska, Finska i Švedska i to u poslednjih 6 godina. Danska je i prema Svetskom indeksu konkurentnosti u ovom segmentu među prvih 10 zemalja u svet.

## INOVACIJE U SRBIJI

Jedam od bitnih stubova na osnovu kojih je potrebno bazirati opstanak sektora MSP u Srbiji jeste razvoj inovativnosti. Naime, inovativna MSP predstavljaju najbitniji deo savremene privrede čiji stub predstavlja konkurentnost i jačanje privrednog razvoja. Sposobnost prilagođavanja promenama jedan je od najvećih problema i izazova sa kojima se sreću privredni subjekti u savremenim uslovima privređivanja, a upravo ta sposobnost je jedna od osnovnih odlika MSP (7, 9).

MSP se prilagođavaju promenama koja utiču na mogućnost da preduzeće postane inovativno. Inovativnost je važan faktor koji omogućava preduzeću da se razvija. Dakle, inovacije su osnovno sredstvo koje pokreće preduzeće na dalji razvoj, koje se posle može odnositi na nacionalnu privredu kao i društvo u celini. Dakle, ekonomija koja počiva na znanju zavisi od inovacija. Inoviranje podrazumeva nove ideje koje se primenjuju da bi se došlo do efikasnog poslovanja, a sve to mora da bude u skladu sa zahtevima potrošača i potrebama koje se javljaju na tržištu (14). Iz navedenih razloga, orijentacija na kupca postaje ključni aspekt modernog poslovanja koji se sprovodi u cilju upoznavanja i osvajanja lojalnih kupaca (13). Odnosi između kupca i prodavca uspostavljaju se na realnom ili virtuelnom tržištu (2).

Preduzeća koja su inovativna predstavljaju ona koja poseduju novu kombinaciju faktora koji je namenjen za proizvodnju. Zato možemo reći da faktori proizvodnje koji mogu da se kombinuju podrazumevaju uvođenje novog dobra, unapređenje metode proizvodnje, otvaranje novih tržišta, sprovođenje nove organizacije ili nekog procesa (12). upotrebom novih tehnoloških inovacija preduzeće može da nastavi sa razvojem na tržištu (9). Naime, tehnološka inovacija podrazumeva

## Inovacije kao pokretač razvoja ekonomije

proces pod kojim preduzeće uvodi novi koncept, dizajn, proizvod ili uslugu a koji je sasvim nov za poslovanje (8). eće investicije doprinose povećanju broja zaposlenih i njihovih zarada i doprinose boljoj ekonomičnosti (3). Tako da, mala i srednja preduzeća (MSP) imaju karakteristiku da povećavaju stepen i obim korišćenja novih resursa jedne privrede, uz visok stepen fleksibilnosti i adaptivnosti novim tržišnim i drugim uslovima (11). Treba istaći činjenicu da svi finansijski poslovi se globalno mogu sistematizovati u tri funkcionalna područja i to: nabavka kapitala (finansiranje), upotreba kapitala (investiranje), i upravljanje kapitalom (održavanje likvidnosti). (10). Naime, globalni ekonomski sistem i stvaranje dinamičnog i fleksibilnog globalnog ekonomskog poretka su produkti intenzivnog procesa današnjih promena (18).



Slika 3. Zastupljenost vrsta inovacija prema teritoriji (%) u periodu 2020-2022. godina

Izvor: (15).

Slika broj 3 nam ukazuje koliko su zapravo inovativna preduzeća u Srbiji, Inovacije su podeljene na sledeće kategorije: (1) Inovacije proizvoda i usluge, (2) inovacije proizvodnog procesa (3) napuštene inovacije ili još uvek u toku (4) ne inovatori. Beogradski region ima tu odliku da ima najviše MSP tako da ima jednak probaj Inovacija proizvoda I usluge (48,2%) i inovacija proizvodnog procesa (47,5%). Najmanje inovacija imamo u Regionu Južne i Istočne Srbije (8%) inovacija proizvoda i usluge i ono što je interesantno da imamo veći procenat ne inovatora MSP, čak 13%. Ne treba zanemariti region Vojvodine koga čine skoro 24% inovativnih preduzeća i region Šumadije i Zapadne Srbije sa 20% inovacija u periodu 2020-2022. godine. Učešće poslovnih subjekata sa najmanje jednom vrstom inovacije iznosi 51,14%. Inovativno je više od 67% velikih poslovnih subjekata, oko 56% srednjih poslovnih subjekata, dok je među malim poslovnim subjektima oko 50% inovativno. Inovativne aktivnosti su skoro jednako zastupljene kod poslovnih subjekata koji se bave proizvodnim i uslužnim delatnostima – inovacije je uvelo oko 50% poslovnih subjekata.

Tabela 2. Poslovni subjekti prema inovativnosti, delatnosti i veličini

	Ukupno	Inovatori	Neinovatori	Učešće inovatora u %
Ukupno	19367	9905	9462	51,14
Mali poslovni subjekti	15849	7855	7994	49,56
Srednji poslovni subjekti	2879	1618	1261	56,20
Veliki poslovni subjekti	639	432	207	67,61
Proizvodni poslovni subjekti	4951	2470	2481	49,89
Uslužni poslovni subjekti	14416	7435	6981	51,57

Izvor: (15).

U pogledu regionalne zastupljenosti, inovacije proizvoda i procesa imaju učešće preko 47%, ali su neravnomerno zastupljene po regionima. Regionalna zastupljenost inovacija proizvoda i procesa kreće se u rasponu od 48,2% (Beogradski region) do 8% (Region Južne i Istočne Srbije).

TEMATSKI ZBORNIK NACIONALNOG ZNAČAJA: 'Znanje ili veštine' ili 'Znanje i veštine'

Tabela 3. Zastupljenost vrsta inovacijaprema teritoriji i veličini poslovnog subjekta

Teritorija	Veličina	Poslovni subjekti - inovatori			Neinovatori
		Inovacija proizvoda/usluga	Inovacija proizvodnog procesa	Napuštebe inovacije i inovacije u toku	
REPUBLIKA SRBIJA	Ukupno	7136	7989	984	9462
	Mali	5758	6205	704	7994
	Srednji	1060	1409	202	1261
	Veliki	318	375	78	207
Beogradski region	Ukupno	3438	3792	506	3913
	Mali	2841	3001	373	3327
	Srednji	458	617	103	517
	Veliki	139	174	30	69
Region Vojvodine	Ukupno	1695	1914	291	2472
	Mali	1347	1457	206	2075
	Srednji	265	370	62	330
	Veliki	83	87	23	67

Izvor: (15).

