Academia Oamenilor de Știință din România

Raport final de cercetare

Proiectul numărul 15/2018

„Strategii pentru implementarea economiei cunoștințelor în România”

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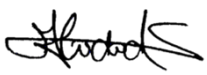

București 2018

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Introducere

Prezentul raport de activitate sumarizează cercetarea derulată în 2018, pe parcursul a 6 luni în cadrul proiectului **Strategii pentru implementarea economiei cunoștințelor în România** coordonat de domnul Prof.Univ.Dr.Dr.Dr.H.C. din cadrul Academiei Oamenilor de Știință din România. Cercetarea atestată de raportul de față a avut trei direcții concretizate în trei lucrări științifice: I) Analizarea noilor modele de afaceri (antreprenoriat social corporativ) specifice economiei cunoștințelor cu o focalizare pe contextul economic românesc; II) Analiza distribuției georgrafice a economiei cunoștințelor în cadrul Uniunii Europene; III) Exemplificarea digitizării ca forță motrice a economiei colaborative și economiei cunoștințelor.

Economia cunoștințelor a ajuns să înlocuiască economia tradițională (Hadad, 2017a, 2017b), deoarece societățile au evoluat, iar accentul s-a mutat de la activele corporale la cunoștințe în toate procesele din sectoarele economic, de afaceri și educație (Mehmood & Rehman, 2015). Această schimbare se reflectă în transformările instituționale și schimbările economice pe termen lung susținute de politicile naționale de inovare. În plus, economiștii și cercetătorii au ajuns la concluzia că trebuie să integreze cunoștințele în modelele lor teoretice. Acest lucru a dat naștere unei noi teorii a dezvoltării, care este un demers recunoscut al diferitor cercetători care încearcă să înțeleagă mai bine rolurile pe care tehnologia și cunoașterea le joacă în creșterea economică.

Economia bazată pe cunoaștere reprezintă poziția în care crearea de cunoștințe și capitalizarea sunt primordiale pentru generarea bogăției. Una dintre cele mai directe definiții date economiei cunoștințelor este cea a lui Brinkley (2006, p. 3): „Economia bazată pe cunoștințe este ceea ce se obține atunci când firmele reunesc calculatoare puternice și minți educate pentru a crea bogăție”. Această definiție deschide calea industriilor cunoștințelor și aduce în discuție caracterizarea unei astfel de economii în care se reunesc investițiile tehnologice și forța de muncă împreună cu înaltă calificare (Bejinaru, 2016) pentru a construi dezvoltarea durabilă a afacerilor. OCDE a recunoscut importanța economiilor cunoștințelor și le-a definit drept „economii care se bazează direct pe producerea, distribuția și utilizarea cunoștințelor și informațiilor” (OCDE, 1996, p. 7). Deoarece cunoașterea este unul dintre principalele motoare ale economiei cunoștințelor, sectorul de afaceri beneficiază de matricea elaborată de Bolisani și Bratianu (2018) pentru a genera cunoștințe utilizând cele patru strategii generice: strategii de exploatare, strategii de achiziție, strategii de explorare și strategii de crearea de cunoștințe.

În mediul actual ce se află în continuă schimbare rapidă, sub amenințarea concurenței acerbe și a progreselor tehnologice, firmele trebuie să țină pasul pentru a rămâne competitive pe piață și pentru a face acest lucru trebuie să caute modalități de a crește inovația angajaților lor și de a rămâne competitive prin intermediul antreprenoriatului corporativ (Kuratko et al., 2015). Ele pot, de asemenea, să rămână competitive prin generarea de cunoștințe - crearea de noi unități de afaceri, procese, produse, servicii care reprezintă antreprenoriatul corporativ. Un număr consistent de cercetători găsesc cea mai convingătoare definiție cea a lui Sharma și Chrisman (2007, p. 88), Antreprenoriatul corporativ se referă la procesul prin care indivizii

din societățile deja înființate recunosc și exploatează oportunitățile „proces prin care un individ sau un grup de indivizi, în asociere cu o organizație existentă, urmăresc să creeze o organizație nouă sau să incite reînnoirea sau inovarea în cadrul acestei organizații deja existente".

I. Analizarea noilor modele de afaceri (antreprenoriat social corporativ) specifice economiei cunoștințelor cu o focalizare pe contextul economic românesc

Conceptul de Antreprenoriat Social Corporativ (CSE) este un tip special de antreprenoriat corporativ și o paradigmă emergentă de afaceri care nu are limite evidente din contextul său. CSE în principiu „își propune să producă o transformare semnificativă și cuprinzătoare a modului în care o companie operează" (Austin și Reficco, 2009, p. 3). Fiind un concept în curs de dezvoltare, literatura este deficitară în acest sens și există puține dovezi pentru a realiza un studiu statistic și de aceea alegem să analizăm fenomenul prin cercetarea studiilor de caz pentru a obține o înțelegere aprofundată a CSE stabilit în contextul economiei cunoștințelor.

Alături de diverse strategii, economia cunoștințelor se ocupă de crearea de cunoștințe și CSE poate fi ușor asimilat domeniului. Antreprenoriatul social corporativ a apărut în 2005, în cercetarea efectuată de Hemingway și se referă la diferite valori personale care ar putea acționa ca un catalizator pentru îmbunătățirea afacerii, acționând în același timp ca agent moral în contextul favorizării factorilor externi. Prin urmare, CSE reprezintă o combinație atât a trăsăturilor personale, cât și a comportamentelor specifice (idem) și este astfel definit ca fiind un „angajat al unei corporații care operează într-o manieră antreprenorială socială, adică identificând oportunități și / sau promovând activități responsabile din punct de vedere social, pe lângă rolul lor oficial de a lucra întru realizarea obiectivelor de afaceri ale firmei" (p7). Mediul favorabil se va dovedi a fi condiția cheie pentru succesul CSE (Austin și Reffico, 2009). Singurul document public care atestă modul în care CSE poate fi activat aparține lui Crets (2012), dar se concentrează numai pe problematica unei afaceri durabile din punct de vedere ecologic, a reciclării și a reducerii deșeurilor.

Potrivit lui Austin et al. (2006) CSE reprezintă „procesul de extindere a domeniului de competență a firmei și oportunitățile corespunzătoare stabilite prin mobilizarea inovativă a resurselor, atât în interiorul, cât și în afara controlului său direct, care vizează crearea simultană a valorii economice și sociale" (p. 6). Hadad (2015) a definit trei strategii CSE: CSE ca instrument de inovare de transformare; CSE ca instrument de dezvoltare a pieței; și CSE ca instrument de dezvoltare locală. Am ales să ne concentrăm pe CSE ca instrument de inovare transformațional care recurge la „capacitățile de cercetare și dezvoltare ale companiei pentru a dezvolta noi servicii și produse care vizează piețele existente sau emergente" (p. 190). În acest caz, problema socială devine un catalizator și ajută compania să canalizeze capabilitățile sale în noi direcții prin mobilizarea resurselor interne și externe pentru a crea un nou spațiu de piață și pentru a ajunge la noi segmente de clienți și clienți netradiționali. Această strategie prezintă asemănări cu strategia oceanului albastru (blue ocean), deoarece impune companiei să se aventureze în domenii neexplorate. În plus, accentul se pune pe inovația tehnologică menită să rezolve problema socială și, de cele mai multe ori, această

inovație vine împreună cu crearea de cunoștințe, o schimbare a modelului de afaceri sau poate o integrare în structura deja existentă a companiei.

În secțiunea ce urmează va fi prezentată metodologia, urmând ca ulterior să prezentam discuția rezultatelor. Scopul cercetării este de a dezvolta o înțelegere profundă a CSE, care va avea ca rezultat noi dovezi ale comportamentului real al practicanților dyad-teoreticieni. Alegerea metodei de cercetare a studiului de caz se bazează în principal pe chestiunea cheie de cercetare descriptivă pe care o abordăm în acest studiu: „Cum se manifestă CSE în corporații?". Există dovezi că studiul de caz este folosit cu sporirea încrederii ca o strategie riguroasă de cercetare în sine (Hartley, 1994, p.208; Hartley, 2004, p. 323). S-au formulat câteva întrebări secundare de cercetare, care au fost direct legate de specificul fiecărui caz și au fost extrase din literatura de specialitate explorată, pentru a obține o viziune mai clară asupra modului în care CSE este privită, se manifestă și este susținută în întreaga organizație:

- Cum rezolvă compania problema socială?

- Cum își mobilizează compania resursele pentru a crea un produs / serviciu / abordare inovatoare pentru a adresa problema socială?

- Cum își mobilizează compania resursele pentru a identifica noi segmente de piață neconvenționale pentru a contracara problema socială?

- Cum își mobilizează compania resursele pentru a elabora un nou produs pentru a aborda un segment de piață neconvențional pentru a contracara problema socială cu care se confruntă comunitatea?

- Cum contribuie compania la dezvoltarea locală și în ce constă dezvoltarea locală reală?

- Cum asigură compania o dezvoltare locală durabilă a comunității a cărei problemă socială este abordată?

- Cum asigură compania și își asigură viabilitatea financiară?

În ceea ce privește utilizarea teoriei, amintim doar strategiile antreprenoriale sociale identificate anterior: CSE ca un instrument de inovare transformare, CSE ca instrument de dezvoltare a pieței și CSE un instrument de dezvoltare locală. Așa cum a fost definit de Hadad (2015), CSE ca instrument de inovare transformațional reprezintă o poziție în care problema socială vizată de companie acționează ca mobilizator al resurselor de cercetare și dezvoltare și se pune accentul pe crearea unui nou produs, serviciu, abordare sau o combinație a tuturor dintre aceștia care rezolvă problema socială.

Colectarea datelor noastre de studiu a fost realizată prin analizarea documentelor disponibile pe site-ul web al companiei, articole din ziare, bloguri și statistici și rapoarte diferite privind compania.

Printre tehnicile utilizate pentru analizarea datelor studiului de caz s-au numărat ipoteze-cheie pe care le-am făcut atunci când am definit întrebările noastre de cercetare și cazul. Câteva exemple de ipoteze cheie sunt prezentate mai jos:

- Când se elaborează o nouă strategie de dezvoltare a afacerilor bazată pe principii sociale, compania este condusă în principal de interesul său în rezolvarea problemei comunității sociale identificate;

- Atunci când elaborează o nouă strategie de dezvoltare a afacerilor bazată pe principii sociale, compania consideră în principal gradul de noutate a produsului / serviciului / abordării dezvoltate pentru a aborda problema socială;

- Atunci când elaborează o nouă strategie de dezvoltare a afacerilor bazată pe principii sociale, compania consideră în principal oportunitatea de a adapta produsele / serviciile existente la nevoile noilor clienți / piețe nesatisfăcute.

Aceste ipoteze au fost implicite în stadiul inițial de analiză, așa că am anticipat și am planificat. Am elaborat un model de descoperiri așteptate într-un cadru teoretic stabilit (bazat pe revizuirea literaturii și analiza practicilor) și am comparat modelul bazat empiric cu cadrul teoretic dezvoltat anterior.

Pe baza ipotezelor de cercetare menționate anterior, am decis să ne concentrăm asupra companiilor pentru care am găsit informații suficiente pentru a ne face un exemplu în domeniul antreprenoriatului social corporativ în economia bazată pe cunoaștere. Lucrarea prezentă se va concentra numai pe Aqua Carpatica, care va servi drept oportunitate pentru antreprenoriatul social corporativ ca instrument de inovare transformare, în timp ce celelalte două cazuri vor fi prezentate în documentele ulterioare.

Generalizarea studiului de caz se face prin generalizarea analitică, nu prin generalizarea statistică. Studiile de caz, ca și experimentele, sunt generalizabile la propozițiile teoretice și nu la populații sau universuri. În acest sens, studiul de caz, ca și experimentul, nu reprezintă un „eșantion", iar în studiul de caz „obiectivul este extinderea și generalizarea teoriilor (generalizarea analitică) și nu enumerarea frecvențelor (generalizarea statistică)" (Yin, 2010, p. 15). Constatările contribuie la teoria generală a fenomenului antreprenorial social corporativ.

Testul purității: Ca parte a eforturilor de responsabilitate socială ale companiei, Aqua Carpatica a lansat campania de testare a purității apei în 2014 cu sloganul „Împreună ne luptăm pentru puritatea tuturor apelor din România". De când a fost lansat, acest tip de apă a avut concentrații scăzute de nitrați fiind cunoscută și sub numele de „cea mai pură apă". Prin această campanie, compania atrage atenția asupra nivelurilor ridicate de nitrați din apele de suprafață și de adâncime din țara noastră. Toate acestea se datorează faptului că, în prima jumătate a anului, nitrații utilizați în agricultură ca îngrășăminte sunt dizolvați în apa de ploaie și intră în sursele de apă și de aici, în paharele tuturor, și mai departe, în corpurile lor. Nitrații sunt compuși chimici care apar atunci când are loc mineralizarea substanțelor organice azotate din plante și animale. Nitrații sunt parțial absorbiți de rădăcinile plantelor și servesc drept materie primă pentru sinteza proteinelor și a altor compuși de azot. Excedentul rămas contaminează apele subterane (așa cum se întâlnește în râuri, lacuri și ape subterane).

Prima parte a campaniei a avut ca rezultat o hartă care conține toate apele din România și conținutul lor de nitrați (indicator de impurități). Pentru a face acest lucru, Aqua Carpatica a oferit teste de nitrați și broșura realizată de către profesorul Gheorghe Mencinicopschi intitulată „Credeți că știți ce ați bea" care putea fi găsită în magazine precum: Carrefour, Cora, Auchan, Kaufland și Mega Image. Testul este o bandă de hârtie care are la unul dintre capetele sale un indicator sensibil tratat pentru a recunoaște valoarea nitraților de apă. O probă a unui astfel de test poate fi văzută în articolul original. Testul este introdus timp de două secunde în apa testată (ape adânci - fântâni / fântâni, ape de suprafață - râuri, lacuri, izvoare, apă de la robinet și apă îmbuteliată) . Ulterior, testul este scos din apă și după două minute se poate observa cum își schimbă culoarea. Culoarea de la sfârșitul testelor trebuie comparată cu valoarea de referință tipărită pe ambalaj pentru a putea indica nivelul de nitrați din care face parte testul.

A doua etapă a campaniei a fost înregistrarea valorii testului pe aplicația Facebook „Testul de puritate” sau pe site-ul oficial al campaniei (www.testulpuritatii.ro), alături de locul unde a fost testată și tipul de apă pe care a fost efectuat testul. Fiecare test înregistrat a contribuit la completarea hărții cu nitrați care a putut fi accesată de oricine era interesat de curățenia apei pe care o consumase.

Ceea ce este de fapt interesant este că, deși prin această campanie compania a investit sume mari de bani, precum și timp și resurse umane, nu au anticipat un viitor curs de acțiune pentru rezultatele pe care le-au primit, nu le-au centralizat, nu au fost indicate suprafețele care au avut cele mai mari concentrații de nitrați și nu au stabilit ce măsuri trebuie luate sau cum pot fi contracarate aceste probleme.

Analiza antreprenoriatului social corporativ ca strategie de inovare transformatoare aduce un interesant fapt despre campanie și compania în ansamblul său: Aqua Carpatica a ales o abordare foarte rațională într-o categorie în care celelalte mărci aleg să abordeze emoțiile. Cu această campanie, compania a făcut un pas înainte și le-a oferit fizic un produs demo. Ei au creat o loialitate la nivel înalt printre consumatori, deoarece acesta a fost printre puținele momente în care clienții au avut de fapt posibilitatea de a testa produsul pe care l-au cumpărat. Campania a avut ca temă centrală interactivitatea oferită de testele reale. Testele nu au fost inventate de Valvis Holding, dar au fost cumpărate din Statele Unite. Agenția Cohn & Jansen JWT, responsabilă de proiectarea acestei campanii, a venit cu ideea utilizării testelor de comunicare (Wall-Street, 2015).

Aceasta a fost o acțiune de mare expunere (profil de risc ridicat) cu diferite repercusiuni potențiale deoarece mulți clienți doreau să se testeze pentru ei înșiși dacă produsele Aqua Carpatica sunt conforme cu marcajele efective de pe etichete, astfel încât compania trebuia să fie sigură că știa pentru ce a făcut publicitate. În acest fel, compania s-a deschis publicului și a devenit mai transparentă decât era. Obiectivul principal al campaniei a fost de a influența comportamentul de cumpărare al clienților din regiunile cu niveluri ridicate de nitrați și de a educa mai mult clienții pentru a deveni mai conștienți de necesitatea de a citi etichetele și de a deveni mai informați. Astfel, problema socială a nivelelor ridicate de nitrați în ape a inspirat compania să combine un instrument de testare (inovație tehnologică) cu o comunicare de marketing care, în cele din urmă, a dus la o abordare inovatoare a companiei de a loializa clienții și a ajunge la ei.

În plus, compania a făcut un pas mai departe prin ridicarea barei și contestarea concurenței pentru a furniza pe piață produse care ar trebui să fie mai competitive. Prin ridicarea barei pe care compania o folosea avantajul competitiv reprezentat de resursele naturale pe care le are la dispoziție (izvoarele cu nivel scăzut de nitrați) și a devenit un punct de referință incontestabil.

II. Analiza distribuției georgrafice a economiei cunoștințelor în cadrul Uniunii Europene

Mediul de afaceri este remodelat de economia cunoștințelor, care a dus atât competitivitatea, cât și activitatea de afaceri la un nivel complet nou. Lucrarea de față evidențiază distribuția geografică a economiei cunoștințelor la nivelul Uniunii Europene prin analiza factorială. Analiza factorilor, o tehnică bine cunoscută de grupare statistică, a fost aplicată în cele 28 de țări ale UE (observate în studiul nostru ca variabile aleatorii) cu un număr fix a priori de doi factori. Pe fiecare variabilă, realizările sunt date de scorurile (normalizate între 0 și 1) înregistrate pentru anul 2012 pe 12 indici cheie ai economie cunoștințelor (KE). Structura factorului rezultat este comparată cu gruparea geografică standard a țărilor UE (NorthWest-South-East) în literatura de specialitate KE. Software-ul SPSS a fost utilizat pentru analiza statistică.

Din analiza literaturii de specialitate, am fost determinați să elaborăm următoarele ipoteze: H1. Există o corelație puternică între factorii care determină economia bazată pe cunoaștere: indicele economiei bazate pe cunoaștere (KEI), indicele competitivității globale (GCI), indicele global de inovare (CII), indicele fericirii mondiale (WHI), indicele Gini, cheltuielile pentru cercetare și dezvoltare din PIB), numărul articolelor științifice și tehnice din reviste, PIB pe cap de locuitor, cheltuielile guvernamentale pe student, ratele de mobilitate obligatorii, fluxurile nete de investiții străine directe, exporturile de înaltă tehnologie (ca procentaj al produselor industriale), cheltuielile militare, consumul de energie electrică kwh pe cap de locuitor, consumul de energie electrică (kg echivalent petrol pe cap de locuitor), emisiile de CO2 (tone metrice pe cap de locuitor), gospodăriile cu acces la internet (%), frecvența zilnică a accesului la internet, întreprinderile care vând online; H2. Distribuția economiei cunoașterii urmărește distribuția geografică a țărilor din UE.

Am început analiza noastră numerică prin calcularea coeficienților de corelație Pearson între toate perechile de indicatori economici probabil legați de KE, și anume toti cei anterior menționați. Datele corespunzătoare au fost obținute de la Baza de date a Băncii Mondiale (https://data.worldbank.org/) sub limita că cele mai noi date disponibile KEI aparțin cohortei 2012. Din cei 18 indicatori propuși inițial - separați de KEI, indispensabili la indicatorul de referință, ca indice de referință - doar 11 sunt corelați semnificativ (la o valoare de 0,5) cu KEI, astfel încât ceilalți șapte sunt excluși din statistici.

