



# **Grand challenges: companies and universities working for a better society**

## **Extended Abstracts**

*University of Pisa - Sant'Anna School of Advanced Studies, Pisa*

**September 7-8, 2020**

Electronic Conference Proceedings of Sinergie - Sima Management Conference  
*Grand challenges: companies and universities working for a better society* Pisa, 7-8 September  
2020  
University of Pisa - Sant'Anna School of Advanced Studies, Pisa

ISBN 97888943937-6-7

Gli Electronic Conference Proceeding sono pubblicati *online* sul portale di Sinergie Italian Journal  
of Management  
<http://www.sijm.it>

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Via Interrato dell'Acqua Morta, 26  
37129 Verona - Italy

# **Grand challenges: companies and universities working for a better society**

**7-8 September 2020**

## ***Electronic Conference Proceedings***

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*Sandro Castaldo, Elisa Giuliani, Marco Frey e Marta Ugolini*

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Al Lettore,

questo volume accoglie gli extended abstract del Convegno Sinergie-SIMA 2020, dal titolo *Grand challenges: Companies and Universities working for a better society*, Università di Pisa, Scuola Superiore Sant'Anna, Pisa, 7-8 settembre 2020.

Le società contemporanee si trovano di fronte a un bivio: da un lato i governi sono sotto pressione per raggiungere obiettivi ambiziosi di crescita economica, dall'altro tale crescita alimenta complesse sfide ambientali e sociali, parte degli obiettivi di sviluppo sostenibile, o Agenda 2030, delle Nazioni Unite. Ciò spinge verso un ripensamento del capitalismo così come tradizionalmente inteso.

Lo scopo del Convegno è di discutere del ruolo delle imprese e dell'università per affrontare queste sfide. Per quanto riguarda le imprese, un focus particolare è rivolto agli impatti positivi che esse possono esercitare sulla società e sull'ambiente attraverso varie iniziative: dagli investimenti responsabili al coinvolgimento degli stakeholder per affrontare rilevanti problematiche sociali. Altrettanto articolato è il contributo che le università possono offrire attraverso le proprie attività di ricerca, formazione e terza missione.

Gli Extended Abstract raccontati in questo volume affrontano la tematica con una varietà di argomenti, punti di vista, prospettive.

Vengono altresì proposti studi e ricerche sul più ampio e generale capo del management, cui spetta un ruolo da protagonista anche al di fuori delle imprese.

*Sandro Castaldo, Elisa Giuliani, Marco Frey e Marta Ugolini*



Cari Lettori e Convegnisti,

il *call for paper* del Convegno Sinergie-SIMA 2020 Conference dal titolo *Grand challenges: companies and universities working for a better society* ha previsto la possibilità di presentare *extended abstract* oppure *full paper*. In totale sono pervenuti in redazione 113 *extended abstract* e 35 *full paper*.

Per gli *extended abstract*, la valutazione dei contributi ricevuti è stata operata dai Chair e dal coordinamento scientifico in base alla coerenza con il tema del Convegno e/o con gli studi di management secondo l'articolazione dei Gruppi Tematici SIMA. Sono state altresì valutate la chiarezza e la rilevanza (anche potenziale) dei contenuti proposti.

Per i *full paper*, la procedura di valutazione dei contributi è stata condotta secondo il meccanismo della *peer review* da parte di due referee anonimi, docenti universitari ed esperti dell'argomento, scelti all'interno dei soci SIMA e della comunità di Sinergie.

In particolare, nella valutazione dei contributi i referee hanno seguito i seguenti criteri:

- chiarezza degli obiettivi di ricerca,
- correttezza dell'impostazione metodologica,
- coerenza dei contenuti proposti con il tema/track del convegno e/o con gli studi di management,
- contributo di originalità/innovatività,
- rilevanza in relazione al tema/track del convegno e/o agli studi di management,
- chiarezza espositiva,
- significatività della base bibliografica.

L'esito del referaggio ha portato a situazioni di accettazione integrale, accettazione con suggerimenti e non accettazione. In caso di giudizio discordante la decisione è stata affidata ai Chair. Ogni lavoro è stato poi rinviato agli Autori completo delle schede di referaggio per la attuazione delle modifiche suggerite dai referee.

A seguito del processo di valutazione sono stati accettati 23 *full paper* e 111 *extended abstract*, pubblicati in due distinti volumi.

Tutti gli *extended abstract* di questo volume sono stati presentati e discussi durante il Convegno e pubblicati *online* sul portale della rivista Sinergie ([www.sijm.it](http://www.sijm.it)). Quest'anno sono anche disponibili on line i video con le presentazioni registrate dagli Autori.

Nel ringraziare tutti gli Autori per la collaborazione ci auguriamo che questo volume contribuisca a fornire un avanzamento di conoscenze sul ruolo che le imprese e l'università possono svolgere per conciliare la crescita economica e la necessità di affrontare le complesse sfide globali ambientali e sociali.

I Chair e il Coordinamento Scientifico

*Marco Frey, Elisa Giuliani, Marta Ugolini, Sandro Castaldo,  
Arabella Mocchiari Li Destri, Angelo Bonfanti*





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# Approccio burocratico versus approccio imprenditoriale: il caso dei Living Lab della rete ENOLL

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**Obiettivi.** Il presente lavoro è lo starting point di un progetto “in-progress”, finalizzato ad offrire un contributo alla letteratura esistente sui Living Labs; allo stesso tempo si pone l’obiettivo di offrire spunti di riflessione ai policy maker e agli esperti di ricerca e innovazione che si trovano sempre più coinvolti ad operare scelte strategiche, impiegando ingenti fondi pubblici.

Il lavoro si inquadra all’interno del contesto della quadrupla elica, caratterizzato da processi di innovazione aperta; rispetto alla tripla elica include anche i cittadini, concepiti quali utenti, a rappresentare la società civile.

I quattro soggetti coinvolti, cioè le amministrazioni pubbliche, gli enti di ricerca e università, imprese e gli utenti/cittadini, collaborano in modo attivo, in una rete di co-creation, per lo sviluppo di innovazioni di successo. È in tale contesto che sorgono i Living Labs (LL) (Veeckman et al., 2013; Carayannis et al., 2018; Hossain et al., 2019).

Si sente parlare di Living Labs in Europa a partire dal 2006, quando la Commissione Europea, in occasione della Conferenza “Networked Business and Government: Something Real for the Lisbon Strategy”, tenuta ad Helsinki, promuove un modello di innovazione basato sulla co-creation. Tutti gli attori iniziano a progettare, creare e testare prodotti e servizi insieme in ambienti di vita reali, con gli utenti finali che giocano un ruolo fondamentale. Gli utenti vengono concepiti quali fonte di idee e viene loro affidato il compito di guidare il processo innovativo. Trattandosi di un approccio solo recentemente teorizzato e applicato, la letteratura necessita ancora di contributi sia teorici che empirici. La Commissione Europea invece, nel 2010, definisce i Living Labs come Public-Private-People Partnerships (PPPP), con lo scopo di generare ecosistemi aperti e basati sugli utenti, semplificando l’adozione di tecnologie innovative e servizi che vengono creati insieme agli utenti finali (<http://www.programmainnetwork.it/>).

La maggior parte degli studi presenti in letteratura cercano di individuare metodologie capaci di valutare le performance del Living Lab, con particolare attenzione al livello di coinvolgimento dell’utente (Mulder et al., 2008). Veeckman et al. (2013) considerano l’ecosistema innovativo come il fattore principale per il successo dei Living Labs. Il lavoro di Schuurman (2015) introduce invece un importante fattore, in quanto dimostra come il successo e l’innovazione di un Living Lab sia influenzato dalle caratteristiche del coordinatore del living lab.

Dunque, è necessario identificare le caratteristiche di “buon coordinatore” che sia capace di allineare gli attori all’interno del Living Lab (Schuurman et al., 2018) e allo stesso tempo, far crescere le performance del LL. Alcuni studi dimostrano che il coordinatore debba essere una figura super partes: un ricercatore, un rappresentante di una città, un funzionario del governo che gestisca il LL con un approccio di tipo imprenditoriale e non “burocratico”. L’approccio burocratico è incompatibile con l’iniziativa imprenditoriale in quanto favorisce comportamenti poco propensi a sfidare modi ormai consolidati di gestire le attività e inibisce la probabilità di identificare nuove opportunità. Partendo dal lavoro seminale di Whyte (1956) emerge che le organizzazioni caratterizzate da eccessiva burocrazia, generano lavoratori e manager caratterizzati da una mancanza di spirito imprenditoriale, se non addirittura totale ostilità nei confronti dell’attività imprenditoriale. Merton (1940) ha suggerito che le burocrazie - con i loro ruoli rigidamente definiti, con le gerarchie consolidate e l’enfasi su regole e routine - “lead to an over-concern with strict adherence to regulations which induces timidity, conservatism, and technicism.”. Anche Schumpeter evidenzia che “rationalized and specialized office work will eventually blot out personality, the calculable result, the ‘vision’” (Schumpeter, 1950: pag 133) and that “the bureaucratic method of transacting business and the moral atmosphere it spreads ... exert a

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*depressing influence on the most active minds*” (Schumpeter, 1950: pag 207).

Dunque, l'ambizione del presente lavoro è verificare se i coordinatori dei LL sono maggiormente inclini ad un approccio burocratico, piuttosto che ad un approccio imprenditoriale. Nello specifico, il lavoro cerca di esplorare se i fattori personali degli imprenditori, che generano performance positive nelle imprese, possano essere ricercati anche nei coordinatori dei Living lab. Dunque, in un modello basato sulla quintupla elica (università, governo, imprese, società civile, ambiente) si cercherà di esplorare qual è il ruolo del coordinatore del LL, come tale ruolo incide sulle performance e quali sono i fattori personali che “guidano” le attività di coordinamento e gestione.

Dunque, dopo aver ampiamente analizzato la letteratura sui LL, è stata sviluppata una analisi dei fattori per il successo imprenditoriale, tra cui: i tratti personali, l'educational background, le esperienze di vita, il background familiare. Si è partiti da questi items per verificare, mediante una comparazione dei dati, quanto le due figure differissero tra di loro, attenendosi sia i fattori endogeni che esogeni. Gozukara e Colakoglu (2015) prendono in considerazione i fattori individuali e le caratteristiche degli imprenditori, analizzando il locus of control, ovvero il bisogno di raggiungere gli obiettivi prefissati e il livello di “self confidence”, ovvero all'autostima delle proprie capacità e quindi dell'abilità di riuscire a svolgere con successo le proprie mansioni. Goldberg (1972) identifica i 5 tratti della personalità che possono impattare sull'imprenditorialità. Innanzitutto, l'amicizia che riguarda la sfera interpersonale di un individuo comprensivo, gentile e cortese. Alti livelli di questo tratto corrispondono a una persona particolarmente cooperativa e propensa a instaurare relazioni interpersonali; bassi livelli possono corrispondere a una figura sospettosa, spietata ed egocentrica. Diverse ricerche confermano, invece come le persone più estroverse abbiano maggiori probabilità di identificare e sfruttare opportunità e essere imprenditori di successo. Infatti, capacità di team building e relazionali sono elementi chiave quando si gestisce un business. L'imprenditorialità non è in genere una storia di inventori solitari. Servono capitale fisico e capitale sociale, risorse tangibili e intangibili, tecnologia e relazioni. Il nevroticismo è un altro tratto di personalità che viene preso in considerazione: esso è caratterizzato dalla tendenza a reagire agli eventi con emozioni negative. Se è basso, rappresenta la stabilità emotiva e la diversa propensione ad adattarsi. Bassi livelli di nevrosi corrispondono, dunque, a sensazioni di rilassamento e “self-confidence”. La coscienziosità che identifica il livello di organizzazione, precisione, attenzione ed efficienza. Alcuni ricercatori hanno inteso questo tratto come misura dell'abilità a lavorare duramente (Barrick & Mount, 1991), altri invece come una dimensione composta da due aspetti, quali, la motivazione nel perseguire un obiettivo ben definito. McClelland (1961) suggerisce che la motivazione dell'imprenditore, corrisponde alla volontà di dimostrare che il raggiungimento degli obiettivi è una risultante dello sforzo profuso nell'attività, piuttosto che dell'intervento di altri fattori. Inoltre, l'affidabilità che riguarda la sfera dell'accuratezza ed efficienza dell'individuo nell'assolvere le proprie responsabilità. Nel caso degli imprenditori, le decisioni ricadono principalmente nelle loro mani, rendendo il ruolo dell'affidabilità predominante. Zhao e Seibert (2006) identifica l'apertura a nuove esperienze. Secondo gli autori tale tratto combina diversi aspetti della personalità come l'immaginazione, la creatività e l'indipendenza da giudizi altrui. Tale affermazione è supportata da un'analisi condotta su imprenditori e manager, la quale ha individuato nei primi livelli più alti di apertura. La propensione al rischio è un altro elemento importante da tenere in considerazione. Prince-Gibson e Schwartz (1998) i quali definiscono come la struttura dei valori, unitamente alle priorità, influenzano gli obiettivi fissati e le opportunità colte dall'imprenditore. La struttura dei valori dell'imprenditore può influenzare la creazione di un business che rispetti criteri etici, come ad esempio la sostenibilità. Con riferimento ai fattori che riguardano la tipologia di formazione e il background professionale, la letteratura suggerisce che l'istruzione consente di imparare da una parte a cogliere nuove opportunità di business (Lindquist et al., 2015), dall'altra a sviluppare le competenze necessarie allo svolgimento dell'attività imprenditoriale. Ne consegue che gli individui con una maggiore istruzione hanno più probabilità di intraprendere questo tipo di attività. L'istruzione in ambito imprenditoriale consente lo sviluppo di conoscenze, competenze, atteggiamenti e intenzioni necessarie a formare la figura di imprenditore (Farrukh et al., 2017). Anche le esperienze industriali pregresse hanno un impatto positivo e significativo con l'atteggiamento imprenditoriale. L'intenzione imprenditoriale viene stimolata anche dal contesto familiare, che favorisce il terreno fertile alla creazione di un nuovo business (Pant, 2015). Alcuni studi, infatti, hanno dimostrato come una famiglia di imprenditori, condizioni lo sviluppo di competenze nei bambini, stimolandone il duro lavoro e il bisogno di indipendenza (Chlosta et al., 2012). L'intenzione di diventare imprenditori è quindi condizionata dai modelli di business seguiti dai genitori: i figli crescono con la volontà di costruire un business, perché i propri genitori hanno suggerito l'imprenditorialità come futura occupazione (Pant, 2015); altri studi invece suggeriscono una relazione tra la carriera intrapresa da un membro della famiglia e l'intenzione di un altro componente a perseguire lo stesso percorso. Alcuni lavori, ad esempio, si sono concentrati anche sulla relazione tra l'intenzione imprenditoriale e le esperienze legate ai percorsi di fede e allo sport (Ratten e Miragaia, 2020). In letteratura si riscontra ad esempio, che gli atleti Low-Level, hanno un livello di energy e agreeableness più alto dei non-atleti, mentre gli atleti High-Level hanno un più alto livello di energy, agreeableness, emotional stability e conscientiousness rispetto ai non atleti e come a loro volta gli atleti High-Level abbiano un più alto livello di agreeableness, emotional stability e conscientiousness rispetto a chi è Low-level (Steca et al., 2018).

Dopo aver identificato i fattori più rilevanti in letteratura, l'obiettivo è stato quello di sviluppare un'analisi esplorativa, finalizzata a comprendere se la letteratura sui fattori imprenditoriali può essere applicata anche alla figura del coordinatore dei Living Lab. Si tratta appunto di esplorare se la propensione dei coordinatori è di tipo sinergico e proattivo oppure si basa su un approccio puramente formale e burocratico (Sørensen, 2007).

**Metodologia.** Il presente lavoro propone un'analisi qualitativa esplorativa basata sul caso studio dei Living Labs europei afferenti alla rete ENoLL (European Network of Living Labs). È la rete internazionale dei Living Lab creata nel 2006 dall'Unione Europea con l'obiettivo di stimolare e diffondere un nuovo approccio all'innovazione user-driven e aperta, realizzando una partnership collaborativa tra pubblico, privato, utenti e cittadini. Al momento oltre 150 sono i Living Lab registrati ed accreditati presso l'ENoLL, di cui la maggior parte europei, ma con presenze significative anche dal Canada, Sud America ed Asia.

L'obiettivo del lavoro è indagare e comprendere se i coordinatori dei living lab Europei manifestano un approccio imprenditoriale nella gestione del LL oppure assumono un approccio passivo di un progetto pubblico-privato. Adottando il paradigma costruttivista, l'obiettivo della ricerca qualitativa è stato quello di comprendere le esperienze individuali, relazionali e legate all'ecosistema, considerando la prospettiva delle persone che vivono e lavorano quotidianamente nel contesto dei LL. Coerentemente con i postulati del paradigma costruttivista, il lavoro si basa sul presupposto che le persone creano la realtà attraverso le loro esperienze soggettive (Merriam, 2002). Yin (2017) suggerisce che il metodo caso di studio è applicabile in varie situazioni: quando la ricerca prova ad affrontare una questione esplicativa ancora poco esplorata, indagando sui motivi per cui un fenomeno è accaduto o quando le teorie esistenti sono inadeguati a spiegare i fenomeni oggetto di studio. I casi di studio qualitativi sono ormai parte integrante della letteratura di management e vengono utilizzati dai ricercatori per capire meglio le azioni e i comportamenti di soggetti e organizzazioni (Klenke, 2016). I casi di studio qualitativi generano una conoscenza olistica e contestuale approfondita utilizzando molteplici fonti di dati. Nello specifico, il caso studio multiplo è utilizzato dai ricercatori per indagare le esperienze di individui che vivono all'interno di un determinato contesto al fine di comprendere un fenomeno sociale complesso (Yin, 2017).

Il metodo di raccolta dei dati primari si è basato su un'intervista semi-strutturata finalizzata ad ottenere un'approfondita comprensione del fenomeno.

A tal fine, è stata avviata una Call su LinkedIn alla quale hanno aderito 5 coordinatori, provenienti da diversi paesi Europei. L'intervista è stata somministrata nel mese di gennaio 2020. I partecipanti hanno raccontato la loro storia, riflettendo sui fattori che hanno influenzato il loro percorso professionale e sugli elementi che guidano le attività di coordinatore di un LL (Dean & Ford, 2017).

Le domande, prima di essere somministrate sono state validate (Patton, 2014) da due esperti in materia per determinare la credibilità, l'affidabilità e l'applicabilità delle domande. Entrambi gli esperti in materia hanno confermato che le domande del colloquio erano appropriate per soddisfare lo scopo di ricerca e allineato con un disegno di studio a più casi. Hanno confermato inoltre, che la durata del protocollo di intervista era adeguata a supportare uno studio a più casi e un'analisi dei dati (Stake, 2013). Questo test sul campo stabilisce l'affidabilità e la credibilità nei risultati qualitativi dello studio (Lincoln & Guba, 1990).

Durante il processo di somministrazione intervista è stato preso nota degli atteggiamenti, delle credenze e delle opinioni degli intervistati che potrebbero essere stati omessi nelle trascrizioni dell'intervista (Patton, 2014). L'utilizzo di memo, i metodi di categorizzazione come la codifica e l'analisi tematica e le strategie di collegamento come l'analisi narrativa costituiscono tre gruppi di strategie di analisi dei dati nella ricerca qualitativa. Sebbene non esista un modo migliore per condurre l'analisi dei dati, l'opzione di analisi che ho selezionato si adatta ai dati disponibili raccolti per rispondere alle due domande di ricerca dello studio.

Come ricercatori, eravamo a turno sia intervistatori che osservatori.

Tutte le interviste sono state trascritte ed è stato costruito un database contenente: il codice delle interviste, le parole più ricorrenti, i fattori di riferimento teorici (Yin, 2017), i temi ricorrenti emergenti dalle interviste. Il database creato contiene informazioni per 167 Living Labs.

La tecnica analitica di base che è stata scelta per analizzare i dati è stata la codifica descrittiva; tale metodo viene utilizzato per assegnare simbolicamente significati a pezzi di dati e quindi sviluppare un inventario di parole o frasi che possono essere utilizzate per l'indicizzazione e la categorizzazione dei dati (Saldana, 2016).

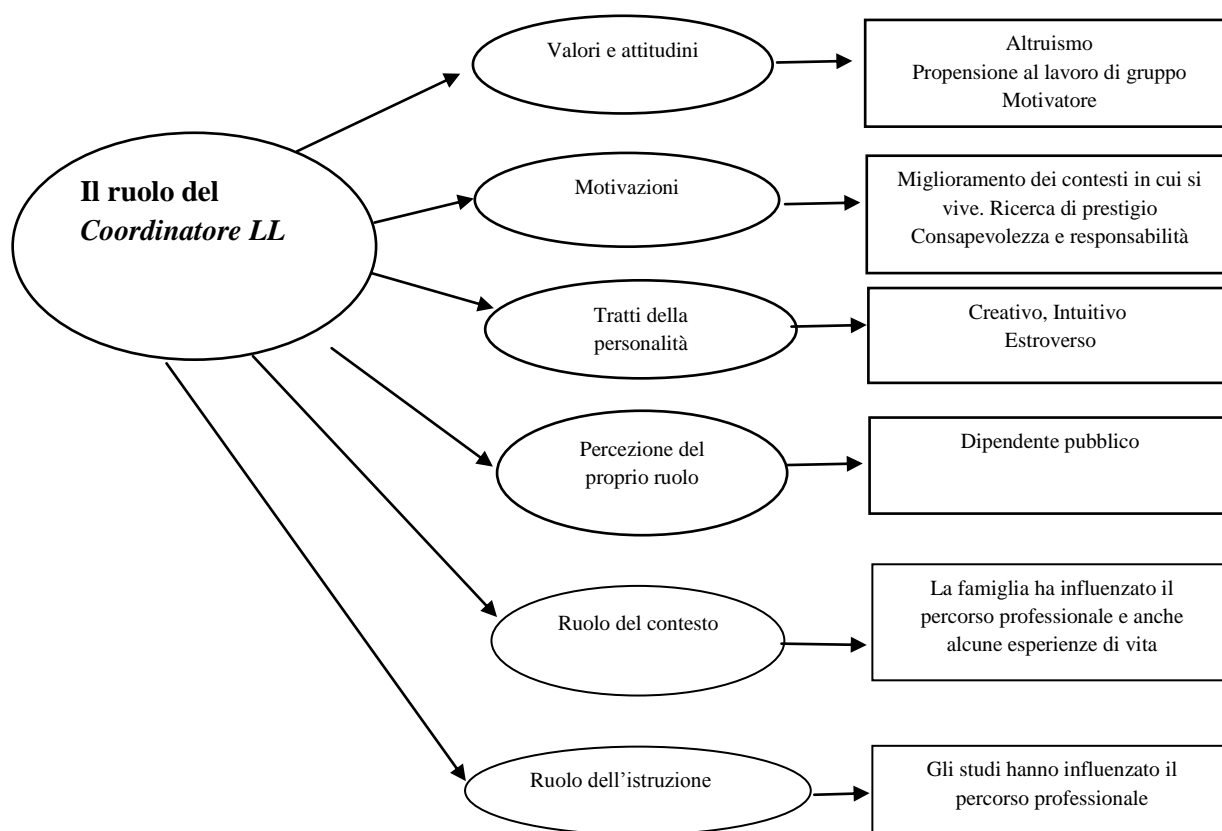
Per l'analisi del case study è stata scelta la strategia "ground up", raccomandata da Yin (2017), che consente ai concetti chiave di emergere attraverso un attento esame dei dati. Questo è stata considerata la strategia più appropriata per analizzare i dati di studio a più casi che ha permesso di allineare i concetti emersi nell'ambito delle due domande di ricerca dello studio (Yin, 2017).

I dati delle interviste sono stati analizzati identificando dei campi e indicizzandoli (Finfgeld-Connett, 2014). Dopo aver codificato i dati tramite l'intervista, si è proceduto a collegare tra loro i fattori emergenti, per valutare le connessioni tra i casi esaminati (Patton, 2014). È stata eseguita, inoltre la triangolazione di più dati: l'approfondimento, le interviste singole, le note e i dati secondari che ci hanno permesso di consolidare e migliorare la comprensione di risultati della ricerca e migliorare la qualità dello studio (Patton, 2014).