Tabela 4. Poslovni subjekti prema vrsti inovativnosti i sektorima delatnosti

		Inovatori								Neinovatori, %
		Ukupno		Proizvoda/usluga		Proizvodnog procesa		Napuštenih inovacija ili inovacija u toku		
		Broj	%	Broj	%	Broj	%	Broj	%	
<b>Ukupno</b>		<b>9905</b>	<b>51,1</b>	<b>7136</b>	<b>36,8</b>	<b>7989</b>	<b>41,3</b>	<b>984</b>	<b>5,1</b>	<b>48,9</b>
A	Poljoprivreda, šumarstvo i ribarstvo	157	39,7	76	19,2	129	32,7	22	5,6	60,3
B	Rudarstvo	17	23,3	14	19,2	10	13,7	2	2,7	76,7
C	Prerađivačka industrija	2268	51,5	1720	39,1	1809	41,1	302	6,9	48,5
D	Snabdevanje električnom energijom, gasom i parom	28	35,9	9	11,5	27	34,6	3	3,8	64,1
E	Snabdevanje vodom i upravljanje otpadnim vodama	190	56,4	81	24,0	148	43,9	11	3,3	43,6
F	Građevinarstvo	450	31,2	353	24,5	357	24,8	21	1,5	68,8
G	Trgovina na veliko i malo i popravka motornih vozila	2180	61,0	1524	42,6	1763	49,3	88	2,5	39,0
H	Saobraćaj i skladištenje	447	38,8	214	18,6	382	33,2	3	0,3	61,2
I	Usluge smeštaja i ishrane	492	64,5	404	52,9	369	48,4	30	3,9	35,5
J	Informisanje i komunikacije	1470	59,5	1130	45,8	1259	51,0	274	11,1	40,5

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		Inovatori								Neinovatori, %
		Ukupno		Proizvoda/usluga		Proizvodnog procesa		Napuštenih inovacija ili inovacija u toku		
		Broj	%	Broj	%	Broj	%	Broj	%	
K	Finansijske delatnosti i osiguranje	130	33,5	83	21,4	107	27,6	16	4,1	66,5
L	Poslovanje nekretninama	28	28,9	20	20,6	28	28,9	-	-	71,1
M	Stručne, naučne, inovacione i tehničke delatnosti	1726	50,6	1320	38,7	1331	39,0	193	5,7	49,4
N	Administrativne i pomoćne uslužne delatnosti	322	41,0	188	23,9	270	34,4	19	2,4	59,0

Izvor: (15).

Najveća zastupljenost poslovnih subjekata inovatora je u sektoru Usluga smeštaja i ishrane, 64,5% i u sektoru Trgovina na veliko i malo i popravka motornih vozila, 61%, dok je najmanja zastupljenost inovatora u sektoru Rudarstva, 23,3%. U strukturi prihoda poslovnih subjekata inovatora dominira učešće prihoda od prodaje nepromenjenih ili zanemarljivo malo promenjenih proizvoda i iznosi preko 80%. Učešće od prodaje proizvoda/usluga koji su novi za poslovni subjekat i učešće od prodaje proizvoda/usluga koji su novi na tržištu zbirno iznosi oko 20%. U ukupnoj populaciji poslovnih subjekata 9% čine oni u kojima nema zaposlenih sa visokim obrazovanjem, s tim da su to uglavnom mali poslovni subjekti. Najveći broj srednjih poslovnih subjekata zapošljava od 10% do 24% visokoobrazovanih, dok više od trećine velikih poslovnih subjekata zapošljava od 10% do 24% visokoobrazovanih kadrova.

Tabela 5. Zaosleni sa visokim obrazovanjem ili obrazovanjem stečenim nakon fakulteta

	0%	1–4%	5–9%	10–24%	25–49%	50–74%	75–100%
<b>Ukupno</b>	<b>9,0</b>	<b>19,4</b>	<b>12,2</b>	<b>19,0</b>	<b>13,6</b>	<b>10,0</b>	<b>16,8</b>
Mali	10,9	19,1	11,0	16,0	13,8	10,3	18,9
Srednji	0,5	22,8	17,7	31,0	11,0	9,0	8,0
Veliki	0,2	9,6	18,8	37,4	20,0	8,5	5,5

Izvor: (15).

Poreske olakšice za naučnoistraživački rad i druge inovativne aktivnosti iskoristilo je 1,9% poslovnih subjekata, dok je 9,7% poslovnih subjekata koristilo poreske olakšice za druge vrste aktivnosti.

### ISTRAŽIVAČKI DEO RADA

#### Uzorak istraživanja

Ukupan uzorak istraživanja čini 200 ispitanika (N=200) sa boravištem u Republici Srbiji. Istraživanjem su obuhvaćeni punoletni ispitanici koji su se u datom trenutku aktivni studenti. Istraživanje je rađeno u periodu od 15.05. do 01.07.2024. godine anketnom metodom na terenu.

Tabela 6. Struktura uzorka u odnosu na pol ispitanika

Pol	f	%
Ženski	95	48
Muški	105	52

Ukupno ( $\Sigma$ )	150	100,0
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Izvor: Autori.

U odnosu na pol ispitanika (Tabela 6), nešto više od polovine celokupnog uzorka istraživanja čine ispitanici muškog pola (52%) a nešto manje od polovine ispitanici ženskog pola (48%). Uzorak je približno ujednačen prema polu ispitanika.

Tabela 7. Struktura uzorka u odnosu na godine života ispitanika

Godine života	f	%
18-25	110	55
26-35	57	29
36-45	18	9
46-55	15	8
56-65	0	0
Više od 65	0	0
Ukupno ( $\Sigma$ )	200	100%

Izvor: Autori.