Un caz special este coeficientul de egalitate Gini, care măsoară discrepanța distribuției averilor între populația unei națiuni. Acest indice este în mod semnificativ negativ corelat cu KEI, tocmai la valoarea de tăiere 0.5, deci am ales să rulăm două analize diferite, una cu Gini și una fără acest indice. Ca regulă generală, prezentăm în continuare numai rezultatele numerice ale analizei cu Gini, analiza fără Gini fiind aproape aceeași. Singura excepție notabilă este structura ușor diferită a clusterelor, care va fi prezentată ulterior.

Trecând la FA-ul experimental, subliniem că în cazul nostru variabilele sunt țările UE, nu indicatorii KE de mai sus. Valorile acestor indici, corespunzătoare fiecărei țări, sunt considerate realizări ale variabilelor aleatoare. Pentru a extrage cei doi factori, am aplicat procedura de reducere a dimensiunii SPSS → Factor, utilizând metoda de extracție a componentelor principale, Varimax cu rotație de normalizare Kaiser, pe setul de 28 de țări

din UE, pe un eșantion de 12 (respectiv 11, când Gini este exclusă) - valorile pentru indicii KE.

Prima parte a acestei lucrări a fost dedicată investigării economiei bazate pe cunoaștere și a multitudinii de factori care o influențează. Am început analiza noastră de la ipoteza că KEI urmărește distribuția geografică (și bogăția) în țările europene. Pentru a testa această ipoteză, am realizat mai întâi o analiză covariantă pereche de 18 indicatori potențiali KE, care a redus numărul lor la 12, inclusiv KEI. În următoarea etapă a cercetării, am modelat 28 de țări ale UE ca variabile aleatorii, valorile normalizate ale celor 12 indicatori fiind instanțierile acestora. La aceste 28 de variabile, s-a aplicat o procedură de analiză a factorilor în SPSS cu un număr fix de doi factori ca ieșire. În cele din urmă, am comparat structura obținută cu doi factori față de clasificarea regională existentă oferită de Divizia de Statistică a Națiunilor Unite (2013). Putem concluziona că distribuția geografică a țărilor UE nu exercită o influență semnificativă asupra indicelui economiei cunoștințelor, deoarece cele două clasificări (geografică și statistică) nu prezintă nici un fel de suprapunere, infirmând astfel cea de-a doua ipoteză. Prima noastră ipoteză a fost confirmată parțial, deoarece nu toți factorii identificați influențează economia cunoștințelor.

De exemplu, ne-am aștepta ca numărul articolelor științifice și tehnice, al cheltuielilor guvernamentale pe student și al ratei mobilității de intrare să aibă o influență importantă asupra economiei bazate pe cunoaștere, totuși factorii au fost excluși din analiza factorială alături de intrările nete de ISD, exporturile de produse industriale, cheltuielile militare ca procent din PIB și emisiile de dioxid de carbon în tone metrice pe cap de locuitor. În ceea ce privește economia bazată pe cunoaștere, România este puternic influențată de Grecia, Cipru, Letonia, Bulgaria, Republica Slovacă și Italia, ceea ce ar putea reprezenta un temei comun pentru elaborarea unor politici armonizate pentru încurajarea economiei bazate pe cunoaștere, a inovării, a competitivității și a digitalizării. Cele mai mari corelații obținute au fost în ceea ce privește indicele competitivității globale, indicele fericirii mondiale, cheltuielile pentru cercetare și dezvoltare, care indică faptul că ele ar putea servi și ca predictori în evaluarea statutului economiei cunoașterii dintr-o anumită țară, în timp ce corelațiile mai slabe pot fi observate pentru întreprinderile care vând online , consumul de energie electrică, emisiile de dioxid de carbon și altele. În viitor, aceeași relație poate fi testată pentru a vedea dacă influențele se schimbă.

Principalele limitări ale acestui studiu constau în faptul că cele mai noi date corespunzătoare KEI care erau disponibile din baza de date a Băncii Mondiale aparțineau cohortei 2012 și că, după ce am afirmat distribuția geografică, nu am obținut un criteriu solid pentru gruparea țărilor. În plus, investigații viitoare ar putea fi dedicate efectuării unei analize similare, dar fără stabilirea numărului de factori la doi. O altă modalitate de identificare a clusterelor bazate pe economia cunoștințelor poate fi realizată prin utilizarea procesului analitic ierahic (AHP) sau a procesului analitic de rețea (ANP) și prin stabilirea unui criteriu de grupare viabil din punct de vedere economic.

III. Exemplificarea digitizării ca forță motrice a economiei colaborative și economiei cunoștințelor

Prin intermediul unui studiu de caz, prezentăm modul în care digitizarea a redeschis industria de transport în ceea ce privește serviciile de închiriere. Evoluția serviciilor de mobilitate începe de la taxiuri, închirieri de mașini, merge la partajare și, în cele din urmă, ajunge la serviciile de partajare a autovehiculelor. Prezenta lucrare va introduce o variantă a serviciului de partajare și închiriere a autovehiculelor, denumit Pony Car Sharing. Partajarea de mașini, partajarea casei și partajarea echipamentelor sunt instrumente ale economiei de colaborareși/sau de partajar, care a început să câștige tracțiune academică și practică, dar toate acestea nu ar fi fost posibile decât în cazul existenței internetului. Internetul înseamnă în permanență împuternicirea consumatorilor din întreaga lume, făcându-i mai cunștienți și oferindu-le acces la decizii mai informate. Cea de-a doua parte a lucrării utilizează cercetarea calitativă și este dedicată unui studiu de caz care analizează compania Pony Car Sharing, în contextul schimbului de cunoștințe și a economiei cunoștințelor, din perspectiva modelului de business: partenerii cheie, activitățile cheie, propunerea de valoare, relația cu clienții, canale, segmente de clienți, fluxuri de venituri și costuri. Constatările arată că nu există un sprijin legislativ pentru economia de împărțire/partajare și că implementarea unui astfel de model de afaceri necesită eforturi substanțiale din partea proprietarului afacerii. Cu toate acestea, investițiile în educarea clienților nu sunt exigibile.

Compania Pony Car Sharing deține o flotă de 80 mașini de în Cluj-Napoca și 40 de mașini în București (VW, Mercedes, Smart fortwo, Smart forfour, Mini One, BMW i3; manuală sau automată) care sunt distribuite uniform pe suprafața celor două județe. Serviciile de închiriere ale companiei sunt disponibile prin intermediul aplicației GetPony (care a fost îmbunătățită pentru servicii cum ar fi: rezervați / rezervați o mașină, alimentați mașina sau cumpărați pachete de unități preplatite pentru a obține diferite tipuri de reduceri). Flota companiei este ecologică (mașini electrice și mașini EURO 6).

Pe măsură ce discutăm despre nevoia de hiperpersonalizare a clienților, compania a insistat să obțină feedback de la clienți cu privire la modul de îmbunătățire a serviciilor, aplicațiilor sau a modului în care compania funcționează și a încorporat feedbackul în noile oferte. Serviciile companiei pot fi accesate foarte ușor. Clientul trebuie să descarce și să instaleze aplicația GetPony disponibilă în mod gratuit pe GooglePlay și AppleStore, să-și înregistreze cartea de identitate și permisul de conducere, să furnizeze un cont bancar valabil și apoi să închirieze oricare vehicul potrivit pentru nevoile proprii. Automobilul este deblocat cu ajutorul aplicației și poate fi preluat dintr-o locație de pe hartă, condus în toată țara și lăsat într-o altă locație din zona de operare desemnată.

Modelul tabloului de afacere (business model canvas) a fost proiectat de Osterwalder și Pigneur (2010, 2013) și reprezintă un instrument strategic de planificare a managementului destinat dezvoltării și documentării modelelor de afaceri noi sau deja existente. Secțiunea de față va dezvolta principalele elemente ale tabloului modelului de afaceri prin portretizarea companiei Pony Car Sharing, cu un accent special pe partenerii cheie, activitățile cheie, propunerea de valoare și segmentele de clienți. Elementele panzei/tabloului sunt interconectate și, uneori, ele se pot suprapune.

Parteneri cheie. Această secțiune descrie rețeaua de parteneri pe care o are compania pentru a optimiza modelul de afaceri, pentru a reduce riscul sau pentru a obține resurse. Pony Car Sharing a inițiat un număr semnificativ de parteneriate care aparțin brandurilor de divertisment, cultura și stilul de viață pentru a atrage clienți. Partenerii-cheie sau rețeaua reprezintă una dintre cele mai importante secțiuni ale tabloului modelului de afaceri în cazul cunoașterii și al împărțirii afacerilor economice, deoarece explică necesitatea conform căreia clientul trebuie să aparțină unei rețele sau unei comunități așa cum a fost identificată în cadrul studiului literaturii de specialitate. Prima și cea mai importantă colaborare a fost cea cu cele trei festivaluri de muzică celebre: UNTOLD, Castle Electric și Mioritmic. Parteneriatul a avut forma unui barter în care flota companiei a fost marcată cu sigla festivalurilor și o imprimare specială, au fost organizate concursuri în care clienții puteau câștiga gratuit intrarea la festivaluri sau reduceri Pony și locuri VIP de parcare pentru flota companiei (Simionescu, 2018). În plus, premii pop-up au fost plasate strategic în mașini pentru ca utilizatorii să le găsească: difuzoare portabile sau pături pentru picnic. O altă mișcare de marketing care a fost făcută a fost să plaseze o mașină Pony în zona de operare a festivalului și să o transforme într-o cabină foto.

Dintre diferitele colaborări inițiate, cea care a fost elaborată cu TedX a presupus ca Pony Car să devină mijlocul oficial de transport pentru vorbitorii invitați, clienților Pony le-au fost oferite, prin concursuri, bilete la conferința TedX. Mai mult, tuturor participanților la conferință li s-au oferit vouchere de reducere. O colaborare similară a fost dezvoltată împreună cu TIFF (Festivalul Internațional de Film Transilvan), diferența fiind că în timpul pauzelor, cinematograful rula un scurt spot publicitar pentru Pony Car. Compania a încheiat și alte parteneriate valoroase cu industria de modă (V pentru Vintage), cu cafeneaua Meron și cu un studio de yoga. Toate aceste parteneriate ar putea fi clasificate ca alianțe strategice între neconcurenți, ceea ce a dus la creșterea gradului de conștientizare a mărcii, atragerea de noi clienți pentru a încerca serviciul companiei, achiziționarea de noi clienți și ajustarea companiei la nevoile adiacente ale clienților.

Activitățile cheie sunt cele mai importante lucruri pe care le face o companie pentru a asigura funcționalitatea modelului de afaceri. Principala activitate cheie a Pony Car Sharing este închirierea autoturismelor persoanelor fizice (B2C) și intenționează să includă un serviciu Business-2-Business (B2B) ca reacție la diferitele cereri pe care le-au primit de la diferite corporații care necesită astfel de servicii pentru propriii lor angajați în termene și condiții speciale. Această nouă activitate s-ar putea dovedi a avea un impact pozitiv asupra traficului din București și asupra nivelurilor de poluare.

Propunerea de valoare are rolul de a descrie produsele pe care compania le oferă, care creează valoare pentru un anumit segment de clienți. Cea mai bună descriere a propunerii de valoare Pony Car Sharing este titlul lor: „Închiriați mașina direct de pe stradă, folosind telefonul. Fără niciun contract. Fără garanții. Fără costuri suplimentare”, deoarece subliniază avantajele pe care le are față de concurenți. Pony Car Sharing este primul serviciu de partajare a mașinilor în România și are avantajul primului jucător. Ea satisface nevoia de mobilitate a clientului, ajutându-l să contribuie la reducerea blocajului și poluării. Pentru companie, inovarea Internet of Things permite transferul de date prin Internet și tehnologia Bluetooth prin intermediul unui dispozitiv (smartphone sau tabletă) și al flotei companiei care are casete de urmărire instalate pe fiecare mașină care controlează principalele operațiuni.

Aplicația primește date din caseta de urmărire, actualizând în mod constant harta cu locația autoturismelor, nivelurile de combustibil, kilometri, recenzii ale ultimilor clienți, culoare și tip de transmisie, pentru a menține clientul actualizat în timp real. Serviciile sunt disponibile clienților cu două condiții: a) clientul trebuie să aibă cel puțin 21 de ani și b) să aibă permisul de conducere de cel puțin un an. Aceste două condiții au fost convenite de comun acord cu compania de asigurări.

Relația cu clienții Pony Car Sharing stabilește relații personale și automate cu clientul în scopul de a achiziționa și de a păstra noi clienți. Departamentul de Relații cu Clienții se ocupă de relația cu clientul care este menținută prin e-mail, telefon și poștă. Segmentul principal de clienți al Pony Car Sharing este reprezentat de Millennialii care sunt permanent la curent cu orice lansări de tehnologie nouă, activi și curioși, cu o atitudine diferită în ceea ce privește simțul proprietății în comparație cu generațiile trecute, mobilitatea urbană, care nu dețin o mașină. Millennialii sunt, de asemenea, adoptatorii timpurii ai serviciilor companiei.

Resursele cheie sunt în acest caz resurse tangibile (flota autovehiculelor din București și Cluj-Napoca) și resursele intangibile (aplicația și datele pe care le generează). Alte resurse cheie includ capitalul uman care joacă un rol esențial în interacțiunea cu clientul și ajută la dobândirea acestuia. Canalele descriu modul în care compania comunică și atinge segmentele de clienți pentru a furniza propunerea de valoare. Compania ajunge la clienți prin aplicația descrisă anterior prin intermediul conturilor de utilizator; prin urmare, Pony Car Sharing nu folosește nici un intermediar în relația cu clienții săi.

Fluxurile de venituri sunt stabilite în strânsă legătură cu activitățile cheie și fiecare dintre ele ar trebui să poată genera o sursă de venituri. Compania încearcă să achiziționeze clienți recurenți, prin intermediul abonamentelor și reducerilor de preț și a unităților Pony. De exemplu, serviciile pot fi achiziționate pe minut, zi, abonament etc. Principalele costuri suportate de companie au fost legate de investiția inițială, achiziția flotei și întreținerea, combustibilul, salariile, dezvoltarea și întreținerea aplicației, asigurări etc.

Concluzii

Una din lecțiile învățate din primul articol sub formă de studiu de caz este că, atunci când compania are un avantaj competitiv final, trebuie să îl folosească și, prin utilizarea acestuia, va crește concurența pe piață și competitivitatea produselor oferite. Acest lucru nu este ușor și necesită mobilizarea atât a resurselor interne, cât și a celor externe. Mai mult, CSE se materializează în acest caz în inovație transformatoare de care beneficiază nu numai compania, ci și comunitatea locală în care acționează. Această inițiativă nu a implicat o schimbare în modelul de afaceri al companiei, dar cu siguranță a făcut mare parte din competiție să își regândească modelele de afaceri. Problema socială cu care se confruntă compania a acționat ca un catalizator pentru mobilizarea resurselor companiei și a fost tradusă în dezvoltarea unei noi abordări care vizează educarea și împuternicirea/responsabilizarea populației. Un consumator educat este un consumator informat și nu se va mulțumi cu produse mai puțin calitative. Aqua Carpatica a recunoscut nevoia de a crea o buclă de învățare - învățare reciproc avantajoasă: compania a învățat de la populație despre nivelul ridicat de nitrați din ape și apoi populația a aflat de la companie cum

să testeze apa. Această parte a strategiei asigură alinierea la pilonul de educație și formare al economiei cunoștințelor.

În cadrul celei de-a doua lucrări, am început analiza noastră de la ipoteza că KEI urmărește distribuția geografică (și bogăția) în țările europene. Pentru a testa această ipoteză, am realizat mai întâi o analiză covariantă pereche de 18 indicatori potențiali KE, care a redus numărul lor la 12, inclusiv KEI. În următoarea etapă a cercetării, am modelat 28 de țări ale UE ca variabile aleatorii, valorile normalizate ale celor 12 indicatori fiind instanțierile acestora. La aceste 28 de variabile, s-a aplicat o procedură de analiză a factorilor în SPSS cu un număr fix de doi factori ca ieșire. În cele din urmă, am comparat structura obținută cu doi factori față de clasificarea regională existentă oferită de Divizia de Statistică a Națiunilor Unite (2013). Putem concluziona că distribuția geografică a țărilor UE nu exercită o influență semnificativă asupra indicelui economiei cunoștințelor, deoarece cele două clasificări (geografică și statistică) nu prezintă nici un fel de suprapunere, infirmând astfel cea de-a doua ipoteză. Prima noastră ipoteză a fost confirmată parțial, deoarece nu toți factorii identificați influențează economia cunoștințelor.

Cea de a treia lucrare a contribuit la literatura existentă în domeniul cunoștințelor, managementului cunoștințelor, digitalizării și modelelor de afaceri. În prima parte, a fost stabilit cadrul teoretic al studiului de caz bazat pe un model de afaceri care trebuie evaluat în partea practică a cercetării. Scopul lucrării a fost prezentarea unui exemplu de model de afaceri bazat pe economia cunoștințelor în contextul digitizării în România. Constatările au arătat că partajarea mașinilor de la Pony reprezintă un exemplu de bune practici. Prezenta lucrare ar putea ajuta legislatorii să dezvolte un cadru pentru economia cunoșințelor și partajare, astfel încât aceștia și companiile similare să poată beneficia de sprijin specializat constând în locuri de parcare gratuite sau investiții în infrastructură pentru mașinile electrice, iar lista poate continua. O lecție învățată este că parteneriatele dintre neconcurenți ar putea avea o influență pozitivă asupra creșterii gradului de conștientizare a mărcii prin asocierea cu diferite branduri bine stabilite. O altă provocare din partea legislației a fost educarea clienților și furnizarea acestora a unor informații exacte pentru a înțelege cum funcționează compania, ce înseamnă serviciile, care sunt beneficiile utilizării serviciului și care sunt diferențele majore dintre serviciile companiei și serviciu tradițional de închiriere auto.

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Lista publicații pentru RAPORT FINAL PROIECT NR 15/2018

Coordonator Profesor univ.dr. Constantin BRĂTIANU

Cercetător științific grad III: Shahrazad HADAD, Ph.D.

Lista următoare atestă îndeplinirea criteriilor conform contractului de cercetare:

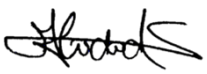
1. **Hadad, S.** (2018). Analyzing Corporate Social Entrepreneurship Specific to Knowledge Economy with a Focus on the Romanian Economic Context. *Management Dynamics in the Knowledge Economy*, *6*(2), 247-264. http://www.managementdynamics.ro/index.php/journal/article/view/261 **(Revista indexată BDI)**

2. **Hadad, S.** (2018). The geographic distribution of Knowledge Economy (KE) within the European Union (EU). *Management & Marketing, Challenges for the Knowledge Society*, *13*(3), 1089-1107. https://www.degruyter.com/downloadpdf/j/mmcks.2018.13.issue-3/mmcks-2018-0025/mmcks-2018-0025.pdf **(Revistă indexată BDI, Scopus și ESCI – ISI fără factor de impact)**

3. **Hadad, S.** (2018). Showcasing digitisation as the backbone of knowledge and sharing economy in Romania. Strategica –International Conference – Sixth Edition, "Challenging the Status Quo in Management and Economics", Bucharest: 11th -12th October, pp.588-599. https://www.researchgate.net/profile/Constantin_Bratianu/publication/328381941_2018_STRATEGICA_Proceedings/links/5bc985fb458515f7d9c96c1c/2018-STRATEGICA-Proceedings.pdf **(Conferinta indexată ISI Proceedings)**

4. Vizitiu, C., Agapie, A., Paiusan, R., **Hadad, S.,** & Nastase, M. (2018). Adapting corporate entrepreneurship assessment instrument for Romania. *South African Journal of Business Management*, *49*(1), 7, 1-7. https://sajbm.org/index.php/sajbm/article/view/8 **(Revistă indexată ISI, factor impact 0.27)** – *această lucrare nu a fost prezentată în cadrul raportului întrucât nu am fost autor unic.*

Asistent universitar doctor Shahrazad HADAD



SHOWCASING DIGITIZATION AS THE BACKBONE OF KNOWLEDGE AND SHARING ECONOMY IN ROMANIA

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Abstract. *By means of a case study, we are showcasing how digitization has reshaped the transportation industry concerning renting-like services. The evolution of mobility services starts from taxis, car renting, goes to ride-sharing and, ultimately, arrives at car-sharing services. The present paper will introduce an instance of car-sharing and renting service which is called Pony Car Sharing. Car sharing, house-sharing, equipment-sharing are all instruments of the sharing/network and collaborative economy, which has started to gain academic and practice traction, but all this would not have been possible unless for the existence of the Internet. The Internet is constantly empowering consumers all over the world by making them more knowledgeable and granting them access to make more informed decisions. The second part of the paper uses qualitative research and is dedicated to a case study that analyses Pony Car Sharing company, in the context of sharing and knowledge economy, from the business model canvas perspective: key partners, key activities, value proposition, customer relationship, channels, customer segments, revenue streams and costs. The findings reveal that there is no legislative support for the sharing economy and that implementing such a business model requires substantial efforts from the business owner. Nevertheless, investments in educating the customers are not expendable.*

Keywords: *digitization; knowledge economy; sharing economy; digital skills; business; impact*.