Tutte le risposte ottenute sono elaborate mediante la Thematic Cluster Analysis. L'uso delle tecniche permette, di lavorare su parole e concetti con una maggiore carica semantica e di ricostruire i percorsi attraverso i quali si costruisce il significato. Il dato di partenza è tipicamente un testo di un'intervista dal quale in una prima fase si estraggono i termini più significativi ai fini della ricerca. A tale scopo è stata effettuata una ricerca volta a comprendere la percezione degli intervistati rispetto al loro ruolo di Coordinatore. Sono state analizzate tutte le risposte date dagli intervistati e sono state prese in considerazione tutte le parole chiave per riuscire a sintetizzare il ruolo del Coordinatore a poche parole dal grande significato. Per selezionare le parole che racchiudano il pensiero dei coordinatori, rispetto al loro approccio gestionale.

Tutte le risposte ottenute dalle interviste sono state analizzate attraverso la metodologia della **clasterizzazione**; in tal modo, si è cercato di identificare le parole che meglio esprimessero il pensiero dei coordinatori rispetto al loro ruolo e al loro approccio gestionale.

Fig. 1: Thematic Cluster Analysis : Il ruolo del coordinatore del LL



Fonte: ns Elaborazione

Grazie all'analisi precedente e coerentemente con quanto emerso dall'analisi della letteratura, sono stati identificati 6 ambiti di indagine che sono stati oggetti di un questionario semi-strutturato e per ciascun ambito sono state formulate delle specifiche domande.

Nello specifico, nella prima parte si indaga sui fattori caratterizzanti il living lab attenendoci alle principali performance raggiunte (numero di brevetti, numero di prototipi realizzati, numero di utenti, ecc.).

Nella seconda parte si indaga valori morali e sociali e sulle attitudini dei coordinatori, nella terza parte si esplorano le motivazioni del coordinatore e la propensione all'innovazione. Si passa poi a valutare i tratti della personalità. La sessione successiva è finalizzata ad analizzare il contesto familiare (family background) e gli stimoli che il coordinatore ha ricevuto negli anni dall'ambiente esterno; l'ultima parte si concentra sulla formazione dei coordinatori.

I questionari sono stati inviati a 167 coordinatori, utilizzando il loro indirizzo e-mail personale, a partire da febbraio e marzo 2020. Ad oggi sono pervenute 22 risposte.

**Risultati.** L'analisi delle risposte ai questionari restituiti dai coordinatori rilevano alcuni interessanti risultati. Dal punto di vista anagrafico, i rispondenti hanno un'età compresa tra i 31 e i 40 anni; solo il 9% supera i 50 anni di età. I due generi, maschile e femminile sono equamente rappresentati. I LL rappresentati dai rispondenti, sono localizzati nei seguenti paesi: Belgio, Bulgaria, Danimarca, Francia, Grecia, Italia, Lussemburgo, Olanda, Polonia, Senegal, Spagna, Svezia, Svizzera, Taiwan e UK. Le tipologie di LL sono le seguenti:

- **User-centered:** dove gli utenti sono per lo più soggetti passivi di studio (il 9.1%).
- **Design-driven:** dove gli utenti sono guidati da designer che cercano di trovare nuove soluzioni (18.2%).
- **Participatory:** dove gli utenti sono considerati alla pari con il resto dei partner di un processo co-creativo (il 59.1%).
- **User-driven:** dove l'utente è colui che guida il processo di innovazione. Tale è il caso di open-source, utenti e lead Living Lab (il 13.6%).

La maggior parte dei LL operano nel settore della Social Innovation (13 di essi); altri settori nei quali operano sono: Energy, Social Inclusion, Social Innovation, Government, Culture & Creativity, Education, Health & Wellbeing, Smart Cities & Regions.

Con riferimento alle performance, la letteratura ne suggerisce diverse, tra cui: *proof of concept*, prototipi, brevetti e prodotti oltre che ricavi e profitti. Dai questionari emerge che dei Living Lab intervistati, solo il 22.7% riesce a generare un profitto dalla propria attività. Nello specifico, il 40% dei coordinatori ritiene che i ricavi siano generati dalla fornitura di servizi di convalida e test a imprese esterne al LL, che sono interessate però a trasformare le tecnologie in prodotti; il 13.3% dei coordinatori ritiene che i ricavi siano generati dalla commercializzazione di un prodotto o di un servizio già testato all'interno del Living Lab; il 13.3% dei coordinatori sostiene che i ricavi derivino dalla consegna di prodotti maturi agli investitori; il 33.3% dei coordinatori non si rivede nelle precedenti opzioni.

I living labs che hanno dichiarato di generare profitti sono prevalentemente quelli che adottano una tipologia *design-driven* e *participatory*.

Con riferimento all'analisi dei fattori endogeni, ai valori e delle attitudini dei coordinatori, dall'analisi delle risposte ricevute dal questionario, emerge come la maggior parte dei coordinatori esprime valori di altruismo (per i coordinatori aiutare gli altri è importante, su scala da 1 a 5, in media 4.27 con la varianza pari a 0.39) e propensione al lavoro di team (più dell'82%). Ciò è coerente con il modello dei Living Lab, che si fonda appunto su un processo di co-creazione all'interno di gruppi composti da soggetti eterogenei tra loro, ma che devono puntare al medesimo obiettivo.

Inoltre, i coordinatori affermano di essere persone creative (100% dei coordinatori), intuitive (100% dei coordinatori), capaci di mantenere le relazioni con gli altri (100% dei coordinatori), in grado di creare reti (media uguale a 4.09, su scala da 1 a 5, e varianza pari a 0.66), e allo stesso tempo ispirare e motivare gli altri (media uguale a 4.32, su scala da 1 a 5, e varianza pari a 0.61).

Tutti i coordinatori affermano che il loro obiettivo principale consiste nel creare ambienti favorevoli allo sviluppo e all'innovazione, promuovendo soluzioni etiche e migliorandone la qualità della vita nel medio - lungo periodo. Essi non sono mossi da un'aspirazione di *building wealth* ma auspicano un miglioramento dei contesti in cui si vive. Le motivazioni alla base del ruolo di coordinatore risiedono nei riconoscimenti personali e nei riconoscimenti pubblici da parte dell'ecosistema innovativo (prestigio).

Alla luce di tali risultati, i coordinatori presentano attitudini e valori simili agli imprenditori; tuttavia, solo una minima parte considera se stesso un imprenditore (il 36.4%), mentre il 31.8% considera sé stesso un dipendente pubblico, il resto non ha un'idea ben chiara del proprio ruolo.

Con riferimento al contesto familiare, la maggior parte dei coordinatori non ha alle spalle una famiglia di imprenditori (solo 3 su 22); tuttavia, il 62.2% dei coordinatori afferma di poter contare sul supporto della famiglia in caso di avvio di un nuovo Living Lab.

Facendo riferimento all'istruzione:

- la maggior parte ha conseguito un master's (63.6%);
  - il 27.3% ha conseguito un PhD;
  - la restante parte (il 9.1%) è in possesso di una laurea di primo livello (*bachelor's*).
- La laurea di primo livello risulta essere il livello minimo di istruzione riscontrato, con il 72.7% dei coordinatori totali che dichiara di aver svolto un periodo di studio all'estero. Dalle risposte emerge che solo la metà degli intervistati ha svolto studi universitari utili a ricoprire il ruolo di coordinatore. I coordinatori hanno evidenziato che il 40.9% delle università frequentate dai coordinatori, non pone in essere alcuna attività formativa volta a preparare i soggetti ai fini manageriali.

Circa il 60% dei coordinatori ha lavorato in contesti connessi all'attuale lavoro (retribuito il 45.5% e non retribuito 13.6%). La maggior parte dei coordinatori ha un'esperienza consolidata precedente di tipo manageriale (59.1%); il 22.7% è autonomo proprietario di brevetti, il 18.2% è co-proprietario di brevetti con aziende.

Anche lo sport educa e incide significativamente sulla formazione e sui tratti della personalità. Con riferimento a tale fattore, l'86.4% dei coordinatori che ha partecipato al questionario pratica almeno uno sport, ma solo il 31.8% di questi pratica sport a livello agonistico. È stato chiesto anche di distinguere tra sport individuali e sport di squadra, poiché coloro che praticano sport individuali sono generalmente più "energetic and open" rispetto a chi pratica sport di squadra (individuale: 59.09%; team: 22.73%; entrambi: 9.09%; nessuno: 9.09%).

I risultati del questionario esplorativo, hanno evidenziato che, nella gestione dei LL, i coordinatori adottano anche se inconsapevolmente, un approccio maggiormente affine a quello imprenditoriale, piuttosto che a quello "burocratico". Ciò dà spazio al talento, alla creatività e alla ricerca di nuove opportunità di crescita.

**Limiti della ricerca.** Questo studio rappresenta il primo step di un progetto più ampio e presenta, pertanto, diverse limitazioni.

L'utilizzo del caso studio dei Living Lab Europei ci ha dato la possibilità di realizzare una prima analisi esplorativa finalizzata ad acquisire una profonda conoscenza del fenomeno, attraverso i dati qualitativi di coordinatori di LL afferenti alla rete ENOLL (rete autorevole e dotata di elevati standard di inclusione).

Diversi ostacoli, però, sono stati riscontrati durante il processo di raccolta dei dati, prevalentemente a causa dell'inizio della FASEI del Covid-19. Tuttavia, il progetto è in itinere e si stanno ricontattando tutti coloro i quali non hanno ancora risposto.

Il prossimo obiettivo del lavoro, dunque è completare la raccolta dei dati e procedere con un'analisi quantitativa.

**Implicazioni pratiche.** I risultati dell'analisi suggeriscono diverse implicazioni per tutti gli attori coinvolti nei LL, per le attività e per la definizione delle politiche pubbliche.

Se in termini generali, le informazioni sui LL risultano insufficienti, ai fini politici la quantità e la qualità degli studi è ancora più bassa. Pertanto, diversi coordinatori regionali, considerando le carenze conoscitive, hanno sposato integralmente il progetto, incoraggiandoci nel proseguo di questa analisi.

In riferimento ai coordinatori, considerando anche i principi che ispireranno la nuova programmazione Europea 2021-2027 e tenendo conto del ruolo che la quintupla elica avrà nei prossimi anni, lo studio, risulta utile ai policy makers sia nella fase di engagement del coordinatore, sia nella definizione del modello organizzativo del LL che deve essere poco “burocratizzato”. Anche le imprese e le università che si troveranno a intraprendere percorsi di co-sviluppo potranno avere utili linee di indirizzo.

**Originalità del lavoro.** Il presente lavoro ha avuto la finalità di sviluppare un’analisi esplorativa in grado di mettere in evidenza le caratteristiche dei coordinatori dei LL. Considerando che la letteratura è molto recente, i lavori empirici a supporto sono pochi. Il presente lavoro ha contribuito a verificare se l’approccio imprenditoriale (appartenente ad una letteratura ormai consolidata), possa essere anche riscontrato nei coordinatori dei living lab.

**Parole chiave:** Living Lab; coordinatori; approccio burocratico, approccio imprenditoriale

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# Biology and entrepreneurship: how they can meet?

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**Objectives.** *Macro (entrepreneurial environment and socio-economic macrosystem) and micro (personal turbulence) environments, provide several stimuli (Tang, 2008) to entrepreneurs. They are always under pressure (Imran et al., 2016) and often find themselves reacting to external stimuli in a complex macrosystem. In a complex macrosystem, especially when catastrophic event happen, entrepreneurship is required to be involved in a process of opportunity identification, evaluation, and exploitation (Shane and Venkataraman, 2000), in order to keep the competitive advantage.*

*Entrepreneurial opportunities bring into existence new goods, services, raw materials, and organizing methods that allow outputs to be sold at more than their cost of production (Casson, 1982). These opportunities are concrete realities in the environment waiting to be noticed, discovered, or observed by entrepreneurs (Kirzner, 1979; Shane, 2000). They are objective phenomena that are always not known to all parties (Shane and Venkataraman, 2000). Therefore, by definition, opportunity is unknown until discovered; and one cannot search for something that one does not know exists (Kaish and Gilad, 1991). Entrepreneurs do not discover entrepreneurial opportunities through search, but through recognition of the value of new information that they happen to receive through other means (Kirzner, 1979).*

*The focus of the current paper is to understand why some people identify entrepreneurial opportunities and others do not, especially in a turbulent context, where unexpected exogenous events happen. Studies have shown that one or more factors influence an individual's ability to recognize opportunities (Cliff et al. 2006; Cooper and Park 2008). Thus, studying these factors explicitly provides a deeper understanding of the reasons underlying the entrepreneurial recognition process and more thoroughly explains why some individuals can recognize opportunities and others cannot (Shane 2000; Baron 2006). Studies have shown that one or more factors influence an individual's ability to recognize opportunities (Cliff et al. 2006; Cooper and Park 2008). Thus, studying these factors explicitly provides a deeper understanding of the reasons underlying the entrepreneurial recognition process and more thoroughly explains why some individuals can recognize opportunities and others cannot (Shane 2000; Baron 2006) especially in a turbulent context. A recent turbulent environment has been generated by the COVID-19 health emergency. Indeed, the lockdown has created a unique context for studying the reaction of entrepreneurs.*

*In the literature, six factors influence opportunity recognition (George et al., 2016): prior knowledge, social capital, cognition/personality traits, environmental conditions, alertness and systematic search. In this paper we focus on alertness because it best represents the concept of "readiness" opportunity recognition. The present work focuses on Alertness. It is defined as "the ability to notice, without search, opportunities that have hitherto been overlooked" (Kirzner, 1979, p.48), endeavor to discover and exploit opportunities. Kirzner (1997) distinguishes discovery from successful search of opportunities and suggests that alert individuals discover opportunities by surprise. However, Kirzner's alertness by no means implies pure accident either. Rather, the notion of opportunity discovery is midway between that of deliberate search and that of sheer windfall gain generated by pure luck (Kirzner, 1997). From this perspective, entrepreneurs do not discover entrepreneurial opportunities through search, but through recognition of the value of new information that they happen to receive through other means. A concept that well expresses the meaning of alertness is "Flashes of superior insight" (Alvarez and Busenitz, 2001). "Flashes of superior insight" refer to entrepreneurial alertness, which assists an individual in opportunity recognition when it presents itself or even if it does not exist (Alvarez and Busenitz, 2001).*

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Alertness has been studied in several ways. Miao and Liu (2010) study the individual psychological factors (entrepreneurial alertness and prior knowledge) which influence alertness. Garcia-Cabrera and Garcia-Soto (2009) study the individual's cognitive capabilities which influence the Alertness. Sambasivan et al. (2009) study alertness as mediator of the relationship between personal qualities and venture performance. Entrepreneurial alertness is still loosely defined both conceptually and empirically in the extant literature, even if different studies put effort in analyzing the concept. While psychological variables are frequently investigated, physiological variables have played a peripheral role in the study of management (Zhang and Zyphur, 2015). No one in literature considers the biological approach. We define the biological perspective on management as the set of studies that examine the genetic influences (Arvey et al, 2016; Lindquist et al., 2015;2016). These studies form the basis for a new school of thought that incorporates human biology, dosing blood biochemical molecules, into explanations of management behavior (Shane, 2009; Shane et al., 2010, Shane and Nicolau, 2015, Nofal et al., 2018).

As mentioned above, entrepreneurs are always under pressure and they must continuously react, to recognize and exploit opportunities. This mood has a connection with a well-known concept in biology "The fight-or-flight response". The fight-or-flight response, also known as the acute stress response, refers to a physiological reaction that occurs in the presence of something that is alarming, either mentally or physically (Goldstein, 2008;2010). The fight-or-flight response can be activated due to both real and imaginary stimuli (Goldstein, 2010). The fight-or-flight response plays a critical role in how people deal with stress in the environment. The flight or fight response can be activated instantly when needed and the reaction is very rapid and happens unconsciously. The sympathetic nervous system triggers the fight-or-flight response before people consciously make any decision on how to act. When the perceived stimulus passes, the parasympathetic nervous systems begins to return the body back to balance. Then, an opportunity has been felt, identified and recognized; then, a new equilibrium is reached. From a physiological point of view, the hormones testosterone, and cortisol affect how organisms react to stress (Klein, 2013). Adrenaline, cortisol, norepinephrine are the three major stress hormones, explained. Both testosterone and cortisol bind to steroid-responsive centres in the amygdala (Wood, 1996), a brain structure centrally involved in emotional processing (LeDoux, 2000), where approaching (e.g. fight) (testosterone) or avoidant (e.g. flight) (cortisol) behavior is facilitated (Schulkin, 2003). It has been widely demonstrated that the brain area known as amygdala that belongs to the sympathetic nervous system (SNS), is susceptible to testosterone (Sar et al., 1990, Johnson et al., 2005) as well as to cortisol. It is already well-known that the fight-or-flight reactions are induced by the SNS (Johnson et al., 1992). Approaching (fight) or avoidant (flight) behaviors are facilitated in the amygdala by testosterone and cortisol, respectively (Sherman et al., 2012; Sellers et al., 2007). Taken together, this suggests that, the testosterone: cortisol ratio involved in the SNS-amygdala relationship, regulates the response to (micro and macro) environmental stimuli (Hermans et al, 2008) . In other words, the testosterone:cortisol ratio can be used as a biomarker for human fight-or-flight reactions (Montoya, Estrella R et al., 2012). In addition, the activation of the amygdala by angry faces vs. happy faces is positively correlated with the resting testosterone:cortisol ratio (Hermans et al, 2008). The dual-hormone hypothesis posits that testosterone's role in status-relevant behavior should depend on concentrations of cortisol, a hormone released in response to physical and psychological stress. Thus, high testosterone/low cortisol ratios seem to predict approach motivation or reward sensitivity. In these motivational stances, individuals are more likely to confront threat (Terburg et al., 2009).

Thus, in this explorative study, we attempt to propose a physiological measure of entrepreneurial alertness. We use Testosterone:cortisol ratio as a biomarker for human fight-or-flight reactions (Montoya, et al., 2012), to measure the "alertness " of entrepreneurs in the process of opportunity recognition and exploitation. Our assumption is that the Testosterone:cortisol ratio is not considered as a proxy of life stress-full, instead entrepreneurs live they life as a challenge.

There are studies on testosterone:cortisol ratio in the management literature. Some authors have investigated the relationship between testosterone:cortisol ratio and sleep (Van Cauter et al., 2008). Others invested the testosterone:cortisol ratio with taking the risk (Barel et al., 2017). Other studies have highlighted (with a non-invasive prenatal exposure of testosterone with a retrospective marker) the relationship with testosterone:cortisol ratio and the taking of domain-specific risks related to financial investments and professional career (Bonte et al., 2016). There are also studies on testosterone:cortisol ratio in the Entrepreneurial literature. Several studies have found that the interaction of testosterone and cortisol in predicting status-relevant behaviors, such as risk-taking and desire to compete after a loss, is not moderated by gender (Mehta and Josephs, 2010; Mehta et al., 2015; Mehta et al., in press).

One study of women found that testosterone and cortisol interacted in predicting reactive aggression, with greater testosterone associated with more reactive aggression but only for women with high cortisol (Denson et al., 2013). Nevertheless, women's testosterone levels tend to be lower and less variable (across women) than men's levels (Dabbs, 1991; Harris, et al., 1996). Thus, for women there is less variation in testosterone to potentially relate to behavior, a problem that may be compounded if women show similarly limited variation in the outcomes typically measured in dual hormone studies (e.g., antisocial behaviors, dominance). Most of the physiological analyses of alertness use saliva (Sherman et al., 2015).

There are studies investigating the testosterone:cortisol ratio with the entrepreneurial opportunity (White et al., 2006) and entrepreneurial recognition (Nicolau and Shane 2009; 2014), however, we identified some gaps: (1) none research in management has examined the association between alertness and testosterone:cortisol ratio as well as the neuroendocrine axis strictly associated with. (2) no studies performed physiological analyses of alertness with blood samples (most of them use saliva); (3) no study has associated testosterone: cortisol relationship with entrepreneurial alertness as a gender issue.

In this study, we aim to investigate the role of this ratio as a factor that could influence the individual in entrepreneurial alertness to recognize opportunities to create new firms and/or to generate firms' growth (Fini et al., 2009).

Our research question is the following: "How entrepreneurial alertness is influenced by biological factors?"

**Methodology.** The methodology of this study is based on two steps. First, the authors administered an explorative questionnaire to verify the entrepreneurial alertness (Tang et al., 2012) and entrepreneurial intent (in January 2020). The questionnaire was divided into three parts: the first part collects general information (age, gender, profession), the second part aims to collect information on the respondent's business intent and the third part measures entrepreneurial alertness. The questionnaire is still active and to date has a total of 180 responses. The questionnaire was administered online on the main professional networks (LinkedIn and Facebook). In the last part of the questionnaire we asked for the availability to participate an exploratory study based on a clinical routine hormones blood analysis.

Among 180 people, 8 people gave their willingness to supply their blood sample. According to Cooke et al., (2020) for this first study, we selected only women (they were 4). Since this study is going to consider the testosterone: cortisol ratio, the exclusion of men was essential to ensure reliability of the result. Indeed, this can be influenced in men by sexual behavior, therefore in this preliminary study, we did not consider them. We choose businesswomen instead of men to have a category of subjects in which testosterone levels are tightly controlled by estrogens (of course this cannot be possible for men). The main characteristics of the 4 female entrepreneurs involved in the explorative analysis, are described below (although in our case series, one case is in menopausal she is under estrogens therapy, the influence could be related to the management of their business):

Case 1: she is an entrepreneur who lives between Italy, Switzerland and the United States. He is 53 years old. She is divorced but is currently engaged and has no children. She has managerial skills. She operates in the financial sector.

Case 2: she is an entrepreneur who lives in Italy. She is 42 years old. She is not busy and has no children. In addition, she has managerial skills. She operates in the wellness sector.

Case 3: she is an entrepreneur who lives in Italy. She is 36 years old. She is not busy and has no children. She has no managerial skills. She operates in the wellbeing sector.

Case 4: she is an academic entrepreneur who lives in Italy and a biomedical scientist who travels all over the world. She is 46 years old, married and has two children. She has no managerial skills. She operates in the health sector and in the medical devices sector.

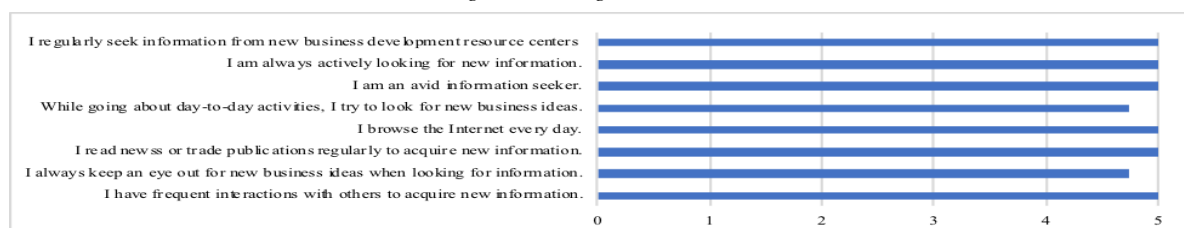
The second step is an exploratory qualitative study that aims to provide a first evidence on the phenomenon from a physiological point of view. Exploratory studies are known in management. Indeed, there are studies on the relevance of leadership in organizational life that use for example, the functional magnetic resonance imaging (Boyatzis et al., 2012). In this step, all participants were volunteers and underwent clinical routine hormones blood analysis (at the end of February 2020, just some days before the COVID-19 lockdown). The trials were deemed not to constitute clinical trials and were not registered as such. All participants were tested also for metabolic disease (such as diabetes), renal diseases, and liver dysfunction. No one of the participants was on drug therapy. About the clinical biochemistry parameters, blood samples were collected for clinical biochemistry markers were determined as following: glucose, total cholesterol, HDL, LDL, TG,  $\gamma$ GT, as well as AST, ALT and creatinine with ADVIA 1800. Neuroendocrine axis hormones profile, TSH, T3, ACTH, Cortisol, Testosterone (free and conjugated) by ELISA with CENTAUR XP. Efficiency of glomerular filtration rate (eGFR) was calculated by the abbreviated MDRD equation as following:  $186 \times (\text{Creatinine}/88,4)^{-1,154} \times (\text{Age})^{-0,203} \times (0,742 \text{ for female})$ . Testosterone: cortisol ratio was calculated after conversion of testosterone from pictograms/deciliter into micrograms/deciliter.