Kada je u pitanju starost ispitanika, dobijeni prosek godina ispitanika je  $AS=26,5$  najmlađi ispitanik ima 18 a najstariji 46 godina. Imajući u vidu starosnu strukturu, odlučeno je da se uzorak ispitanika podeli na sledeće starosne kategorije: ispitanici starosti od 18 do 25 godina koji čine (55%), zatim ispitanike starosti od 26 do 35 godina (29%), ispitanike starosti od 36 do 45 godina (9%) i ispitanike od 46 do 55 godina koga čini (8%) ostalih ispitanika nije bilo. Uzorak je nije ujednačen prema starosti ispitanika (Tabela 7).

Tabela 8. Struktura uzorka u odnosu na poznavanje inovacija

Da li vam je poznat pojam inovacija?	f	%
Da	188	94%
Ne	5	2%
Nisam siguran/na	7	4%
Ukupno	200	100

Izvor: Autori.

Na osnovu pokazatelja 94% ispitanika je upoznato sa pojmom inovacija. Manji broj ispitanika svega 2% nije upoznat.

Tabela 9. Struktura uzorka u odnosu na pojmove

Da li pravite razliku između pojmova inovacija i pronalazak?	f	%
Da	190	95%
Ne	4	2%
Nisam siguran/na	6	3%
Ukupno	200	100%

Izvor: Autori.

Najveći broj ispitanika 95% pravi razliku između inovacija i pronalaska. Ovaj podatak nam ukazuje da su ispitanici upoznati sa inovacijama i samim pojmom istih.

Tabela 10. Struktura uzorka u odnosu na pojmove

Smatrate li da je potrebno podsticati razvoj novih inovacija?	f	%
Da	200	100%

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Ne	0	0%
Nisam siguran/na	0	0%
Ukupno	200	100

Izvor: Autori.

Najveći broj ispitanika čak 100% smatra daje potrebno u daljem periosu razvijati nove inovacije jer će na taj način doći do većeg broja zaposlenih.

Tabela 11. Struktura uzorka u odnosu na razvoj malih i srednjih preduzeća

Smatrate li da je sektor malih i srednjih preduzeća jedan od temelja ekonomskog razvoja u Srbiji?	f	%
Da	195	98%
Ne	0	0%
Nisam siguran/na	5	2%
Ukupno	200	100

Izvor: Autori.

U ovom istraživanju 98% ispitanika smatra da je važan factor zavoja malih i srednjih preduzeća od velike važnosti za ekonomski razvoj u Srbiji.

Tabela 12. Struktura uzorka u oodnosu na inovacije u odnosu na konkurentsku prednost

Da li mislite da je inovacija osnova razvoja konkurentskih prednosti kompanije?	f	%
Da	186	93%
Ne	0	0%
Nisam siguran/na	14	7%
Ukupno	200	100

Izvor: Autori.

93% ispitanika smatra da je konkurentska prednost kompanije od značaja i da inovacije predstavljaju veliki značaj.

Tabela 13. Struktura uzorka u oodnosu na poznavanje inovacija kao osnov provlačenja kupaca

Da li smatrate da je inovacija osnova za diferencijaciju kompanije (koja je vidljiva kroz privlačenje novih kupaca) u odnosu na druge kompanije koje proizvode isti proizvod ili pružaju iste usluge?	f	%
Da	200	100%
Ne	0	0%
Nisam siguran/na	0	0%
Ukupno	200	100

Izvor: Autori.

Na osnovu mišljenja ispitanika 100% smatra da su inovacije ključ pridobijanja novih kupaca.

Tabela 14. Struktura uzorka u oodnosu na smanjenje troškova poslovanja

Da li smatrate da inovacije, uz smanjenje troškova poslovanja, mogu doprineti poboljšanju društvene odgovornosti kompanija (stvaranjem pozitivnog ili smanjenjem negativnog uticaja na životnu sredinu i sl.)?	f	%
Da	200	100%
Ne	0	0%
Nisam siguran/na	0	0%

Izvor: Autori.

Takođe, 100% ispitanika smatra da su inovacije uz smanjenje troškova poslovanja mogu doprineti poboljšanju društvene odgovornosti.

Tabela 15. Struktura uzorka u odnosu na razvoj novih inovacija

Da li smatrate da kompanije koje ulažu u razvoj novih inovacija imaju veće šanse za uspeh?	f	%
Da	200	100%
Ne	0	0%
Nisam siguran/na	0	0%

Izvor: Autori.

Ispitanici 100% smatraju da ulaganje u razvoj novih inovacija povećava šansu za poslovni uspeh.

Tabela 16. Struktura uzorka u odnosu na ulaganja za dalji razvoj novih inovacija

Da li smatrate da kompanije koje ulažu sredstva u razvoj novih inovacija imaju veće šanse za opstanak u periodima krize, kao što je period aktuelne pandemije, koja je negativno uticala na brojne privredne sektore?	f	%
Da	200	100%
Ne	0	0%
Nisam siguran/na	0	0%

Izvor: Autori.

Svi ispitanici 100% smatraju da kompanije koje ulažu sredstva u razvoj novih inovacija imaju veće šanse za opstanak u periodima krize, kao što je period aktuelne pandemije, koja je negativno uticala na brojne privredne sektore.