Introduction and literature review

According to Jansen (2017, p.2), we are dealing with a-yet-to-come Golden Age of Information that is characterized by the cheap (and sometimes, even free) knowledge transfers, need of customers to belong to (virtual) communities (serial networkers) and increased individualization embedded in the high customization demanded by customers. Ultimately, these elements create altogether "a fertile ground for unlimited innovation", an innovation which can ideate economic, social, environmental and political types of value (Paunescu, 2014). On the other hand, in order to ensure there is a corresponding reaction to such requirements, organizations need to assimilate to their business strategies concepts reflecting authenticity, involvement, and innovation. The new emerging business models will reflect the use of non-linear intangibles giving rise to new thinking models and patterns (Bratianu, 2009, 2017a, 2017b, 2018).

Therefore, this tech breakthrough results in the redesign of organizational processes and structures that call for brand-new strategies to exploit other sources of competitive edge a company might possess. This paradigm shift is questioning the way current

businesses are being conducted and advances the adoption of new business models for ensuring sustainability. Empirically speaking, the importance of business models overrides the importance of industry classification indicators providing more reliable financial forecasts (Weill & Ross, 2004). Business models, beyond representing a useful tool for investors, lenders and other stakeholders, can be used by companies to provide insights on the results of IT applications (Hedman & Kalling, 2003) and to leverage technology in order to derive economic value (Chesbrough & Rosenbloom, 2002; Chesbrough, 2010). Hadzimustafa (2011) posits that higher levels of economic development can be attained with the involvement of highly qualified personnel and efficient technology transfers in the context of enhanced knowledge generation in both commercial companies, NGOs and umbrella organizations (Zbuchea et al., 2017, 2018). In the same vein, Johnson et al. (2008) investigate how different industries can be reshaped by new business models and stimulate growth.

We are witnessing a new era in which products and services come to be widely distributed via multiple channels. The network economy, as well as the knowledge economy, resorts to intangible resources such as knowledge and the emotional knowledge (Bratianu & Orzea, 2013) to find solutions to different problems, and transforms them into smart products and processes that require efficient use of resources and therefore increased sustainability.

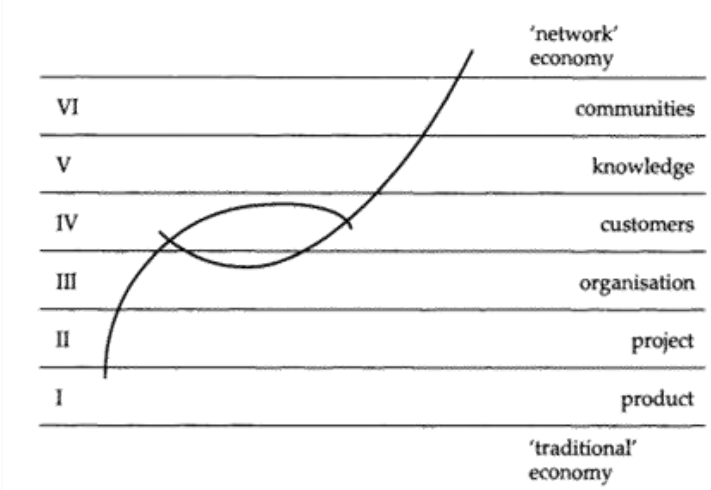

Figure 1. Sigmoid-curve
(Source: Jansen, 2017, p.10)

In order for companies to maintain competitiveness on the local, regional and global market, Jansen (2017) has come up with Sigmoid curve tool (from traditional to "network economy") (Figure 1) to assess the adequateness of companies' current business models that can be found at the interplay of suppliers, customers and network partners.

Knowledge economy consists of the creation, distribution, and use of knowledge and information (OECD, 1996), and it represents one of the leading sources of wealth establishment (Vesela & Klimova, 2014). Powell and Snellman (2004) regard knowledge economy as "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid

obsolescence" (p. 199). As opposed to traditional economy, the knowledge economy is characterized by a higher emphasis being placed of the intellectual capabilities than on tangible resources (Bratianu, 2011; Hadad, 2017a, 2017b, 2017c, 2018; Bejinaru & Iordache, 2011). Knowledge is a strategic resource (Bolisani & Bratianu, 2017) that plays an extremely important role in the life of developing countries (such as the case of Romania) and is contributing to the improvement of the local economy (Dima et al., 2018) inasmuch as innovative clusters can be a solution to the economic development of the same category of countries (Dan, 2011, 2012).

There are four components/pillars that underlay the knowledge economy: 1) An economic incentive and institutional regime (EIR) that provides good economic policies and institutions that allow for efficient mobilization and allocation of resources and stimulate creativity and incentives for the efficient creation, dissemination, and use of existing knowledge; 2) Educated and skilled workers who can continuously upgrade and adapt their skills to efficiently create and use knowledge; 3) An effective innovation system of firms, research centers, universities, consultants, and other organizations that can keep up with the knowledge revolution and tap into the growing stock of global knowledge and assimilate and adapt it to local needs; 4) A modern and adequate information infrastructure that can facilitate the effective communication, dissemination, and processing of information and knowledge (ICT) (Chen & Dahlman, 2005; World Bank, 2009, 2012). According to Tapscott (2014), the knowledge economy is a digital economy.

Now, that Digitization has become part of everyone's life and digital technology has altered most fields of activity and industries (Cao et al., 2018) such as transportation (Uber, Taxify), communication (all sorts of messenger applications and social media platforms), accommodation (Airbnb), medicine (telemedicine), production (3D printing), etc., it is clear that the tech disruption/destruction might have started from the very intersection of mobile phones, personal computers, and the Internet (Topol, 2013). One byproduct of digitization is the concept of a shared economy. According to World Economic Forum (2018), sharing economy is inviting economic actors (companies) to reassess and rethink their businesses and revenue models: focus on access rather than on ownership, design and turn products and services into actual experiences, and cater to the hyperpersonalisation need of the customer. As every new concept, sharing economy finds itself at the crossroads from a legal standpoint since very few countries have specially designed laws to foster it (Demailly & Novel, 2014). A crucial role in harnessing the sharing economy is played by the public authorities that, next to practitioners and researchers, can identify the most viable models and design methods to support them through: a) enhanced visibility and communication campaigns; b) fundraising and incubators; c) adapting regulations to embed new models (idem); d) implement best practices.

Research methodology

The present paper employs mainly qualitative research. The first part sets the theoretical ground for the knowledge economy, sharing economy and digitization, whereas the second part showcases how a 21st-century car sharing rental company works. The main objective of the paper was to illustrate how a company works within a newly established framework and which are the challenges it faces. We employed qualitative research since the phenomenon that is being investigated is a very recent

one and there is not enough available data in order to measure its spread and conduct quantitative research. Therefore we opted for an in-depth analysis of a company that acts in the sharing and knowledge economy in order to gain more insight on how such a company works, which are the challenges it faced throughout its existence and illustrate it business model through the lenses of the business model canvas designed by Osterwalder and Pigneur (2010) and we will address the following: key partners, key activities, value proposition, customer relationship, customer segments, key resources, channels, revenue streams, and cost structure. The paper uses both primary and secondary sources of information. The primary sources are represented by the small confirmatory interviews conducted with the kind help of two employees: Ms. Diana Otelea (Brand Manager) and Ms. Mihaela Simionescu (Customer Service Coordinator); whereas the secondary sources of information came from the official website of the company, official company documents, and other press related articles. The main limitation of the paper is that it illustrates only one stance of sharing and knowledge economy and that it does not allow for further inference.

Case study: Pony Car Sharing

Company description

Pony Car Sharing is a 100% Romanian private capital owned company, founded in 2015 as the first and biggest car-sharing service in Romania. Since it activates in the car sharing service, the company represents an actor in the sharing economy.

Pony Car Sharing was set up following the example of the car rental CAR2GO German company headquartered in Ulm, that later extended in Europe and the United States (www.car2go.com). Pony Car Sharing is a business-to-consumer (B2C) car-sharing company in which customers can rent the vehicles the company owns.

The company has 38 employees and a turnover that classifies it as a small business. Since it started, the company has not incurred any profits as it can be inferred from Figure 2. This is a normal consequence of an investment in assets that is to return in several years. The company started its activity in Cluj, and later, in 2017, it began to set up an additional headquarter in Bucharest.

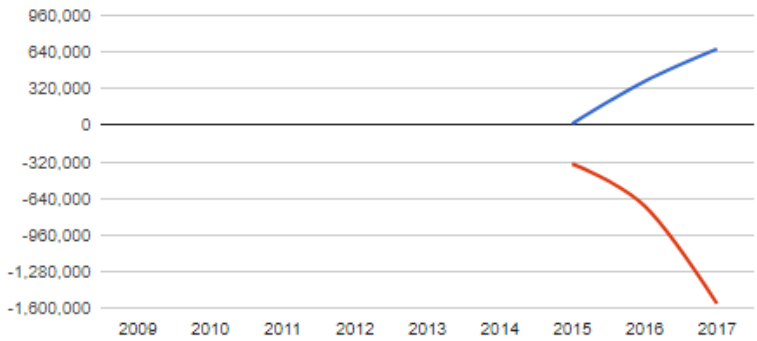

Figure 2. Pony Car Sharing – Turnover (blue) and Net Profit (red) (Source: Lista firme, 2018)

The company owns a fleet of 80 cars in Cluj-Napoca and 40 (going on 80 by the end of 2018) cars in Bucharest (VW, Mercedes, Smart fortwo, Smart forfour, Mini One, BMW i3; both on gas and electric; manual or automatic) and they are uniformly distributed over the surface of the two counties. The rental services of the company are available through the GetPony app (which was improved to services such as book/reserve a car, fuel the car or buy prepaid unit packages to get a different kind of discounts). The fleet of the company is eco-friendly (electric cars and EURO 6 cars).

As we are discussing the need of hyperpersonalisation of the customers, the company insisted on getting customer feedback on how to improve the services, app or how the company works and embedded the feedback in the new offers.

The services of the company can very easily be accessed. The customer needs to download and install the GetPony app which is freely available on GooglePlay and AppleStore, register their ID and driver's license, provide a valid bank account and, then, they can rent whichever vehicle is suited for their own needs. The car gets unlocked with the help of the app, and it can be picked up from a location on the map, driven all around the country and dropped off at a different location within the designated operating area.

Business model canvas

The business model canvas was designed by Osterwalder and Pigneur (2010, 2013) and represents a strategic management planning tool meant for developing and documenting new or existing business models. The present section will develop the main building blocks of the business model canvas by portraying the case of Pony Car Sharing company, with a specific focus on key partners, key activities, value proposition, and customer segments. The elements of the canvas are interconnected and, at times, they might be overlapping.

Key partners. This section describes the network of partners that the company has in order to optimize the business model, reduce the risk or acquire resources. Pony Car Sharing has initiated a significant number of partnerships belonging to entertainment, culture and lifestyle brands in order to attract customers. The key partners or network is one of the most important sections of the business model canvas in the case of knowledge and sharing economy business because it accounts for the need of the customer to belong to a network or community as identified in the literature review.

The first and most important collaboration was the one with the three famous music festivals: UNTOLD, Electric Castle and Mioritmic. The partnership took the shape of a barter in which the company's fleet was branded with the logos of the festivals and a special print, there were organized contests in which the customers could win free entry to the festivals or Pony discounts, and VIP parking spots for the company's fleet (Simionescu, 2018). Additionally, pop-up prizes were placed strategically in the cars for the users to find: portable speakers or picnic blankets. Another marketing move that was taken was to display a Pony car inside the festival operating area and turn it into a photo booth.

Among the various initiated collaborations was the one developed with TedX when Pony Car became the official transportation means for the invited speakers and TedX conference tickets were offered for Pony customers through contests. Moreover, all the

conference participants were offered discount vouchers. A similar collaboration was developed with TIFF (Transylvanian International Film Festival), the difference being that during the breaks, the cinema would run a short Pony Car commercial. The company concluded other valuable partnerships with the fashion industry (V for Vintage), Meron coffee shop (to be associated with a routine people have), and with a yoga studio. All these partnerships could be categorized as strategic alliances between non-competitors which resulted in invaluable increased brand awareness, attracting new customers to try the service of the company, acquire new customers and it fine-tuned the company to the adjacent needs of the customers.

Key activities are the most important things a company does to ensure the functionality of the business model. The main key activity of Pony Car Sharing is renting cars to natural persons (B2C) and they plan to include a Business-2-Business (B2B) service as a reaction to the various requests they got from different corporations requiring such services for their own employees under special terms and conditions. This new activity might prove to have a positive impact on the traffic in Bucharest and on the levels of pollution.

Value proposition has the role to describe the products the company offers that create value for a specific customer segment. The best description of Pony Car Sharing value proposition is their headline: "Rent your car straight from the street, using your phone. Without any contract. Without warranties. Without extra charges", because it underlines the advantages it has as compared to the competitors. Pony Car Sharing is the first car sharing service in Romania and it has the first mover advantage. It satisfies the need for mobility of the customer by helping him/her share, contributes to traffic jam reduction, and pollution. For the company, the Internet of Things innovation allows for the transfer of data through the Internet and Bluetooth technology by means of a device (smartphone or tablet) and the company fleet that has tracking boxes installed on every car which control the main operations. The app receives data from the tracking box constantly updating the map with the location of the cars, fuel levels, kilometers, reviews of last customers, color and type of transmission in order to keep the customer updated in real time. The services are available to customers under two conditions: a) the customer should be at least 21, and b) he/she should have their driver's license for at least 1 year. These two conditions were commonly agreed with the insurance company.

Customer relationship Pony Car Sharing establishes both personal and automated relationships with the customer with the purpose of acquiring and retaining new customers. The Customer-service department is in charge of the relationship with the client that is maintained through e-mail, phone and post office. *Customer segments* The main customer segment of the Pony Car Sharing is represented by Millennials who are permanently up-to-date with any new tech releases, active and curious, with a different attitude regarding the sense of ownership as compared to past generations, keen on urban mobility, not owning a car. Millennials are also the early adopters of the company's services.

Key resources are in this case tangible resources (the fleet of cars in Bucharest and Cluj-Napoca), and intangible resources (the app and data it generates). Other key resources include the human capital that plays a crucial role in interacting with the customer and helping to acquire him/her. *Channels* describe how the company communicates with and reaches its customer segments to deliver the value proposition. The company

reaches its customers through the previously described app by means of user accounts; therefore, Pony Car Sharing does not use any intermediaries in relation to its clients.

Revenue streams are established in tight connection to the key activities and each of them should be able to generate a source of revenue. The company tries to acquire and many as possible recurring clients by means of subscriptions and price discounts and Pony units. For example, the services can be acquired by minute, day, subscription, etc. *Cost structure* The main costs incurred by the company were related to initial investment, the acquisition of the fleet and its maintenance, fuel, salaries, development, and maintenance of the app, insurance, etc.

Conclusions and implications

The present paper has contributed to the existing literature in the field of knowledge, knowledge management, digitization, and business models. In the first part, it has laid the theoretical framework of the business case study to be assessed in the practical part of the research. The purpose of the paper was to showcase an instance of the knowledge economy business model in the context of digitization in Romania. The findings revealed that Pony Car Sharing represents an example of good practices. The present paper could help legislators develop a framework for the knowledge and sharing economy so that this and similar companies could benefit from specialized support consisting in free parking lots or investment in infrastructure for electric cars, and the list may continue. One lesson learned is that partnerships between non-competitors could have a positive influence on increasing brand awareness by associating with different well-established brands. A different challenge from the legislation was to educate the customers and provide them with accurate information in order to understand how the company works, what the service means, which are the benefits of using the service, and which are the major differences between the company services and traditional car rental service.

Disclaimer

Product or corporate names may be trademarks or registered trademarks and are used only for identification and explanation without intent to infringe.

Acknowledgments. The present paper has been financially supported by the Academy of Romanian Scientists, Program No. 15/2018 “Strategies for Implementing Knowledge Economy in Romania”.

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Management Dynamics in the Knowledge Economy
Vol.6 (2018) no.2, pp.247-264; DOI 10.25019/MDKE/6.2.04
ISSN 2392-8042 (online)

Analyzing Corporate Social Entrepreneurship Specific to Knowledge Economy with a Focus on the Romanian Economic Context

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Abstract. *The knowledge economy is defined, according to the World Bank, through the integration of its four main component elements: education and training, innovation systems, information infrastructure, economic incentives and institutional regime. The first part of the paper reconciles knowledge economy and corporate social entrepreneurship, while the second part focuses on the education and training, and innovation pillars of the knowledge economy, and more specifically it resorts to the framework of corporate social entrepreneurship as a transformational innovation strategy for company growth. The current investigation has been conducted by means of case study method having the following research question: "How does corporate social entrepreneurship manifest in corporations?"., accompanied by secondary research questions such as: "How does the company mobilize its resources to create an innovative product/ service/ approach in order to tackle the social issue?, How does the company contribute to local development?". The findings revealed that the social issue of high levels of nitrates in the waters inspired the company to combine a testing tool (technological innovation) with marketing communication which eventually resulted in an innovative approach for the company to increase the loyalty of their customers and to reach out for new ones. The present paper has been developed based on the author's doctoral research.*

Keywords*: knowledge economy; business models; corporate social entrepreneurship; innovation; business strategy.*

Introduction and short literature review

The current paper attempts to reconcile two very new concepts: knowledge economy and corporate social entrepreneurship. In broad terms, knowledge economy refers to the generation and management of intangible resources, whereas corporate social entrepreneurship (CSE) is social entrepreneurship undertaken by large corporations. The more elaborate theoretical foundations of the presented

paper on CSE can be found in Hadad (2015), and on knowledge economy in Hadad (2017a, 2017b).

The knowledge economy has come to replace traditional economy, as societies have evolved and the emphasis has moved from tangible assets towards knowledge in all the processes of the economic, business and education sectors (Mehmood & Rehman, 2015). This shift is reflected in institutional transformations and long-run economic changes that are supported by the national innovation policies and, moreover, economists and scientist have arrived at the conclusion that they need to integrate knowledge in their theoretical models. This gave rise to "New growth theory" which is an acknowledged pursuit of different researchers who try to better understand the roles that both tech and knowledge play in enhancing economic growth (Mehrara & Rezaei, 2015).