**Findings.** This exploratory study provides some preliminary results. First, we get the results from the explorative questionnaires. Information was collected on the lifestyle and nutrition of the volunteers for analysis. The entrepreneur women interviewed do not conduct special diets. However, they said they preferred healthy food and had moderate sports. In all cases, women entrepreneurs consider themselves as innovative people, even if with different risk attitudes.

The first evidences of the questionnaires show an alignment towards the three dimensions of the entrepreneurial alertness, suggested by the literature.

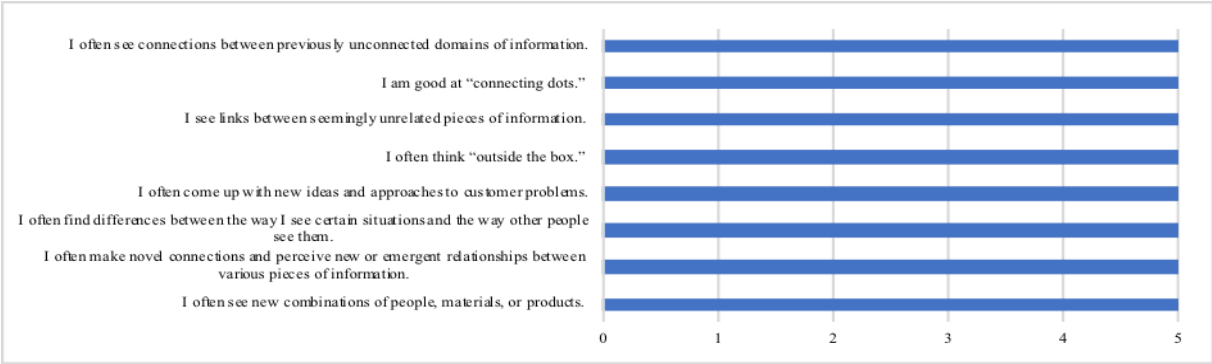
The data show the average values of the respondents. On average, respondents frequently search for information from different sources (Figure 1) and easily manage to associate this information with others (Figure 2). Finally, they perceive that they can sense potential opportunities and make decisions accordingly (Figure 3).

Fig. 1: Scanning and search



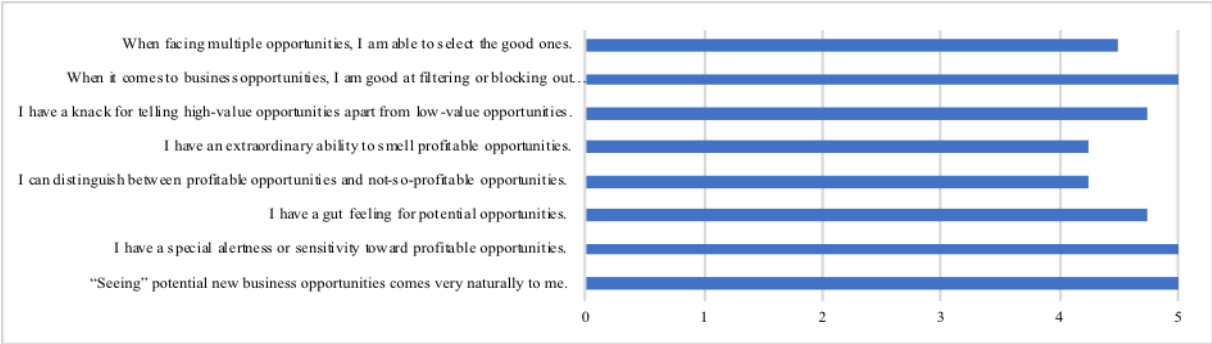
Source: authors elaboration

Fig. 2: Association and connection



Source: authors elaboration

Fig. 3: Evaluation and judgment

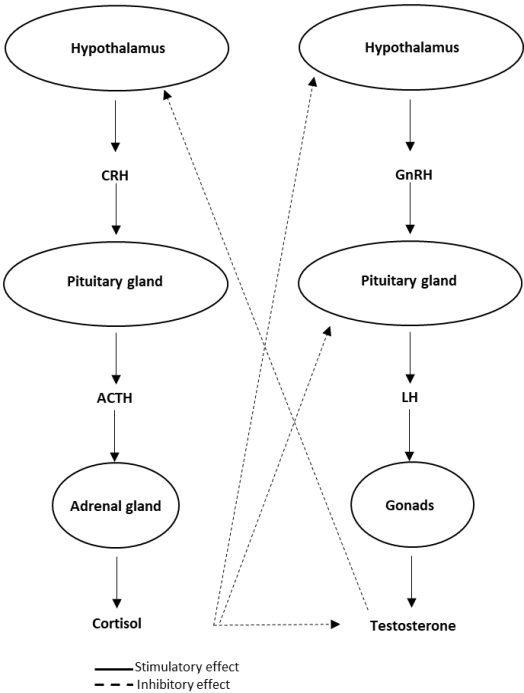


Source: authors elaboration

We get some results also from the exploratory study on blood samples, to analyses "alertness" from a physiological point of view.

In this part, the case series, four women (described above) were enrolled in order to evaluate the neuroendocrine axis linked to the testosterone:cortisol ratio (figure 4). This latter two hormone can be influenced in men by sexual behavior (therefore in this preliminary study, we did not consider them).

Fig. 4: Neuroendocrine axis hormones involved in the synthesis of cortisol and testosterone.



Source: authors elaboration

The subjects were tested for glucose, total cholesterol, HDL, LDL, TG (table 1), to prove no presence of metabolic disease (such as diabetes), as well as AST, ALT,  $\gamma$ GT, creatinine and, eGFR to prove no presence of liver dysfunction, and renal diseases, respectively (table 2). The hypothalamus and pituitary hormones involved in the neuroendocrine axis control was also assessed (table 3). The testosterone and cortisol levels are shown in figure 5A and B. The testosterone:cortisol ratio is shown in figure C.

Tab 1: Circulating levels of metabolic substrates

	Glucose (mg/dL)	Total cholesterol (mg/dL)	HDL (mg/dL)	LDL (mg/dL)	TG (mg/dL)
Case 1	94	237	79	138	100
Case 2	86	257	78	-	67
Case 3	68	255	87	138	-
Case 4	85	212	118	89	62

Source: authors elaboration

Tab 2: Circulating levels of liver enzymes and renal biomarkers.

	AST (IU/L)	ALT (IU/L)	$\gamma$ GT (IU/L)	Creatinine (mg/dL)	eGFR (mL/min/1,73m <sup>2</sup> )
Case 1	18	28	11	0,77	72
Case 2	20	18	16	0,80	75
Case 3	14	19	13	0,93	71
Case 4	13	15	11	0,71	83

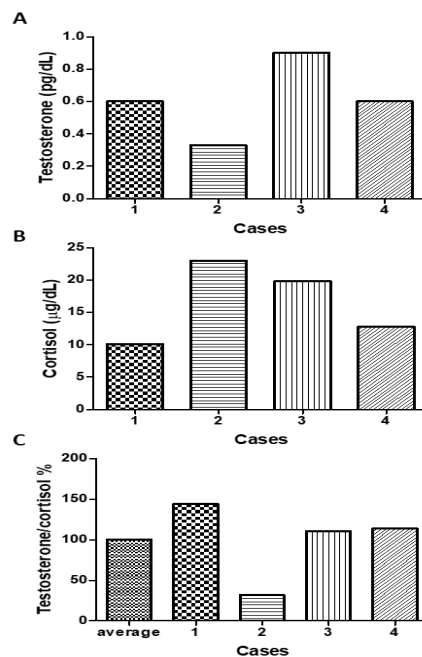
Source: authors elaboration

Tab 3: Circulating levels of neuroendocrine axis hormone.

	Prolactin (ng/mL)	ACTH (pg/dL)	TSH ( $\mu$ UI/mL)	T3 (pg/mL)	T4 (mg/dL)
Case 1	8,55	8,37	2	3,53	-
Case 2	15,90	21,7	1,22	5	17,1
Case 3	12,33	14,8	0,9	2,01	-
Case 4	13,26	16,9	1,44	3,6	14,2

Source: authors elaboration

Fig 5: A) testosterone; B) cortisol levels in four entrepreneurs. C) average and single data of the testosterone and cortisol ratio



Source: authors elaboration

The clinical biochemical parameters showed a healthy state of the subjects. The neuroendocrine axis was in the physiological range. Therefore, the testosterone: cortisol ratio was calculated, probably significantly associated with the type of the firm in case 2. In fact, in this case, the entrepreneur manages a family business.

**Research limits.** *The present research has two main limitations. First, research is still work in progress. This paper is a first exploratory analysis of the theoretical phenomenon. Considering the exploratory nature of the paper we can only interpret the possible meanings of these results in the light of previous research. Future studies will be needed to test these interpretations on a large sample of entrepreneurs.*

*Second, the research considers only testosterone: cortisol ratio as a biomarker for entrepreneurial alertness, even if, in the case series presented here we are strengthening a group of pituitary and thyroid hormones that act on the nervous system.*

*Future research will repeat all the analysis (questionnaire and clinical routine hormones blood analysis) in the period post-lockdown, and we will compare the results; moreover, we will consider also other drivers to measure the personal environment (ex: psychological items, life experiences, etc). Moreover, next studies will test a large sample of entrepreneurs, by comparing also academic and non-academic entrepreneurs. Then, we will test with mydriasis visualizer.*

**Practical implications.** *This study contributes to entrepreneurial supervision literature in three ways. First, this research is the first study that brings together literature on hormones and that on entrepreneurial opportunity recognition. In fact, the study provides empirical evidence of the importance of the relationship between testosterone: cortisol relationship and entrepreneurial alertness. In particular, the relationship between testosterone: cortisol ratio and the entrepreneurial alertness is positive in three out of four cases. Only in one case (case 2), a different trend is registered, probably because of the company's genesis. In fact, in this case, the entrepreneur inherited the business from her family.*

*Second, the document provides empirical evidence with a procedure that is not yet used. In fact, most of the existing studies in literature analyze the relationship between hormones and entrepreneurship from a psychological and cognitive point of view. Moreover, most of the studies uses a saliva collection method. However, although saliva collection is a good indicator of hormone measurement, it is not as effective and accurate as analyzing the blood sample.*

*Third, it is the first study entirely focused on the hormone and female entrepreneurship relationship. Most of the studies seem to analyze the differences between female entrepreneurs and male entrepreneurs. However, this is one of the few studies that considers only women. The results related to the physiological parameters provide important hints both to the personal lifestyle of entrepreneurs, and to the possible best team building, in order to have a sustainable competitive advantage and to address key societal challenges.*

**Originality of the study.** *As mentioned above, there are studies on testosterone: cortisol relationship in the entrepreneurial literature. Several studies have found that the interaction of testosterone and cortisol in predicting state-relevant behaviors, such as risk-taking and the desire to compete after a loss, is not moderated by gender (Mehta and Josephs, 2010; Mehta et al., 2015). A study conducted on women found that testosterone:cortisol ratio interacted in predicting reactive aggression, with higher testosterone associated with more reactive aggression but only for women with high cortisol (Denson et al., 2013) . However, most of the analysis use saliva (Sherman et al., 2015) and no studies have associated testosterone:cortisol ratio with entrepreneurial alertness as a gender issue.*

*This study is one of the first exploratory studies that provides blood sample analysis and binds the relationship between testosterone: cortisol ratio in the female entrepreneurial alertness.*

**Key words:** *entrepreneurship; testosterone:cortisol ratio; biology; blood analysis*

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# Gli assistenti vocali agli occhi dei millennials: un'indagine esplorativa

MICHELA PATRIZI<sup>\*</sup> MARIA VERNUCCIO<sup>\*</sup> ALBERTO PASTORE<sup>▲</sup>

**Obiettivi.** Gli assistenti vocali (AV) sono tecnologie dell'intelligenza artificiale (IA) in grado di simulare le capacità umane di comprensione e interpretazione del linguaggio attraverso l'interazione vocale (Fivesight Research, 2017). I dati di utilizzo degli AV iniziano a divenire particolarmente rilevanti, con 90 milioni di utenti, solo negli USA, che interrogano il proprio AV su smartphone almeno una volta al mese e 56 milioni che utilizzano uno smart speaker (Voicebot, 2018). Secondo una recente ricerca condotta da Juniper Research (2019), anche a livello mondiale, lo smartphone si conferma come il device più utilizzato dagli utenti per interagire con il proprio AV. Gli utenti che utilizzano gli AV su smartphone sono soprattutto i millennials (Voicebot, 2019a) e le interazioni sono caratterizzate principalmente da richieste di natura informativa (es., domande generiche, informazioni sul traffico) e ludica (es., riproduzione di brani musicali, giochi). Attualmente, il mercato degli AV risulta essere dominato da big player: Google - Google Assistant, Amazon - Alexa, Apple - Siri, Microsoft - Cortana (Voicebot, 2018). Agli AV dei provider tecnologici, si iniziano ad affiancare i name-brand voice assistant (Vernuccio et al., 2019), AV sviluppati in-house, che parlano con una specifica voce di marca e che sono attivati dall'utente pronunciando il nome del brand (es., "Hey Mercedes!").

Nella letteratura accademica di marketing, si sta assistendo alla nascita di un filone di studi volto ad indagare le percezioni dei consumatori circa le interazioni con gli AV. Nello specifico, i primi studi hanno concentrato l'attenzione sulla percezione circa l'utilità dell'AV in interazioni di natura pubblicitaria (Smith, 2018), l'utilità e la facilità di utilizzo dell'AV in interazioni di natura informativa e transazionale (Tuzovic and Paluch, 2018; Moriuchi, 2019; Wagner et al., 2019) e la sicurezza dei dati durante interazioni di natura informativa, ludica e transazionale (Lau et al., 2018; Cho, 2019; McLean and Osei-Frimpong, 2019). Il presente lavoro si inserisce in questo filone di studi, rispondendo alla call di Belk and Kniazeva (2018), i quali sollecitano ricerche volte ad indagare la percezione di antropomorfismo dell'AV. A questo proposito, alcuni ricercatori hanno iniziato a studiare tale percezione facendo riferimento al concetto di "presenza sociale", legata alla percezione dell'AV alla stregua di un interlocutore umano (Cho, 2019; Cho et al., 2019; McLean and Osei-Frimpong, 2019). In questi studi, la percezione di presenza sociale risulta essere collegata alla percezione di benefici utilitaristici, edonistici (Cho, 2019; Cho et al., 2019; McLean and Osei-Frimpong, 2019) e simbolici (McLean and Osei-Frimpong, 2019). Altri studiosi, invece, hanno approfondito il concetto di voce umana, che si contrappone ad una voce percepita come più sintetica/robotica (Cherif and Lemoine, 2019).

Data la relativa carenza di contributi sul tema specifico, sembra interessante indagare congiuntamente le diverse dimensioni della percezione di antropomorfismo dell'AV e le diverse tipologie di benefici percepiti, adottando un approccio esplorativo. Inoltre, al meglio delle nostre conoscenze, nessuno studio si è interrogato sulla presenza di differenze percettive tra gruppi di utenti. Pertanto, il presente lavoro si pone un duplice obiettivo: 1) esplorare le dimensioni chiave della percezione di antropomorfismo dell'AV e dei benefici derivanti dall'interazione con lo stesso; 2) identificare cluster di utenti sulla base delle differenze percettive. Alla luce dei dati riportati all'inizio del paragrafo circa gli utenti e i device utilizzati, il presente lavoro si focalizza sugli utenti millennials che utilizzano l'AV attraverso lo smartphone. Per raggiungere tali obiettivi, i dati raccolti attraverso una survey sono stati analizzati applicando una exploratory factor analysis (EFA), alla quale ha fatto seguito una k-means cluster analysis.

Il termine antropomorfismo si riferisce alla tendenza dei consumatori di attribuire caratteristiche fisiche umane, emozioni, intenzioni e motivazioni ad agenti e oggetti non umani (Epley et al., 2007). Nella letteratura accademica di marketing, l'antropomorfismo è stato prevalentemente legato ad aspetti fisici e di design di prodotto, quali caratteristiche del volto (Aggarwal and McGill, 2007; Kim and McGill, 2011; Landwehr et al., 2011; Guido and Peluso, 2015; Kwak et al., 2015) e lineamenti del corpo umano (Guido and Peluso, 2015). Con l'introduzione degli AV, la percezione di antropomorfismo inizia ad essere indagata con riferimento sia al concetto di voce umana (Cherif and Lemoine, 2019) sia al concetto di presenza sociale (Cho, 2019; Cho et al., 2019; McLean and Osei-Frimpong, 2019).

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La voce umana di un AV può essere creata grazie alle ultime tecnologie di sintesi vocale e si contrappone ad una voce percepita dai consumatori come più sintetica/robotica. Sulla base di quanto emerge dallo studio di Cherif & Lemoine (2019), quando gli utenti interagiscono con un AV dotato di voce umana (vs. voce sintetica) aumenta la percezione di umanità dell'AV nella mente degli utenti. Inoltre, secondo quanto riportato da una ricerca di Voicebot (2019b), nel contesto esperienziale degli AV, gli utenti preferiscono interagire con una voce dotata di caratteristiche che siano il più simili possibile alle caratteristiche vocali umane. Nella letteratura accademica di marketing, seppur in contesti esperienziali differenti da quello analizzato (ambito pubblicitario e marketing politico), sono state individuate diverse caratteristiche della voce che riescono a stimolare la percezione di tratti legati alla dimensione di umanità, quali il tono (Morales et al., 2012), l'accento (Zoghaib, 2017; Zoghaib, 2019) e la qualità (Wiener and Chartrand, 2014).

La presenza sociale è un costrutto nato nella psicologia sociale applicata alle telecomunicazioni e in questo filone di studi è stata inizialmente definita come “the degree of salience of the other person in a mediated communication and the consequent salience of their interpersonal interactions” (Short et al., 1976, p. 65). Con l'evoluzione tecnologica si assiste alla nascita di una nuova forma di comunicazione, poiché all'interazione tra due soggetti mediata da un medium (through the medium), si affianca l'interazione tra un soggetto e il medium stesso (with the medium). Nel contesto d'interazione with the medium, il costrutto di presenza sociale è stato utilizzato nel filone di studi human-computer interaction per indicare la percezione degli utenti circa l'umanità di diverse interfacce tecnologiche di comunicazione, quali siti web di e-learning (Tung and Deng, 2007), siti web di e-commerce (Hassanein and Head, 2007), social media (Shen and Khalifa, 2009) e robot (Lee et al., 2006). Con riferimento all'interazione tra gli utenti e gli AV, gli studi finora condotti mostrano che gli utenti percepiscono la presenza sociale dell'AV (Cho et al., 2019; McLean and Osei-Frimpong, 2019) e che tale percezione produce un effetto positivo su l'attitudine verso l'AV (Cho, 2019).

Negli studi appena citati, la presenza sociale è stata collegata alla percezione di tre tipologie di benefici: utilitaristici, edonistici (Cho, 2019; Cho et al., 2019; McLean and Osei-Frimpong, 2019) e simbolici (McLean and Osei-Frimpong, 2019). Il termine “benefici utilitaristici” è stato utilizzato con riferimento a benefici funzionali, pratici e strumentali. Nel contesto esperienziale degli AV, la possibilità di interagire a mani libere, con poco sforzo e senza la necessità di guardare o toccare un'interfaccia fisica (es., lo schermo dello smartphone) sono importanti benefici utilitaristici non eguagliabili da nessun'altra tecnologia (Hoy, 2018). I benefici edonistici si riferiscono invece ad attributi dell'esperienza estetica ed emotiva dell'utente, come il piacere e il divertimento (Schuitema et al., 2013). Mentre i benefici utilitaristici sono fondamentali per spingere l'utente ad utilizzare gli AV, i benefici edonistici sono la chiave del successo e dell'uso continuato nel tempo di queste nuove tecnologie (McLean and Osei-Frimpong, 2019). Infine, i benefici simbolici si riferiscono all'identità sociale e all'immagine dell'utente, che possono derivare dall'interazione con una tecnologia (Schuitema et al., 2013). Pertanto, gli utenti sono spinti ad utilizzare gli AV per migliorare la propria immagine e il proprio status sociale (McLean and Osei-Frimpong, 2019).

Nonostante il crescente interesse della letteratura accademica verso le percezioni di umanità della voce e di presenza sociale dell'AV, nonché dei benefici derivanti dall'interazione tra gli utenti e questi nuovi strumenti tecnologici, i risultati appaiono ancora piuttosto frammentati e parziali. Per questo motivo, appare opportuno adottare un approccio esplorativo per identificare ed interpretare le principali dimensioni della percezione di antropomorfismo dell'AV e dei benefici percepiti a seguito dell'interazione con un AV. Di conseguenza, formuliamo la seguente domanda di ricerca:

**RQ1:** Quali sono le dimensioni chiave della percezione di antropomorfismo dell'AV e dei benefici derivanti dall'interazione tra utente e AV?

Inoltre, nel contesto esperienziale degli AV, nessuno studio ha proposto una segmentazione degli utenti basata sulle percezioni oggetto del presente studio. Da qui sorge la seguente domanda di ricerca:

**RQ2:** Quali gruppi di utenti possono essere identificati sulla base delle differenze percettive di antropomorfismo dell'AV e dei benefici?

**Metodologia.** Al fine di rispondere alle domande di ricerca, abbiamo condotto una survey incentrata sugli utenti millennials (under 30), essendo il segmento che presenta la maggiore percentuale di utilizzo degli AV su smartphone (Voicebot, 2018) e, in particolare di Google Assistant, che risulta essere l'AV più utilizzato (Voicebot, 2019a). La survey, condotta presso il Dipartimento di Management di una grande Università del Centro Italia, nel mese di Novembre 2019, si è avvalsa di 324 rispondenti in target, che, in un primo momento, sono stati selezionati coinvolgendo gli studenti universitari dei Corsi di Laurea triennali e magistrali e, in un secondo momento, attraverso la “snowball sampling strategy” (Robinson, 2014). La partecipazione è valsa a ciascuno studente il riconoscimento di 1 CFU. In via preliminare, è stato condotto uno studio pilota con 10 rispondenti per testare la survey in termini di espressioni linguistiche e tempi di completamento. Sulla base dei risultati, sono state apportate alcune revisioni di modesta entità al questionario. Il campione è composto per il 58% da donne (Tabella 1, Appendice) e presenta un'età media di 24 anni.

Dopo aver espresso il proprio consenso, un rispondente alla volta è stato invitato da un componente del team di ricerca a compilare il questionario, che è stato somministrato attraverso la piattaforma online SurveyMonkey®. Il questionario finale è composto da quattro sezioni. Nella prima, è stata rilevata la percezione di antropomorfismo dell'AV mediante la misurazione di due costrutti, la voce umana (VU) e la presenza sociale (PS). La voce umana è stata misurata adattando la scala di Human Facial Physiognomy (Guido and Peluso, 2015) e utilizzando le dimensioni di

“umanità” della voce - tono, accento e qualità - emerse dagli studi di Morales et al. (2012), Zoghaib, (2017; 2019), e Wiener and Chartrand (2014). Pertanto, sono stati utilizzati quattro item: “Google Assistant sembra avere una voce umana”, “Google Assistant sembra avere un tono di voce umano”, “Google Assistant sembra avere un accento umano”, “Google Assistant sembra avere una qualità di voce umana”. La presenza sociale (PS) è stata misurata utilizzando la scala a quattro item (es., “Quando interagisco con Google Assistant sembra come se ci sia qualcuno vicino a me”, “Le mie interazioni con Google Assistant sono simili a quelle con un essere umano”) di McLean and Osei-Frimpong (2019). Nella seconda sezione sono stati misurati i benefici percepiti - utilitaristici, edonistici e simbolici - utilizzando le scale sviluppate da McLean and Osei-Frimpong (2019) e l'attitudine verso l'AV (ATT) mediante la scala a cinque item di Moriuchi (2019). Nella terza sezione, dedicata alle variabili descrittive, è stato misurato il livello di expertise utilizzando una scala a sette punti (da 1=decisamente non esperto a 7=decisamente esperto), il rischio percepito (RP) attraverso la scala a quattro item di McLean and Osei-Frimpong (2019) e la propensione all'innovazione (PI) mediante la scala a quattro item sviluppata da Agarwal and Prasad (1998) (Tabella 4, Appendice). Tutti gli item sono stati misurati con una scala Likert a sette punti (da 1=decisamente in disaccordo a 7=decisamente in accordo). Infine, nella quarta e ultima sezione, sono stati richiesti i dati strutturali (genere, età e titolo di studio).