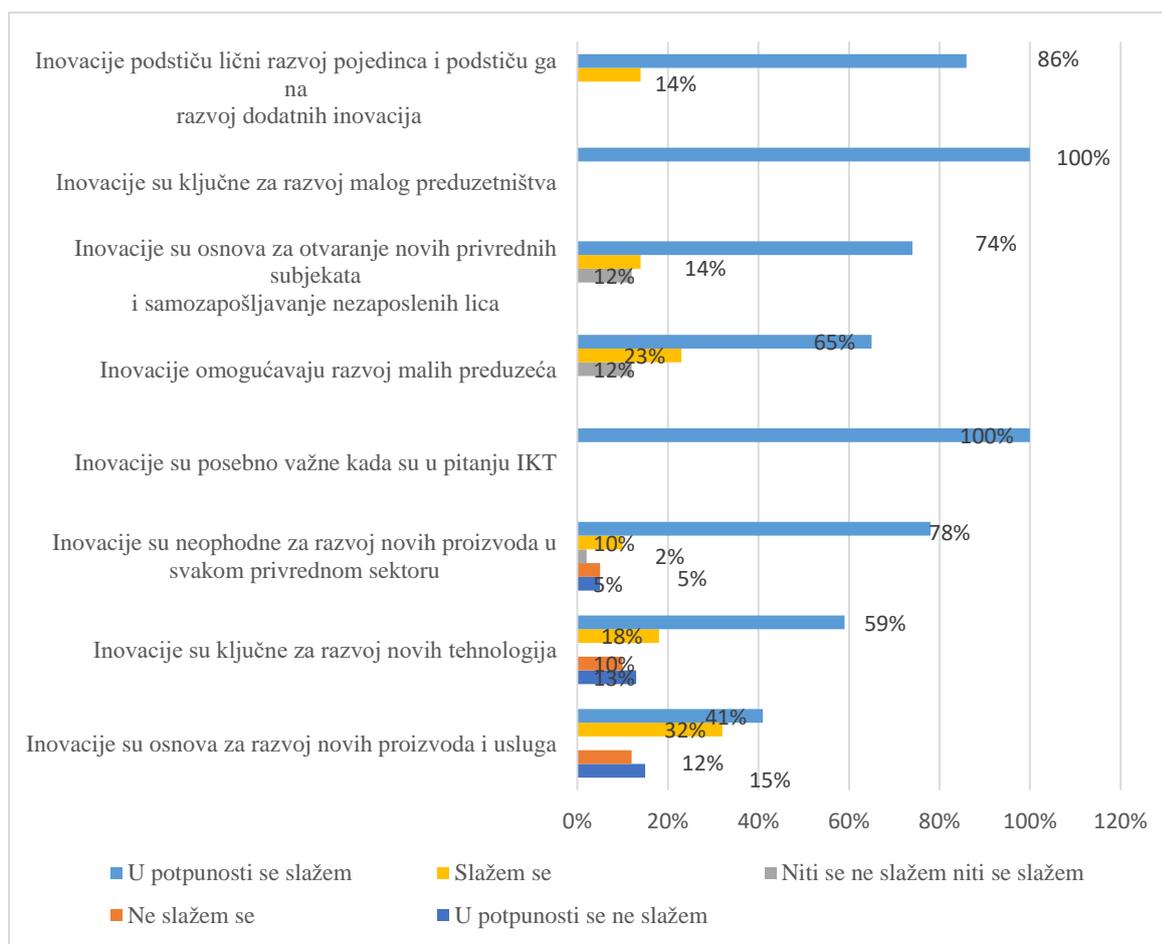
Tabela 17. Struktura uzorka u odnosu na ulaganje u razvoj inovacija

Smatrate li da ulaganje u razvoj inovacija može imati pozitivan utjecaj na sektor malih i srednjih preduzeća u Srbiji tokom pandemije COVID-19?	f	%
Da	200	100%
Ne	0	0%
Nisam siguran/na	0	0%

Izvor: Autori.

Najveći broj ispitanika 100% smatra da je ulaganje u razvoj inovacija može imati pozitivan utjecaj na sektor malih i srednjih preduzeća u Srbiji tokom pandemije COVID-19.

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Slika 4. Pravci inovacija na osnovu mišljenja ispitanika

Izvor: Autori.

Na osnovu dubinske analize ispitanika njih 86% smatra podstiču lični razvoj pojedinca i podstiču ga na razvoj dodatnih inovacije. Dakle, u narednom periodu je potrebno da država podrži inovacije uz poreske olakšice samih preduzetnika.

Inovacije predstavljaju ključni uspeh za razvoj preduzetništva tj. malih i srednjih preduzeća. Takođe, ovde je uloga države od velike važnosti.

Treba istaći da ispitanici smatraju da su inovacije osnova za za otvarawe novih provrednih subjekata tj. preduzeća. Država je pružila ogromnu mogućnost u smislu registracije preduzeća bez odlaska u Agenciju za privredne registre. Preduzetnici imaju mogućnost da sve obave online.

Dakle, 65% ispitanika smatraju da inovacije pružaju dalji razvoj malih i srednjih preduzeća. Na osnovu podataka 100% ispitanika je potvrdilo da će se i dalje razvijati IT sektor uz primenu veštačke inteligencije. 78% ispitanika smatra da su inovacijeneophodne za razvoj novih proizvoda u svakom privrednom sektoru. Inovacije po mišljenju ispitanika su ključne za razvoj novih tehnologija. Bez inovacije neće biti novih proizvoda i usluga to smatra 43% ispitanika.

### ZAKLJUČAK

Konkurentnost i inovacijski učinak su međusobno povezane ekonomske kategorije. Izbor stranog tržišta je ključna odluka svake kompanije u procesu internacionalizacije. Mala i srednja preduzeća dominantno su zastupljena u mnogim nacionalnim ekonomijama širom sveta. Glavni izvor rasta i razvoja malih i srednjih preduzeća predstavljaju inovacije. Značaj inoviranja za sticanje konkurentske

prednosti MSP nameće neophodnost detaljnog i analitičnog planiranja ovog procesa. Planiranje treba da obuhvati potrebne resurse za razvoj inovacije (ljudske, finansijske, fizičke i druge). U budućnosti se očekuje da će visokotehnoške inovacije omogućiti još veće povećanje produktivnosti u poslovanju preduzeća, smanjiti troškove, povećati rast i proširiti postojeća tržišta. Inovacija u sebi nosi budućnost. Rizik je uvek prisutan, ali je njegov stepen znatno viši ukoliko preduzeće konstantno ne inovira.

Važnu ulogu država treba da odigra u budućem periodu u pogledu investiranja i saradnju sa malim i srednjim preduzećima. Takođe, investiranje će se ogledati u novim ITK uslugama, medicinskim i drugim prihvatljivim proizvodima koji su razvijeni u državama EU. Ne treba zanemariti činjenicu da mlađoj populaciji do 30 godina država treba da pruži pomoć u pogledu finansiranja novih ideja.