Knowledge economy represents the stance in which knowledge creation and capitalization are paramount to the generation of wealth. One of the most direct definitions given to knowledge economy is the one pertaining to Brinkley (2006, p.3) "Knowledge economy is what you get when firms bring together powerful computers and well-educated minds to create wealth". This definition opens the stage for knowledge industries and brings into the discussion the characterization of such economy in which tech investments and highly skilled labor force (Bejinaru, 2016) are brought together to build sustainable business development.

OECD has recognized the importance of knowledge economy and has defined it as "economies which are directly based on the production, distribution, and use of knowledge and information" (OECD, 1996, p.7). As knowledge is one of the main drivers of the knowledge economy, the business sector started to develop and implement a series of knowledge strategies aiming at creation, acquisition, sharing, transformation and using intelligently the new intangible resources (Bolisani & Bratianu, 2017; Bratianu & Bolisani, 2015).

According to Hadad (2017b), Romania underscores in ICT, whereas it has a good standing in education and training. The paper revolved around finding strategies to improve ICT, followed by EIR, Innovation, and Education to ultimately ensure the development of knowledge economy in Romania which are listed below.

Table 1. Public policy strategies to enhance KE in Romania (Hadad, 2017b)

Public policies for learning and education	Public policies for ICT and Innovation
Governmental program that will sustain life-long learning in Romanian SMEs by providing financial assistance for employee training (S1.1)	Governmental program for the financial support of SME's investments in hardware and software and the development of webpages (S2.1)
Governmental program that will sustain the development of knowledge repositories at the level of	Governmental program for the financial support of schools' investments in hardware and

technological clusters, industry associations, and other professional organizations by providing financial assistance for hardware acquisition and software development in order to facilitate knowledge transfer (S1.2)	educational software and the training of staff for the use of ITC in teaching and learning (S2.2)
Governmental program that will sustain the development of professional schools (by providing support to the pupils, and companies hiring them) (S1.3)	Governmental program for the advancement of the e-government agenda (i.e. the digitalization of public services) and creation of SMEs (S2.3)

In the fast-paced changing environment, under threat of fierce competition and technological advancements, firms need to keep up in order to remain competitive in the market and for doing so they need to seek ways to increase the innovativeness of their employees and remain competitive by means of *corporate entrepreneurship* (Kuratko, Hornsby, & Hayton, 2015). They can as well remain competitive by generating knowledge - creating new business units, processes, products, services which stand for corporate entrepreneurship. A consistent body of researchers find Sharma's and Chrisman's (2007, p.88) definition most compelling, Corporate Entrepreneurship refers to the process through which individuals in already established companies recognize and exploit opportunities, "process whereby an individual or group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization".

The concept of Corporate Social Entrepreneurship (CSE) is a special type of corporate entrepreneurship and a newly emerging business paradigm that does not have evident boundaries from its context. CSE basically "aims to produce a significant and comprehensive transformation of the way a company operates" (Austin & Reficco, 2009, p.3). Being an emergent concept, literature is scarce in this respect and there is little evidence in order to conduct a statistical study, and this is why we choose to analyze the phenomenon of through case study research in order to derive an in-depth understanding of corporate social entrepreneurship set in the context of the knowledge economy.

Alongside strategies, knowledge economy deals with the creation of knowledge and CSE can easily be assimilated into the domain. Corporate social entrepreneurship emerged in 2005, in the research conducted by Hemingway and it referred to different personal values that could act as a catalyst for improving business while acting as a moral agent in the context of favoring external factors (Hemingway, 2013). Therefore, CSE is a combination of both personal traits and organizational culture (Ghinea & Bratianu, 2012), in a dynamic business environment. The enabling environment will prove to be the key condition for the success of CSE (Austin & Reffico, 2009). The only public document to attest how CSE can be enabled pertains to Crets (2012) but it only focuses on the issue of environmentally sustainable business, recycling and reducing waste.

According to Austin, Stevenson, and Wei-Skillern (2006, p.6), CSE represents "process of extending the firm's domain of competence and corresponding opportunity set through innovative leveraging of resources, both within and outside its direct control, aimed at the simultaneous creation of economic and social value". Hadad (2015, p.190) has defined three CSE strategies: CSE as transformational innovation tool; CSE as a market development tool; and CSE as a local development tool. We chose to focus on CSE as transformational innovation tool that resorts to the "R&D capabilities of the company in order to develop new services and products which target existing or emerging markets". In this case, the social issue becomes a catalyst and helps the company channel its capabilities into new directions by mobilizing the internal and external resources to create a new market space and reach out to new customer segments and non-traditional customers. This strategy exhibits similarities with a blue ocean strategy since it requires the company to venture into unexplored fields. Moreover, the emphasis is placed on the technological innovation meant to solve the social problem, and most of the times this innovation comes along with knowledge creation, a change in the business model or maybe an integration into the already existing structure of the company. The company performance depends on the nonlinear integrators of the intellectual capital (Bratianu, 2013), including the role of transformational leadership (Bass & Riggio, 2006; Bratianu & Anagnoste, 2011).

Methodology

Research questions

The purpose of the research is to develop an invaluable and deep understanding of CSE that will result in new evidence from the real—world behavior for the dyad practitioners-theoreticians. The choice for the case study research method mainly resides in the descriptive key research question that we address in this study: "How does CSE manifest in corporations?". There is evidence that the case study is being used with growing confidence as a rigorous research strategy in its own right (Hartley, 1994, 2004). Several secondary research questions were formulated, which were directly linked with the specificity of each case and were drawn from the literature explored as well, in order to get a clearer view on the ways CSE is regarded, it manifests and it is sustained throughout the organization:

– How does the company tackle the social issue?
– How does the company mobilize its resources to create an innovative product/ service/ approach in order to tackle the social issue?
– How does the company mobilize its resources to identify new unserved market segments in order to counteract the social problem?
– How does the company mobilize its resources to devise a new product to address an unserved market segment in order to counteract the social problem the community faced?
– How does the company contribute to the local development, and in what the actual local development does consist?

– How does the company ensure a sustainable local development of the community whose social problem is addressed?
– How does the company ensure and secure its financial sustainability?

Use of theory

Concerning the use of theory, we only remind the previously identified corporate social entrepreneurship strategies: CSE as a transformational innovation tool, CSE as a market development tool and CSE a local development tool. As defined by Hadad (2015) CSE as transformational innovation tool represents stance in which the social problem targeted by the company acts as a mobilizer for the R&D resources and the focus is on creating a new product, service, approach, or a combination of all of them that solves the social problem.

Case study data collection and analysis

Our case study data collection was done by analyzing the documents available on each company's website, newspaper articles, blogs and different statistics and reports regarding the companies.

Among the techniques used for analyzing the case study data were key assumptions that we made when we defined our research questions and the case. Some examples of key assumptions made are given below:
– When designing a new business development strategy based on social principles the company is driven mainly by its interest in solving the social community issue identified;
– When designing a new business development strategy based on social principles the company considers mainly the degree of novelty of the product/ service/ approach developed to tackle the social issue;
– When designing a new business development strategy based on social principles the company considers mainly the opportunity for adapting existing products/services to the needs of the new unserved clients/ markets.

These assumptions have been implicit at the initial stage of analysis, so we anticipated and we planned. We developed a pattern of expected findings within an established theoretical framework (grounded on literature review and practice analysis) and we compared our empirically based pattern with the previously developed theoretical framework.

Based on the previously stated research assumptions, we decided to concentrate on companies for which we found sufficient information in order to make our case on corporate social entrepreneurship in the knowledge economy. The present paper will only focus on Aqua Carpatica which will serve to make the case for corporate social entrepreneurship as a transformational innovation tool, whereas the other two cases will be presented in subsequent papers.

Generalization from a case study

Case study generalization is done through analytic generalization, not through statistical generalization. The case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes. In this sense, the case study, like the experiment, does not represent a "sample," and in doing a case study, "[the] goal is to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization)." (Yin, 2010, p.15). The findings contribute to the general theory of the corporate social entrepreneurship phenomenon.

Carpathian Springs - Aqua Carpatica – Testul Purității (the Purity Test)

Defining the case

Company description
During 1994-2002, Dorna Apemin SA is set up as the first action of the Valvis Holding. The main activity of this company was to bottle mineral water from its own spring in Dornelor Depression. The namesake of this location will become the name of the very successful DORNA brand. Throughout 1996 and 1999, Valvis Holding comes up with three new brands: Dorna, Poiana Negri, and Izvorul Alb. All of these three brands will be acquired by The Coca-Cola Company in 2002.

SC Carpathian Springs SA was established in 2000 by Jean Valvis based on the experience of the successful team that created Dorna mineral water and LaDorna brands. Carpathian Springs represents a daring project based on the experience in the field and on the knowhow of the company management.

The group also owns a division for dairy products, Dorna Lactate SA (acquired by the French multinational Lactis Group in 2008), distribution division, Dorna Hellas SA (acquired by the French multinational Lactis Group in 2008), a wine division, Viti-Pomicola Samburesti SA (2005), and two eco-agricultural production divisions, Dorna Agri SA (2007) and Agroelectrica SA (pilot project, it combines eco cultures, energy plants, solar energy, wind energy, bio fruits and vegetable greenhouses – with an energy co-generation system).

We are to focus our attention on the Carpathian Spring division of the Valvis Holding as a corporate social entrepreneurship case study regarded as an innovation tool. Aqua Carpatica, the only water in the world with 0 g nitrates per liter, was launched on the Romanian market at the end of 2010 and for several years it was among the first brands in the professional rankings attaining different EFFIE awards. In 2015, the company reached its peak for its Purity Test Campaign for which it has been awarded The Grand Effie Award Romania, the Golden Effie medal (non-alcoholic beverages category), and also a Bronze Effie medal (for the experienced brand's category) (Wall-Street, 2015).

The portfolio (Figure 1) of the company includes: Aqua Carpatica Sparkling Water (0.5l and 1.5l – laboratory analyses have revealed the fact that this sparkling water is a natural mineral water, naturally sparkling, hydrogen-carbonated magnesian, and calcic without physico-chemical and microbiological indicators of impurities), Aqua Carpatica Forte Sparkling Water (PET: 0.5l and 1.5l; glass bottles glass bottles: 330ml and 750 ml – enriched in natural carbon dioxide), Aqua Carpatica Still Water (PET: 0.5l, 1.5l and 2l; glass bottles: 330ml and 750 ml), and Aqua Carpatica Still (5l).

With the slogan "The purest mineral water in the world", Aqua Carpatica currently employs 71 workers. The philosophy behind the logo of the company resides in the fact that the naturally mineral water from Paltinis spring is a naturally sparkling (hydrogen-carbonated) and strongly mineralized (magnesium and calcium) water containing 0% nitrates. This water is pure from a physico-chemical and microbiological point of view and it is recommended in low-nitrate diets. On the other hand, the still mineral water is a weakly mineralized still water which does not contain carbon dioxide and the level of nitrates is 0.8mg/l (Bajenaru Spring) and 1.85mg/l (Haja Spring), it is pure from a physico-chemical and microbiological point of view and it is also recommended in low-nitrate diets.

Figure 1. Carpathian Springs portfolio (Aqua Carpatica, 2018)

According to Panaete (2015), Aqua Carpatica has exceeded in a number of sold units Izvorul Alb brand (also created by Valvis). Therefore, in January-May 2015 the most sold Romanian mineral water brand was Borsec with a 200-year old history, followed by Aqua Carpatica and Izvorul Alb. Aqua Carpatica has made its entrance in top three most sold mineral waters given the fact that the brand was created eight years ago (2010), while the other brands have a tradition of decades or even centuries in bottling and selling mineral water. According to the same source, also in 2013, the brand was ranked 19 in "Top 50 strongest Romanian brands", the following year having a spectacular increase being ranked 8 in the "Top 100 strongest Romanian brands" (Biz, 2014).

In a stagnant market, the turnover of the company speaks for itself, for Aqua Carpatica has registered spectacular turnover increases, and for 2015 their sales are expected to increase by 50% as compared to the previous year 2014. (Semeghin, 2015). A better evolution of the sales of the company is better depicted in Figure 2.

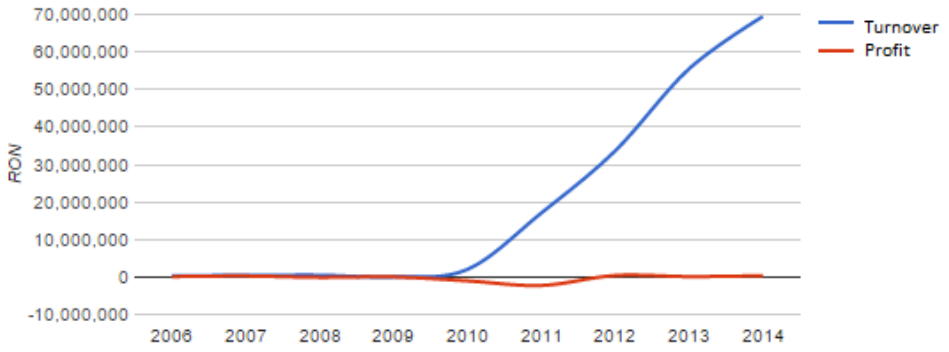

Figure 2. Carpathian Springs sales and profits evolution

The new development stage of the brand has been materialized through a series of stable contracts in countries such as: The United States of America, Great Britain (Whole Foods store chain), Japan (Metro Cash& Carry chain), China, all the Gulf countries (United Arab Emirates, Qatar, Kuwait, Bahrain Kingdom, Saudi Arabia Kingdom, and Oman Sultanate), Russia, Moldova, Germany, and Hungary. Starting July 2015, Aqua Carpatica is sold on the shelves of the Sprouts Farmers Market (supermarket chain in the United States of America owning more than 200 stores in 12 states) which commercializes fresh and organic products offering their customers an experience oriented towards health benefits. This brand is the only Romanian brand that has been certified and homologated as compliant with the US standards and that has partnerships with supermarket chains all over the American continent, and not only with convenience stores (Semeghin, 2015).

Identifying and defining the social problem
Water represents around 75% in the body mass of a baby, 60% of an adult and 50% of an elderly person. This is why babies need three times more the water adults need as reported to their weight. The daily body intake is around 120ml/body. In this vein, the still mineral waters with low mineralization (oligo-minerals) are the optimum choice according to the Ministry of Health Order No. 978/2006. Among these kinds of mineral waters, some are clinically attested by the Romanian Society of Pediatrics (Aqua Carpatica and Aquatique), The Institute for Child and Mother Protection "Alfred Rusescu" (Bucovina) or it self-recommends (Izvorul Minunilor) on the label "recommended for preparing babies' formula".

Careful attention should be paid to the level of nitrates contained by the water used to hydrate and prepare food for the babies. According to a study conducted in 2012 by a team of doctors from the Public Health National Institute Romania, throughout

1997-2005, 3314 cases of methemoglobinemia (also known as the blue baby disease which is, in fact, an acute intoxication with nitrates) were registered. Happily, for 2011 only 84 such cases were nationally reported, out of which 60% comes from the North-East part of the country. High nitrates concentrations can also be found in water from counties such as Dolj, Mehedinti, and Botosani, where 75% of the fountains have a high level of nitrates exceeding the legal limit of 50mg/l. The same study draws on the attention that for babies artificially fed with milk formula during their first 12 months, the possibility for that disease to occur increases due to the fact that they develop a low gastric acidity which allows for the development of nitrate-reducing bacteria that convert the nitrates into nitrites. Ergo, the toxicity of the nitrates is determined by their transformation into nitrites fostering methemoglobinemia (the methemoglobin results as a consequence of ferric iron oxidation of the hemoglobin at ferric iron, it cannot connect the oxygen determining in this manner a significant drop in tissue oxygenation). It clinically manifests as the brown cyanosis, dyspnea, anxiety, palpitations, confusion) which in 80% concentration leads to asphyxiation and eventually, to the baby's death (www.apc-romania.ro). Therefore, infants below six months who drink water containing nitrate in excess of the maximum contaminant level (MCL) (n.a. 10 mg/L) could become seriously ill and, if untreated, may die, and symptoms include shortness of breath and blue baby syndrome (United States Environmental protection Agency, 2015).

Table 2 presents top 10 water brands recommended for hydrating and preparing baby formula with respect to the sodium content (mg/l). According to the team of experts from the Consumer Protection Authority coordinated by associate professor Ph.D. Costel Stanciu, the top clearly revels that Aqua Carpatica ranks second for this niche (Table 2).

Aqua Carpatica decided to embark on the journey of delivering low-nitrates mineral water for babies and in the fight against unclean waters in Romania by initiating Purity Test Campaign (Testul Purității).

Table 2. Ranking of mineral water brands with respect to nitrates concentrations

Rank	Name	Sodium content in mg/liter	Equivalent in salt – mg/litre (1 mg Na = 2,5 mg salt)
1.	Izvorul Minunilor	0.74	1.85
2.	Aqua Carpatica	0.78	1.95
3.	Aquatique	1.2	3
4.	Vedda (Polonia)	1.25	3.125
5.	Jana (Croatia)	1.7	4.25

6.	Hipp (Austria)	1.78	4.45
7.	Bucovina	2.88	7.2
8.	Humana (Germania)	5	12.5
9.	San Benedetto	6	15
10.	My Water (Greece)	6.27	15.675

Formulating the research question

The main research question is "How does Corporate Social Entrepreneurship manifest in a corporation?", while the secondary research questions relate to how did the company tackle the social issue and how the company mobilized its resources to create the innovative approach in order to tackle the social issue?

Presenting case study evidence

Corporate antecedents
Water Law. In the early spring of 2012, Aqua Carpatica initiated the Water Law campaign (http://www.legea-apei.ro) through which it aimed to reshape the legal environment with regards to the maximum nitrates concentrations admitted by the law in potable waters and their display on the labels of all mineral waters in Romania. The law has not yet entered into force because it needs 100,000 signatures in order to become official. Protecting the quality of the water is a key element in the environmental politics of the European Union. Because the quality of water sources is not effectively controlled within the limits of the natural frontiers, there emerged the need to create a legislative framework at European level for regulating this matter. Therefore, in 1991, the European Union Nitrates Directive (91/969/CEE) entered into force, and it was among the first legal documents meant to control pollution and to improve the quality of the water. This law stipulated that the maximum value of nitrates in drinkable water is 50mg/l, but many countries have considerably reduced this value for babies. Contrary to this trend, Romania took that upper limit for granted. Therefore, the current law is extremely permissive, according to Government Decision/1020/2005 and technical norms for commercializing mineral water in Romania, the upper accepted limit for the quantity of nitrates is 50mg/l, while for babies, pediatricians all around the world recommend a maximum of 10mg/l according to AFSSA (Agence Francaise de Securite Sanitaire des Aliments, 2001). So far, according to the official information provided by the company, the campaign has reached a number of 70,696 supporters.

The school for a greener Romania. "School for a greener Romania" corporate social responsibility program is an initiative meant to engage kindergartens, schools and

high schools with which Aqua Carpatica has developed partnerships in order to collect and recycle PETs (2012-2013), and paper and cardboard. Every year, the most hardworking schools got prizes in terms of money ranging from 1,500 euro (3rd place) – 2,500 euro (1st place). Beyond the environmental purpose of this project, the company places an important emphasis on fostering in children a special preoccupation towards the environment by asking them to do different homework on ecology in order to create an ecology manual. This campaign civically engages schools, professors, teachers, and last but not least, parents. The program is permanently open to suggestions from its stakeholders in order to improve it. The results of the three campaigns that have been developed so far can be traced in Table 3.

It is worth mentioning that even though, the first campaign had the fewest students and schools involved; they collected the highest quantity of cardboard and paper. The number of actively involved schools progressively increased during the three campaigns, the kilograms of collected and recycled paper and cardboard decreased throughout the years, while the quantity of collected and recycled PETs experienced an exponential increase, and the number of engaged students remained steady in the past two years.