**Risultati.** Al fine di analizzare la percezione di antropomorfismo dell'AV e dei benefici derivanti dall'interazione con Google Assistant, attraverso il software SPSS 25, abbiamo eseguito una exploratory factor analysis (EFA), utilizzando la principal components come criterio d'estrazione dei fattori e la Varimax rotation. Per identificare il numero di fattori da estrarre sono stati utilizzati i seguenti criteri: 1) eigenvalue > 1 (SPSS default); 2) scree plot; e 3) parallel analysis (Patil et al., 2008). Successivamente, al fine di individuare gruppi di consumatori sulla base delle differenze percettive, abbiamo effettuato una K-means cluster analysis basata sui punteggi fattoriali. I risultati dell'EFA mostrano una soluzione a 4 fattori (24 item; Tabella 2) con tutti i factor loading superiori a 0,40 (valore minimo 0,603; valore massimo 0,876) e nessun cross-loading superiore a 0,30. Questi risultati sono soddisfacenti in accordo con Costello and Osborne (2005). I quattro fattori estratti spiegano il 65,31% della varianza totale. Inoltre, l'indice Kaiser-Meyer-Olkin (KMO) pari a 0,896 (significativo a  $p < 0,001$ ) conferma l'adeguatezza del campionamento e il test di sfericità di Bartlett ( $\chi^2 = 5145,12$  (276),  $p < 0,001$ ) conferma l'appropriatezza delle variabili utilizzate per l'analisi dei fattori (Hair et al., 2008). Infine, l'alpha di Cronbach (fattore 1:  $\alpha = 0,919$ ; fattore 2:  $\alpha = 0,913$ ; fattore 3:  $\alpha = 0,864$ ; fattore 4:  $\alpha = 0,880$ ) conferma la coerenza interna degli item in ciascun fattore (Malhotra and Naresh, 2010). I fattori estratti possono essere ricondotti a: 1) benefici utilitaristici ed edonistici; 2) benefici simbolici; 3) voce umana; e 4) presenza umana.

Al fine di esplorare l'esistenza di gruppi di consumatori, i quattro fattori estratti dall'EFA sono stati utilizzati come punto di partenza per la K-means cluster analysis (metodo di Ward). Il numero finale di cluster è stato identificato prendendo in considerazione i seguenti criteri: 1) le proprietà statistiche in termini di relazione tra la varianza all'interno del cluster e la varianza tra i cluster (F-test); 2) l'interpretabilità dei dati; 3) la numerosità di ciascun cluster; e 4) lo Pseudo F-test (Calinski and Harabasz, 1974). Questi criteri hanno condotto ad una soluzione a tre cluster (Tabella 3, Appendice), la cui generalizzabilità all'intera popolazione è confermata dal Rand Index (pari a 0,778) (Rand, 1971).

Il primo cluster, che abbiamo denominato “Utile e Piacevole”, si compone di 111 rispondenti e rappresenta il 34,26% del campione ( $N=324$ ). Questi utenti mostrano un'elevata sensibilità ai benefici utilitaristici ed edonistici (punteggio standardizzato positivo 0,61, quindi sopra la media e valore più alto tra i 3 cluster). Non risultano invece essere interessati ai benefici simbolici (-0,46, quindi inferiore alla media e valore più basso tra i 3 cluster), così come alla voce umana (-0,43) e alla presenza umana (-0,46, valore più basso tra i 3 cluster).

Il secondo cluster, si compone di 116 rispondenti (35,80% del campione) ed è stato denominato “Umano”, perché risulta essere particolarmente sensibile alla voce umana (0,86, valore più alto tra i 3 cluster) e alla presenza umana dell'AV (0,48, valore più alto tra i 3 cluster). Mostra invece una ridotta percezione dei benefici utilitaristici ed edonistici (0,18) oltre che simbolici (0,06).

Infine, il terzo cluster, denominato “Status Symbol”, si compone di 97 rispondenti (29,94% del campione). Questo segmento mostra un'elevata sensibilità ai benefici simbolici (0,49, valore più alto tra i 3 cluster), ma non risulta essere interessato ai benefici utilitaristici ed edonistici (-0,91, valore più basso tra i 3 cluster). Inoltre, non percepisce l'umanità della voce (-0,55, valore più bassi tra i 3 cluster) e la presenza umana dell'AV (-0,05).

Per evidenziare le differenze, i 3 cluster sono stati confrontati sulla base delle variabili descrittive rilevate nella terza e nella quarta sezione del questionario. L'analisi delle relazioni tra le variabili descrittive qualitative e la cluster membership è stata effettuata mediante la tabella di contingenza (o analisi di connessione) utilizzando il test del Chi-quadrato. Inoltre, abbiamo eseguito una serie di one-way ANOVA considerando la cluster membership come variabile indipendente e le variabili descrittive quantitative come variabili dipendenti. I risultati mostrano un'associazione significativa tra la cluster membership e il genere ( $\chi^2 = 5,924$  (2),  $p = 0,052$ ) e differenze significative tra i cluster in termini di età ( $F(2, 321) = 6,621$ ,  $p = 0,002$ ), expertise ( $F(2, 321) = 6,949$ ,  $p = 0,001$ ), rischio percepito ( $F(2, 321) = 2,736$ ,  $p = 0,066$ ) e propensione all'innovatività ( $F(2, 321) = 5,796$ ,  $p = 0,003$ ). Con riferimento al genere, i cluster “Utile e Piacevole” e “Status Symbol” si caratterizzano per una prevalenza di utenti di genere femminile, che rappresentano rispettivamente il 62% e il 64% del cluster, mentre il cluster “Umano” si caratterizza per una lieve maggioranza di utenti di genere maschile (51% del cluster). Con riferimento alle variabili descrittive quantitative, il cluster “Utile e Piacevole” mostra livelli medi di sensibilità maggiori al rischio percepito ( $M_{Utile\&Piacevole} = 4,59$  vs.  $M_{Umano} = 4,01$ ;  $p = 0,004$ ) rispetto al cluster “Umano”, mentre non si registra una differenza significativa con la media

del cluster “Status Symbol” ( $M_{Utile\&Piacevole} = 4,59$  vs.  $M_{Umano} = 4,27$ ;  $p = 0,449NS$ ). Inoltre, gli utenti del cluster “Umano” hanno l’età media più alta rispetto agli utenti del cluster “Utile e Piacevole” ( $M_{Umano} = 24,24$  vs.  $M_{Utile\&Piacevole} = 23,32$ ;  $p = 0,004$ ) e del cluster “Status Symbol” ( $M_{Umano} = 24,24$  vs.  $M_{StatusSymbol} = 23,35$ ;  $p = 0,009$ ). Infine, il cluster “Status Symbol” presenta il livello medio di expertise minore rispetto agli altri due cluster ( $M_{StatusSymbol} = 3,31$  vs.  $M_{Utile\&Piacevole} = 3,89$ ;  $p = 0,021$  e  $M_{StatusSymbol} = 3,31$  vs.  $M_{Umano} = 4,08$ ;  $p = 0,001$ ), così come il livello medio più basso di propensione all’innovatività ( $M_{StatusSymbol} = 4,3$  vs.  $M_{Utile\&Piacevole} = 4,8$ ;  $p = 0,028$  e  $M_{StatusSymbol} = 4,3$  vs.  $M_{Umano} = 4,91$ ;  $p = 0,004$ ).

**Limiti della ricerca.** I limiti del presente lavoro suggeriscono fruttuose linee di ricerca future.

In primo luogo, il nostro studio si è avvalso di dati raccolti nel mese di novembre 2019, concentrando l’attenzione sul solo segmento degli utenti millennials e sull’interazione con Google Assistant attraverso un unico device, lo smartphone. Pertanto, la ricerca futura potrebbe eseguire uno studio longitudinale, anche estendendo l’indagine ad altri segmenti di utenti, AV e device.

Gli ulteriori limiti del presente lavoro risiedono nella natura esplorativa delle tecniche di analisi adottate per l’estrazione dei fattori (EFA) e per l’identificazione di cluster di consumatori (K-means cluster analysis). Nello specifico, il numero di fattori, così come il numero e la dimensione dei cluster, sono influenzati da scelte effettuate dal team di ricerca sia per il criterio d’estrazione e la rotazione dei fattori sia per la tecnica di clustering. Al fine di superare tali limiti, futuri studi, raccogliendo dati caratterizzati da una distribuzione normale, potrebbero utilizzare la maximum-likelihood come criterio d’estrazione dei fattori e optare per la rotazione Promax. Con riferimento alle scelte adottate nella cluster analysis, in lavori futuri si potrebbero adottare altre tecniche di clustering (es., TwoStep clustering e Hierarchical clustering).

Inoltre, nel presente lavoro è stato adottato un approccio descrittivo dei cluster identificati e la natura esplorativa non consente di trarre conclusioni causali. Per questo motivo, la ricerca futura potrebbe trarre le basi da questo studio e adottare metodi che consentano di convalidare i nostri risultati in termini causali, testando attraverso un modello di equazioni strutturali, gli antecedenti dell’umanità e dei benefici percepiti, così come le conseguenze sul comportamento dei consumatori.

Infine, l’umanità della voce è stata misurata attraverso quattro item, che sono frutto dell’adattamento della scala di Human Facial Physiognomy sviluppata da Guido and Peluso (2015). Pertanto, futuri lavori di ricerca potrebbero testare la validità e l’affidabilità della scala qui adottata.

**Implicazioni pratiche.** I risultati di questo studio offrono ai marketer interessati alle nuove tecnologie dell’intelligenza artificiale basate sulla voce, importanti insight per comprendere i consumatori.

Nello specifico, i risultati dell’EFA indicano quali sono i benefici e le dimensioni dell’antropomorfismo dell’AV percepite dai consumatori. Con riferimento ai benefici, i marketer devono tener presente che l’utilità e l’edonismo sono percepiti come inscindibili l’uno dall’altro, mentre i benefici simbolici rimangono una categoria a sé stante. Inoltre, i marketer orientati ad attivare nella mente del consumatore la percezione di antropomorfismo dovranno lavorare sia sulla presenza sociale sia sulla voce dell’AV. Con riferimento a quest’ultimo punto, emergono interessanti implicazioni in termini strategici, poiché la voce di un AV di un provider tecnologico non può essere modificata da un brand che decide di entrare nell’ecosistema del provider. Pertanto, le imprese interessate ad intraprendere una strategia di antropomorfizzazione dovranno valutare l’ipotesi di sviluppare in-house l’AV (es., l’AV MBUX di Mercedes), progettando una voce ad hoc con caratteristiche peculiari (tono, accento, qualità).

Inoltre, i risultati della cluster analysis offrono agli esperti di marketing informazioni circa le caratteristiche demografiche e attitudinali di gruppi di consumatori millennials che utilizzano gli AV. Pertanto, si offre alle imprese la possibilità di scegliere un segmento target (Utile e Piacevole, Umano, Status Symbol) e di rivolgersi allo stesso creando una specifica offerta di valore. Ad esempio, rivolgendosi al cluster “Utile e Piacevole”, i marketer dovranno progettare un’esperienza d’interazione che sia al tempo stesso informativa e ludica, prevedendo entrambe le tipologie di richieste. Se l’impresa deciderà di rivolgersi al cluster “Umano”, dovrà invece sviluppare una voce ad hoc con caratteristiche specifiche (tono, accento e qualità) e connotare il proprio AV di una presenza umana lavorando sulla sua capacità d’interazione (es., prevedendo un tempo di risposta dell’AV che sia simile a quello di un interlocutore umano). Infine, qualora il target sia il cluster “Status Symbol”, l’impresa potrà sottolineare nelle sue campagne di comunicazione relative all’AV i benefici simbolici derivanti dall’interazione (es., il miglioramento dell’immagine dell’utente tra i suoi amici/colleghi).

**Originalità del lavoro.** Il nostro contributo si inserisce nel nascente filone di studi volto ad indagare le percezioni dei consumatori circa le interazioni con gli AV, identificando ed interpretando le dimensioni chiave della percezione di antropomorfismo dell’AV e dei benefici. Nello specifico, emergono quattro dimensioni chiave: la voce umana, la presenza umana, i benefici utilitaristici ed edonistici e i benefici simbolici. Inoltre, il presente lavoro, attraverso la segmentazione degli utenti basata sulle dimensioni percettive appena elencate, identifica tre cluster: Utile e Piacevole, Umano e Status Symbol. Questi ultimi sono stati confrontati sulla base delle variabili descrittive rilevate (rischio percepito e propensione all’innovazione) e dei dati strutturali (genere ed età).

Pertanto, il nostro lavoro offre molteplici contributi alla letteratura accademica di Marketing.

*Lo studio propone un avanzamento delle conoscenze sulle percezioni dei consumatori legate all'esperienza d'interazione con gli AV e rappresenta la prima esplorazione condotta in Italia con particolare riferimento ai diversi cluster di utenti millennials.*

*In primo luogo, questo lavoro rileva empiricamente per la prima volta entrambe le dimensioni percepite di “voce umana” e di “presenza umana”, rispondendo così alla call di Belk and Kniazeva (2018), i quali sollecitano maggiori sforzi di ricerca circa la percezione di antropomorfismo dell'AV. Nello specifico, la proposta di concettualizzazione di “voce umana” contribuisce ad arricchire la letteratura accademica di Marketing sull'antropomorfismo, che fino ad oggi ha concentrato l'attenzione solo sugli attributi fisici e di design, non considerando il ruolo giocato dallo stimolo vocale (Guido and Peluso, 2015).*

*In secondo luogo, con riferimento alle dimensioni chiave dei benefici percepiti, il presente lavoro non solo conferma i benefici simbolici descritti da McLean and Osei-Frimpong (2019), ma evidenzia anche la dimensione ibrida “benefici utilitaristici ed edonistici”, mostrando come l'utilità e l'edonismo siano due aspetti inscindibili di un unico beneficio.*

**Parole chiave:** *Assistenti vocali, antropomorfismo, benefici, EFA, cluster analysis*

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<sup>1</sup> Per la bibliografia completa contattare gli autori.

## Appendice

Tab. 1: Profilo dei Rispondenti (N = 324)

Categoria	(%)
<i>Genere</i>	
Donne	58
Uomini	42
<i>Education</i>	
Scuola Media Primaria	-
Scuola Media Secondaria (liceo)	13,9
Laurea Triennale	70,1
Laurea Magistrale	15,1
Dottorato	-
Altro	0,9

Tab. 2: Risultati dell'Exploratory Factor Analysis (EFA)

Fattori	Item	Factor loading
Fattore 1 -Benefici utilitaristici e edonistici ( $\alpha = 0.919$ )	- Penso che Google Assistant sia utile	0,822
	- Utilizzare Google Assistant mi semplifica la vita	0,777
	- Utilizzare Google Assistant mi consente di risparmiare tempo	0,760
	- Utilizzare Google Assistant mi consente di gestire il mio tempo in modo efficiente	0,746
	- Penso che Google Assistant sia informativo	0,728
	- L'esperienza di utilizzo di Google Assistant è interessante	0,716
	- Trovo che utilizzare Google Assistant sia piacevole	0,713
	- Mi diverto ad utilizzare Google Assistant	0,657
	- Penso che Google Assistant sia logico	0,656
	- Utilizzare Google Assistant è coerente con gli obiettivi che mi sono posto	0,650
	- Penso che Google Assistant sia realistico	0,608
	- Penso che Google Assistant sia specifico	0,603
Fattore 2 -Benefici simbolici ( $\alpha = 0.913$ )	- L'uso di Google Assistant mi fa sembrare più importante tra i miei amici/colleghi	0,876
	- L'uso di Google Assistant mi fa sembrare più prestigioso di quelli che non lo fanno	0,862
	- L'uso di Google Assistant è uno status symbol per me	0,848
	- L'uso di Google Assistant migliora la mia immagine tra i miei amici/colleghi	0,829
Fattore 3 - Voce Umana ( $\alpha = 0.864$ )	- Google Assistant sembra avere una qualità di voce umana	0,829
	- Google Assistant sembra avere un tono di voce umano	0,818
	- Google Assistant sembra avere una voce umana	0,798
	- Google Assistant sembra avere un accento umano	0,789
Fattore 4 -Presenza Umana ( $\alpha = 0.880$ )	- Durante l'interazione con Google Assistant mi sembra di avere a che fare con una persona reale	0,833
	- Le mie interazioni con Google Assistant sono simili a quelle con un essere umano	0,829
	- Interagisco con Google Assistant in modo simile a come interagisco con gli esseri umani	0,779
	- Quando interagisco con Google Assistant sembra come se ci sia qualcuno vicino a me	0,652

Note: Varianza Spiegata = 65,31%; KMO = 0,896; Bartlett's  $\chi^2 = 5145,12$  (276),  $p < 0,001$ .

Tab. 3: Risultati della K-means cluster analysis

	F-statistic	Cluster		
		1. Utile e Piacevole	2. Umano	3. Status Symbol
Fattore 1 - Benefici utilitaristici e edonistici	101,821*	0,61	0,18	-0,91
Fattore 2 - Benefici simbolici	29,424*	-0,49	0,06	0,49
Fattore 3 - Voce Umana	114,412*	-0,43	0,86	-0,55
Fattore 4 - Presenza Umana	30,138*	-0,46	0,48	-0,05
N	324	111	116	97
% del campione	100%	34,26%	35,80%	29,94%

Note: \* $p < 0.001$ .



Tab. 4: Scale di misurazione

Item	
VU1	Google Assistant sembra avere una voce umana
VU2	Google Assistant sembra avere un tono di voce umano
VU3	Google Assistant sembra avere un accento umano
VU4	Google Assistant sembra avere una qualità di voce umana
PS1	Quando interagisco con Google Assistant sembra come se ci sia qualcuno vicino a me
PS2	Le mie interazioni con Google Assistant sono simili a quelle con un essere umano
PS3	Durante l'interazione con Google Assistant mi sembra di avere a che fare con una persona reale
PS4	Interagisco con Google Assistant in modo simile a come interagisco con gli esseri umani
BU1	Utilizzare Google Assistant mi consente di risparmiare tempo
BU2	Utilizzare Google Assistant mi semplifica la vita
BU3	Utilizzare Google Assistant è coerente con gli obiettivi che mi posto
BU4	Utilizzare Google Assistant mi consente di gestire il mio tempo in modo efficiente
BE1	Trovo che utilizzare Google Assistant sia piacevole
BE2	L'esperienza di utilizzo di Google Assistant è interessante
BE3	Mi diverto ad utilizzare Google Assistant
BS1	L'uso di Google Assistant migliora la mia immagine tra i miei amici/colleghi
BS2	L'uso di Google Assistant mi fa sembrare più importante tra i miei amici/colleghi
BS3	L'uso di Google Assistant è uno status symbol per me
BS4	L'uso di Google Assistant mi fa sembrare più prestigioso di quelli che non lo fanno
ATT1	Penso che Google Assistant sia utile
ATT2	Penso che Google Assistant sia realistico
ATT3	Penso che Google Assistant sia informativo
ATT4	Penso che Google Assistant sia specifico
ATT5	Penso che Google Assistant sia logico
RP1	Ho i miei dubbi sulla riservatezza delle mie interazioni con Google Assistant
RP2	Sono preoccupato/a di eseguire una transazione finanziaria tramite Google Assistant
RP3	Temo che i miei dati personali memorizzati da Google Assistant possano essere rubati
RP4	Sono preoccupato/a che Google Assistant raccolga troppe informazioni su di me
PI1	Se sentissi parlare di una nuova tecnologia informatica, troverei un modo per sperimentarla
PI2	Tra i miei colleghi di solito sono il primo a provare nuove tecnologie informatiche
PI3	In generale, sono titubante nel provare nuove tecnologie informatiche
PI4	Mi piace sperimentare nuove tecnologie informatiche

Note: VU=Voce Umana; PU=Presenza Umana; BU=Benefici Utilitaristici; BE=Benefici Edonistici; BS=Benefici Simbolici; ATT=Attitude verso l'AV; RP=Rischio Percepito; PI=Propensione all'Innovazione.



# Art and business. The history of Campari

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**Objectives.** *Art is business, and business is art. Isn't it? The relationship between art and business is anything but impossible to reconcile (Baumgarth, 2018). Entrepreneurs and companies are increasingly keen to invest in and to provide financial support to arts through the establishment of corporate museum (Carù et al., 2016; Byrom & Lehman, 2009; Chaney et al., 2018; Hollenbeck et al., 2008) and corporate art collections (Kottasz et al., 2007; Campa and Zijlmans, 2019). Marketers and branders alike are often winking to art to appear different vis-à-vis competitors and to gain differentiation (Jelinek, 2018; O'Reilly, 2005; Scarpaci et al., 2018; Hoffman, 2002; Borghini et al., 2010; Hetsroni et al., 2005). Art is even affecting firm's core offering in some companies in which product design was totally overturned by artistic inputs and artists' endorsement, as in the case of Alessi (Dalpiaz et al., 2016).*

*Artists, on their side, have historically led entrepreneurial-like careers and have often made the most out of their artistic talent, such as Leonardo Da Vinci, Marcel Duchamp, Andy Warhol, Jeff Koons, and Damien Hirst (Scherdin, and Zander, 2011; Vecco, 2019; Thompson, 2010).*

*Thus, there is no wonder that in the last decade there has been a growing research interest in the way art and business interact with each other (Strauß, 2018; Blombäck and Brunning, 2009). In this work in progress paper, we discuss the relationship between art and business from the perspective of companies that employ art as a competitive tool to define, develop, maintain, and convey a legitimate, differentiated, authoritative, and updated image toward consumers, intermediaries, and ultimately competitors and the society at large. We draw on the paradigmatic example of Campari, an Italian company which heavily and purposefully relied upon art to develop a strong market positioning and a well renown image in its industry since its very inception.*

*The Italian market offers a privileged observation point to look at the relationship between art and business due to the country's extraordinary artistic background, the Italians' special taste for art and artistic creativity, and the existence of several long-lived Italian companies that can boast tight connections between their business activities and the art world (Napolitano and Marino, 2016).*

*We provide an inductive explanation of the role that art has played in the emergence, development and growth of Campari and compose a complex empirically grounded theoretical framework at the crossroad of three diverse but interweaving streams of research, i.e. market emergence (Glynn and Navis, 2013; Khaire and Wadhwani, 2010; Pedeliento et al., 2019), business longevity (Napolitano et al., 2015; Ciravegna et al., 2020), and authenticity (Grayson and Martinec, 2004; Beverland, 2006).*

*Findings drawn offer an empirical case in point for the identification of antecedents, practices, processes, and outcomes of successful art-business relationships that can inspire business practices aimed at leveraging values that come from art in business ventures.*

**Methodology.** *We employ a mixed-method research protocol grounded in business history (Kipping and Üsdiken, 2014) and case study analysis (Yin, 2009) which combines primary data - such as interviews, and corporate archival sources - with secondary sources such as information retrieved from corporate museums, mass media articles, advertising campaigns and other cultural and material artifacts that can help in painting a finer grained picture of the case. We adopt an in-depth socio-historical approach to explain the historical development of the brand and the historical connections between the brand and the world of art, and use it to inform a theoretical conceptualization of these dynamics, an approach called 'history in theory' (Kipping and Üsdiken, 2014; Maclean et al., 2016).*

**Research setting.** *Founded in Milan in 1860 by Gaspare Campari (1828-1882), Campari begun its history as a café settled in Piazza Duomo where the red colored bitter aperitif - originally named "Bitter all'uso d'Hollanda" - and his secret formula have been first created. When Gaspare passed away, his son Davide took on the company lead,*

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moved the company from craftsmanship to industrial production, and expanded the firm's product portfolio (Varini, 2012). At the aftermath of WWII, Campari was transformed into a limited company chaired by Guido Campari as the president and managed by Antonio Migliavacca, nephew of Davide, as the CEO. The Campari business increased strongly in between the 50s and the 60s with the company getting access to over 80 international markets. The firm's succession to non-family owners in 1976 marked a new step in the Campari's history toward a global dimension. Domenico Garavoglia and Erinno Rossi became the main shareholders and took on the top management roles of Campari from 1982, drove the expansion and transition of the company to a holding group, through a set of successful M&As such as the Dutch Group Bols Wessanen, Skyy Spirits LLC, Ouzo and Cinzano. The launch of an initial public offering in 2001 and the access of Campari to the stock exchange market completed the changeover of Campari into a conglomerate. Today Campari group is the sixth-largest player in the spirit industry, with over 50 brands in its portfolio, 190 countries penetrated, 21 plants worldwide and about 4,000 employees.