## LITERATURA

1. Aghion, P., Blundell, R., Griffith, R., Howitt, P., & Prantl, S. (2009). The effects of entry on incumbent innovation and productivity. *The review of economics and statistics*, 91(1), 20-32.
2. Bojčić, R., & Pavlović, M. (2017). Testiranje dimenzija kvaliteta bankarskih usluga u Srbiji i bližem okruženju radi unapređenja usluga. *Ekonomski pogledi*, 19(2), 49-66. <https://doi.org/10.5937/EkoPog1702049B>
3. Beke-Trivunac, J., & Peković, D. (2021). Učinak ulaganja u stalna sredstva na povećanje broja zaposlenih i njihovih zarada u preduzetnim sektorima. *Revizor*, 24(95-96), 7–16. <https://doi.org/10.5937/Rev2196007B>
4. Dajić, M. (2017). Uloga i značaj inovacija u razvoju privrede Srbije. *Ekonomski signali: poslovni magazin*, 12(1), 55-64.
5. Edquist, C., Zabala-Iturriagoitia, J. M., Barbero, J., & Zofío, J. L. (2018). On the meaning of innovation performance: Is the synthetic indicator of the Innovation Union Scoreboard flawed?. *Research Evaluation*, 27(3), 196-211.
6. Gliković, D., Vuksanović, D., & Mrkajić Ateljević, A. (2020). Inovacije i konkurentna prednost u uslovima globalizacije. *Novi ekonomist*, 14(2), 22-28.
7. Ilić, Đ. (2018). Razvoj i mesto preduzetništva u privredi Republike Srbije. *Trendovi u poslovanju*, 6(1), 1-10.
8. Kitić, A., & Radišić, M. (2023). Programi finansiranja nauke i privrede kao bitan element stvaranja inovacija.
9. Mytelka, L., & Farinelli, F. (2005). Local clusters, innovation systems and sustained competitiveness. *UNU/INTECH Discussion Paper*.
10. Milunović, M., & Jerinić, D., (2013): Osnovi ekonomije, Cekom books, Sremski Karlovci.
11. Pavlović, M., Popović, J., & Turanjanin, D. (2021). Razvoj malih i srednjih preduzeća u Srbiji, Časopis: *Oditor*, broj 2/2021.
12. Simin, M., Živkucin, S., Aleksić, S., & Soleša, D. (2021). The current condition and development of the innovative sector of small and medium enterprises (SMEs) in AP Vojvodina. *Ekonomija-teorija i praksa*, 14(3)
13. Ratković, M., Pavlović, M., & Anđelković, M. (2017). Comparative analysis of customer satisfaction in postal and banking services. *International review*, (1-2), 108-120.
14. Rahman, N. A., Yaacob, Z., & Radzi, R. M. (2016). An overview of technological innovation on SME survival: a conceptual paper. *Procedia-Social and Behavioral Sciences*, 224, 508-515.
15. Republički zavod za statistiku RS (2023). Statistika nauke, tehnologije i inovacija, Saopštenje br. 332 - год. LXXIII, 1.12.2023.
16. Schumpeter, J. A. (2013). *Capitalism, socialism and democracy*. Routledge.
17. Stojković, H. S., Kastratović, E., & Stankovic, L. (2022). Inovacija kao način povećanja konkurentnosti privrede innovation as a way to increase the competitiveness of the economy. *Trendovi u poslovanju*, 19(1), 18-25.

18. Vuković, A., Milunović, M., & Jakšić, K. (2019). INNOVATION OF THE ECONOMY AS A KEY DETERMINANT OF ECONOMIC DEVELOPMENT. *KNOWLEDGE BASED SUSTAINABLE DEVELOPMENT*, 129.
19. [https://ec.europa.eu/commission/presscorner/detail/en/qanda\\_21\\_3050](https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3050), preuzeto: 01.07.2024. 20. <http://srn.com>, preuzeto 1.7.2024.).

## INNOVATION AS A DRIVER OF ECONOMIC DEVELOPMENT

**Summary:** The development of innovations related to a company's operations can lead to better internal organization, reduced operating costs, and various other opportunities. By developing innovations that impact products and services, businesses can attract new customers, increase market share, and boost profits. Today, most companies recognize the positive impact of innovation, but certain challenges may arise, such as the inability to finance the implementation of a particular innovation or the development of a new innovative product. This issue is especially pronounced among entrepreneurs in Serbia, who often rely on alternative sources of financing. For these reasons, the authors have structured this paper into two parts: theoretical and research, to provide comprehensive clarity on innovation as a driver of economic development.

**Key words:** innovation, economy, business costs, research and Serbia



## OKRUGLI STO „ZNAJJE ILI VEŠTINE“ ILI „ZNAJJE I VEŠTINE“

Okrugli sto „Znanje ili veštine“ ili „Znanje i veštine“ deo je projekta Instituta za strategijske studije i razvoj „Petar Karić“ pod radnim naslovima: „Osavremenjavanje koncepta nastave na studijskim programima OAS, MAS i DAS za zanimanja budućnosti – Srbija u globalnom svetu (u pripremi)“.

### PROGRAMSKI OKVIR OKRUGLOG STOLA

Veliki broj raznovrsnih istraživanja poslova budućnosti pokazuje da poslodavci ukazuju ne samo na potražnju za kreativnošću, kritičkim razmišljanjem, rešavanjem problema i veštine koje se odnose na razvoj i korišćenje savremene tehnologije, već i da stavljaju sve veći naglasak na interpersonalne i socio-emocionalne veštine. Ovo poslednje uključuje sposobnost saradnje, koordinacije i efektivne komunikacije sa drugima. Sticanje ovih veština počinje u ranom detinjstvu, ali se ne završava na studijama. Brzina razvoja novih tehnologija dovodi do ubrzanog zastarevanja velikog broja poslova, a promene u društvenom i prirodnom okruženju dovode do kontinuiranog razvoja novih potreba ljudi, pa time i potreba za kreiranjem novih poslova i posledično potrebe za celoživotnim učenjem.