Table 3. Results of the School for a Greener Romania

Years	Schools	Students	Cardboard and paper collected and recycled (kg)	PETs (kg) collected and recycled
2012-2013	425	95,214	175,159	1,320
2013-2014	750	125,000	163,225	-
2014-2015	1100	125,000	116,662	150,000

The company, through the Valvis Foundation has taken different actions to support and help sectors of society in need: it contributed to Children with Disability UNICEF program by helping children with special needs (since 2002), supporting breast cancer fighting program "Fighting Breast Cancer" launched by the independent, non-governmental, non-profit organization "Renasterea Botoseneana", supporting "Crina Foundation Program" developed by Crina Foundation with the purpose of collecting product donations on a monthly basis for the children of the actual foundation (since 2006), supporting Greek communities in Iasi, Braila, Galati (since 2000); supporting 450 children from Valea Plopului – involving donations of products (since 2011), and Valvis Class – scholarship program for children with high intelligence and abilities but of modest social conditions (since 2008). Moreover, the vision of the company is articulated in five clearly-stated principles: creating guaranteed high-quality products (premium) compliant with European standards, developing the potential of Romania with respect to bio-products; developing the group based on human resources' potential and professionalism; orienting their products towards the health sphere and exporting quality products and gaining their international

recognition. All these principles are based on the core business intention of the corporate entrepreneur, which is sustainability, and which is going to be the catalyst in order to put into practice the vision of the company.

Testul purității. As part of the company's social responsibility endeavors, Aqua Carpatica has launched the Purity Test Campaign in 2014 with the slogan "Together we fight for the purity of all waters in Romania". But ever since it was launched, the water has had low nitrates concentrations being called the "purest water". Through this campaign, the company draws the attention to the high levels of nitrates from both surface and deep waters in our country. All this given to the fact that, in the first year half, nitrates, used in agriculture as fertilizers are dissolved in rain water and get into the water sources, and from here, in everyone's glasses, ergo in their bodies. Then nitrates are chemical compounds that come to being when the mineralization of nitrogenous organic substances from plants and animals occurs. Nitrates are partially absorbed by plant roots and serve as feedstock for the synthesis of proteins and other nitrogen compounds. The remaining surplus contaminates underground water (as it can be found in rivers, lakes, and groundwater).

The first part of the campaign resulted in a map containing all the waters in Romania and their nitrates content (impurity indicator). In order to do so, Aqua Carpatica offered nitrates tests and professor's Gheorghe Mencinicopschi "Do you think you know what you drink" brochure that could be found in chain stores such as Carrefour, Cora, Auchan, Kaufland and Mega Image. The test is a paper band that has at one of its ends a sensitively treated indicator for recognizing the value of water nitrates. A sample of such test can be seen in Figure 3. The test is introduced in the to-be-tested water (deep waters – wells/fountains, surface waters – rivers, lakes, springs, tap water and bottled water) for two seconds. Subsequently, the test is taken out of the water, and after two minutes it can be observed how it changes its color. The color at the end of the tests has to be compared with the benchmark printed on the package in order to be able to tell the level of nitrates the test belongs to.

The second step of the campaign was to register the value of the test on the Facebook application "Purity test" or on the official website of the campaign, alongside with the place where the test has been taken and the type of water on which the test has been carried on. Every registered test contributed to making the nitrates map complete and it could be accessed by anyone who was interested in the cleanness of the water they consumed.

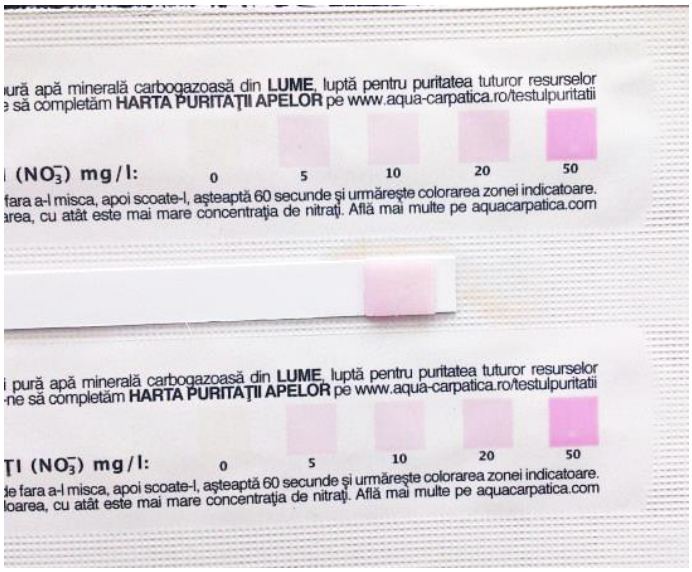

Figure 3. Purity test (Testulpurităţii.ro, 2018a)

The campaign resulted in 2496 tests that have been carried out, of which 1676 tests were for tap water (Figure 4), 127 tests were for streams, rivers, and lakes (Figure 5), 693 tests were for fountains and springs (Figure 6).

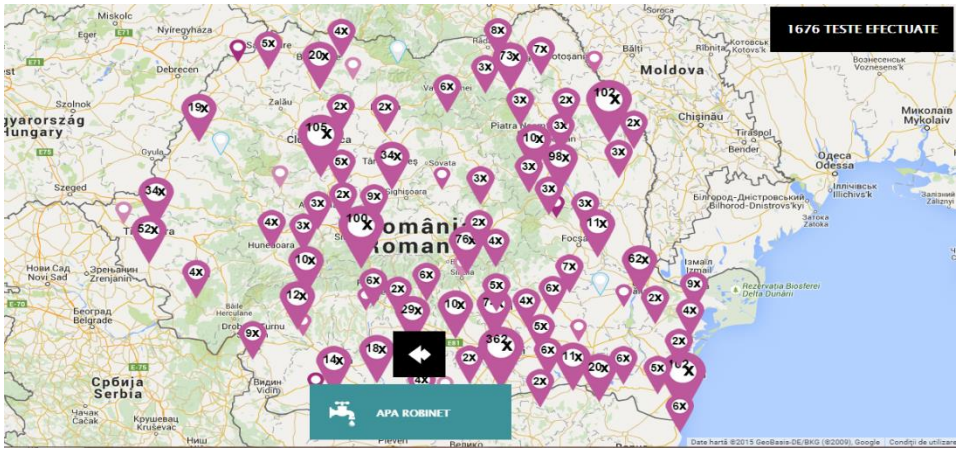

Figure 4. Tap water map (Testulpurităţii.ro, 2018b)

Figure 5. Streams, rivers and lakes map (Testulpurității.ro, 2018c)

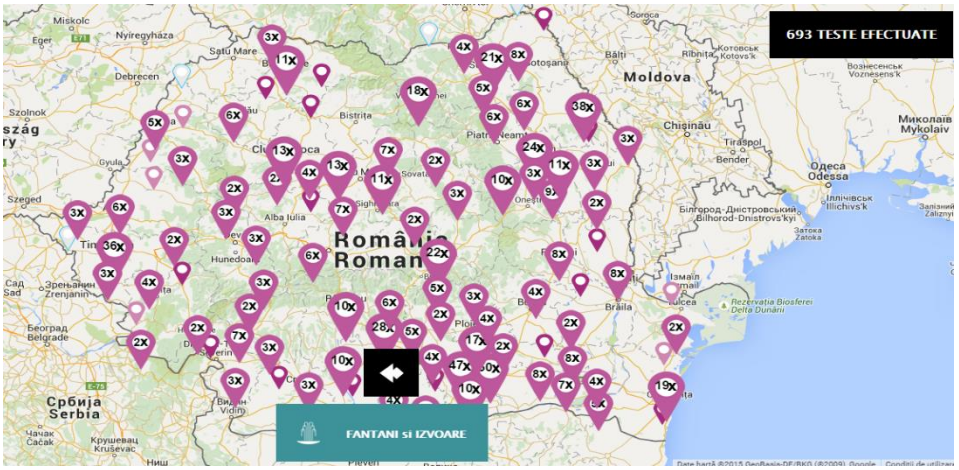

Figure 6. Fountains and springs (Testulpurității.ro, 2018d)

Case study data analysis – CSE as a transformational innovation strategy in the knowledge economy - Discussion

What is actually intriguing is that even though through this campaign the company has invested large amounts of money and also time and human resources, they did not predict a future course of action for the results that they got, they have not centralized them, they have not indicated the areas which had the highest concentrations of nitrates and they did not establish what measures should be taken or how this issues can be counteracted.

Analyzing corporate social entrepreneurship as a transformational innovation strategy brings about an interesting fact about the campaign and the company as a

whole: Aqua Carpatica chose a very rational approach in a category in which the other brands choose to tackle emotions. With this campaign, the company went a step forward and they physically gave their customers a demo product. They created a high level of loyalty among their consumers because that was among the few moments when the customers were actually given the opportunity to test the product they bought. The campaign had as a central theme the interactivity provided by the actual testing. The tests were not invented by Valvis Holding, but they were bought from the United States. Cohn & Jansen JWT agency that was in charge of designing this campaign came up with the idea of using the tests for communication (Wall-Street, 2015).

This was a high exposure action (high risk profile) with different potential repercussions because many customers wanted to test for themselves if Aqua Carpatica products are compliant with the actual markings on the labels, so the company had to be sure they knew what they were advertising for. In this manner, the company opened up to the public and became even more transparent than it used to be. The main objective of the campaign was to influence the buying behavior of the customers in regions with high levels of nitrates and to educate the customer more for them to become more aware of the need to read the labels and become more informed. So the social issue of high levels of nitrates in the waters inspired the company to combine a testing tool (technological innovation) with marketing communication which eventually resulted in an innovative approach for the company to increase the loyalty of the customers and to reach out for new ones.

Moreover, the company made a step further by raising the bar and challenging the competition to provide the market products which ought to be more competitive. By raising the bar that high the company made use of its competitive advantage represented by the natural resources it has at its disposal (the springs with a low level of nitrates) and became an irrefutable benchmark.

Conclusions

One of the lessons that can be drawn from this case study is that when the company has an ultimate competitive advantage, it has to use it, and by using it, it will increase competition on the market and the competitiveness of the products offered. This does not come easy and it requires the mobilizing of both internal and external resources. Moreover, CSE materializes in this present case in transformational innovation and it benefits not only the company but also the local community in which it acts. This initiative did not imply a change in the business model of the company, but it certainly made the competition rethink their business models.

The social problem the company was facing acted as a catalyst for the mobilization of the resources of the company and translated in developing a new approach that targeted educating the population and empowering it. An educated consumer is an informed consumer and he will not settle for less than qualitative products. Aqua Carpatica acknowledged the need of creating a mutually beneficial teaching-learning loop: the company learned from the population about the high levels of nitrates in

waters, and then the population learned from the company how to test the water. This side of the strategy provides alignment with the education and training pillar of the knowledge economy.

Disclaimer

Product or corporate names may be trademarks or registered trademarks and are used only for identification and explanation without intent to infringe.

***Acknowledgements**: The present paper has been financially supported by the Academy of Romanian Scientists, Program No. 15/2018 "Strategies for Implementing Knowledge Economy in Romania".*

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Received: April 12, 2018
Accepted: June 16, 2018

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The geographic distribution of Knowledge Economy (KE) within the European Union (EU)

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Abstract. *The business environment is reshaped by knowledge economy which has taken both competitiveness and doing business to a whole new level. Because knowledge economy plays a key role in the creation of welfare it has been classified as an important reliable indicator for comparing world's economies. The present paper highlights the geographic distribution of knowledge economy at the level of the European Union by means of factorial analysis. Factor analysis, a well-known statistical clustering technique, has been applied on the 28 EU countries (seen in our study as random variables) with an a priori fixed number of two factors. On each variable, the realisations are given by the scores (normalized between 0 and 1) registered for year 2012 on 12 key Knowledge Economy (KE) indices. The resulting factor structure is compared to the standard geographical grouping of EU countries (NorthWest-SouthEast) in present KE literature. SPSS software has been used for the statistical analysis. The highest correlations attained were in terms of the Global Competitiveness Index, World Happiness Index, R&D expenses signifying that they could also act as predictors in evaluating the status of the knowledge economy of a particular country, whereas weaker correlations can be spotted for enterprises selling online, electric energy consumption, carbon dioxide emissions and others. In the future, the same relationship can be tested to see whether the influences have changed, in the light of new available data.*

Keywords: knowledge economy, competitiveness, innovation, competitiveness index, sustainability.

Please cite the article as follows: Hadad, S. (2018), "The geographic distribution of Knowledge Economy (KE) within the European Union (EU)", *Management & Marketing. Challenges for the Knowledge Society*, Vol. 13, No. 3, pp. 1089-1107, DOI: 10.2478/mmcks-2018-0025.

Introduction to knowledge economy, competitiveness, innovation and their key drivers

The precursors of *knowledge economy (KE)* can be traced back to the works of Machlup (1962) and Drucker (1969, 2017), who discussed about the transition from the industrial economy to the knowledge economy, and to the post-industrialist theories of Bell (1973). Despite the plethora of already existing definitions developed by multiple researchers (Powell and Snellman, 2004), the one most commonly acknowledged is developed by Organisation of Economic Cooperation and Development (OECD) (1996) which regards knowledge economies as being "economies which are directly based on the production, distribution, and use of knowledge and information" (p. 7). Because knowledge economy plays a key role in the creation of welfare it has been classified as an important reliable indicator for comparing world's economies (Brinkley, 2006).

Moreover, we consider competition to be among the key drivers of any economy and society. Competition, in general terms, may be defined as the rivalry between the different players on a market, in which each seller is trying to obtain sales, profit and market share by offering the best combination of price, quality and service. However, a modern approach to competition is that it is based in the changes occurring in the labour process or in the organization of production (Bratianu, 2017), idea that lead to a rather different definition for this term being considered the external expression of the internal drive of capital *as capital* to expand, to produce surplus value, and realize it in the form of profit (Jessop, 2014).

A competitive market is one in which multiple producers compete in trying to satisfy the needs of a large number of consumers. In the ideal scenario of a perfectly competitive market, no single producer, or group of producers and no single consumer or group of consumers can dictate how the market operates or individually determine the price or quantity of goods exchanged. Throughout the years, researchers have tried to establish a way to measure the competitiveness of a business, and they have learned that by looking at factors such as growth rate, net profit margin, returns on investment, market share, brand reputation or unique selling point, they could completely describe a firm operating in its external environment. However, when it comes to measuring the competitiveness of a country, issues become much more complex.

According to the World Economic Forum (WEF) (2013, 2016), competitiveness represents a set of institutions, policies and factors that determine the level of productivity in a country. At the same time, the productivity level determines the rates of return obtained by investments in an economy and the level of prosperity that can be reached by that economy. The process of understanding the drivers of competitiveness has been long debated starting from Adam Smith's focus on division and specialisation of labour to current interest on investment in physical capital and infrastructure (idem), and knowledge.

Nowadays, other factors such as education, training, technological progress, good governance, market efficiency, firm sophistication, among others, are taken into account when trying to measure competitiveness (Bejinaru, 2017; WEF, 2016). However, it has also been shown that all these factors and many others are interconnected, being relevant for a single economy, which lead to the development of the global competitiveness index computed based on twelve pillars for every country in the world.

Economic welfare is determined by various factors, among which we can find competition and innovation. For instance, Engels was favouring the existence of capitalism as being conditioned by the constant improvement and revolutionising of production tools (Stelzer, 2002), thus putting innovation at the core of an economic system operated by competitive markets.

Schumpeter (1942), the undisputed father of the economics of technological change, referred to capitalism as "the perennial gale of creative destruction" (p. 83) explaining the now famous term of creative destruction which is an industrial mutation process pursuing the destruction of an economic system from within, in order for it to be replaced with a new one.

Furthermore, innovation has been considered one of the most important sources for companies to draw their competitive advantages from, perfectly portraying the competitive advantage strategy (Porter, 2011). Generally, some measures for innovation may be R&D expenses (also as percentage of GDP if considered country-wise), average number of patents granted or average number of employees working on R&D, and the list may continue. Although it is rather difficult to measure it, emotional knowledge and emotional intelligence have a critical role in stimulating innovation (Bratianu & Orzea, 2013). However, in this regard, as in the case of competitiveness, one can also refer to a country's general propensity towards innovation, and in this case many drivers must be considered for conducting a proper study. The global innovation index aims to take into account the multi-dimensional facets of innovation, being both a measuring tool and one whose goal is to improve countries' innovation performances.

The first objective of the present research was to establish whether Knowledge Economy Index (KEI), Global Competitiveness Index (GCI), Global Innovation Index (CII), World Happiness Index (WHI), Gini Index, Research and Development expense (as percentage of GDP), Number of scientific and technical articles in journals, GDP per capita, governmental expenditure per student, In bound mobility rates, Foreign Direct Investment Net Flows, High tech exports (as percentage of manufactured goods), Military Expense (as percentage of GDP), Electric power consumption kwh per capita, Energy use (kg of oil equivalent per capita), CO2 emissions (metric tons per capita), Households with internet access (%), Daily frequency of internet access (% individuals), Percentage of enterprises selling online are correlated. In order to conduct such an analysis we resorted to the bivariate covariances between each and every pair of the previously listed indices. Furthermore, the second objective of the paper aimed to investigate by means of factorial analysis (Principal Component Analysis – PCA) whether the geographic distribution of the countries of the European Union influences their knowledge economy propensity.

Literature review and conceptual framework

Knowledge Economy Index (KEI) was designed by the World Bank (2009, 2012) based on a simple arithmetic mean of four subindexes, namely the pillars of knowledge economy: Economic Incentive and Institutional Regime (EIR); Innovation and Technological Adoption; Education and Training; Information and Communications Technologies (ICT) Infrastructure, (idem, Chen and Dahlman, 2005).

According to Hadad (2017), knowledge economy is characterized by open innovation, education, knowledge management and creativity that are grounded in Information and Communication Technologies (ICT) and the existence of highly trained and well educated workers. In this respect, the generation of knowledge and access to Internet makes consumers more knowledgeable and aware in respect to the decisions they take (Vatamanescu et al., 2017) and, implicitly, more educated.

Skrodzka (2016) conducted a geographic research that underlined a positive influence of knowledge economy pillars on the knowledge economy development of European Union countries, accompanied by a strong positive relationship between knowledge economy development and the economic development level.

In their empirical investigation on EU growth, convergence and the knowledge economy, Caraveli et al. (2008) established that investment in medium education, knowledge sectors and patent number positively influence economic growth and income disparities among EU regions. Moreover, the authors spot an unbalanced distribution of knowledge in a geo-economic context of EU-15. They advocate for policy measures which can proliferate knowledge-based activities in different regions that can further ripple into heightened innovation rate, sustainable growth and, ultimately, engender income disparities contraction. Concomitantly, peripheral regions can benefit from R&D subsides and knowledge infrastructure creation.

Some authors propose a linear, positive relationship between interfirm competition and knowledge acquisition based on previous studies showing that not only does alliance partners' protection not lower the magnitude of the knowledge flow between firms (Simonin, 1999; Norman and MacDonald, 2004), but it increases the efficiency of resource pooling, consequently *"interfirm competition essentially involves the acquisition of knowledge from alliance partners*." (Zhang et al., 2010, p.79). To sum up, the logical inference that lies behind the results of this study is that competition is one of the factors that coexists in any strategic alliance and it fosters knowledge acquisition that becomes a mediator for knowledge creation; furthermore, knowledge creation leads to innovation so, competition is a factor that is directly and positively linked with a company's innovative efforts. On the long run, according to Voinescu and Moisoiu (2015) competitiveness is driven by sustainability and an imperious requirement to make it in the knowledge economy is to increase investments in both innovation and tech.