Yet, despite the company changed drastically across the first 160 years of its history, there is a thing that was kept equal: the (successful) use of an artistic register in the brand's communication strategy and the leverage of art as a source of inspiration for new product development. The history of Campari in fact evolved in tandem with the evolution of artistic avant-gardes such as futurism, went at the same pace of artistic careers of prominent figures like Fortunato Depero, Bruno Munari, and Marcello Dudovich, and stretched to other forms of art such as film-making with starring directors like Federico Fellini and Paolo Sorrentino. These and other artists played a pivotal role to allow the brand establishing a distinctive and untapped communication style, and even to create new products. A coevolutionary process between the Campari brand and the art world that culminated with the establishment (in 2010) of the corporate museum Galleria Campari.

**Findings.** The reconstruction of the evolutionary history of the company is divided into five periods identified by taking into consideration the changing political, economic, social, technological and business conditions in which the brand was nested over time, as well as the evolutionary trajectories of arts. This reconstruction and the successive periodization of the history of Campari offer a privileged point of observation to shed lights on how history can be used to explain the evolutionary dynamics referred to how art affected brand communication and, more in general, the corporate strategy of Campari (Kipping & Üsdiken, 2014). The identification of phases permitted building a theoretical story and explaining the evolution of the Campari brand and the interweaving dynamics binding this brand with the history of art.

The first phase, labelled 'the age of posters', stretches from 1860 (the year of foundation) to 1925 and covers the period in which Campari evolved from a bar to a brand. In 1867, the Café Campari moved to the Galleria Vittorio Emanuele and became the meeting point of artists, politicians, and the local bourgeoisie. In 1888, Davide Campari took on the company's leading role and moved from craftsmanship to industrial production. In 1898 the Campari trademark was registered and Davide ushered a communication style for the brand based on collaborations with famous artists of the caliber of Mora, Dudovich, Cappiello, and Hohenstein. The aim was to create a distinctive brand and product image through a unique visual identity made visible through posters. In 1921, Davide Campari commissioned Leonetto Cappiello the making of a promotional poster to advertise the red aperitif which resulted in the creation of 'Lo Spiritello' a popular Campari icon. At the brand's inception Campari, was building a new market for a new product category (Glynn and Navis, 2013; Khaire and Wadhwani, 2010). The emergence of a new market category comes along a high degree of uncertainty and requires market audience to form a shared socio-cognitive understanding about what the product is and how it stands nearby other (existing) product categories (see Rosa et al., 1999). When the Campari bitter was launched on a market that was wider than the bunch of aficionados of the Campari café, the brand had a legitimacy discount (Zuckerman, 1999) that the company tried to overcome by finding a new and untapped way to mix a visual imaginary coming from the artistic word with the language of commercial communication.

The success of this strategy became visible in the second period - that corresponds with the emergence of political fascism and artistic futurism (1926-1936) - that we labelled 'the legacy of Fortunato Depero'. In 1926, in occasion of the 15th edition of the Venice Biennale, Fortunato Depero, one of the leading exponents of the artistic movement known as futurism, exhibited the painting "Squisito al selz", dedicated to "Commendator Campari". Campari and Depero established a strong partnership: the artist became an active component of the creative staff of the company and contributed to posters, lettering, packaging, technical drawings. Depero was very active in the advertising business in Italy at that time, working for many brands and companies throughout the country. In 1932, the Italian artist passed into the annals of design history for being the person who created the iconic bottle of the very first example of a premixed ready-to-drink aperitif: Campari Soda. The collaboration with Depero lasted until 1933. Davide Campari died in 1936. It is especially in the period from 1926 to 1936, that a successful partnership between Campari and the most important figures of the futurism artistic and cultural movement allowed the brand to acquire an image that has never been forgotten both by the brand and by its main audiences. The unique (art-permeated) style featuring the brand Campari (which was ushered by Davide) became a brand blueprint that was kept alive despite the company was gradually detached from its ancestral heritage of a family firm.

In phase three (1937-1949), the company that was managed by the third generation of the Campari family, went through the WWII. Since - because of the war - the firm was shut down and then restarted in 1946, we labelled this phase as the 'death and renaissance'. It is interesting to note that Campari re-opening coincided with the restart of the artistic programming of the Teatro La Scala on May 11<sup>th</sup>, where a new season was inaugurated with a concert directed by Arturo Toscanini whose radio broadcasting was sponsored by Campari.

With the ending of the war, Campari also entered into a new phase. The fourth period covers a time that goes from 1950 to 1983 that we labelled 'the new deal'. With the beginning of the '50s a new era was ushered that corresponded with the invention and mass diffusion of the television. Despite the advent of this new media, visual arts were still very important in the communication of the Campari brand. In 1950, the worldwide known Italian illustrator Franz Marangolo started working with Campari and continued until the end of the 60s. Marangolo was crucial to develop and build a fresh and up-to-date corporate identity and image to make it in fit with the times. Besides Marangolo, other important artists collaborated with Campari during the 50s and 60s. These include Felice Mosca, Attilio Rossi and Giovanni Mingozzi. Visual arts were then flanked by a new form of brand communication made possible by the new media: television. In 1954, Campari appeared in the television commercials show Carosello with a series of short movies (around three minutes each). Important movie stars appeared in these commercials: David Niven (1976) and Humphrey Bogart whose famous character from *Casablanca* is reconstructed and included in a TV commercial. In this period, Campari begins to interact with the movie industry, still relying mainly on TV. In 1960 Campari gets back in touch with Bruno Munari, after a first collaboration during the twenties, and entered the wave of pop and underground art culture. The "Graphic Declination of the name Campari" is from 1964: it was designed to be located in the newly inaugurated subway in Milan. Campari managed to stay consistent with its art-infused communication style (see Hagtvædt & Patrick, 2008; Logkizidou et al., 2019): the brand kept working with artists regardless of the media used. The invention and mass diffusion of television opened up a new scenario for corporate communication in phase four. Yet, it did not led Campari to skew toward mass communication but offered the brand another expressive media to showcase its unique image. Instead of using the new media to foster sales, Campari stayed loyal to visual communication through static posters and turned to TV commercial with a set of short movies characterized by a high artistic content. This is the time in which Campari showed one of its main cues of authenticity, the downplaying of commercial motives (Beverland, 2006), which perfectly matches product consistency as the product is the same since 1860.

The fifth and last period starts in 1984 and lasts to present times. We have labelled it 'the seventh art' to signify the time in which Campari began exploiting the expressive and visual opportunities offered by what is often referred to as the form of art that comes after other six, i.e. painting, music, dance, architecture, poetry and sculpture: cinema.

Following the wide international expansion of Campari group through a series of M&As in different countries, Campari was faced with the challenge of finding a new communication register that could have been considered aligned with a company that operates at the global level but still consistent with its artistic blueprint. Thus, Campari developed strong ties with major stars of the movie industry. In 1984, Federico Fellini shot "Ragazza in treno", the first commercial ever made by the director. He produced a real short film, a small masterpiece, which is still considered a milestone of Italian advertising history (Montagnoli, 2018).

In 1986, Kelly le Brock and American-English actress and model that debuted in 1984 in a movie entitled *The Woman in Red*, co-starring Gene Wilder, became the protagonist of the campaign "Campari it's fantasy". In 1998, Tarsem Singh inaugurated a provocative commercial campaign, named "Red Passion" which put into question consolidated gender stereotypes. The Red Passion series was completed by other more traditional campaigns adopting a more widely used style focused on sex appeal and physical seduction and even published a calendar, i.e. the Campari Calendar featuring international sex symbols like Eva Green, Kate Hudson, Uma Thurman and Salma Hayek, this latter actress also starring in the 2006 short movie "Hotel Campari" directed by Matthew Rolston.

In 2010, Galleria Campari was opened up to celebrate the 150th anniversary of the company. The museum is hosted in the old production premise settled in Sesto San Giovanni, disused in 2005 and renovated between 2007 and 2009 on the project of Mario Botta and Giancarlo Piretti for the creation of the new headquarters and corporate museum.

Other major directors collaborated in the communication campaigns in the following years: 'The Waiting' by Joel Shumacher (2011); 'Killer in Red' and 'Creation' by Paolo Sorrentino (2017), 'The legend of red hand' by Stefano Sollima (2018), 'Sirena', a reference to Ugo Mochi past artwork by Ettore Mengozzi (2018), and 'Entering Red' by Matteo Garrone (2019).

From the 80s onward hence, with the affirmation of the group at the global scale, Campari turned to cinema as it offers the possibility to communicate the brand and its art-infused character more widely by using a visual that is more easily understood and deciphered by a wider, international and culturally diverse, audience. Instead of approaching the international-market by using mass media and a homologating communication style, Campari managed to use essay-like cinema, to stay loyal to its tradition and - at the same time - to reach a global audience.

The history of Campari adds yet another empirical bit of information to the growing topic of business longevity (Napolitano et al., 2015; Ciravegna et al., 2020). Campari, as a product, was kept identical from 1860 onward: no product innovation was brought into being by the company. As a company, managed to survive and thrive for more than 150 years despite the founding family was gradually ousted from the firm's governance. As a brand, it was able to maintain a unique, distinctive and art-infused communication style despite the number of drastic modifications taking place in the broader social landscape in which the brand was and is nested, and despite the profound transformations that took place at the level of media that can be used for commercial purposes.

**Research limitations.** The research has three main limitations. The first relates to the research stage. Findings stem from a study which is currently ongoing. As such, at this stage, we cannot guarantee upon the robustness of the interpretations here reported. Second, findings are based on the analysis of a unique case. Although conducted

longitudinally and covering an extended timeframe (from the business inception to present times), the findings drawn should be deepened through the observation of other brands that similarly to Campari used an art-based communication register for a long time and were able to keep this communication style consistent throughout the firm's development. The third and last deals with the historical sources used and how we interpret them. Although one can strive to collect all available historical secondary data related to the birth, growth and evolution of a brand, there might be other data so far overlooked, that could provide different interpretations and narrate a somehow different story.

**Practical implications.** Through the Campari's story, we identified a long-lasting corporate commitment toward art and the different tools that were employed in order to maintain such a commitment across different periods in which the social, cultural, and technological conditions changed a lot. Moreover, also corporate goals changed time to time, in terms - for instance - of the geographical scope of the corporate business. According to different conditions and objectives, Campari changed approach, method, and tools in order to still keep this general attitude of an art-inspired brand. Hence, according to specific conditions professionals should identify the most effective strategy to initiate and maintain a positive relationship with art, arts, and artists. In this vein, at the beginning of its history, Campari was very much oriented toward avantgarde. This is due to the need to attract attention and "create" conflicts, paradoxes, and buzz, as we could define it today. To some extent, it was necessary to shock the public opinion in order to let consumers reconsider their habits and change them, both in terms of products and brands, but also rituals and lifestyle. Later on, when the brand acquired a renown and well-respected status, Campari collaborated with famous and high taste authors (in the movie industry, for instance), but not necessarily revolutionary. Moreover, also popular stars and themes were employed in order to further increase Campari global awareness.

Following the Campari experience, it should be necessary a careful analysis of the artistic scenario in order to select the appropriate mix of genres, authors, and even techniques (live performers, video artists, digital artists, etc.) in order to adapt to the target market.

**Originality of the study.** Although research on the relationships between art and business is flourishing, studies focused on brands that have used an art-based register to set up their brand communications and to form their distinctive identity are in short offer. To the best of our knowledge this is the first study to offer a longitudinal historical reconstruction of a brand that emerged and developed by staying side-by-side with art since its very beginning. The study findings are also original because they allow developing a complex theoretical framework where three streams of research, i.e. market emergence, authenticity and corporate longevity, coexist.

**Keywords:** Campari; art-business; history; case study.

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# Diversity & inclusion (D&I) in management academies: state of the art and future challenges

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**Objectives.** *Recent organizational literature and business practice have underscored the relevance of promoting the integration of diversity within groups and organizations, as well as of adopting an “inclusionary approach” to embrace both observable and unobservable dimensions of heterogeneity. It has been suggested that this approach is critical to unleash the potential benefits of a varied organizational environment, such as greater creativity, flexible problem solving, originality, but also participation, talent promotion and, ultimately, ethics and humanity (see Cox and Blake, 1991; Milliken and Martins, 1996; Pless and Maak, 2004).*

*Similar to many other professional communities, the academic world has engaged in a debate on the importance of promoting diversity and inclusion. In this scenario, scientific academies have been placed under the spotlight given the critical role that they may play in shaping a fields' identity, communicating such identity to the external environment, as well as in monitoring their members' conduct to ensure they conform with agreed principles and practices (Greenwood, Suddaby and Hinings, 2002). In fact, the posture that such institutions choose to adopt toward diversity-related issues is likely to affect the diffusion of values of diversity and inclusion in the wider academic community.*

*The present study aims to contribute to this debate, by reviewing and assessing the state of the art in the diffusion of the values of diversity and inclusion in scientific academies in the field of management. We adopt the lens of institutional theory, according to which the goals of professional bodies may be achieved through both: (1) the development of formal structures that help to gain a symbolic positioning (Meyer and Rowan, 1977; Parsons and Bales, 1956), and (2) the exertion of proactive actions (Di Maggio, 1988).*

*Focusing on the academies that are affiliated or associated to the Academy of Management, our research investigates both formal and substantial expressions of scientific academies' strategic posture toward the core values of diversity and inclusion (D&I) by focusing on their mission statements and their policies and practices.*

**First insights from extant literature.** *While recent literature has focused on the role of scientific academies in promoting engagement, diffusing the values of rigor and relevance of both teaching and research (Caswill and Wensley, 2007), shaping and publicizing scholars' research agenda (Starkey and Tiratsoo, 2007), training junior scholars and developing new skills in senior ones, and building a legitimate management education system (Masrani et al., 2011), to our knowledge no study has yet reviewed mission statements of Academies and analyzed their efforts specifically directed towards D&I issues. Yet, this is relevant because previous literature has suggested that scientific academies may also serve as powerful internal conduits to establish new values and practices, change embedded institutional rules and decision-making procedures, diffuse collective views of the roles they play, and alter existing prevailing belief schemes of society members (Masrani et al., 2011).*

*To address this question, we reviewed literature focused on similar institutions. Institutions of higher education may be considered similar to Academies in terms of the typology of community they are composed of and tasks (education and research) they aim to support. In recent years, the mission statements of colleges and universities have been evaluated in order to identify the actual tone of the institution (Cochran and David 1986) and the values that shape its culture and goals (Davis et al. 2007; Palmer and Short, 2008). Literature focused on higher education institutions have also stated*

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that an institution's mission statement may provide insight about their values regarding D&I (Meacham and Barrett 2003; Wilson et al. 2012). According to Meacham and Barrett (2003), "An institution's mission statement represents a consensus on campus-wide values, expectations for student learning and development, and a statement of campus priorities for many years ahead" (p. 6).

The relevance of D&I values in higher education institutions in the United States of America has been requested because racial and ethnic diversity in this nation has dramatically increased in the last decades. The dramatic increases in the enrollment of students of color and the presence of African American faculty in all public universities in Alabama stimulated in the past the adoption of diversity initiatives, by the use of resolution-by-agreement (Edmondson et al., 2011). Now, D&I embraces also the concepts of gender, socio-economic status, custom and other individual and societal attributes (McLaughlin et al., 2015). In this vein, universities have both created new programs for recruitment, training, and retention of a diverse workforce and launched new products, services, and marketing strategies for an increasingly diverse population, in order to create a positive environment that embraces such variety. Williams and Clowney (2007) have illustrated the evolution of organizational Diversity Capabilities in Higher Education: Academic diversity is defined as "Focused agenda centered on infusing diversity into the curriculum of the institution and conducting research around issues of diversity" (p. 5). With an increasing attention to the principles of Diversity Management, Universities are pursuing the goal of enhancing the representation of minorities (e.g. in terms of gender, race, ethnic roots, culture, physical abilities, sexual orientation) in the workforce in order to partially correct past discrimination and to prevent future abuses (Edmondson et al., 2011). In Europe, studies on D&I have often regarded gender and the glass ceiling (Le Feuvre, 2009; Jones and Palmer, 2011). Irish universities are defined "male-dominated", especially at senior management, professorial and governance levels (O'Connor, P., 2011). In Italy, data from the MIUR shows that only 38,2% of faculty in Italian universities are females. This is roughly similar to the EU average. Nevertheless this proportion has increased in time, the differential between men's and women's chances of promotion to a professorial level in Italian academia is one of the worst in Europe, since Italian female full professors are only 24.9% of the total<sup>1</sup>. Moreover, the female scholars that obtained a full professorship are only 16% of the female academic population (whilst male who manage to make it up to full professorship represent 30% of total male academics), demonstrating that males are two times more likely than women to obtain a full professorship (the current Glass Ceiling Index is 1.51<sup>2</sup>). It is important to underline that full professorship status is a necessary prerequisite for high and senior academic positions within academic and research institutions; in fact, only 6 on 81 Rectors are female; for the role of Deputy/Director of Department, only 18.1% are estimated to be females<sup>3</sup>. Focusing on women discrimination in Lithuanian academic institutions, crucial processes have been identified to establish integrity in academic institutions, starting from the reconsideration of mission of an academic institution, its commitments to various stakeholders and "transferring anti-discriminatory statements from the level of *de jure* to the one of *de facto*" (Vasiljevienė and Pučėkaitė, 2009, p.639). The existence of the diversity statement is considered a "signalling value", that indicates a long-term commitment towards the particular stated diversity values (Das, 2019).

**Research Design: research questions, methods and sample.** In order to understand their way of being inclusive, our work aims to answer the following research questions (RQ): RQ1: Do academies' mission statements mention the values of D&I? What do academy mission statements actually say about their level of commitment to D&I? RQ2: Concerning D&I topics, is there coherence between the contents of Academy mission statements and their policies? How does an academy implement D&I in its practices and can an academy be considered D&I oriented even if there is no mention of D&I in its mission? For RQ1, we have applied a content analysis methodology commonly used to analyze mission statements (Kemp and Dwyer, 2003; Bartkus et al., 2004; 2006; Stallwirth Williams, 2008; Dermol, 2012). For RQ2, we have analyzed the specific disclosed policies and practices promoted by Academies aimed at enhancing the level of D&I commitment. Academic Societies were drawn from AoM's affiliated and associated Societies and academies (20 Academies)<sup>4</sup>. According to Perce and David (1987), mission statements are broadly defined and may be found accessing the official corporate website. They were obtained by accessing official corporate websites in the following sections: "Mission"; "Value"; "About us", "Aim and Scope".

**Methodology.** In order to recognise the main contents of mission statements, we have followed a subjective ("latent") content analysis, applying three criteria already used in literature. The first method used is based on stakeholder theory (Freeman et al., 2004). Regarding scientific academies we have identified the following categories of stakeholders: Scholars; Teachers/educators; Young researchers (early career); Business/Industry; Practitioners (manager, professionals); Institutions (Public Bodies, Political Entities); National/Regional Culture/Country (e.g. nationality).

The second method is based on Bartkus et al. (2004; 2006) and also considers the importance of identifying the

<sup>1</sup> In 2005, the percentage was about 17%.

<sup>2</sup> CGI = (academic female/total population) / (full professor female/full professor male). The index is calculated on May 2020 data. In 2018 it was about 1.6 (MIUR "Le carriere femminili in ambito accademico").

<sup>3</sup> Data from Centro InterAteneo Econometrica, Department of Sociology e Social Research, University Milan Bicocca and Polis Institute University Piemonte Orientale

<sup>4</sup> Among the academies considered we have included also the Italian Society of Management that is not yet an AoM affiliated or associated academy but has similar dimension, scope and nature relative to the other analyzed academies.

(four) goals that mission statements aim to pursue:

- a) direction: communicate the organizations' direction to its different stakeholders (David, 2001);
- b) control mechanism: provide the correct definition of the structure and activities of the organization;
- c) non routine: to guide new or non-routine decisions (such as innovation, new philosophy, new strategy);
- d) motivation: to inspire the organization, providing values and philosophies.

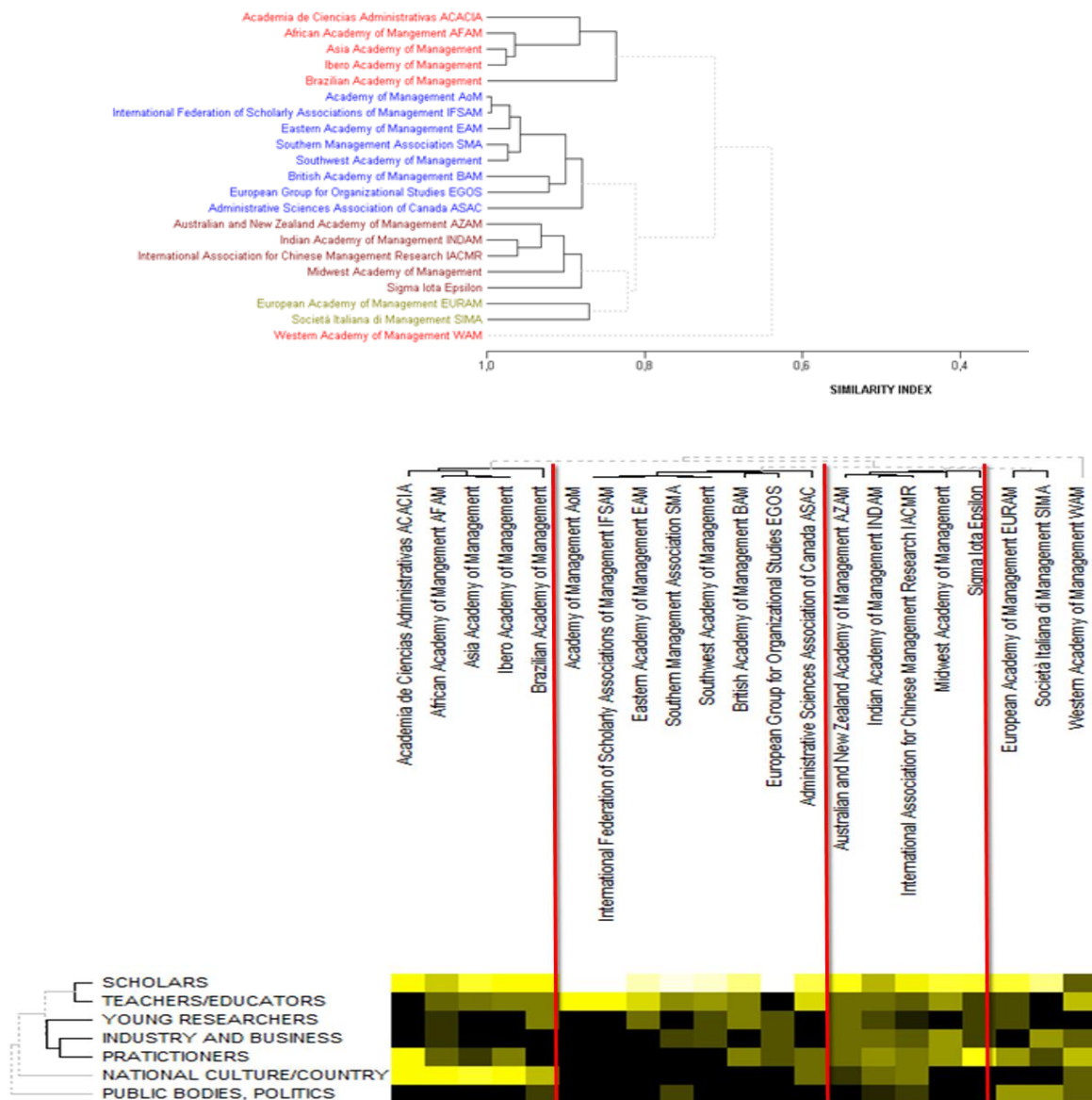
The third evaluation method used is based on the seminal work of Pearce and David (1987): an ideal "mission statement" should provide information about a company's customers or clients, employees, products or services, markets, technology, self-concept, desired public image, philosophy, and strategies for growth and survival (David, 1989, 2007). For the purpose of this paper, we have also included the topic of "D&I". The analysis is based on the content analysis performed by QDA-Miner; i.e., a software package that performs a non-numerical analysis of de-structured information.