Holistički koncept koji uključuje znanje, veštine, stavove i vrednosti nazivamo kompetencijama. Prema projektu „OECD Learning Compass 2030“, kompetencije su više od „veština“. Veštine su preduslov za vršenje kompetencije. Da bi bili spremni i kompetentni za 2030. godinu, studenti treba da budu sposobni da koriste svoja znanja, veštine, stavove i vrednosti sa ciljem da deluju na koherentan, proaktivan i odgovoran način, kojim menjaju budućnost na bolje. Istraživanja pokazuju da bi ulaganje u samo jednu važnu oblast veština – zajedničko rešavanje problema – moglo dodati čak 2,54 triliona dolara globalnom BDP-u.

Porast potražnje za ovim veštinama nameće potrebe za usvajanjem holističkog pristupa učenju koji uključuje ne samo konkretne veštine za ostvarivanje ekonomskog uspeha, već i stavove i vrednosti koje podstiču pojedince na učenje tokom celog života. To uključuje prihvatanje međuljudskih i društvenih vrednosti koje promovisu koheziju i tolerantnost ekonomije i društva, poštuju i podržavaju integritet njihovih institucija i cene krhkost prirodnog okruženja.

Kompetencija i znanje nisu ni konkurentni, niti međusobno isključivi koncepti. Studenti treba da steknu osnovno znanje kao osnovni gradivni blok razumevanja. Oni takođe mogu pokazati kompetencije zasnovane na znanju i koristiti ih za osavremenjavanje, produbljivanje i primenu stečenog znanja. Koncept kompetencija uključuje mobilizaciju znanja, veština, stavova i vrednosti za ispunjavanje složenih zahteva u situacijama neizvesnosti.

Proces formalnog obrazovanja treba da pripremi mlade za ovakvu budućnost. Sistem obrazovanja treba svakom pojedincu da omogući da prihvati i razvija svoje jedinstvene ljudske kvalitete – one za koje je malo verovatno da će ikada biti zamenjeni tehnologijom.

### Tematske oblasti Okruglog stola

- Savremeni ciljevi društvenog i ekonomskog razvoja.
- Novi, sveobuhvatni pokazatelji društvenog i ekonomskog razvoja. Činjenica je da BDP kao metrika ne ukazuje na kvalitet tog rasta i njegov uticaj na zdravlje ljudi i planete.
- Tradicionalna metrika BDP-a dopunjena pokazateljima za inovativnost, inkluzivnost, održivost i otpornost.
- Vertikalna socijalna mobilnost kao pokazatelj kvalitetnog društvenog rasta.
- Veštine ili znanje na kratak i dugi rok. U kratkom roku, veštine mogu da doprinesu najvećem rastu vrednosti i za radnike i za poslodavce. Zahtevi za preispitivanjem uloge visokog obrazovanja.
- Celoživotna učenje, timski rad, rad na daljinu i rad u kancelariji.

- Uspon globalnih digitalnih poslova. Očekuje se da će do 2030. godine broj globalnih digitalnih poslova porasti i da će generalno biti bolje plaćeni poslovi. Ako se njima dobro upravlja, globalni digitalni poslovi predstavljaju priliku za korišćenje talenata širom sveta, proširujući bazu talenata koja je dostupna poslodavcima i obezbeđujući puteve ekonomskog rasta kroz široki spektar prihoda.
- Stručno obrazovanje.
- Oglasi nekad i sad.
- Studije slučajeva: Zanimanje budućnosti / FORENZIČAR.

## UVODNA PREZENTACIJA

<div style="display: flex; justify-content: space-between; align-items: center;">   </div> <h3 style="text-align: center;">Okrugli sto „Znanje ili veštine“ vs „Znanje i veštine“</h3> <p style="text-align: center;">ALFA BK Univerzitet Beograd, 30.05.2024.</p>	<h3>Uvodna pitanja</h3> <ul style="list-style-type: none"> <li>• <b>Mikro nivo:</b> Kako koncipirati svrhu i ciljeve studijskih programa? Da li više pažnje usmeriti na sticanje znanja ili na razvoj veština? Ili nešto treće?</li> <li>• <b>Makro nivo:</b> Kakav sistem i koji procesi obrazovanja donose najveće koristi razvoju društva, povećanju društvenog bogatstva i boljoj budućnosti?</li> <li>• <b>Globalni nivo:</b> Kakvo je buduće mesto naše zemlje na globalnom tržištu rada i nauke?</li> </ul>																																																						
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<h3>Pravci razvoja obrazovanja</h3> <ul style="list-style-type: none"> <li>• Stručne kvalifikacije smatraju se relevantnijim za tržište rada jer su više orjentisane na posao.</li> <li>• Visoko obrazovanje igra ključnu ulogu u društvu tako što podstiče inovacije, povećava ekonomski razvoj i rast i generalno poboljšava dobrobit građana.</li> <li>• U EUROSTATU smatraju da će u narednim godinama biti povećana tražnja za visokokvalifikovanim ljudima sa relevantnim obrazovanjem, kako bi se mogli baviti poslovima koji su fleksibilniji i složeniji.</li> </ul>																																																							

OSVRT NA ODRŽANI OKRUGLI STO

**„Znanje ili veštine“ ili „Znanje i veštine“**

Naučno društvo za upravljanje organizacijama i Institut za strategijske studije i razvoj „Petar Karić“ ALFA BK Univerziteta organizovali su 30. maja 2024. godine Okrugli sto sa temom: „Znanje ili veštine“ vs. „Znanje i veštine“. Cilj ovog Okruglog stola bio je da se što je moguće celovitije stekne uvid u nekoliko strateških pitanja, na mikro, makro i globalnom nivou. Na mikro nivou postavlja se pitanje: „Kako koncipirati svrhu i ciljeve studijskih programa? Da li više pažnje usmeriti na sticanje znanja, razvoj veština ili nešto treće?“

Obezbeđenje i kontrola kvaliteta studijskih programa nameću kontinuiranu potrebu za preispitivanjem odgovora na ova pitanja. Kvalitetan studijski program mora da ima jasnu svrhu, ciljeve i ishode studijskih programa i pojedinačnih predmeta na tim programima. Svrha, kompetencija i cilj određuju sadržaj nastavnih programa, način izvođenja nastave, ocenjivanje ishoda i kompetencije nastavnika. Za makro nivo važno pitanje je: „Kakav sistem i koji procesi obrazovanja donose najveće koristi razvoju društva, povećanju društvenog bogatstva i boljoj budućnosti?“ Posmatrano na globalnom nivou, postavljeno je pitanje: „Kakvo je buduće mesto naše zemlje na globalnom tržištu rada i globalnom tržištu naučnih znanja?“

Poslodavci odlučuju da li im je potrebna osoba sa znanjem ili osoba koja ima određene veštine. Osvrt na objavljene oglase na tržištu rada pokazuje da poslodavci od visoko obrazovanih lica traže kreativnost, kritičko razmišljanje, sposobnost rešavanja problema (kao osobine koje se zasnivaju na znanju), i veštine koje se odnose na razvoj i korišćenje tehnologije i interpersonalne i socio-emocionalne veštine, kao stručne kvalifikacije koje su više orjentisane na posao. Duboka teorijska znanja potrebna su onima koji se razvijaju za rad u nauci.