Hopman et al. (2010) reveal from their study conducted in the Netherlands whether a change in competition policy, from the abuse system to the new Competition Act based on the prohibition system that put an end to the era of cartel paradise had an effect on innovation. The authors used R&D expenditures and patent applications as measures of innovative efforts, since these were considered to be most relevant for the policy. The study concluded that a transition to a more competitive environment, caused by a new policy, was relevantly and positively linked to an increase in intellectual property applications, and thus, to an increase in innovation and knowledge economy. Another result is that firms that operate in a more competitive environment also increase their efficiency concerning innovative efforts, obtaining more innovative output by using less innovative input (Hadad, 2017a-c). Moreover, the importance of vertical relationships is highlighted, since it was proven that cooperation with suppliers in innovative efforts leads to important increases both in the innovation intensity of the industry and the ratio of the firms with patent applications. The conclusion of this study is that the relationship between competition and innovation is a monotonously positive one.

Global Competitiveness Index (GCI), is made of twelve pillars divided in three subindexes: a) basic requirements: institutions, infrastructure, macroeconomic environment, health and primary education, b) efficiency enhancers: higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, c) innovation and sophistication factors: business sophistication and innovation (WEF, 2016)

In the attempt to align to the Europe 20202 Strategy, Priede and Neuer (2015) suggest that there is a considerable gap between EU countries in terms of competitiveness which can only be undersized by engaging in more intensive research and development investments.

Global Innovation Index (CII) The GII is composed of two sub-indices: *Innovation Input Sub-Index* and the *Innovation Output Sub-Index*, to form a total of seven pillars (Cornell University, INSEAD, and WIPO, 2014). *The Innovation Input Sub-Index* refers to those elements of an economy that enable and support innovative activities: Institutions, Human capital and research, Infrastructure, Market sophistication and Business sophistication. *The Innovation Output Sub-Index* is built around the pillars that represent the results of the innovative efforts in an economy: Knowledge and technology outputs and Creative outputs. Therefore this index provides a close link to knowledge economy.

Higher average incomes do not necessarily lead to improvements in average well-being of the population. Increased economic output, which would implicitly mean higher incomes, has led to heightened *CO_2 emissions (metric tons per capita), electric power kwh consumption per capita, energy use (kg of oil equivalent per capita)* that have left the environment and wellbeing of society better off. In a knowledge economy, the three previously mentioned indicators would be expected to undergo decreasing trends given the availability of information and alternative sources of energy to use. As income has been proven not to necessarily impact the wellbeing of society on the long term, attention of researchers has shifted towards World Happiness Index (WHI). According to Helliwell et al. (2012) the measurement of WHI is based on the assessment of daily emotions (affective happiness) and the individual's overall evaluation of life (evaluative happiness). The authors describe that the happiness of a nation is not necessarily positively correlated to the Gross National Product (GNP) [and Gross Domestic Product (GDP) per capita], since the quest for higher income may impair one's happiness.

The *Gini Index*, also referred to as an inequality index, represents the measurement of income dispersion of a nation's population with the intent of highlighting the discrepancies is income or wealth distribution (Jenkins, 2017), where a 0 value serves as perfect equality, whereas 1 is the superior limit expressing the maximal inequality. The index has applications in education and opportunity analysis. Education is central to the knowledge based economy for ensuring that knowledge workers contribute to the development of human capital in knowledge industries (Danby and Lee, 2012; Lešera et al., 2018), therefore we assert that the progress of society can also be easily reflected in the governmental spending it incurs per students (*governmental expenditure per student*) and the level of *inbound mobility rates in tertiary education*.

Foreign Direct Investment (FDI) Net Flows - By using firm level panel data, Kinoshita (2000) discovered that the learning effect of R&D acts as better predictor in explaining the productivity growth of a company as compared to the innovative effect and that positive FDI spillovers can be identified in the electrical machinery and radio and TV sectors. Additionally, FDIs have been proven to influence the national competitiveness and, at the same time, a crucial role on the absorptive capacity of the host state is played by the location or by the cluster it belongs to (Gugler and Brunner,

2007) and innovation can play a significant role in the economic welfare for the countries within the cluster (Dan, 2011, 2012). Finally, Alvarez and Marin (2013) conclude that international competitiveness in high-tech industries is affected by different dimensions of internal and external factors.

The research conducted by Falk (2009) explains that business *R&D intensity* generates significant knowledge and its importance exceeds that of share of high-tech exports in explaining GDP per working age population, concluding therefore that high tech exports impact the development of OECD countries. Furthermore, Braunerhjelm, and Thulin (2008) argue that a one percentage point increase in R&D expenditures triggers a three percentage point increase in high-tech exports leading to no significant market size change. *Research and Development activities result in* knowledge generation and have a crucial role in assessing cross-country competitiveness (Dzhukha et al., 2017; Ryzhkova, and Prosvirkin, 2015). Moreover, as knowledge economy deals with intangibles (Bratianu, 2018), the number of scientific and technical articles published in journals can be considered knowledge economy product categories, though this is a debatable indicator since quality should prevail over quantity. However, for now, this is the official global indicator provided by the World Bank. A better way of measuring the knowledge diffusion created through the scientific and technical articles would be the number of citations the articles have acquired in high ranking journals or through the journals' impact factors (Bernstein and Gray, 2012; Carpenter et al., 2014).

Concerning the Military Expense (as percentage of GDP) – the former EU Commission, President Barroso (2012) alleged that "the defense sector, apart from the political and other aspects is also crucial in terms of exports, cutting-edge research and provides growth and highly skilled jobs". In the same vein were the claims of Van Rompuy (2012) "a stronger defence industry which will contribute to more innovation and competitiveness and to more growth and employment across our Union". The military activity (defence-related R&D investment) influences innovation in the broader civilian economy of several OECD nations (Mowery, 2012). However, the scope and nature of this influence remains uncertain and subject to considerable debate, this is why in the present research we decided to include the military expense (as percentage of GDP) indicator.

Competitiveness can be achieved if special attention is paid to the knowledge economy variables enacted by R&D expenditure as a percentage of the GDP, lifelong learning, and tertiary education attainment (Dima et al., 2018). Accordingly, GDP per capita is regarded as a potential influencer of competitiveness and knowledge since it represents both the standard of living of a country and the output of an economy. Another key driver of knowledge economy is digitisation which has been put in place, at EU level, by the Digital Agenda for Europe in the context of Europe 2020 Strategy which assesses 31 indicators grouped into five compounds: connectivity, human capital, use of Internet, integration of digital technology and digital public services. For our analysis we shall consider the percentage of *households with internet access*, *daily frequency of internet access (% individuals)*, *and percentage of enterprises selling online*.

From the present literature review we were led to elaborate on the following hypotheses: H1. There is a strong correlation between the enablers of knowledge

economy: Knowledge Economy Index (KEI), Global Competitiveness Index (GCI), Global Innovation Index (CII), World Happiness Index (WHI), Gini Index, Research and Development expense (as percentage of GDP), Number of scientific and technical articles in journals, GDP per capita, governmental expenditure per student, In bound mobility rates, Foreign Direct Investment Net Flows, High tech exports (as percentage of manufactured goods), Military Expense (as percentage of GDP), Electric power consumption kwh per capita, Energy use (kg of oil equivalent per capita), CO2 emissions (metric tons per capita), Households with internet access (%), Daily frequency of internet access (% individuals), Percentage of enterprises selling online; H2. The distribution of knowledge economy follows the geographic distribution of the countries within the EU.

Research methodology and results

United Nations Statistics Division (UNSD) (2013) has classified the countries of Europe (and implicitly the European Union) into two regions: the North + West and the South + East (Table 1).

Table 1. Regional EU clustering

"NorthWest Europe" Region (I)	**"SouthEast Europe" Region (II)**
Austria	Bulgaria
Belgium	Croatia
Denmark	Republic of Cyprus
Estonia	Czech Republic
Finland	Hungary
France	Romania
Germany	Slovakia
Ireland	Slovenia
Latvia	Poland
Lithuania	Greece
Luxembourg	Italy
Netherlands	Malta
Sweden	Portugal
UK	Spain

Source: Author's own representation based on UNSD (2013).

Factor Analysis (FA) is a well-known clustering technique used in statistics and econometrics, relying heavily on probabilities, and sometimes acknowledged as Principal Component Analysis (PCA). FA applies to partitioning large sets of random variables into smaller, meaningful clusters, the centroid of each cluster being the so-called *factor* (Tabachnick and Fidell, 2007; Vizitiu et al., 2018, Agapie et al., 2018). Since the resulting number of factors is usually of an order of magnitude smaller than the initial number of variables, one expects from such analysis a better comprehension of the dependency among the variables, mathematically expressed by the correlation matrix (Habing, 2003).

When there is no a priori information, the number of factors is left open, to be determined by the computer programme based on the eigenvalue criterion – see Stevens (2002) for a thorough discussion on this topic, and George and Mallery (2003) for the specifics of SPSS software, respectively. However, this is not the case with our study, where existent KE literature indicates, as pointed out in *Introduction*, a grouping of the 28 EU countries into two main clusters: NorthWest and SouthEast, thus downsizing the number of factors to *two*.

We started our numerical analysis by computing Pearson correlation coefficients among all pairs of economic indices presumably related to KE, namely: KEI; GII; GCI; World happiness index; R&DGDP expense; *Number of scientific and technical articles;* Gini; GDP per capita; *Government expenditures per student*; *Inbound mobility rate*; *FDI net inflows*; *High Tech Exports of manufactured goods*; *Military expense of GDP*; Electric power consumption per capita; Energy use per capita; *CO_2 emissions metric per capita*; Households with internet access; Daily frequency of internet access (% of individuals); Enterprises selling online. The corresponding data was obtained from the World Bank Database (https://data.worldbank.org/) under the limitation that the newest KEI available data belongs to the 2012 cohort.

Out of the 18 indices initially proposed - separate from KEI, mandatorily placed in the benchmark, as being a reference index – only 11 are significantly correlated (at a cut-value of 0.5) with KEI, so the other seven are excluded from the statistical analysis (in *italic* in the list above, and in Table 2 below – on the next page).

A special case is the *Gini* equality coefficient, measuring the discrepancy of wealth distribution among a nation's population. This index is significantly *negatively* correlated with KEI, precisely at the cut-value 0.5, so we chose to run two different analyses, one with Gini, and one without this index. As a general rule, we present in the following solely the numerical results of the analysis *with* Gini, the analysis *without* Gini being pretty much the same. The only notable exception is the slightly different structure of the clusters, to be presented in the subsequent.

Moving on to exploratory FA, we point out that in our case the variables are the EU countries, not the above KE indices. The values of these indices, corresponding to each country, are considered as realisations of the random variables. In order to extract the two factors, we applied the SPSS *Dimension Reduction →Factor* procedure, using the *Principal Component* extraction method, *Varimax with Kaiser normalization* rotation, on the 28-item set of EU countries, on a sample of 12 (respectively 11, when *Gini* is excluded) - values for the KE indices.

Table 2. Correlation matrix for proposed Knowledge Economy indices

		KEI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	KEI	1																		
1	**GII**	.901**	1																	
2	**GCI**	.894**	.887**	1																
3	**WHI**	.855**	.779**	.816**	1															
4	**R&DGDPexpense**	.844**	.735**	.799**	.697**	1														
5	*NoSciampTecharticles*	.310	.221	.451*	.279	.253	1													
6	***Gini***	-.502**	-.417*	-.478*	-.417*	-.588**	-.350	1												
7	**GDPpercapita**	.693**	.704**	.732**	.784**	.517**	.181	-.202	1											
8	*Govexpendperstudent*	.241	.295	.166	.207	.355	-.240	-.074	-.003	1										
9	*Inboundmobilityrate*	.257	.387*	.396*	.439*	.095	.145	-.065	.755**	-.267	1									
10	*FDINetInflows*	.317	.372	.416*	.379*	.034	.203	-.137	.517**	-.404*	.504**	1								
11	*HighTechExportsofmanufgoods*	.262	.439*	.238	.251	.050	.158	-.199	.105	.394*	.096	.163	1							
12	*Militaryexpenseof GDP*	-.159	-.262	-.105	-.165	-.041	.422*	.172	-.280	-.329	-.178	-.132	-.218	1						
13	**Electricpowerconsumptionkwhpercapita**	.669**	.655**	.672**	.624**	.679**	.012	-.279	.757**	.191	.462*	.242	-.042	-.176	1					
14	**Energyusekgofoilequivalentpercapita**	.653**	.643**	.685**	.616**	.618**	.035	-.326	.787**	.028	.553**	.431*	-.056	-.237	.919**	1				
15	*CO_2emissionsmetrictonspercapita*	.355	.409*	.365	.359	.227	-.029	-.183	.651**	-.229	.649**	.523**	-.023	-.200	.563**	.765**	1			
16	**Householdswithinternetaccess**	.858**	.889**	.862**	.842**	.696**	.259	-.511**	.778**	.238	.421*	.466*	.351	-.247	.657**	.695**	.465*	1		
17	**Dailyfrequencyofinternetaccessindivid**	.845**	.859**	.844**	.763**	.667**	.212	-.399*	.775**	.171	.425*	.444*	.274	-.184	.694**	.717**	.431*	.946**	1	
18	**Enterprisesellingonline**	.688**	.631**	.566**	.629**	.581**	.103	-.540**	.417*	.155	.085	.121	.243	-.234	.371	.379*	.146	.612**	.529**	1

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

Source: Author's representation based on own research.

The two resulted factors partitioned the EU countries into two groups, one with 20 and the other with eight countries, see Table 3. The cumulative total variance explained by the two factors is 86.084%.

Table 3. Clustering the EU countries with respect to Knowledge Economy indices

Factors	**Variables**
Group 1	Austria, Bulgaria, Croatia, Cyprus, Estonia, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, *Luxembourg*, Malta, Poland, Portugal, Romania, Slovak Republic, Spain, UK
Group 2	Belgium, Czech Republic, Denmark, Finland, Germany, Netherlands, Slovenia, Sweden

Source: Author's representation based on own research.

Another statistical instrument employed in relation with FA represented by the *Cronbach's alpha coefficients*. Originally intended for social studies based on surveys where the answer to each question follows a finite-range Likert scale, Cronbach's alpha is the most common measure of a scale's internal consistency (Tabachnick and Fidell 2007; Craciun et al., 2015). In our case, we have rescaled all KE indices within the interval [0, 1], so Cronbach's alpha coefficients were computed for each of the two resulting factors, in order to determine whether the scale used is reliable with respect to the items composing each factor.

Table 4. Cronbach's alpha coefficient for Factor 1

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Austria	11.326	19.747	0.767	0.989
Bulgaria	11.587	18.832	0.931	0.988
Croatia	11.498	19.135	0.815	0.989
Cyprus	11.515	18.687	0.967	0.988
Estonia	11.406	19.292	0.895	0.988
France	11.358	19.407	0.928	0.988
Greece	11.548	19.017	0.940	0.988
Hungary	11.506	18.945	0.969	0.988
Ireland	11.341	19.311	0.861	0.989
Italy	11.484	19.000	0.931	0.988
Latvia	11.523	18.579	0.984	0.988
Lithuania	11.501	18.877	0.962	0.988
Luxembourg	11.196	20.600	***0.282***	***0.992***
Malta	11.464	18.892	0.952	0.988
Poland	11.527	18.881	0.987	0.988
Portugal	11.491	19.078	0.952	0.988
Romania	11.609	18.605	0.959	0.988
Slovak Republic	11.495	19.156	0.935	0.988
Spain	11.445	19.011	0.988	0.988
UK	11.333	19.029	0.928	0.988

Source: Author's representation based on own research.

In our case, each of the two obtained factors (groups of countries) was subsequently tested for internal consistency in SPSS using the Cronbach's alpha coefficient technique. Factor 1 checked with a Cronbach value of 0.989, while Factor 2 checked with a Cronbach value of 0.945.

Table 5. Cronbach's alpha coefficient for Factor 2

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Belgium	5.371	1.503	0.944	0.930
Czech Republic	5.482	1.465	0.765	0.940
Denmark	5.315	1.395	0.836	0.935
Finland	5.260	1.621	0.576	0.951
Germany	5.405	1.396	0.811	0.938
Netherlands	5.348	1.425	0.827	0.936
Slovenia	5.488	1.454	0.893	0.931
Sweden	5.230	1.561	0.853	0.937

Source: Author's representation based on own research.

A detailed Cronbach analysis of the two factors is depicted in Table 4 and Table 5, respectively. One should notice that the last column of both tables presents the Cronbach values in the case of deletion of the corresponding variable. We can see that removal of Luxembourg would result in a small improvement in Cronbach's alpha. On the other hand, one should notice that the *Corrected Item-Total Correlation* value for Luxembourg is low (0.282), which sets this country as an outlier that can be further removed from the statistical analysis. After performing this operation, the cumulative total variance explained by the two factors increases to 87.463%.

The graphical representation of the partitioning of the 27 (minus Luxembourg) EU countries into two clusters is depicted in Figure 1.

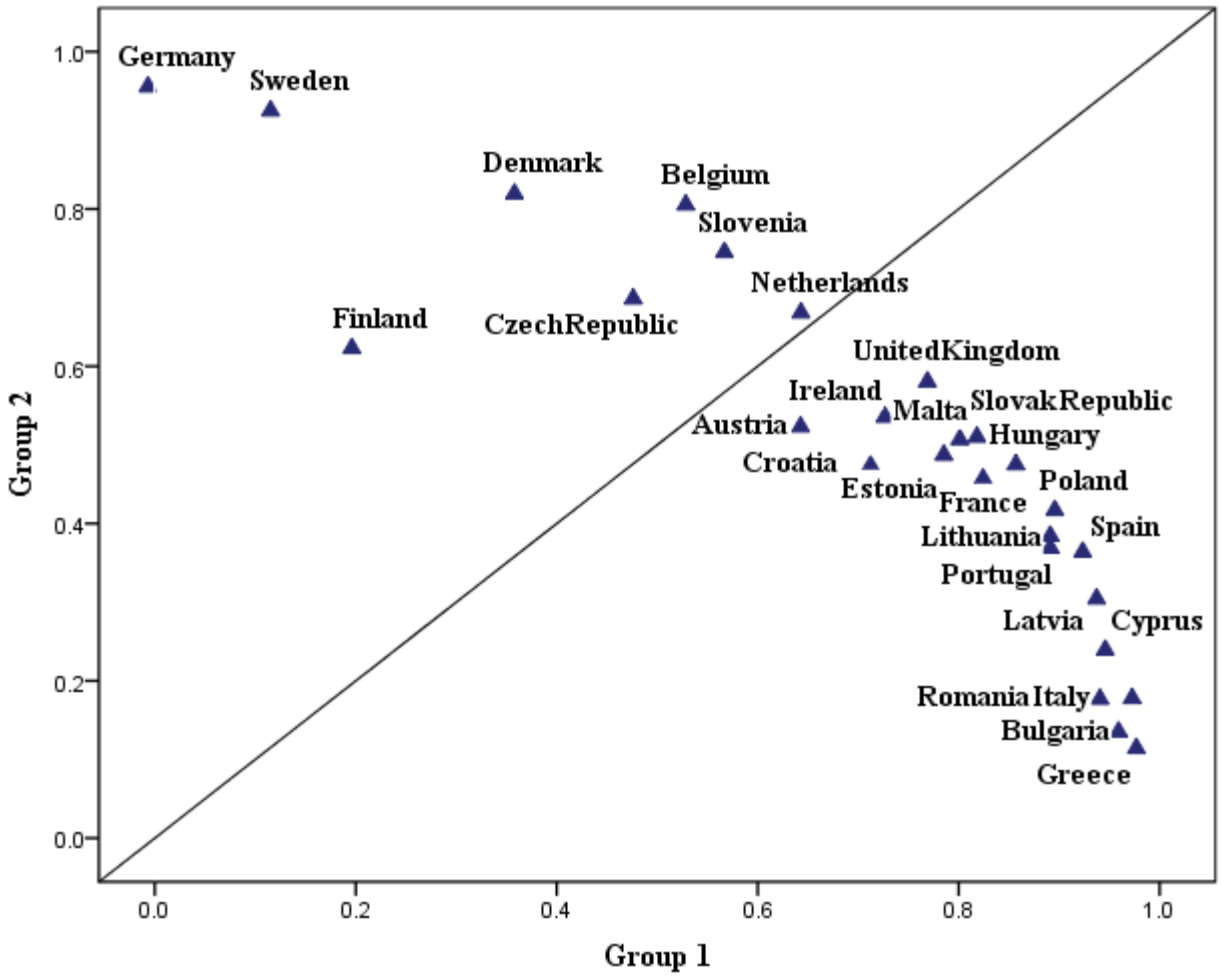

Figure 1. Distribution of EU countries with respect to Knowledge Economy – case with Gini
Source: Author's representation based on own research.