In order to understand what mission statements say about the academies' commitment to D&I, we have followed an "objective content analysis" (known as "manifest content"), identifying the presence of the words "diversity" or "inclusion" or a set of similar words (such as "inclusiveness").

**Findings. Result 1: RQ1: Do academies' mission statements mention values of D&I? What do Academy mission statements actually say about their level of commitment to D&I?**

An example of the findings of the content analysis (QDA-Miner) are reported in the following figures. Figure 1 provides the results of the analysis used to check the similarity or dissimilarity of various mission statements in terms of code frequency referred to the stakeholder groups and clusters on the basis of the Similarity Index provided by QDA-Miner. On the basis of the similarity index it is possible to identify 4 clusters, that are visualized in the following heatmap.

Fig. 1: Similarity index and heatmap (Stakeholders)



Source: Our elaboration

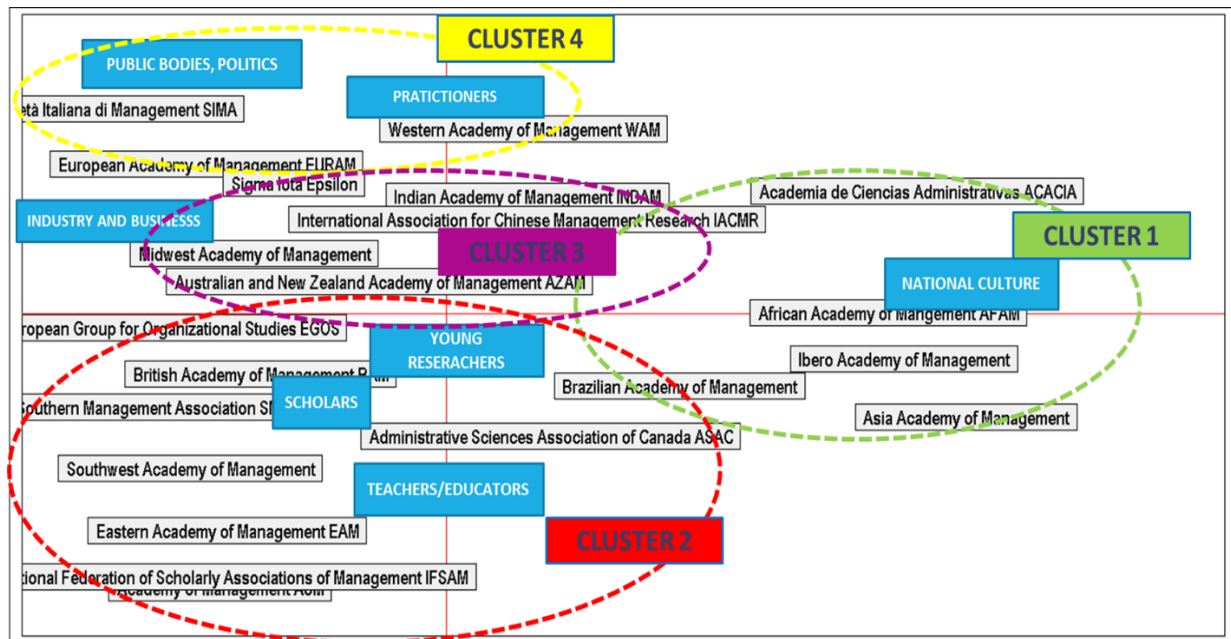
Cluster 1 represents Academies that tend to create a mission statement that is strongly national country-oriented (ACACIA; African; Asia; Ibero; Brazil). In this case, Academies drew attention to their international role by citing the value of their culture, ethnicity and collaboration with foreign Academies. In Cluster 2, the concept of scholarship prevails. In this case, mission statements are oriented to underscore the relevance of creating a community among scholars and the focus on teachers/educators is higher (e.g.: AoM: “We inspire and enable a better world through our scholarship and teaching about management and organization”).

Cluster 3 is characterized by a similar distribution of frequency among stakeholders. Such mission statements tend to create an “equilibrium” among the different stakeholder groups.

EURAM, SIMA and WAM (Cluster 4) are located in a different part of the heat-map, since they more strongly disclose their role in creating relationships with public bodies. These academies intend to increase the perceived legitimacy of management research through political lobbying, dialogue and strategic alliances with key external stakeholders.

To more effectively analyze the content of mission statements, we then developed a correspondence analysis of code frequency for the Academies (figure 2).

Fig. 2: Correspondence analysis Figure (Stakeholders)



Source: Our elaboration

The same procedure was performed regarding strategic goals for the last evaluation method, based on the seminal work of Pearce and David (1987).

In sum, Academies tend to create a mission statement that explains their role for the academic community, specifying their principal stakeholders (Scholars/teachers), their products and their goals. The declarations of their responsiveness to social, community, and environmental concerns is mainly referred to maintain a sense of community that involves nurturing members, building collaborations, enhancing life-long friendships, making “partnerships” and providing training. Moreover, the sense of integrating different cultures belonging to different Regional/National areas of the world is a way to promote the reduction of barriers among the community of scholars and educators. In other words, Academies tend to conceptualize their role related to promoting integration among scholars or the need to address national differences by focusing on cross-cultural issues.

Focusing on what Academy mission statements say about their level of commitment to D&I, The result is that only 5 (25% of the total sample) Academies explicitly quote these terms in their mission statements (broadly defined). D&I orientation is explicitly defined in the mission/institutional presentation (e.g. “about us”) only by BAM, EGOS, EURAM, ANZAM and ANPAD (Brazilian Academy of Management)<sup>5</sup>. As the content analysis has demonstrated, an Academy can

<sup>5</sup> BAM (“We aim to be inclusive, to recognize and respect the diversity in our community, and to promote high quality in all we do...”); EGOS (“EGOS embraces diversity of all kinds including a pluralistic approach to understanding organizations from the perspective of the social sciences (such as sociology, social history, political science, psychology and anthropology) as well as the humanities (such as philosophy, discourse analysis, literary criticism and rhetoric”); EURAM (“The European Academy of Management (EURAM) is a professional community of engaged management scholars and reflective practitioners - open, inclusive, international and cross-cultural”); ANZAM (ANZAM’s Values: Four key values underlie ANZAM’s commitment to advancing the practice of management in Australia and New Zealand and more widely:... Inclusiveness); ANPAD- Brazilian

be considered diversity-oriented although there is no explicit mention of diversity in its official statement of values, expectations, and priorities but if the content is oriented to quote several stakeholders, to promote integration among scholars coming from different Nations, cultures, status, to provide services aimed to create a community where values and ethics are shared. In this sense, the creation of a community aimed at overcoming age, industry-academia boundaries and national barriers may be considered a form D&I orientation.

**Result 2: RQ2:** Concerning D&I topics, is there coherence between the contents of Academy mission statements and their policies? How does an academy implement D&I in its practices? Can an academy be considered D&I oriented even if there is no mention of D&I in its mission?

We proceeded firstly to analyse the content of disclosed policies found on each academies' web site in order to infer their "institutional" D&I orientation. Various additional statements about diversity are disclosed by official documents, such as Ethical Codes, Strategic Plan and D&I specific policies (e.g. EURAM Professional and Research Integrity Committee; EGOS Diversity and Anti-Harassment Policy; BAM Fellows Nominations Criteria). The results confirm that the Academies that explicitly declare their D&I orientation in their mission statements are coherent in their policies aimed at promoting this social issue.

The analysis of other Academies confirms that their disclosed policies are consistent with each prevailing mission statement orientation (e.g. country; scholar; industry, teaching). This suggests that the mission statement communicates not only the main aim and scope of the Academy, but also a different way of embracing issues of "diversity and inclusion" (e.g. creating a community, promoting relationships with businesses) that is underlined also in official documents. In several cases (e.g. African Academy of Management and SIMA) D&I issues, though not present in the mission statement, are explicitly disclosed in their official documents.

The analysis of the main content of Divisions and/or Special Interest Groups (SIG) helped us to understand if and how Academies are engaged in pursuing D&I in their strategic goals and whether they promote scientific studies on D&I. The number of scientific academies in the management field that currently invest in Divisions/SIGs focused on D&I are still limited. The results confirm that the Academies that explicitly declare their D&I orientation in mission statements (e.g. BAM, ANPAD; ANZAM, EURAM) promote this social issue creating specific organisational units such as divisions, committees, SIGs that are "D&I oriented" (e.g. Indigenous Issues Special Interest Group for ANZAM; SIG "Gender in Management" for BAM). In this vein, they truly "practice what they preach". For the other sampled academies, whose commitment to D&I is not explicitly disclosed in their mission statement, the presence of organisational units is rarer (except, e.g., for AoM that presents a specific division "Gender and Diversity in Organizations" and a "Diversity and Inclusion Theme Committee" as well as other divisions "D&I oriented" such as Career, Conflict Management, Organisational Theory and Organisational Behaviour); nevertheless, their commitment to issues of D&I may be seen as increasing as many institutional topics of these academies (such as Strategic management, Corporate Governance, Organisation, Business Process Management) are more and more affected by an awareness of social issues.

Considering that a diverse and inclusive Board of Directors (in terms of gender, national affiliation, position and country of origin) is generally considered a predictor of a good "social performance", the analysis of the board composition demonstrates that the analysed Academies present a strong orientation to create a diverse and inclusive board, especially in the cross-national Academies.

In this vein, the analysis of practices confirm that Academies that declare D&I issues in their mission statements are also oriented to implement coherent policies and practices. Through the consideration of the other academies, on the basis of their current efforts of promoting the D&I issues in their institutional topics and in their board composition, we can conclude that an Academy may be considered D&I oriented even if there is no mention of D&I in its mission.

**Conclusions.** This study has identified the extent to which D&I issues are treated in mission statements disclosed by scientific academies in the management field, or pursued through their policies and practices.

In order to answer RQ1, we applied a content analysis to assess mission statements' content and, in particular, the explicit reference to D&I orientations. For RQ2 we delved further into the analysed academies, scrutinizing their disclosed policies, organisation and practices in order to infer their level of practical orientation towards issues of D&I. The results demonstrate that mission statements help to communicate the institutional role of Academies as defined by extant literature (Caswill and Wensley, 2007, Starkey and Tiratsoo, 2007, Masrani et al., 2011). However, by performing a more fine grained content analysis, the orientation towards several stakeholders (not only scholars), the promotion of integration among scholars coming from different Nations, cultures, status, and the creation of services aimed to create a community where values and ethics are shared, suggest the implicit adoption of different forms of D&I policies although they are not necessarily spelt out in their mission statements. On this basis, the content analysis developed on the mission statements in this paper helps to identify several clusters of scientific academies in the management field that correspond to different specific de-facto orientations towards D&I issues.

Investigating the disclosed policies (though official documents such as Ethical Code, Diversity Policy) and their adopted practices (in terms of SIG/Divisions focused on these social issues and the board composition), it becomes apparent that the Academies that explicitly declare their D&I orientation in mission statements are coherent in

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Academy of Management ("Aiming to contribute to the exercise of democracy and citizenship, ANPAD incorporates distinct theoretical positions in the areas of Business Administration, Public Administration, Accounting and similar areas, acting as an important space for dialogue and debate among academia regarding social experience).



implementing social policies and practices; the other academies are investing in D&I issues without any disclosure, "using" especially the Board composition lever.

**Research limits.** The present research used secondary data, available on the website of each scientific academies. This is an effective pragmatic way to collect information, but obviously not as satisfactory as interviews with the governance staff and members.

**Practical Implications.** The members of the Scientific Societies are professors and researchers, whose research projects and teaching activities are able to transfer relevant messages and values to the academic community as a whole, in term of colleagues and students (the future managerial class). The academic community is not immune from the diffusion of dominant logics, which is often the reason behind problems of segregation and barriers to diversity. In this context, scientific academies may be pivotal in supporting policies of D&I, leveraging their established role of channels of new values, practices and belief schemes of society members.

**Originality of the study.** On the best of our knowledge, D&I has never been studied regarding the specific role of scientific academies. Therefore, it is the first specific study aimed investigating this intriguing theme adopting an empirical point of view.

**Key words:** Diversity, inclusion, academic capital diversity, inter-academy network

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# Industry 4.0: challenge or opportunity for social sustainability in firms?

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**Objectives.** *The term Industry 4.0, which is currently widely used worldwide, refers to a series of technological innovations that in recent years have above all transformed industry and businesses.*

*Lasi et al. (2014, p. 240) affirm that “Industry 4.0 collectively refers to a wide range of current concepts” such as for instance: Internet of Things, smart factory, cyber physical systems, new systems in distribution and procurement, new systems in the development of products and services, adaptation to human needs and also Corporate Social Responsibility.*

*This is a recent topic that is progressively developing in numerous fields of study, including the managerial one (Piccarozzi et al., 2018).*

*In this regard it is interesting to underline that a recent paper proposes a systematic literature review concerning Industry 4.0 in managerial studies and states that Industry 4.0 “[...] refers to the integration of Internet of Things technologies into industrial value creation enabling manufacturers to harness entirely digitized, connected, smart, and decentralized value chains” (Prause, et al., 2017, p. 423) able to “deliver greater flexibility and robustness to firm competitiveness and enable them to build flexible and adaptable business structures, [acquiring] the permanent ability for internal evolutionary developments in order to cope with a changing business environment” (Koether, 2006, p. 583), “as the result of a purposely formulated strategy implemented over time” (Piccarozzi et al., 2018, p. 16).*

*The above definition shows how the development of Industry 4.0 positively affects several important aspects and challenges in the life of firms, like global competitiveness (Mark et al., 2019), business model implementation (Gerlitz et al., 2016), supply chain (Glas and Kleemann, 2015), and also sustainability (Kagermann et al., 2013).*

*Indeed, sustainability, like innovation, is a key element for the management and strategies of modern businesses and a strong link exists between Industry 4.0 and sustainability (Kiel et al., 2017).*

*Some authors affirm that sustainability should be considered as one of the issues right at the core of Industry 4.0 strategy (Piccarozzi et al., 2018) while some others consider sustainability as one of the drivers of Industry 4.0 (Braccini and Margherita, 2018).*

*Even if it is true that some studies on the link between Industry 4.0 and sustainability have been developed following the triple bottom line approach including economic, environmental and social issues (Almada-Lobo, 2016; Frolov et al., 2017; Prause and Atari, 2017; de Sousa Jabbour, 2018), it is also true that Müller and Voigt (2018), for example, underline a lack of significant in-depth studies and development of literature just in this domain.*

*In particular, literature lacks in-depth contributions about the link between Industry 4.0 and social sustainability (Morrar et al., 2017), as also underlined more recently by Piccarozzi et al. (forthcoming) who consider this stream of literature in the start-up phase. Social sustainability can be defined as “a life-enhancing condition within communities, and a process within communities that can achieve that condition” (Mckenzie, 2004, p. 12) and, over the years, it has grown in importance just like the other pillars of sustainability (i.e., economic and environmental).*

*Indeed, to promote sustainable development, firms are asked to “overcome a purely economic vision, paying more and more attention to the environmental impact of their products and processes as well social issues and workers’ wellbeing” (Siemieniuch et al., 2015, p. 20).*

*Therefore, in the current global and competitive context it is no longer sufficient to focus attention on traditional aspects of sustainability such as resources efficiency, cost and waste reduction or productivity (Rodrigues et al., 2016), but it is necessary to put the spotlight on social issues (i.e., working conditions and safety; Cherrafi et al., 2016).*

*This is even more important when dealing with firm innovation, in that maintaining the focus on social innovation can threaten the maintenance and development of conditions of social sustainability during innovation (Vallance et al., 2011); just think of the role workers can have in finding new ideas to innovate that are able to encompass all aspects of sustainability and especially social ones.*

*However, scholars have not yet reached consensus about the link between the last innovation drivers (i.e., digitalization, Industry 4.0, etc.) and social innovation. Indeed, Linkov et al. (2018, p. 1) for example affirm that “while*

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the growth of a digital economy may increase productivity and benefit local and global economies, digitalization also raises potential sustainability challenges pertaining to social", while other authors state that Industry 4.0 can instead represent, with its innovations, an opportunity for the development of social sustainability (Rauch et al., 2019).

In this domain, the aim of this extended abstract is to map the state of the art of literature regarding Industry 4.0 and social sustainability in the domain of management studies seeking to identify some major gaps in literature. With this aim in mind, two research questions have been formulated:

- RQ1: Which issues have authors analyzed jointly studying Industry 4.0 and social sustainability?
- RQ2: What kind of impact of Industry 4.0 on social sustainability do authors emphasize?

**Methodology.** This extended abstract is based on a systematic review of the literature, which is considered a rigorous methodology able to select all relevant papers pertaining to the subject matter as suggested by Transfield et al. (2003).

This systematic literature review was carried out from the 13<sup>th</sup> of February to the 5<sup>th</sup> of March 2020 and was organized into a series of consequential steps to collect and progressively skim the papers of interest for the topic analyzed, starting from the choice of databases.

Then, according to Newbert (2007), Merli (2018) and Sassanelli et al. (2019) the database Web of Science (WoS) and Scopus-Elsevier were chosen. Indeed, Abatecola et al. (2013) affirm that these databases represent those of greatest interest and usefulness for managerial studies.

Once the databases were chosen, the keywords for the search were selected, considering the following keywords crossed in sequence:

- Research 1: "Industry 4.0" and "social sustainability";
- Research 2: "Digitalization" and "social sustainability".

In addition to the specific word "Industry 4.0", the word "digitalization" has also been selected as it is commonly placed alongside the first as a related key word (Heng, 2014; Lasi et al., 2014; Ibarra et al., 2018).

A total of 30 papers for Research 1 and 8 papers for Research 2 emerged at this stage.

Then, the identified papers were skimmed using ad hoc filters in the two databases to ensure focusing only on papers pertaining to business management.

The filters used were:

- management, decision science, social science for Scopus;
- management for Web of Science.

This phase returned 10 papers for the first research and 5 for the second.

Finally, the results that emerged from the databases regarding the two researches were compared in order to eliminate any duplicate papers.

In conclusion, 13 papers emerged: 9 from Research 1 and 4 from Research 2.

It is important to specify that, given the small number of papers returned by the research, no further selection of papers was made based on type of publication (i.e. only journals, proceedings or books).

All the papers were therefore selected without limiting the analysis to specific categories, in order to have the widest possible vision of the aspects analyzed.

**Findings.** For clarity, results are divided into two sections.

In the first section, the particulars of the papers were analyzed, extracting their main characteristics.

In the second section, papers were investigated in more detail to extrapolate the relevant research topics and main considerations in terms of the impact of Industry 4.0 on social sustainability.

By analyzing the characteristics of the papers, one can highlight that 10 papers are published in international journals (The Journals of Cleaner Production and Sustainability have each published 3 papers for a total of 60% of the sample), while 3 papers are included in international conference proceedings.

The geographical origin analysis establishes that Italian researchers are the most active on this subject matter. Indeed, 31% of the papers (4 papers) are published by Italian authors, followed by Indian scholars with 15% of the sample (2 papers). The remaining papers are published in Europe (38% of the sample, 5 papers between Finland, Greece, Portugal, Spain and Sweden). The last two papers (15% of the sample) come from the USA and Indonesia. The concentration of studies in Europe is normal as the Industry 4.0 term was created and developed in Germany and then spread to the surrounding countries, before having a global impact.

Another interesting feature is related to the year of publication.

Research shows that papers have been published only in the last 3 years, while the Industry 4.0 term was created in 2011) followed by a crescendo.

In particular, 3 papers (23% of the sample) were published in 2017, 4 papers (31% of the sample) in 2018 and 6 papers (46% of the sample) in 2019.

Analyzing the methodological details of the publications, there is a balance between empirical (7 papers, 54% of the sample) and conceptual (6 papers, 46% of the sample) papers

In particular, conceptual papers used the literature review methodology, while the empirical ones are divided between qualitative (5 papers, 71% of the sample) and quantitative (2 papers, 29% of the sample) papers. Among the qualitative papers 3 studies present a single-case study while the remaining 2 used multiple case methodology.

Quantitative papers, in one case, apply structural equation modeling and in the other cluster analysis and were published respectively in 2019 and 2018.

The second section of results establishes the main topics emerged in the stream of literature under analysis (please see Table 1) and then the Industry 4.0 impact on social sustainability as explained by scholars.

Tab. 1: Classification of papers main topic

<b>Theme</b>	<b>n.</b>	<b>%</b>
Working conditions	8	62%
Supply chain	3	23%
Governance	1	8%
Knowledge	1	8%
<b>Total</b>	<b>13</b>	<b>100%</b>

Source: authors' elaboration

As is clear from Table 1, most papers (8 papers, 62% of the sample) focus the analysis on the impact that Industry 4.0 innovations can have on working conditions in the workplace (Bechtsis et al., 2017; Gregori et al., 2017; Nobre et al., 2017; Kumar et al., 2018; Papetti et al., 2018; Cagliano et al., 2019; Fox, 2019; Mark et al., 2019).

Another issue that emerges and seems to attract researchers' attention is linked to the analysis of the supply chain (3 papers, 23% of the sample) (Sendlhofer and Lernborg, 2018; Djunaedi, 2019; Perez et al., 2019).

The remaining two papers instead focus on firm governance (Linkov et al., 2018) and on the role of knowledge (Kashyap and Agrawal, 2019) in the application of Industry 4.0 in a context of social sustainability.

As "working conditions" was the topic most studied it appears necessary to deepen its analysis by dividing the results into sub-topics in order to better understand the specific characteristics of the "Working conditions" (please see Table 2).

Tab. 2: Classification of "Working conditions" issues

<b>Sub categories</b>	<b>n.</b>	<b>%</b>
Layout	4	50%
Disability	1	13%
Productivity	1	13%
Automation	1	13%
General	1	13%
<b>Total</b>	<b>8</b>	<b>100%</b>

Source: authors' elaboration

The results show that half the papers focus on the working conditions of personnel involved in production plants (Kumar et al., 2018; Cagliano et al., 2019; Fox, 2019; Gregori et al. 2019)

The other 3 papers (about 38% the sample) identify other significant issues like Disability (Mark et al., 2019), Productivity (Papetti et al., 2018) and Automation (Bechtsis et al., 2017), while one paper generally speaks about working conditions without further specification (Nobre et al., 2017).

For each paper, the type of impact highlighted by the application of Industry 4.0 innovations to social sustainability was analyzed (please see Table 3).

Tab. 3: Impact of Industry 4.0 on social sustainability

<b>Impact</b>	<b>n.</b>	<b>%</b>
Positive	9	69%
None	4	31%
<b>Total</b>	<b>13</b>	<b>100%</b>

Source: authors' elaboration

Most studies (9 papers, 69% of the sample) highlight a clear positive impact of Industry 4.0 on social sustainability, while the remaining papers (4 papers, 31%) do not express any consideration of this issue. However, in none of the papers was a negative impact of Industry 4.0 application on social sustainability highlighted.