Izlaganja i diskusija učesnika, koje su obuhvatile i njihova istraživačka, nastavna i profesionalna iskustva, iznedrile su nekoliko polaznih stavova za dalja razmatranja.

Pitanja potrebnih znanja ili/i veština razmatrana su na primeru procesa sprečavanja pranja novca, na primeru upotrebe veštačke inteligencije, na primeru primene savremenih programa u računovodstvenom procesu, na primeru zadatka sudskog veštaka, na primeru internog revizora, na primeru konsultanta u velikoj agenciji za pružanje humanitarne pomoći i drugo. Razvoj informacione tehnologije zahteva multidisciplinarni pristup u mnogim profesijama, što je ilustrovano na primeru studenta računovodstva koji je putem veštačke inteligencije osmislio program za rešavanje kolokvijuma. Većina primera ukazala je i na činjenicu da praktično iskustvo razvija odgovornost i poštovanje prema drugima, što je važna osnova za interpersonalne veštine.

Druga tema bile su kompetencije nastavnika koji studentima treba da pruže zahtevana znanja i veštine. Teorijska znanja i akademske veštine nisu sporne. Problem je simbolično izražen kroz pitanja: „Šta može profesor bez iskustva u praksi da kaže studentu? Čemu će moći da ga nauči?“ Nekoliko učesnika iznelo je svoja iskustva u pristupu ovom problemu. U profesiji računovodstva rešenje je jasno, svaki nastavnik iz ove oblasti mora da ima i neko profesionalno zvanje.

Visoko obrazovanje igra ključnu ulogu u društvu na taj način što podstiče inovacije, povećava ekonomski razvoj i rast i generalno poboljšava dobrobit građana. S druge strane, stručne kvalifikacije smatraju se merodavnijim za tržište rada. Sve brži razvoj složenih i međusobno prožetih tehnoloških i privrednih procesa ukazuje na to da će u narednim godinama biti povećana tražnja za visokoobrazovanim i visokokvalifikovanim ljudima koji će moći da se bave sve složenijim i sve fleksibilnijim poslovima.

Na početku skupa, učesnike je pozdravio dobrodošlicom rektor ALFA BK Univerziteta, prof. dr Jovan Veselinović.



Učesnici okruglog stola “Znanje ili veštine” ili “Znanje i veštine”

Učesnici Okruglog stola sa akademskih institucija sa preovlađujućim iskustvom u nastavi i iskustvom u praksi:

dr Jozefina Beke-Trivunac, profesor emeritus, ALFA BK Univerzitet, Institut za strategijske studije i razvoj „Petar Karić“ i Naučno društvo za upravljanje organizacijama.

dr Marijana Joksimović, redovni profesor, ALFA BK Univerzitet.

dr Larisa Jovanović, profesor emeritus, ALFA BK Univerzitet.

dr Snežana Knežević, redovni profesor, Fakultet organizacionih nauka Univerziteta u Beogradu i Naučno društvo za upravljanje organizacijama.

dr Lidija Madžar, vanredni profesor, ALFA BK Univerzitet.

dr Ana Anufrijević, Univerzitet „Union – Nikola Tesla”, Fakultet za ekonomiju i finansije Beograd.

dr Kosana Vićentijević, Akademija strukovnih studija Zapadna Srbija, odsek Valjevo.

dr Edin Glogić, Visoka škola za finansije i računovodstvo FINra Tuzla, Bosna i Hercegovina.

dr Gordana Vukelić, redovni profesor u penziji i Naučno društvo za upravljanje organizacijama.

dr Dragan Cvetković, vanredni profesor, Visoka škola za poslovnu ekonomiju i preduzetništvo, Beograd i Naučno društvo za upravljanje organizacijama.

dr Srećko Devjak, docent, Dun & Bradstreet, d. o. o., Slovenija.

dr Stevanče Nikoloski, Univerza v Novem mestu Fakulteta za ekonomijo in informatiko, Slovenija.

dr Drinka Peković, docent, ALFA BK Univerzitet.

dr Malči Grivec, Univerza v Novem mestu, Fakulteta za ekonomijo in informatiko, Novo mesto, Slovenija.

dr Zorica Đurić, docent, ALFA BK Univerzitet.

dr Gordana Mrdak, vanredni profesor, ALFA BK Univerzitet.

Učesnici Okruglog stola iz privrede sa preovlađujućim iskustvom u praksi i iskustvom u akademskoj nastavi:

mr Agron Ferati, Executive Director/Izvršni direktor, International Advisory, Products and Systems Ltd. (i-APS).

dr Jelena Krpić, Licencirani ovlašćeni revizor, Euroaudit, Beograd i Naučno društvo za upravljanje organizacijama.

dr Emil Živkov, Interni revizor, Transnafta a.d., Pančevo i Naučno društvo za upravljanje organizacijama.

dr Nebojša Jeremić, Viši interni revizor za finansije i računovodstvo, Telekom Srbija.

ma Bojan Stojiljković, Finansijski direktor, Dual-pvc, Smederevo.

ma Marko Kihler, doktorand Pravnog fakulteta Univerziteta Union, Sekretar ALFA BK Univerziteta.