The slightly different partition provided by the same FA, but without including the Gini index, is given in Figure 2 (Annex 1). However, one can observe that the countries pertaining to Group 1 exhibit better clustering.

The differences between the two analyses (with or without the Gini index) are the following: a) in the first case the countries appear to be more scattered as compared to the second one; b) Finland and Portugal permute from one group to another, from the first to the second analysis; c) Ireland migrates from Group 1 to Group 2, from the first to the second analysis.

The graphical representation of the cross distribution between the regional classification and the FA clusters is depicted in Annex 2 (Figure 3). The two regional clusters are listed in ascending order from left to right, 14 countries in each cluster, while the two FA clusters are represented in colors (green versus blue). As one can notice, the differences are quite significant implying that the popular geographical dichotomy between NorthWest and SouthEastern European countries does not hold true.

Conclusions

The first part of this research paper was dedicated to investigating knowledge economy and the multitude of factors influencing it. We started our analysis from the hypothesis that KEI follows the geographical (and wealth) distribution among European countries. In order to test this hypothesis, we first performed a pairwise covariance analysis of 18 potential KE related indices which downsized their number to 12, KEI included. In the next step of the research, we modelled the 28 EU countries as random variables, the normalized values of the 12 indices being their instantiations. To these 28 variables, a factor analysis procedure was applied in SPSS with a fixed number of two factors as the output. Finally, we compared the two factor obtained structure against the existing regional classification offered by the United Nations Statistics Division (2013). We can conclude that the geographical distribution of the EU countries does not exert a significant influence on the knowledge economy index, since the two classifications (geographical and statistical) do not exhibit any overlapping pattern, therefore infirming our second hypothesis. Our first hypothesis was partially confirmed since not all the factors identified exert string influence on the knowledge economy.

For example, we would expect that the number of scientific and technical articles, governmental spending per student and the inbound mobility rate would have an important influence over knowledge economy, however the factors were excluded from the factorial analysis next to FDI net inflows, high tech exports of manufactured goods, military expenses as percentage of GDP and carbon dioxide emissions as metric tons per capita. In terms of knowledge economy, Romania is strongly influenced by Greece, Cyprus, Latvia, Bulgaria, Slovak Republic and Italy and this could represent a common ground for working towards harmonised policies for encouraging knowledge economy, innovation, competitiveness and digitisation. The highest correlations attained were in terms of the Global Competitiveness Index, World Happiness Index, R&D expenses signifying that they could also act as predictors in evaluating the status of the knowledge economy of a particular country, whereas weaker correlations can be spotted for enterprises selling online, electric energy consumption, carbon dioxide emissions and others. In the future, the same relationship can be tested to see whether the influences have changed, in the light of new available data.

The main limitations of this study reside in the fact that the newest KEI corresponding data which was available from the World Bank Database belonged to the 2012 cohort and that after infirming the geographic distribution, we did not render a sound criterion for the grouping of the countries. Additionally future investigations could be devoted to conducting a similar analysis however not setting the number of factors to two. Another way of identifying knowledge economy clusters may be done by using Analytic Hierarch Process (AHP) or Analytic Network Process (ANP) and establishing an economically valid grouping criterion.

Acknowledgements

The present paper has been financially supported by the Academy of Romanian Scientists, Programme No. 15/2018 “Strategies for Implementing Knowledge Economy in Romania”.

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**World Bank Database https://data.worldbank.org/.

Annex 1

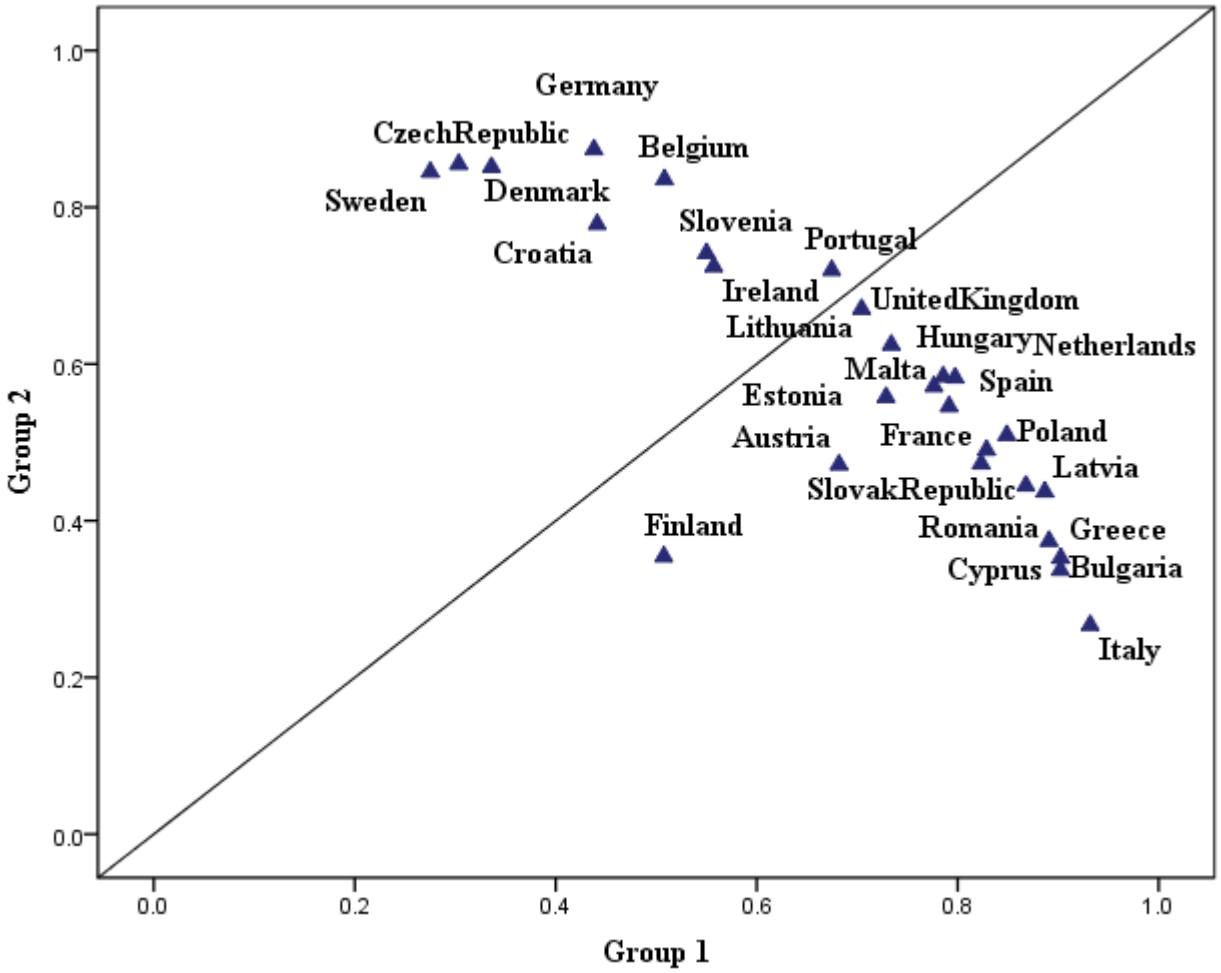

Figure 2. Distribution of EU countries with respect to Knowledge Economy – case without Gini

Source: Author's representation based on own research.

Annex 2

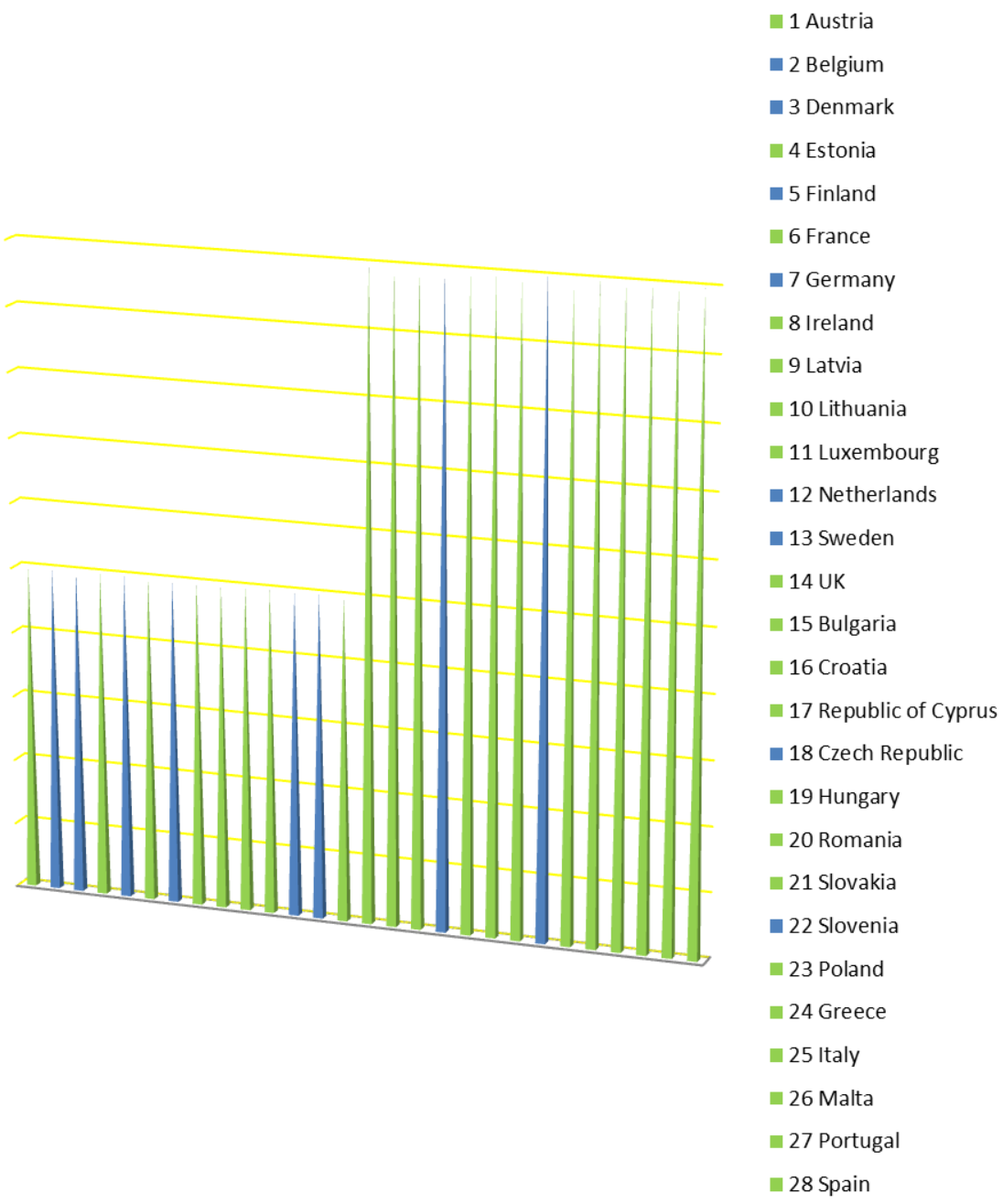

Figure 3. Geographical vs FA clusters
Source: Author's representation based on own research.

South African Journal of Business Management
ISSN: (Online) 2078-5976, (Print) 2078-5585

Adapting a corporate entrepreneurship assessment instrument for Romania

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Dates:
Received: 11 Apr. 2017
Accepted: 26 Aug. 2017
Published: 28 June 2018

Background: The study adapts the corporate entrepreneurship assessment instrument (CEAI), a notable North American psychometric instrument used to evaluate entrepreneurial culture, and investigates its construct validity scale, taking into account that psychometric instruments have limited cross-cultural portability.

Objectives: We aim at identifying the perceived internal management key factors in the Romanian entrepreneurial culture (private sector) and applying CEAI to emergent economies.

Method: The corporate entrepreneurship assessment instrument uses a 48-item Likert scale questionnaire to collect information from a large sample of employees working in different companies. The questions, seen as random variables, are then factor analysed in order to get a reduced more manageable structure. Factors are finally interpreted with respect to the entrepreneurial propensity of the business sector in study. The software used for statistical analysis was SPSS.

Results: The survey conducted on 175 professionals from Romanian technology-based companies yielded a 10-factor structure for this particular business environment: reinforcement and work discretion, dynamic environment and decreased formalisation, delegation, time availability, strategic awareness, management support, stress, vertical communication, horizontal communication and knowledge sharing.

Conclusion: The study provides a thorough understanding of the Romanian post-communist corporate culture, and, together with a similar analysis recently performed in South Africa, aims to create a clearer picture of cross-cultural portability of entrepreneurship psychometric instruments.

General framework

Highlighting the factors that contribute to the economic development of private-owned enterprises has preoccupied scholars for more than two centuries. From among these factors, Smith emphasised the division of work, Ricardo the revenues of production factors and Keynes the marginal inclination towards investments.

Schumpeter has significantly contributed to the motives and questions pertaining to transformation, and from a historical perspective, to the survival of the free enterprise system. The underlying assumptions of his theory require the understanding of the role of the entrepreneur.

Generally speaking, any person with economic initiatives can claim to be an entrepreneur. However, as it has been pointed out, only the market economy environment allows the entrepreneur to be the promoter of innovation in various fields of activity with respect to products, services, organisational processes, resources and markets (Swedberg 2007). This idea is known in the literature as the *Schumpeterian* theory – 'new combinations that may dramatically alter the bases of competition in an industry, or lead to the creation of a new industry' (Sharma & Chrisman 1999:18), or embodied in incremental improvements and diversifications on the current markets (Vizitiu 2014). Miller (1983) presented corporate entrepreneurship (CE) as the capability of the company to innovate new products and services, to be proactive by bringing newness on the market and to take risks getting involved in technology-based ventures with high uncertainty. On the contrary, other authors sustained that CE comprises four directions: *sustained regeneration* – equivalent with continuous improvement of the products on current or similar markets; *corporate rejuvenation* – requiring the restructuring of internal resources and

How to cite this article: Vizitiu, C., Agapie, A., Paiusan, R., Hadad, S. & Nastase, M., 2018, 'Adapting a corporate entrepreneurship assessment instrument for Romania', *South African Journal of Business Management* 49(1), a8. https://doi.org/10.4102/sajbm.v49i1.8

capabilities; *strategic renewals* – regarding the company relationship between different markets; *redefinition of the industry domain* – targeting radical innovations and industry disequilibrium (Frederiksen & Davies 2008).

Concerning the size and form of ownership of innovative enterprises, Schumpeter started a debate that lasted for over a century. He differentiated between owner-operated enterprises and managers-operated (other than the owners-) enterprises. Moreover, he asserted that large enterprises, active on strong and aggressive monopolistic markets in search of big profits, are more innovative than small enterprises, active on competitive markets. The technical progress is thus *bureaucratised* because the decision-makers are now the increasingly opportunistic managers and not the owners themselves. Under these circumstances, the innovation process becomes a quasi-automatic process that no longer needs a dynamic entrepreneur. *The Schumpeterian hypothesis*, as it is known in the literature, was partially or totally rejected by Arrow and others, who claimed that all enterprises are interested in favouring the innovative process. Drucker, who in his early years took part in the *Kapitalismusdebatte* (debate on the future of capitalism) in Europe, described the organisational extent of the free enterprise as being 'receptive to innovation and willing to perceive change as an opportunity rather than a threat' (Drucker 1985:150).

The scholars' effort to determine the perceived internal factors for entrepreneurial activities was aimed to create psychometric instruments able to diagnose the level of entrepreneurial behaviour and culture within existing organisations.

Adapting Schumpeter's and other scholars' ideas to contemporary developments, processes and phenomena, the recent literature on CE emphasises that as globalisation and technological developments have accelerated (Vizitiu 2014), companies were forced to heavily rely on diversified information to create innovations (Dumitrache & Răileanu-Szeles 2014), and implicitly, to gain sustainable competitive advantage in order to survive and grow. Thus, the phenomenon of entrepreneurship within existing companies (Antoncic & Hisrich 2001) emerged in the same way as individual entrepreneurship, but directed towards already established companies. It includes specific attitudes of employees and tendencies of companies of all sizes to prosper in their specific competitive environments (Kuratko 2009). The present business environment requires entrepreneurial strategies for the established companies to succeed; consequently, the CE strategy distinguishes itself from other entrepreneurial unplanned and spontaneous initiatives (Burgelman 1983) through its specific goal defined as 'a vision-directed, organization-wide reliance on entrepreneurial behaviour that purposefully and continuously rejuvenates the organization and shapes the scope of its operations through the recognition and exploitation of entrepreneurial opportunity' (Ireland, Covin & Kuratko 2009:21).

Even if currently there is no universally accepted definition of CE (Gautam & Verma 1997; Sharma & Chrisman 1999) and the phrase *corporate entrepreneurship* may sound as an oxymoron because of the association of the bureaucratic and hostile environment of large companies to innovative and creative attitudes given by the *entrepreneurship* concept, CE represents a viable solution of already established companies to systematically pursue technological opportunities requiring considerable long-term capital investments with important societal benefits through the development of new products and markets (Sathe 2003).

One of the most comprehensive and enlightened structure of the CE strategy analyses four main components (Thornberry 2001):

- *Corporate venturing*, which 'means that the firm will enter new businesses by expanding operations in existing or new markets' (Zahra 1995:227), involving new competencies and learning attitudes for employees.
- *Intrapreneuring*, which is oriented to entrepreneurial behaviours of employees seen as 'the dreamers who figure out how to turn an idea into a profitable reality' (Pinchot 1985:ix).
- *Organisational transformation* given by rearrangement of resources within companies in a new pattern in order to gain new capabilities and pursue new business opportunities without resorting to downsizing, re-engineering or cost-cutting transformations.
- *Industry rule-bending* with respect to altering the rules of competitiveness by achieving the highest operational efficiency among rivals.

The present research undertakes an empirical identification of organisational factors within the private sector to foster entrepreneurship in existing Romanian organisations, with the final goal of creating a diagnosis CE psychometric instrument for the national business culture.

As a critical affirmation to the relevant corpus, the limitations of current literature on internal factors that promote CE have to be underlined. Even if the factors are numerous and well explained – see, for example the seminal paper of Kuratko, Montagno and Hornsby (1990) – literature fails to provide an accurate management model for promoting CE activities, and implicitly, to foster the creation, identification and proper exploitation of business opportunities. The lack of guidance on the managers' role in CE engagement was firstly pointed out by Hornsby, Kuratko and Zahra (2002).

Since the second half of 20th century, many psychometric instruments have emerged, with the purpose of diagnosing the level of entrepreneurship within internal organisational climate. In this context, Hornsby et al. (2002) developed one of the most popular psychometric instruments, called corporate entrepreneurship assessment instrument (CEAI), for the assessment of entrepreneurial organisational climates in the North American culture.

The present research aims at developing a specific CE instrument for the Romanian business culture, starting from the original North American CEAI, investigating its construct validity and then successively tailoring it, similar to the way Van Wyck and Adonisi (2011) developed their own CEAI for the South African entrepreneurial culture.