These first insights help answer the two main research questions behind this study.

**RQ1:** Which issues have authors analyzed when jointly studying Industry 4.0 and social sustainability?

From the analysis of the literature it is clear that, when we talk about the impact of Industry 4.0 on social sustainability, the attention is mainly focused on the "human dimension of social sustainability" (Zink, 2014, p. 35).

For instance, Cagliano et al. (2019) are certain that technology becomes an indispensable tool for the organization of work and working spaces and therefore is able to create a better environment for workers.

Gregori et al. (2017), on the other hand, highlight that smart architecture within the concept of Internet of Things factory, could positively influence social sustainability in a production site through a series of steps and tools that can monitor working conditions in factories. The authors propose a model to create factory layout using digital tools (i.e. system space virtualization or simulation on virtual maps) and periodically monitoring the well-being of workers through data acquired by sensors and direct interviews.

Bechtsis et al. (2019) focusing on some specific characteristics of the workplace, such as nuisance of noise level, vibrations and harshness in general, argue that innovation and robotics, in particular, allow the minimization of these factors which normally disturb workers, thus creating a more comfortable environment.

In addition, the application of Industry 4.0 to firms can trigger a virtuous circle in that achieving social sustainability can also lead to productivity gains.

Indeed, Papetti et al. (2018) state that innovative tools, such as the application of Internet of Things, can optimize human work and implement the quality of working conditions, contributing in this way to increasing the efficiency of the entire production system.

Even more interesting, is the paper by Mark et al. (2019) who decline social sustainability in terms of inclusion of the disabled worker.

The authors affirm that technologies are fundamental to allow the inclusion of disabled workers even in the highly technical areas of factories.

Moreover, the same authors highlighted that certain conditions are necessary for the effective achievement of social sustainability. Indeed, there are some threats that must be overcome to take advantage of Industry 4.0 implementations, like for example, the high costs for firms and the related lack of incentives by Institutions when speaking about assistance systems for people with disabilities (Mark et al. 2019).

**RQ2:** What kind of impact of Industry 4.0 on social sustainability do authors emphasize?

Results clearly reveal that innovations introduced by Industry 4.0 have a positive impact on social sustainability, at least at a literature review level. Contrary to what has already been mentioned in the introduction, from a study of Vallance et al. (2011), it seems that Industry 4.0 innovations are linked to sustainable development, thus they are able not to compromise the rights and environment of workers and the social condition in general.

In this sense, Mark et al. (2019, p. 1) state that “despite many fears that Industry 4.0 will lead to machines gradually replacing employees, Industry 4.0 aims much more at a human-centered production in which humans will continue to play an important role in the future”.

However, it should be underlined that in none of the papers analyzed is there a precise measurement of this positive impact.

Even if it is true that some papers highlight this positive impact through the analysis of case studies (5 papers, 71% of the sample), there is no mention of specific measurement methodologies and/or parameters used and/or applied to evaluate the positive fallout of Industry 4.0 on social sustainability; this represents an important gap in literature to be considered in future studies.

Indeed, using technology pertaining to Industry 4.0, the role of human capital does not seem to suffer negative impacts.

On the contrary, these technological innovations can contribute to raising the position of the worker (Bechtsis et al., 2017; Gregori et al., 2017; Nobre et al., 2017; Kumar et al., 2018; Papetti et al., 2018; Cagliano et al., 2019; Fox, 2019; Mark et al., 2019) towards a favorable climate and respect for his particular skills.

Therefore, impacts seem to be mainly positive even if some problems must still be overcome, in some cases, taking full advantage of these positive fallouts triggered by Industry 4.0 on social sustainability (i.e. Mark et al. 2019).

Furthermore, the issue of governance should not be underestimated.

Indeed, Linkov et al. (2018) affirm that governance, both at the governmental and individual firm level, must support the integration of innovations to achieve social benefits. In fact, authors introduce the concept of “adaptive governance” permitting intervention on the potential threats that digitization could present to sustainability, making it possible to achieve the desired objectives.

**Research limits.** It is necessary to point out some limitations of the research.

Firstly, the number of databases used are a limitation of this study. Moreover, the limited number of keywords may have restricted the study presented in this short paper. Although the methodology of the systematic review of the literature is a replicable and standardizable model, at the same time some proposed assumptions are affected by the subjective analysis of the researcher.

**Practical implications.** This extended abstract has theoretical and managerial implications.

From a theoretical point of view, the paper helps to provide an initial overall view of the link between Industry 4.0 and social sustainability studied so far by scholars in an international context.

Indeed, as the review of the literature has underlined, this link has only been studied in very recent times and thus deserves more attention. In particular, some gaps in literature have emerged. Firstly, it is clear that there is no comprehensive view of how Industry 4.0 affects firm social sustainability. Indeed, the papers analyzed focus on single

aspects of this issue (i.e. situation of workers, supply chain, etc.) without proposing and/or suggesting for example how or to what extent Industry 4.0 can positively impact on social sustainability aspects while also enhancing the overall impact, thanks to existing or future relationships of social sustainability. In this same domain, further research should study possible virtuous links between firms, investors as well as universities and research centers in supporting firm transitions to digitalization having only or also a positive impact in the social sphere. In this respect, it is worth remembering that Industry 4.0 will reshape all firm environments and challenges and, in this way, will involve the entire society in developing future paths different from those of the past, like what happened with past industrial revolutions (Aquilani et al., 2019). This change in society will in turn, bring new challenges and changes in firms above all from a social point of view, because people operating in firms will ask for different working conditions, tools, etc. Literature should also focus attention on these important and unexplored issues to paint the full picture of the link between Industry 4.0 and social sustainability and vice versa, remembering that this change also involves, for example, the higher education system and research developed by institutions (i.e. Universities, research centers, etc.).

Indeed, none of the papers studied considers enhancements in social sustainability which need specific tools and/or innovations to be realized thanks to Industry 4.0; the effect and/or affect of social sustainability on Industry 4.0 development has to date been completely unexplored.

For both the above-mentioned research gaps, effects of Industry 4.0 on social sustainability and vice versa, more studies are needed above all in the empirical domain; only 2 quantitative studies have been retrieved considering only a few aspects of social sustainability.

On the other hand, costs and investments represent a critical element for the introduction of innovations linked to social sustainability, notwithstanding the fact that they are not widely investigated in literature.

From a managerial point of view, this paper can be of interest for managers and entrepreneurs to understand potential impact and benefits when applying Industry 4.0 innovations, also from a social sustainability point of view, even if difficulties and/or application problems (i.e. costs, governance aspects) must also be carefully taken into account.

Future research steps should consider the inclusion of other databases and/or search engines and other keywords related to the subject in order to widen the research at a desk level and refine the literature review presented in this extended abstract. Then, a framework regarding positive fallouts of Industry 4.0 on social sustainability could be created and tested, first thanks to multiple case studies and then seeking to create some measures or standards to evaluate the real achievement and improvement of social sustainability through Industry 4.0 implementation. After this stage it would be possible to complete a first picture on this subject matter also considering investments towards a respectful implementation of Industry 4.0 considering social innovation issues not only in terms of costs and/or investments, but also in terms of activities, worker involvement actions, etc. On completion of this research, managers would have a useful framework to choose activities that best suit their needs, given the specific nature of their firm and awareness of the necessary costs and/or investment, thus also paying sufficient attention to their budget.

**Originality of the study.** The study proposes an initial overall analysis of the main aspects of Industry 4.0 and social sustainability and, thus far, represents the first systematic review of the literature on the topic.

This research provides some initial considerations on the impact of Industry 4.0 on social sustainability from a managerial perspective, highlighting the positive effects but also the potential difficulties and/or problems for the achievement of their sustainable development objectives.

**Key words:** Industry 4.0, social sustainability, systematic literature review, impact, sustainable development.

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# Global value chains in the era of 4IR: new paradigm of business models for SMEs

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## Abstract

**Objectives.** *The key context of this paper is set within Fourth Industrial Revolution (4IR). Through the literature review, this paper offers to identify the opportunities of theoretical novelty and ways to elaborate on understanding firm dynamics in Global Value Chains in the context of 4IR.*

**Methodology.** *This paper presents a brief survey literature review of previous studies methodologies, models and contexts in studying firms' upgrading in Global Value Chains (GVCs).*

**Findings.** *This review made clear that prior literature also falls short in explaining learning and upgrading in GVCs on the verge of a major technological disruption that will affect the traditional forms in which firms interacts with their ecosystem in the process of creating, sharing and appropriating value.*

**Research limits.** *Although the findings are significant, there are limitations in this paper because the fact that no empirical analysis was used in this paper.*

**Practical implications.** *This paper concludes by proposing to link the international business and the innovation and organizational approaches by taking a BM perspective of the firms in GVC.*

**Originality of the study.** *The approach based on Business Model (BM) innovations and new forms of organizing for business (such as platforms) is used to synthesize from previous research findings and build on to newer explanations of firms' entry, learning and upgrading within GVCs.*

**Key words:** *Fourth Industrial Revolution; Business Models; Global Value Chains.*

## 1. Introduction

Unlike the previous industrial revolutions which were characterized by mechanization, electrification and digitization respectively, the fourth industrial revolution (4IR) is characterized by the integration of 'cyber-physical' systems, drawing on such core technologies as 3D printing, big data, sensor networks and intelligent real-time processing (Moavenzadeh, 2015).

4IR relies on the integration of physical processes with (cyber) digital ones, and the consequent connection of different functions within a value chain (VC). Yet, like in the previous industrial revolutions, 4IR will transform how goods and services are produced and delivered. Notably, the digitization of certain products, as well as the ability to collect and track vast amounts of customer data and 3D printing technology has made it easier to meet customer demand more accurately and efficiently. By making the borderline between the physical, digital, and biological spheres even fuzzier, 4IR might lead to the shift in the form in which human and economic interactions occur and consequently how value will be created and distributed. Besides the implications for how firms do business, most likely it will create opportunities to upend industries, emerge and grow (Müller et al., 2018).

Global value chains (GVCs) have emerged as a significant means by which powerful multinational corporation (MNC) organize their operations amongst multiple suppliers (Laplume et al., 2016). Thus, GVCs are a form of international trade in intermediate goods between an MNC and its globally dispersed suppliers or buyers. This sort of trade in the intermediaries accounts for two-thirds of all global trade (World Bank and World Trade Organization, 2019). Often but not always, GVCs take the form of offshoring labour-intensive processes to lower-cost regions, particularly developing countries, where MNCs may partner with local firms, including SMEs. This has facilitated the economic rise of many such SMEs, particularly in Asia, as well as MNCs for whom GVCs are central to their business model (BM). However, widespread availability of standardised intermediaries can lead to the proliferation of

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homologous products in a market and intense price-based competition (World Bank and World Trade Organization, 2019).

In GVCs, 4IR advancements could lead to strategic onshoring and near-shoring as automation and 3D printing reduce the incentive to seek out low-labour cost production sites. Furthermore, shipping services might decline in importance as homes or local communities acquire 3D printing capabilities (Moavenzadeh, 2015). Furthermore, 4IR can affect how VCs are interconnected, enabling greater transparency and real-time automated coordination between VC members (Müller et al., 2018). This would have the consequence of weakening the importance of a major source of competitive advantage for multinational firms - their ability to coordinate production internationally - thus perhaps making room for SMEs to be more competitive in consolidated industries (Laplume et al., 2016).

Until now, catching up processes have been based on labor costs differentials and on the development of export-oriented manufacturing and their ability to develop national linkages. These same factors that were critical for the catching up development story in emerging economies also determined the limits of that same catching up process. Indeed, many countries are stuck into the so-called "middle income trap" as the domestic wages rise but the local products remain in low-end segment (Lee, 2013). In this context, the "Industry 4.0" and the "smart factory" may create even further challenges for developing countries, as they permit significant reductions of the waste and production costs, in particular of labor costs. These have permitted the manufacturing of several commodity products to be brought back to developed countries and to be produced at similar or lower costs than in developing countries. Yet, the 4IR may also uncover new opportunities for entry and for proceeding with catching up. For example, China is the leader in the number of robot factories installed. In sum, the 4IR may reveal both the prospect for further catching up and an additional limitation for emerging economies.

Prior literature also falls short in explaining learning and upgrading in GVCs on the verge of a major technological disruption that will affect the traditional forms in which firms interact with their ecosystem in the process of creating, sharing and appropriating value. International business literature has focused on explaining how firms become part of GVC, the sources of their competitive advantage, and best practices in international markets. The innovation and the organizational literatures have focused on the process by which firms learn and innovate, in particular on how firms deal with technological disruptions.

Despite taking a different theoretical focus and evidence being scattered and sometimes contradictory, it seems consensual to affirm that this process of entry, learning and upgrade is not uniform across firms, industries or countries or sequential, i.e. the fact that a firm enters in a GVC or that it learns and innovates is not automatically leading to upgrade. Due to their distinct theoretical and empirical approaches, we still know little about how participation in GVC may foster firms' ability to learn and innovate, as well as the organizational strategies that enhance possibility of upgrading in GVC that is on the verge of a major technological disruption, the form in which firms in a GVC create and appropriate value.

We propose to address this gap in the literature by linking both the international business and the innovation and organizational approaches. We will do that by taking a BM perspective of the firms in GVC.

## 2. Theoretical Background

### 2.1 International Business literature

The Ricardo and Heckscher-Ohlin traditional models of comparative advantage of countries stress that countries may trade even if they are more efficient to produce internally, and that they tend to export products that use inputs that are abundant and cheap in the country, while importing products that use inputs relatively scarce in the country. These traditional models were however unable to explain intra-trade. More recent contributions stressed the importance of tariffs, transportation costs, demand tastes and regulations, in particular environmental regulations in understanding trade, but also of countries' technology and competences.

Being more empirical and focusing on firms rather than on countries as actors of trade, the international business literature focuses on explaining the international comparative advantage of firms. It tries to explain why some firms than others are more likely to participate in international trade, how knowledge is transferred across countries and plants, and how best practices emerge and diffuse in international markets. Specifically on participation in the international markets, prior literature shows that not all firms export because exporting involves sunk cost and only the most productive firms venture into exporting (Greenaway and Kneller, 2007). Additionally, exporting firms seem to differ significantly from those that only trade in domestic markets, which concerns their competencies to face greater competition and more demanding customers, and to innovate (Cooper and Kleinschmidt, 1985; Roper and Love, 2002).

Some efforts have also been in examining GVCs' decisions and performance. In particular, recently, borrowing from the on-going debate on the transaction costs and resource based-view approach to governance, the theoretical contributions have been discussing the governance mode of the interactions with external and foreign partners. Benito et al. (2019) argue that dynamic considerations, such as learning across the GVC, are difficult to be encompassed in decisions related to efficiency and foreign operation mode.

This is most in line with some empirical evidence on the two main sources of learning, and ultimately upgrading, for an SME in a GVC context. First, SMEs that engage in direct GVC participation benefit from the direct transfer of knowledge from MNCs, often either by pressure to attain corporate standards (including the adoption of 4IR

technologies for greater VC integration) or by the direct involvement of VC leaders (MNCs) in the operation of the SME when competence is low (Ernst and Kim, 2002; Lensson et al., 2006). This transfer of knowledge observed when a firm introduces a new (to firm) product or process, occurs for two main reasons.

First, MNCs often have a greater breadth and depth of experience than SMEs, gained from operating over long periods in multiple locations and countries at the technological frontier; and, MNCs or large firms in general are often better (financially) equipped to invest in the R&D, high skilled talent, risk etc., necessary to experiment with and develop applications for 4IR (Shefer and Frenkel, 2005).

Second, an SME may attain upgrading from a GVC through spillovers. "Spillovers are externalities that accrue from one firm to another, and [...] imply a process of learning by the recipient firm..." (Narula and Marin, 2005: 2). Spillover effects are most clearly observed in industrial clusters (Giuliani et al., 2005; Lema et al., 2015; Oyeyinka, 2005), yet there is evidence in the wider international business literature that hints that such externalities may extend beyond localised effects to affect much of an industrial sector. Durand (2007) for instance, shows that by applying supply chain practices developed in the US to its Mexican operations, the MNC Wal-Mart accelerated the modernisation of Mexican SME retail firms while driving down worker remuneration across the industry. These externalities may be due to competitive pressures, imitation and informal knowledge flows (for example through the movement of workers) (Durand, 2007). They have also been attributed to demonstration effects, copying and reverse engineering (Roper et al., 2017).

Hence, some social mechanisms such as inclusion of non-business intermediaries, joint strategizing, multilateral feedback, or rules for equitable value distribution may become relevant to coordinate routine and innovation activities across multiple external and foreign partners, and consequently to foster innovation capability development across GVC (Kano, 2018).

In sum, taking an international business approach, prior literature had documented extensively on why some firms participate in international trade and others not, as well as on difficulties of knowledge transfer and coordination of activities across a GVC, with multiple external and foreign partners. Still, when considering the issues of coordination of innovation and knowledge transfer, it has often taken the view of the multinational lead firm, and it has often focus on processes associated with innovation in the products and their associated production techniques.

Hence, it does not tell us much about how firms can enter, learn and upgrade within a GVC, especially when new technologies are revolutionizing the mode in which firms conceive production and consequently the interaction with partners along the VC.

## 2.2 Innovation and Organizational approaches

The innovation literature has provided extensive evidence on the continuous and radical processes of innovation, as well as on how firms react to technological disruptions. This literature has stressed the particular relevance in the process of innovation development, of the (vertical) supply-chain partners, customers and suppliers, which are sources of technological and market knowledge (Bodas Freitas and Fontana, 2018; Clark and Fujimoto, 1991), but also of horizontal partners, such as universities or firms in other industries that extend the possibilities of firms to access to new knowledge and resources (Belderbos et al., 2004).

This literature has also examined extensively the effects of technological disruptions. Evidence suggests that technological disruptions are a challenge for existing firms if they are not able to accommodate them in their product architecture (Henderson and Clark, 1990) and if their value-chain partners are slow to accommodate the required changes (Tsai, 2004). Overcoming technological disruptions seems associated with firms' ability to identify the nature of the challenge, to identify the relevant lead users, and to established relationships that allow early access to resources and markets.

More recent contributions have examined platforms, as a specific new mode of organizing relationships in the ecosystem, which has become possible due to improvements and wide diffusion of digitalization and IT. A platform-based organization of firm and its VC partners includes a focal hub firm that coordinates and orchestrates activities between the firms and facilitates for the production of an integrated product or service (Iansiti and Levien, 2004). That is, this organization between firms leverages contributions from a firm's horizontal VC partners and integrates it with contributions from its vertical supply chain partners. This permits the generation greater value for the end user (Van Alstyne et al., 2016). Additionally, digitalization has enabled these platforms as new forms of intermediaries that could reduce transaction costs (Hagiu and Yoffie, 2009).

These approaches however have focused on the set of relationships, and on the strategies to innovate by the lead firms. While some efforts have been made to test the performance of firms within and outside the platforms, no attempt has been to examine the BM of the SME in the platform, and how they innovate their BM to accommodate technological disruption. In addition, this literature tend to focus on very specific industries such as semi-conductors, video games, which are not those ones where manufacturing and production activities are prevalent, hence GVC are less relevant.

Moreover, it is well-known that firms operating in different technological regimes face different innovation challenges. Examining the benefits of high R&D spending and the innovation rates in situations with different levels of difficulty to innovate and imitate, Nelson and Winter (1982) argue that the possibility to attain higher productivity rates and the imitator achieving higher productivity, depends on the technological regimes in which the firms operates. Hence, we simply know little about how firms operating in different industries can enter, learn and upgrade in GVC in the face of a technological disruption.

### 2.3 Business models

“At a very general and intuitive level, a BM is a description of an organization and how that organization functions in achieving its goals (e.g., profitability, growth, social impact, . . .)” (Massa et al., 2017: 73). BMs thus encompass value creation, offer and capture. Value creation refers to all the production steps that a firm undertakes. Value offer is often thought of as lying in a spectrum ranging from services-only to product-only including products that are delivered as services. Value capture refers to how a firm is paid for its offer, whether the product is sold outright, as a subscription, per-feature, etc. (Müller et al., 2018).

The BM represents interactions across firm boundaries along the VC (Zott and Amit, 2007, 2008). This representation of the processes emerges as firms interact with each other, providing a network of firms according to their roles in the capture and distribution of value (Hacklin et al., 2018). As the VC involves key partners in the process of capturing and distributing value, they might be difficult to substitute. This forms a network of partner firms that play a role in the evolution of a given BM according to their various interests (Tikkanen et al., 2005; Ansari et al., 2016). Thus, while describing how the firm “does business”, by describing routines and actions, the BM necessarily implies a set of relationships (Zott and Amit, 2013).

This raises an important question of, when faced with constant technological and market changes, how do firms’ network of partners and their BM reflect firms’ learning and innovation? It is through this network of interactions that value generation processes are problematized, and thereby lead to the potential of innovation and stagnation, which is then encapsulated as changes to the BM (Garud et al., 2018). At times, severe overhaul to the BM can become necessary due to drastic changes in the dynamic surrounding environment (Cavalcante et al., 2011).

The literature on BM stresses that, faced with disruptive technologies or demand changes, current relationships run the risk of being mutated, or dropped entirely, while new relationships can be forged, upon the grounds of the new, innovated, BM (Lorenzoni and Baden-Fuller, 1995).

Empirically, relying mostly on case studies of large corporation, previous studies stress how IT permitted interaction throughout a network of partnered firms to cumulate into a particular BM.

However, it has mostly neglected that the BM that a SME can devise might not be similar to those of large corporations, as well as that SME in developed and developing countries might be able to devise different BMs.

### 3. Conceptual Model to Examine Entry, Learning and Upgrade in GVC in the era of the 4IR

As elaborated before, the BM of a firm describes how the firm “does business”, and the set of relationships that firms maintain with value-chain partners and other intermediaries. Given the analytical focus of the BM approach, we argue that it permits to bridge international business and innovation literatures, and consequently to conceptualize the process of change and learning in responding to disruptive technologies in the context of their GVC linkages. In doing so, we highlight how newer ways to organize for business (or production), such as in platforms, facilitates coordinated actions and responses from a firm and its network of VC partners.

Taking a firm’s changes to its BM (BM innovation) and new ways of organizing for value generation (such as platforms) as the approaches may permit us to better understand how firms can accommodate changes in the products, in organization of the production and in the interaction with value-chain partners and other intermediaries. This approach will allow as well in elaborating how specific BMs may facilitate firms’ entry, learning and process of upgrading in GVC in the 4IR era than others.

4IR is expected to trigger new paradigms of BM and organizing for business, in particular within SME firms.

### 4. Conclusions

In this paper, we review the various approaches in literature that serve as a lens into VC analysis pertinent to most SMEs with specific focus on the final markets, buyers, suppliers within various sectors. This review made clear that prior literature also falls short in explaining learning and upgrading in GVCs on the verge of a major technological disruption that will affect the traditional forms in which firms interacts with their ecosystem in the process of creating, sharing and appropriating value. This mainly results from fact that the international business literature, on the one hand, and the innovation and the organizational literatures have distinct theoretical and empirical approaches. This paper concludes by proposing to link the international business and the innovation and organizational approaches by taking a BM perspective of the firms in GVC.