\*Pažnja: Ovaj Okrugli sto deo je projekta: „Osavremenjavanje koncepta nastave na studijskim programima OAS, MAS i DAS za zanimanja budućnosti – Srbija u globalnom svetu (u pripremi)“

## REVIEW OF THE ROUND TABLE

### **'Knowledge or Skills' or 'Knowledge and Skills'**

The Scientific Society for Management of Organizations and the Institute for Strategic Studies and Development "Petar Karić" of ALFA BK University organized a round table on May 30th of this year with the topic: 'Knowledge or Skills' or 'Knowledge and Skills'. The aim of this round table was to gain as comprehensive an insight as possible into several strategic issues at the micro, macro, and global levels. At the micro level, the question is: "How to conceptualize the purpose and objectives of study programs? Should more attention be paid to acquiring knowledge or developing skills? Or something else?"

Ensuring and controlling the quality of study programs imposes a continuous need to reassess the answers to these questions. A quality study program must have a clear purpose, goals, and outcomes for the study programs and individual subjects within those programs. The purpose, competencies, and goals determine the content of the curricula, the method of teaching, the assessment of outcomes, and the competencies of the teachers. At the macro level, the important question is: "What system and which education processes bring the greatest benefits to the development of society, increase social wealth, and improve the future?" Viewed at the global level, the question posed is: "What is the future place of our country in the global labor market and the global market of scientific knowledge?"

Employers decide whether they need a person with knowledge or a person who has certain skills. A review of published job advertisements on the labor market shows that employers seek creativity, critical thinking, problem-solving ability (as traits based on knowledge), and skills related to the development and use of technology and interpersonal and socio-emotional skills as professional qualifications that are more job-oriented. Deep theoretical knowledge is needed by those who are developing for work in science.

## O ODRŽANOM OKRUGLOM STOLU

The presentations and discussions of the participants, which included their research, teaching, and professional experiences, generated several starting points for further consideration.

The questions of necessary knowledge and/or skills were discussed using examples from the process of money laundering prevention, the use of artificial intelligence, the application of modern programs in the accounting process, the tasks of a court expert, the role of an internal auditor, the work of a consultant in a large humanitarian aid agency, and more. The development of information technology requires a multidisciplinary approach in many professions, illustrated by the example of an accounting student who designed a program to solve exams using artificial intelligence. Most examples also highlighted the fact that practical experience develops responsibility and respect for others, which is an important foundation for interpersonal skills.

Another topic was the competencies of teachers who need to provide students with the required knowledge and skills. Theoretical knowledge and academic skills are not in question. The problem is symbolically expressed through the questions: "What can a professor without practical experience tell a student? What will they be able to teach them?" Several participants shared their experiences in approaching this problem. In the accounting profession, the solution is clear: every teacher in this field must also have some professional qualification.

Higher education plays a key role in society by fostering innovation, increasing economic development and growth, and generally improving the well-being of citizens. On the other hand, professional qualifications are considered more relevant for the labor market. The rapid development of complex and intertwined technological and economic processes indicates that in the coming years, there will be an increased demand for highly educated and highly qualified people who will be able to handle increasingly complex and flexible jobs.

At the beginning of the event, participants were welcomed by the rector of ALFA BK University, Prof. Dr. Jovan Veselinović.

Participants in this round table included:

Participants from academic institutions with predominant experience in teaching and with relevant practice:

Dr. Jozefina Beke-Trivunac, Professor Emeritus, Institute for Strategic Studies and Development, ALFA BK University, and the Scientific Society for Management of Organizations.

Dr. Marijana Joksimović, Full Professor, ALFA BK University.

Dr. Larisa Jovanović, Professor Emeritus, ALFA BK University.

Dr. Snežana Knežević, Full Professor, Faculty of Organizational Sciences, University of Belgrade, and the Scientific Society for Management of Organizations.

Dr. Lidija Madžar, Associate Professor, ALFA BK University.

Dr. Ana Anufrijević, University "Union – Nikola Tesla", Faculty of Economics and Finance, Belgrade.

Dr. Kosana Vićentijević, Academy of Applied Studies Western Serbia, Department Valjevo.

Dr. Edin Glogić, College of Finance and Accounting FINra, Tuzla, Bosnia and Herzegovina.

Dr. Zorica Đurić, Assistant Professor, ALFA BK University.

Dr. Gordana Vukelić, Retired Full Professor, and the Scientific Society for Management of Organizations.

## TEMATSKI ZBORNIK NACIONALNOG ZNAČAJA: 'Znanje ili veštine' ili 'Znanje i veštine'

Dr. Dragan Cvetković, Associate Professor, College of Business Economics and Entrepreneurship, Belgrade, and the Scientific Society for Management of Organizations.

Dr. Srećko Devjak, Assistant Professor, Dun & Bradstreet d. o. o. Slovenia and the Scientific Society for Management of Organizations.

Dr. Stevanče Nikoloski, University of Novo Mesto, Faculty of Economics and Informatics, Slovenia and the Scientific Society for Management of Organizations.

Dr. Drinka Peković, Assistant Professor, ALFA BK University.

Dr. Malči Grivec, University of Novo Mesto, Faculty of Economics and Informatics, Novo Mesto, Slovenia and the Scientific Society for Management of Organizations.

dr Zorica Đurić, docent, ALFA BK Univerzitet.

Dr. Gordana Mrdak, Associate Professor, ALFA BK University.

Participants from industry with predominant experience in practice and relevant academic teaching:

Mr. Agron Ferati, Executive Director, International Advisory Products and Systems Ltd. (i-APS).

Dr. Jelena Krpić, Licensed Certified Auditor, Euroaudit Belgrade, and the Scientific Society for Management of Organizations.

Dr. Emil Živkov, Internal Auditor, Transnafta a.d. Pančevo, and the Scientific Society for Management of Organizations.

Dr. Nebojša Jeremić, Senior Internal Auditor for Finance and Accounting, Telekom Srbija.

Mr. Bojan Stojiljković, Financial Director, Dual-pvc Smederevo.

Mr. Marko Kihler, PhD Candidate, Faculty of Law, Union University, Secretary of ALFA BK University.

\*Note: This round table is part of the project "Modernization of the Teaching Concept in the Study Programs OAS, MAS, and DAS for Professions of the Future – Serbia in the Global World" (currently in preparation).

## O ODRŽANOM OKRUGLOM STOLU

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