Given that CEAI was reconfigured and tested in time, it is noteworthy that its traceability can be followed: in 1990 under the name of intrapreneurial assessment instrument, the model targeted factors such as management support for intrapreneurship, resource and reward availability, risk taking, time availability and organisational structure (Antoncic & Hisrich 2001; Kuratko et al. 1990), but the empirical analysis performed at that time was not valid for all the five key factors considered (Hornsby et al. 2002). Corporate entrepreneurship assessment instrument, on the other hand, is envisaged to be able 'to gauge the organizational factors that foster corporate entrepreneurial activity within a company' (Hornsby et al. 2002:263), whereas it is based on other five key factors which successfully loaded on the 48 CEAI items for assessing the entrepreneurial North American culture. The five empirical key factors that represent the cornerstone for CEAI are the following: the dimension of the perception of *top management support* for encouraging the companies' employees to champion ideas; the dimension of the perception of *work discretion* with respect to tolerance of failure, responsibility, level of delegation and authority; the dimension of the perception of *rewards and reinforcements* with respect to risk taking and first mover behaviour; the dimension of the perception of *time availability* concerning time tolerance in performing job responsibilities; the dimension of the perception of *organisational boundaries* with respect to the information flow between departments and even organisations (Goodale et al. 2011).

Lau et al. (2012) performed a similar analysis on Hong Kong CE and developed an instrument called the entrepreneurial behaviour inventory (EBI). Using an original 'simulated incident method', yet under the same process of item reduction via factor analysis (FA), they identified four key entrepreneurial characteristics: *innovativeness*, *risk taking*, *change orientation* and *opportunism*.

Even if the need to study CE within emerging economies has been pointed out by Zahra, Van de Velde and Larraneta (2007) and Ahlstrom (2010), such research has not been conducted until recently, and only with respect to East Asian economies like India (Bhardwaj & Sushil 2012). As there are plenty of contextual differences between developed and emerging markets, on one hand, and between East Asian and East European emerging markets, on the other hand, adapting CEAI to an East European, post-communist emerging economy like Romania, is worth being considered.

The research undertaken for this study has a twofold purpose. Firstly, it aims to contribute to international and Romanian strategic management by drawing a comparison between the North American and Romanian entrepreneurial cultures. Secondly, at the same time, it aims to contribute to the already existent Romanian entrepreneurial practice environment (Craciun et al. 2015; Nastase & Valimareanu 2017; Soare et al. 2017), by developing a tailored psychometric instrument for a Romanian CE diagnosis. This Romanian CE exploration by adapting an American psychometric instrument is undertaken because of some well-acknowledged reasons which are as follows: limited cross-cultural portability of psychometric instruments as stated in the literature of psychology; the potential of expanding entrepreneurial theories by investigating them in other cultures as stated by Antoncic and Hisrich (2001), Brislin (1980), De Klerk, Boshoff and Van Wyck (2009), and Van Wyck and Adonisi (2011); and last but not least, it is given even by the CEAI authors' plea in Hornsby, Holt and Kuratko (2008) and Hornsby et al. (2002) for a possible validation of their psychometric instrument scale in a cross-cultural context.

Because of the way in which individuals perceive their social and cultural milieu, they show certain forms of behaviour which influence at their turn activities of interpreting and responding to the questionnaires. Thus, these previously mentioned aspects constitute the reason of emerging possible problems with regard to equivalence and validation of psychometric instruments across cultures. It is worth noticing that a similar application of CEAI to the South African business environment has been performed in Wyck and Adonisi (2011) and had resulted in an *eight-factor* solution!

Taking into account the considerable contributions of CEAI to both the literature and the North American entrepreneurial culture, the need and opportunity becomes manifest to provide a considerable contribution to the Romanian private sector dealing with technologies for the space sector, and also for energy, medicine, transports and so on, through the present research by investigating CEAI construct validity, and implicitly, identifying those key factors that apply exclusively to the Romanian entrepreneurial and organisational culture.

The rationality of psychometric instruments cross-culture portability without modification is given by the anthropologists' explanation of the term *culture* which identifies patterns of understandings, attitudes and specific mental models which fully comply with the society the employees live in (Jahoda 2012; Kroeber & Kluckholm 1952).

Method and data

Factor analysis – also referred to in statistics as principal component analysis (PCA) – is a clustering technique for large sets of variables, each cluster being defined by a central element, a factor. The emerging factors – the cardinal number of which is significantly lower than the number of initial variables – characterise the underlying process that correlates the variables (Tabachnick & Fidell 2007:607). Rigorously, if X_i are the p observed variables (measured for each of the *n* subjects), F_i are the m factors, a_{ij} are the so-called factor loadings and e_i the errors associated with the variables,

leading to equation 1 model (B. Habing [University of South Carolina] pers. comm., 15 October 2003).

$$\begin{cases} X_1 = a_{11}F_1 + \ldots + a_{1m}F_m + e_1 \\ X_2 = a_{21}F_1 + \ldots + a_{2m}F_m + e_2 \\ \vdots \\ X_p = a_{p1}F_1 + \ldots + a_{pm}F_m + e_p \end{cases} \quad \text{[Eqn 1]}$$

The whole FA is centred on the correlation matrix R (equation 2), given by:

$$R = AA^T + \text{cov}(e) \quad \text{[Eqn 2]}$$

As for the number of extracted factors, it is reasonable to expect m << p. In SPSS, for example (George & Mallery 2003), one can either fix *a priori* the number of factors or leave this option to the programme. Usually the number of factors is determined by the eigenvalue criterion (B. Habing [University of South Carolina] pers. comm., 15 October 2003): check how many of the eigenvalues associated to matrix R are larger than 1, and fix the number of factors accordingly. For a thorough discussion on this topic, the reader is referred to Hair et al. (1998:103) and Stevens (2002:389).

A second criterion, to be applied when deciding the number of factors, is to keep as many factors as required in order to explain at least 60% of the total variance within variables.

Sometimes, there is an urge to use an *a priori* number of factors. Similar studies performed in the United States (Hornsby et al. 2002), or South Africa (Van Wyck & Adonisi 2011), for the same CE assessment instrument provided a number of *five* and *eight* factors, respectively. Nevertheless, the authors did not impose a fixed number of factors *a priori*, and they interpret the relatively large number of factors provided by their analysis (*ten*) as an effect of the young, emerging Romanian market.

The data were collected from Romanian companies, 175 subjects (104 women, 71 men) ranging from large companies to medium-sized and small enterprises from the private sector. Significant data on the subjects that filled in the questionnaire are provided in Figures 1–3.

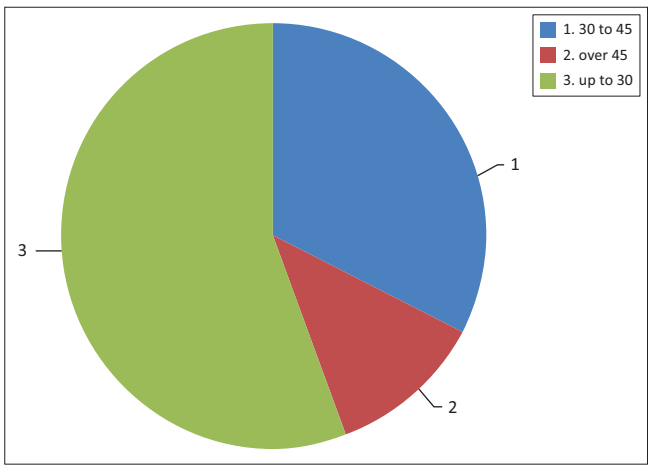

FIGURE 1: Age distribution of the subjects (years).

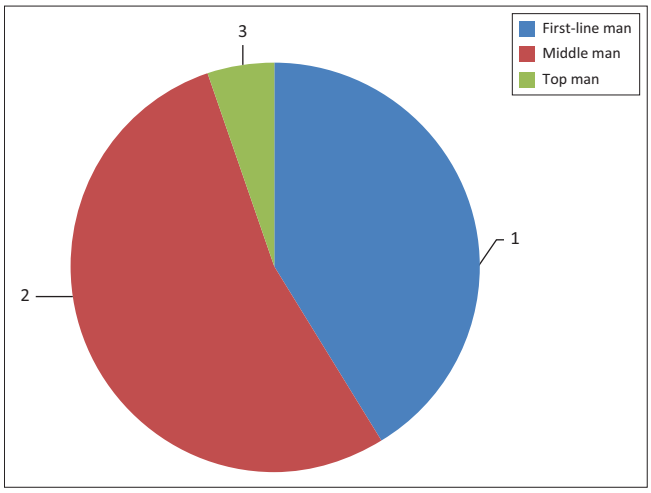

FIGURE 2: Position within the company.

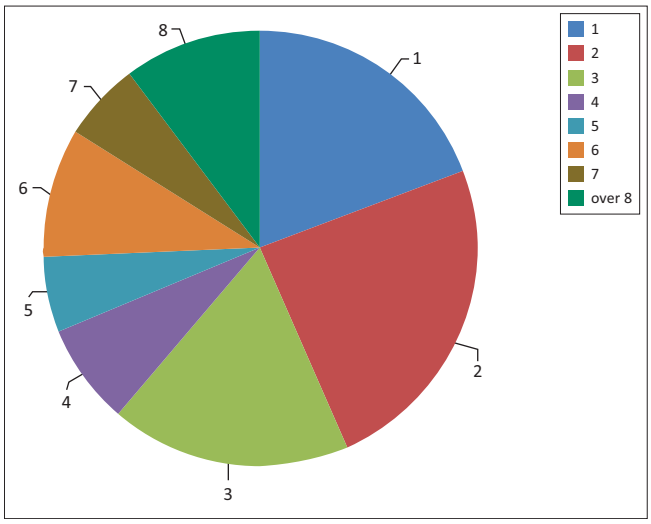

FIGURE 3: Experience within the company (years).

Numerical results

The practical question of this study is: What would the factor structure of the CEAI introduced by Hornsby et al. (2002) be when applied to a Romanian sample?

To answer this question, the authors performed an exploratory FA in SPSS, using an extraction method – principal component, orthogonal varimax rotation with Kaiser normalisation, on the 48-item CEAI on a sample of n = 175 employees from Romanian private companies.

Of the initial 48 variables (items), 13 exhibited eigenvalues larger than one. To improve consistency in the structure of the model, the factors carrying only one variable were excluded first. In a second stage, the variables with significant loads (i.e. larger than 0.45) on more than one factor were excluded. In a third stage, the 0.45 value was used as a minimal threshold for the whole set of loadings, so that variables with lower loadings were also excluded.

After the reduction phase, the number of variables decreased from 48 to 38, while the number of factors was downsized to 11.

Each factor was checked for internal consistency using the Cronbach's alpha coefficient, and the only factors (and variables within: Q36, Q37, Q38) that were discarded were the ones below the minimal acceptance threshold of 0.5 (George & Mallery 2003). This operation produced lead to reducing the set of variables down to 35 items. Table 1 shows the items per factor distribution, while Table 2 gathers the respective Cronbach's coefficients.

The ten factors of our analysis are interpreted qualitatively as: (1) reinforcement and work discretion; (2) dynamic environment and decreased formalisation; (3) delegation; (4) time availability; (5) strategic awareness; (6) management support; (7) stress; (8) vertical communication; (9) horizontal communication; and (10) knowledge sharing.

Box 1 shows the explicit factor-item distribution, using the qualitative interpretation of the factors.

The cumulative total variance explained by the ten factors was 63.83% – after subtracting the variance of the eliminated factor in Cronbach's coefficient test.

Conclusions

The present research targeted investigation on the CEAI construct validity with respect to the five-factor, 48-item structure, in order to empirically identify a tailored set of organisational factors and to implicitly shape a specific CE psychometric instrument exclusively tailored for the Romanian entrepreneurial culture of the private sector. As expected and as evidence of the psychology literature which severely questions the use of psychometric instruments across cultures without modifications, the present research conducted on a sample of 175 Romanian subjects in the private sector revealed a *ten-factor structure which loaded on 35 items*, different to the CEAI for the North American entrepreneurial culture which has *five factors on 48 items.*

The high factor loadings and the eligible Cronbach's alpha coefficients emphasise the fact that the 10-factor CEAI structure obtained for the Romanian entrepreneurial culture is statistically acceptable. On the other hand, the variety of the 10-factor structure, expressed through *reinforcement and work discretion; dynamic environment and decreased formalisation; delegation; time availability; strategic awareness; management support; stress; vertical communication; horizontal communication; knowledge sharing,* provides it with the capacity to be used in business practice.

The current research started from the CEAI authors' plea for verifying their psychometric instrument in other cultures, consolidating the hypothesis given by limited cross-culture portability of psychometric instruments, but also represents substantial contribution both for the Romanian entrepreneurial culture and for the international strategic management with regard to expanding the existing entrepreneurial theories through their applications in other cultures.

Hence, the present research proves the existence of ten stable internal key factors which encourage the entrepreneurial attitudes and behaviours within existing companies in the frame of Romanian private environment in order for the companies to embark on new ventures, strategic renewal and important innovations at all levels.

The ten factors resulting from the research, which correspond to the Romanian entrepreneurial culture could be described as follows: *reinforcement and work discretion* as the way employees are aware that, at the top management level, their beliefs and behaviour are encouraged; *dynamic environment and decreased formalisation* as the extent to which the organisation embraces new work-improving methods and stays up to date with obtaining high-quality products and services, and also refers to the employees' perception of the organisational procedures and rule stiffness; *delegation*, as being the extent to which employees perceive the company permissiveness with respect to the chance to authorise various persons to use their own judgement in the current business activities; *time availability* translated in the way employees perceive the correlation between the amount of

TABLE 1: Ten-factor solution.

Factor 1		Factor 2		Factor 3		Factor 4		Factor 5	
Item	**Load**	**Item**	**Load**	**Item**	**Load**	**Item**	**Load**	**Item**	**Load**
Q11	0.533	Q1	0.748	Q19	0.549	Q40	0.571	Q10	0.718
Q24	0.600	Q2	0.711	Q26	0.625	Q41	0.803	Q18	0.612
Q29	0.753	Q6	0.572	Q27	0.714	Q42	0.804	Q48	0.647
Q30	0.781	Q12	0.737	Q28	0.720	Q43	0.599	-	-
Q31	0.853	-	-	-	-	-	-	-	-
Q32	0.768	-	-	-	-	-	-	-	-
Factor 6		**Factor 7**		**Factor 8**		**Factor 9**		**Factor 10**	
Item	**Load**	**Item**	**Load**	**Item**	**Load**	**Item**	**Load**	**Item**	**Load**
Q9	0.681	Q3	0.529	Q34	0.677	Q15	0.698	Q17	0.582
Q14	0.499	Q25	0.798	Q35	0.688	Q44	0.594	Q22	0.582
Q16	0.483	Q39	0.513	Q47	0.580	-	-	Q23	0.719

TABLE 2: Cronbach's alpha coefficients.

Factor	1	2	3	4	5	6	7	8	9	10
Cronbach's coefficient	0.867	0.793	0.824	0.694	0.535	0.596	0.538	0.587	0.575	0.687

BOX 1: Qualitative description of the ten factors.

Factor 1: Reinforcement and work discretion
1. Senior managers encourage innovators to bend rules and rigid procedures in order to keep promising ideas on track.
2. I feel that I am my own boss and do not have to double check all of my decisions.
3. I have the freedom to decide what I do on my job.
4. It is basically my own responsibility to decide how my job gets done.
5. I almost always get to decide what I do on my job.
6. I have much autonomy on my job and am left on my own to do my work.

Factor 2: Dynamic environment and decreased formalisation
1. My organisation is quick to use improved work methods.
2. My organisation is quick to use improved work methods that are developed by employees.
3. The development of new and innovative ideas is usually followed by a promotion.
4. Many top managers are known for their experience with the innovation process.

Factor 3: Delegation
1. The term 'risk taker' is considered a positive attribute for people in my work environment.
2. This organisation provides the opportunity to be creative and try my own methods of doing the job.
3. This organisation provides freedom to use my own judgement.
4. This organisation provides opportunities to use my skills and abilities.

Factor 4: Time availability
1. During the past 3 months, my work load was too heavy to have time to develop new ideas.
2. I always seem to have plenty of time to get everything done.
3. I have just the right amount of time and work load to do everything well.
4. I feel that I am always working with time constraints on my job.

Factor 5: Strategic awareness
1. On my job, I know exactly what is expected of me.
2. My job description clearly specifies the standards of performance on which my job is evaluated.
3. I clearly know what level of work performance is expected of me in terms of amount, quality and timelines of output.

Factor 6: Management support
1. The 'doers' are allowed to make decisions on projects without going through elaborate justification and approval procedures.
2. Employees with successful innovative projects receive additional reward and compensation for their ideas and efforts beyond the standard reward system.
3. Individual risk takers are often rewarded for their willingness to champion new projects, whether eventually successful or not.

Factor 7: Stress
1. My job is structured so that I have very little time to think about wider organisational problems.
2. Harsh criticism and punishment result from mistakes made on the job.
3. There is a lot of challenge in my job.

Factor 8: Vertical communication
1. My manager helps me get my work done by removing obstacles.
2. The rewards I receive are related to my work on the job.
3. During the past year, my immediate supervisor frequently discussed my work performance with me.

Factor 9: Horizontal communication
1. Within the organisation, there are several options for employees to get financial support for their innovative projects and ideas.
2. My co-workers and I always find time for long-term problem-solving.

Factor 10: Knowledge sharing
1. People are often encouraged to take calculated risks with new ideas around here.
2. There is considerable drive among people in the organisation to generate new ideas without concern for crossing departmental or functional boundaries.
3. In this organisation, employees are encouraged to talk to colleagues in other departments about ideas for new projects.

work to be done and the time allocated by the organisation; *strategic awareness*, as the extent to which employees are aware of the company's vision and mission and of their potential contribution to those strategic aspects; *management support* illustrated through the way the top management's permissiveness with respect to championing ideas and the corresponding resources allocated is perceived; *stress*, as the extent to which the pressure at work caused by multiple deadlines, criticism and job challenges is perceived; *vertical communication*, as the extent to which employees perceive the communication between different top-down and bottom-up levels; *horizontal communication*, with respect to communication between different departments and even partner organisations at the same management levels; *knowledge sharing* in terms of knowledge dynamics and homogenisation through formal and informal networking.

The study not only presents an outstanding contribution for the Romanian entrepreneurial culture in the private sector for diagnosing the level of entrepreneurship inside organisations through the adapted and validated CEAI psychometric instrument but also for international strategic management, as it provides an interesting comparison between the North American and Romanian entrepreneurial cultures.

In Romania, this kind of research is the first attempt based on the authors' expertise of adapting an important psychometric instrument to Romania, another culture than the one where the psychometric instrument was developed in the first place. Moreover, it provides an opportunity for future research to develop a confirmatory analysis to make available the validation of the comprehensive image presented in the current article. Consequently, the resulting diagnosis psychometric instrument corresponding exclusively to the Romanian entrepreneurial culture of the private sector represents an important tool for Romanian top management to identify the organisational needs with respect to enabling the internal entrepreneurial behaviour and to preparing training programmes accordingly in order to break the status quo and embrace the CE benefits, thus gaining sustainable competitive edge.

Acknowledgements

During the revising stages, this work has been partially supported by the Academy of Romanian Scientists, Program No. 15/2018 'Strategies for Implementing Knowledge Economy in Romania'.

Competing interests

The authors declare that they have no financial or personal relationships which may have inappropriately influenced them in writing this article.

Authors' contributions

C.V. contributed to the theoretical framework and data analysis, discussed the results and commented on the manuscript. A.A. contributed to the method design, data processing and analysis; discussed the results and commented on the manuscript. R.P. contributed to the theoretical framework, discussed the results and commented on the manuscript. S.H. contributed to the conclusions, discussed the results, commented on the manuscript and proofread the manuscript. M.N. contributed to the theoretical framework, discussed the results and commented on the manuscript.

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