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# Does the presence of the university affect residents' perceived quality of life? An empirical investigation

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**Objectives.** *Over the last decades, the role that the university may play to contribute to the social, cultural and economic development of the community in which it operates has been largely investigated. New theoretical frameworks have been developed and a debate around the performance metrics and indicators that it is possible to use in order to assess the impact of university activities soon emerged (Riviezzo et al., 2019a). As a matter of fact, if universities are now supposed to contribute to the economic development, but also to show a civic engagement or civic responsibility within the community, the city and region of which they are part (e.g., Chatterton and Goddard, 2000; Thornton and Jaeger, 2008; Goddard, 2009; Goddard and Vallance, 2013; Fini et al., 2018; Carayannis et al., 2018; Riviezzo et al., 2019b), it is clear that new approaches to the assessment of university activities become necessary. However, research on measures and indicators of universities activities is, to a large extent, still very scant (e.g., Urbano and Guerrero, 2013; Mazdeh et al., 2013; Schmitz et al., 2017; Riviezzo et al., 2020). For instance, the impact of the presence of the university on the host community perceived quality of life, to the best of our knowledge, hasn't been explored so far.*

*May the presence of the university in a place affect residents' perceived quality of life? How? The main aim of this study is to try to address these questions, by identifying the specific university activities that have an impact on the perceived quality of life in the place where university operates. To this aim, we aimed at developing and statistically validating a new scale to assess the impact of the presence of the university on the host community perceived quality of life.*

**Methodology.** *First, we used a qualitative research approach to develop the items to include in the new scale. Second, a survey provided data for statistical validation of the scale. Both the research steps were focused on the historic centre of Naples for its extraordinary cultural and historical value and for its high concentration of universities. Indeed, five universities operate in this area, inscribed in the UNESCO World Heritage List in 1995: University of Naples "Federico II", University of Campania "Vanvitelli", University of Naples "L'Orientale", Suor Orsola Benincasa, University of Naples "Parthenope".*

*Since our main aim was to identify all the activities through which the presence of the university contributes to the socio-economical and cultural well-being of the community of which it is part, in a first step, we collected the opinions of the main stakeholders of the area (e.g. faculty members of the five universities, residents, business associations, students, municipality, and so on). We had face-to-face interviews and a protocol interview was used to be sure to gather different points of view about the way the presence of the university shows an impact on the community in daily life. Of course, we asked to provide arguments and examples to support responses. On the whole, we conducted 25 interviews. The interviews lasted from 35 minutes to 84 minutes, with an average of 52 minutes. All interviews were recorded and the transcripts were content-analysed by using the software Nvivo 10. For more information about the results of this first research step, please, see Riviezzo et al., 2019b.*

*According to what emerged from the respondents, we identified three "spillover effects" related to the presence of the university that have an impact on the perceived quality of life. They are: 1) economic spillovers; 2) social spillovers; 3) cultural spillovers. Furthermore, we operationalized the concept of university's strategy and residents' perceived quality of life that are affected by the above mentioned spillover effects. We used an iterative process to reduce and purificate the final list of items for each dimension and, at the end, we developed a scale aiming at assessing the impact of the presence of the university on the residents' perceived quality of life.*

*In order to gather data for the statistical analysis and validation of the scale, in a second step of our research path, we conducted a survey in the historic centre of Naples. On the whole, we collected 600 useful questionnaires. A market research agency supported us for the personal interviews to people living, working and/or regularly frequenting*

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the area. We used a structured questionnaire based on a 5-points Likert scale to assess: economic spillovers (5 items); social spillovers (6 items); cultural spillovers (5 items); university's strategy (3 items); and perceived quality of life (7 items). Furthermore, we collected descriptive statistics (age, sex, main reason for being in the area, etc).

The following step in our research path was the statistical validation of the scale. We performed an exploratory factor analysis (EFA) to identify items that share significant variance, and then a reliability analysis through the Cronbach alphas. For the EFA, we first focused on the three scales aiming at measuring the three types of spillovers (we treated as separated scales the university's strategy and the perceived quality of life). In a first phase we used all the items, including also three reverted items (one for each spillover effect) originally included in the questionnaire. We performed the EFA through the principal axis factoring followed by a Promax rotation, as we expected a certain degree of correlation among the spillover effects. Considering the eigenvalues greater than 1, four factors were selected, even if the scree plot did not show a clear gap. The four factors accounted for the 34% of variance. This solution appeared quite unsatisfactory as the reverse items clustered on the forth factor, producing also some confounding effects on the other factors. Hence, we decided to remove the reverse items and we performed again the analysis. In such a case, three factors were selected accounting for around 36% of variance. The factor correlation matrix showed also a positive correlation among the factors.

As a second step we considered the reliability analysis of the scale. The values are all satisfying ( $> .60$ ) excepted for the scale measuring the economic spillovers, for which the value is adequate (0.565).

Finally we performed a confirmatory factor analysis (CFA) for the three scales of the spillovers with the R package Lavaan. Also in this case the results indicate that three scales have good properties (Table 1). All the factor loadings are balanced and significant, and the fit indices are all satisfactory. All these results confirm that the constructed scale can be used in a structural model.

Tab. 1: Confirmatory Factor Analysis

Items (The presence of the university in this area....)	Estimate	Std.Err	z-value	P(> z )
<b>Economic spillovers</b>				
... favors the birth and survival of economic activities (restaurants, clubs, night clubs, copy shops etc.) that otherwise would hardly exist	1.000			
... has an impact on the private housing market, which many non-resident students apply for	0.696	0.072	9.618	0.000
... determines the creation of new businesses by professors, students and alumni who enrich the local economic environment	0.789	0.111	7.096	0.000
Thanks to it it is possible to use public funds (regional, national, European) to improve the attractiveness of the area (in terms of facilities, services etc.)	0.891	0.126	7.084	0.000
<b>Social spillovers</b>				
... creates greater circulation of ideas, knowledge and talents and promotes relationships	1.000			
... increases the vitality of the area thanks to the continuous movement of people	0.594	0.056	10.569	0.000
... favors the recovery, management and enhancement of buildings and public spaces	0.754	0.102	7.363	0.000
... generates an increase in the sense of security	0.609	0.101	6.025	0.000
... favors the integration and opening of the area, also through the attraction of non-resident and Erasmus professors and students	0.702	0.073	9.573	0.000
<b>Cultural spillovers</b>				
... preserves the tradition and identity of the area	1.000			
... ensures the organization of events (exhibitions, events etc.) and the use of cultural spaces (museums, galleries etc.) otherwise not available in the area	1.010	0.120	8.401	0.000
... raises the cultural level of the population in general and not only of those who attend university	1.022	0.135	7.585	0.000
... sensitizes citizens to respect the history of their territory	1.043	0.134	7.758	0.000

Comparative Fit Index (CFI)	0.971
Tucker-Lewis Index (TLI)	0.951
GFI	0.977
Chi square Test statistic	90.441 (p-value=0.000, d.f. =46)
Akaike (AIC)	19481.167
Bayesian (BIC)	19679.029
RMSEA	0.040
SRMR	0.041

**Findings.** Looking at the results of the structural model (Table 2) we observed that the social and cultural spillovers exert a positive direct effect on both the quality of life and the university strategy. As for the economic



spillovers they have a positive significant effect on the university strategy and a negative not significant effect on the quality of life. All the mediated effects of the three spillovers on the quality of life passing through the university strategy are positive and significant, while the total effect of the economic spillovers are not significant.

Thus, the social and cultural spillovers have a positive effect on the perceived quality of life, and the university strategy fosters such positive effects. On the contrary, the economic spillovers exert a positive influence on the quality of life only mediated by the university strategy. It follows that if the university has not a clear and focused strategic vision about the impact it may have on the local economy, its presence will never produce a significant and long-lasting effect.

Tab. 2: Structural model

*Regression estimates: direct effects*

Dependent Variable	Independent	Estimate	Std.Err	z-value	P(> z )
<i>Quality_Life</i>					
	<i>Economic</i>	-0.068	0.055	-1.251	0.211
	<i>Social</i>	0.358	0.064	5.636	0.000
	<i>Cultural</i>	0.177	0.045	3.943	0.000
	<i>Univ_Strat</i>	0.093	0.037	2.528	0.011
<i>Univ_Strat</i>					
	<i>Economic</i>	0.354	0.059	5.988	0.000
	<i>Social</i>	0.217	0.070	3.092	0.002
	<i>Cultural</i>	0.370	0.048	7.783	0.000

*Regression estimates: Indirect effects mediated by university strategy*

Dependent Variable	Independent	Estimate	Std.Err	z-value	P(> z )
<i>Quality_Life</i>					
	<i>Economic</i>	0.033	0.014	2.329	0.020
	<i>Social</i>	0.020	0.010	1.957	0.050
	<i>Cultural</i>	0.034	0.014	2.404	0.016

*Regression estimates: total effects (direct and indirect effects)*

Dependent Variable	Independent	Estimate	Std.Err	z-value	P(> z )
<i>Quality_Life</i>					
	<i>Economic</i>	-0.036	0.053	-0.667	0.505
	<i>Social</i>	0.379	0.063	5.968	0.000
	<i>Cultural</i>	0.211	0.043	4.914	0.000

	Estimate	Std.Err	z-value	P(> z )
<i>.QUALITY_LIFE</i>	0.461	0.027	17.321	0.000
<i>.UNI_STRAT</i>	0.571	0.033	17.321	0.000

**Research limits.** This study is not without limitations. First, we used a structured questionnaire to collect only perceived data. Even if this method has been proved to be effective, it could lead to biased reporting. Second, it would be of great interest for future research to integrate the model with additional and factual data concerning different aspects of universities contribution to local development and social innovation (e.g., the number of joint research projects with firms, the number of cultural events promoted, the presence in the educational offering of entrepreneurship courses, etc.). Similarly, it would be interesting to supplement the data on the context, with external variables related to the actual level of development of the place where university operates (considering, for example, the GDP, the unemployment rate, etc.). Furthermore, in order to verify to what extent the external contextual conditions can affect the results and the relationships between the investigated variables it would be particularly interesting to perform a comparative analysis among other cities/countries. As a “pilot” study, in fact, we just focused on a specific area (i.e., the historic town-centre of Naples, in Italy).

We hope that the above-mentioned points may represent interesting directions for future avenues of research to expand the present study. However, even considering its limitations, we do believe that it makes an interesting contribution to theory and practice.

**Practical implications.** The results of the present study highlight that the presence of the university produces different important effects on the area where it operates, directly and indirectly affecting the perceived quality of life of the local community. Indeed, the direct economic, social and cultural spillovers, linked to the only circumstance that universities are physically located in that specific area, are paralleled by indirect effects. In this perspective, our study

shows the relevance of the strategic orientation of the university, which plays a mediation role. A greater openness of the university to dialogue with the other actors of the area (e.g., businesses and institutions, associations and schools, and so on), could guarantee better results in terms of economic, social and cultural spillovers. To this aim, the university should activate and manage continuous and systematic relations with the community; it should be more involved in local dynamics, behaving as a key actor of the local economic and social environment. This is particularly the case of the economic spillovers. Thus, if the university aspires to evolve towards a more community-engaged model it must necessarily change its strategy in a radical way. Without a clearly defined strategy, a university cannot contribute to the goals of society and the economy (Clark, 1998; Riviezzo and Napolitano, 2010; Riviezzo and Napolitano, 2014; Riviezzo et al., 2017; 2019a).

Another relevant implication arising from this study is that the use of a few and very specific indicators may prevent a consistent assessment of the economic, social and cultural externalities created by universities in a specific place. Assessment indicators should adopt a more «holistic approach that examines the main channels that bind universities to the rest of society» (Molas-Gallart et al., 2002; p. IV). In this perspective, the present study is the first aiming at empirically assess the impact of the presence of the university not by using specific and “hard” indicators, but perceived and “soft” metrics, such as the effects on the quality of life of the local community.

**Originality of the study.** The multiplicity of conceptual and theoretical advances on the relationship between universities and local development has been paralleled by the need of new performance metrics and indicators. Thus, the investigation of universities activities’ measures and indicators represents an emerging research topic (e.g., Urbano and Guerrero, 2013; Mazdeh et al., 2013; Schmitz et al., 2017; Riviezzo et al., 2019b; 2020). However, to date, it seems to be not yet sufficiently explored. Through the development and the statistical assessment of a new scale, this study aimed precisely to propose an innovative approach to assess universities activities, by focusing on the impact they have on the perceived quality of life of the local community.

Most of the existing studies on the universities still rely on a very few measures, mostly qualitative, that is an enumeration of activities and behaviours. Given the new role of university in the knowledge based society, there is the need to assess holistically and systematically the impact of teaching, research and entrepreneurial activities that universities carry on in order to increase economic, social and cultural development and preserving autonomy and sustainability of the universities themselves (Benneworth et al. 2017; Schmitz et al. 2017; Kapetaniou and Lee, 2017; Riviezzo et al., 2019b). We aimed to contribute to this on-going academic debate by proposing a new and original perspective, and by proposing a research tool that can be used for further studies in different places.

**Key words:** university; civic engagement; community engagement; quality of life; scale development; survey; Italy

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# Exploring the antecedents of responsible leadership behavior at individual and organizational levels

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*This paper empirically explores the individual and organizational antecedents of responsible leadership (RL) behavior of top executives. Drawing on RL literature, we analyze individual and organizational values as well as organizational practices and mechanisms that influence top executives to become leaders for responsible change within organizations. Utilizing a single-case study based on data from top management interviews and secondary data collected in a leading responsible company, this study shows that the internalization of RL behavior is an evolutionary learning process activated by value alignment and organizational identification. Our analysis suggests that RL behavior is embedded in the organizational value system of a responsible company that is progressively transmitted to executives via organizational practices. Key organizational practices are recruiting, training and engagement, open communication, fluid knowledge sharing and flat organizational structures. Further, we find that individual values and organizational factors combine and interact to influence RL behavior by creating spaces for executives to learn, understand and engage in corporate sustainability together with their followers. This paper concludes by providing directions for future research on RL behavior and by describing practical implications on how to engage and develop responsible leaders within organizations.*

**Objectives.** Research in environmental sociology and psychology has suggested that individual values play an important role in motivating responsible decision making and social change (Waters, 1980). For example, Stern and Dietz (1994) found that a biospheric-altruistic value orientations shapes environmentalist beliefs and behavioral intentions leading to the mobilization of strategies for social change. Karp (1996) found evidence that value systems combining self-transcendence and openness to change have positive influence on individual contribution to the collective good. Cameron (2011) argued that virtuousness conceived as the desire to creates social value that transcends self-interested benefit is a key value of responsible leadership. Freeman and Auster (2011) discussed the importance of authenticity to "acting on one's values" and effectively implement responsible business logics. Waddock (2014) stress the centrality of values related to "the good, the true and the beautiful" as central tenants of responsible leadership. Maak et al. (2016) theorized fiduciary duty and social welfare orientation as key values characterizing the interaction between CEO and top managers leading to RL behavior. Although these studies focused on conceptualizing and investigating specific individual values, little research has empirically mapped the values characterizing individual value systems of RLs (Miska and Mendenhall, 2018). This is led to our first research question:

*RQ1 What is the set of individual values that characterize responsible leaders?*

Whereas individual values drive individual behavior, organization's values are "socially shared cognitive representations of institutional goals and demands" (Rokeach 1979, p.50). They provide foundation for the purpose and goals of an organization, representing the guiding principles for interpreting internal and external signals, thus determining decision-making and strategy (Posner, 2010). They silently direct daily actions and decision-making at all levels of the organization. Values are the heart of organizational culture, identity and leadership (Schein, 2004). They shape, support, and filter individual action in ways that align it with the company's distinguishing ethics (Vveinhardt and Gulbovaite 2017). Organizational values are paramount in responsible companies, whose sense of purpose and ethics are at the very heart of business activity. They need to be preserved and reproduced constantly through individual RL behavior that inspire authenticity, integrity and responsibility to all stakeholders (Freeman 2018) and promote strategy-making that is aligned to those values. Although literature on RL investigated individual values leading to RL behavior, not much is known about the organizational values that characterize RL as an organizational property. Furthermore, little attention has been devoted to the relationship between individual and organizational values in determining RL behavior. Extant literature stressed the importance of leaders' individual values in creating

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and maintaining organizational values (Grojean et al. 2004) and recognized value congruency between individual and organizational values as a key condition for ensuring business success. However, this relationship can be investigated also from the opposite perspective. Organizational values might be transcendent, surpassing individual leadership behavior (Bunchko, 2007) and might influence individual values in ways that transform top executives in responsible leaders. In order to address this gap, we developed our second research question as:

*RQ2 What are the organizational values that characterize responsible companies?*

Socio-psychological mechanisms shape executives' perceptions of organizational values and activate individual values in ways that trigger intrinsic motivation to act as responsible leaders (Kirkhaug 2008). Since RL is a relational property within groups of stakeholders (i.e., leaders exist because of followers and followers exist because of leaders), RL is influenced by ordinary social cognitive mechanisms associated with psychologically belonging to an organization (Hogg 2011) and identifying with its mission and purpose (Dutton et al. 1994; Carmeli et al. 2017). These mechanisms align individual and organizational values in ways that integrate personal motives and organizational objectives, spurring personal engagement and motivation that is functional to the effective implementation of RL behavior (Bingham et al., 2013). Since limited literature explains the mechanisms that influence executives to align their individual values with those of a responsible company in the context of RL theory, we formulated our third research question as:

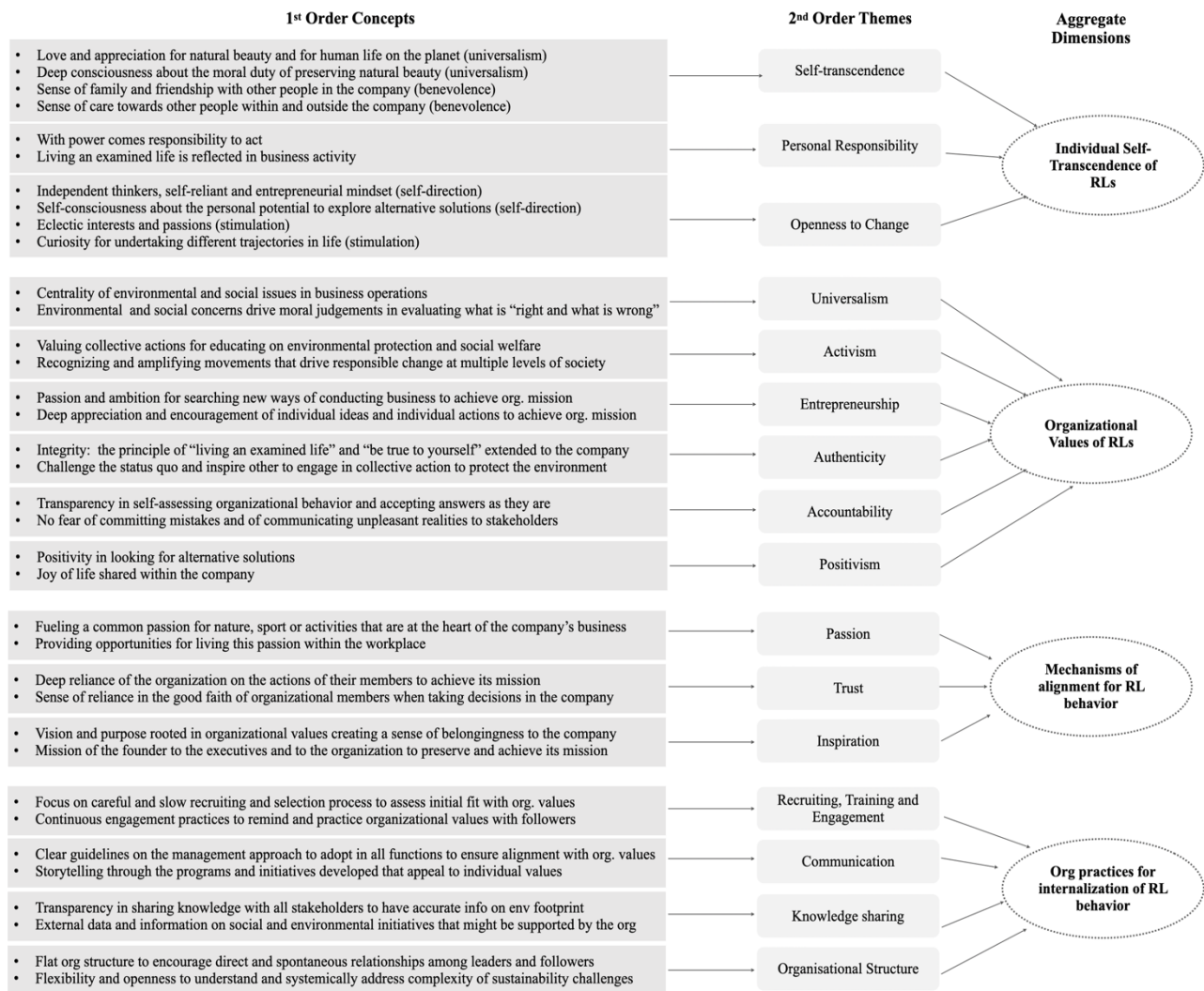
*RQ3 What are the mechanisms that align individual and organizational values in ways that trigger RL behavior?*

Research on organizational values have stressed that the orientation of structures and systems within an organization is very much a function of the values embodied within them (Kirkhaug 2008). Thus, organizational values might influence individual RL behavior through the structures and practices that characterizes it. Although limited research in RL has investigated the relationship between organizational values and RL behavior (Bansal 2003), a number of studies have adopted a value-based perspective (Maak and Pless 2006) to investigated the linkages between RL behavior and various elements characterizing the organizational context. Codwell et al. (2012) analyzed RL behavior in the context of business crises and related it to responsible management. Doh et al. (2011) found responsible organizational culture, fair and inclusive HR practices, and managerial support as key practices for RL. Pless et al. (2011) explored the role of international service-learning programs in enabling executives to develop responsible mindset, ethical literacy, global mindset orientations, cultural intelligence, community building and self-development. Martiz et al. (2011) found that emergent strategy-making modes allow responsible leaders to act as change agents and ensure the long-term sustainability in changing environment. They found that flexibility of planning structures, tolerance to ambiguity and uncertainty and empowered autonomy in decision making contribute to RL. Overall, these studies specify the organizational structures and processes support executives to exhibit RL behavior. Although these studies provide valuable insights on the organizational practices that foster RL behavior, the focus on the meso-level of analysis. Interesting insights might emerge from a cross-level research on interactions among RL antecedents at the individual and organizational level in driving RL behavior (Miska and Mendenhall, 2015). Therefore, our forth research question attempt to fill this gap by asking:

*RQ4 What are the organizational practices that align individual and organizational values in ways that trigger RL behavior?*

**Methodology.** We adopted qualitative research methods to empirically explore the socio-psychological mechanisms and the responsible business practices that lead to RL behavior (Eriksson and Kovalainen 2008). To get in-depth information about the questions under investigation, we conducted a single-case study in a leading responsible company operating in the apparel industry (Yin 2003). Our approach focuses on capturing the stories of individual executives who are in charge of inspiring, transmitting and translating the company's values and mission in strategy and daily-decision making in ways that engage internal and external stakeholders (Yin 2003). We combine data from semi-structured interviews, participant observations and informal interviews to immerse ourselves in the workplace's environment of 10 executives. Interviews were semi-structured in that informants were free to explore alternative path that provided interesting leads and became iteratively theoretical in our approach (Gioia et al. 2013). In a second step, secondary data were collected to complement and triangulate the information gathered in the first step of the research. Secondary data include the founder's books, the company's website and blog, the posts on social networks, press releases, podcasts and video interviews with the founder and key members of the US executive board. NVivo software was used to perform thematic content analysis (Gioia et al. 2013) and axial coding (Corbin and Strauss, 2008) (Figure 1).

Fig. 1: Structure of the data analysis



Source: Authors

**Findings.** Although previous literature has examined the role of individual and organizational values in relation to RL behavior (e.g., Maak and Pless 2006; Pless 2007; Pless et al. 2012), previous studies have rarely considered either their reciprocal influence or their relationship with organizational practices in determining RL as an evolutionary process. However, an increasing number of studies are calling for cross-level research that investigate connections among micro and meso antecedents in order to fully conceptualize RL as a process (Stahl and De Luque 2014; Miska and Mendenhall 2018).

We used a single case-study approach to fill this research gap. We found that the internalization of RL behavior is triggered by individual value systems activated by organizational values through socio-psychological mechanisms that, in turn, are catalyzed by specific organizational practices. Our results show that four aspects in particular contribute to this multi-level process.

The first aspect that contributes to the internalization of RL behavior is related to individual value systems. We found that individual value systems of RLs are characterized by self-transcendence and openness to change. Specifically, environmental and social welfare orientations are predominant values in driving RL behavior. Previous literature suggests that value systems combining self-transcendence and openness to change shape behavioral intentions leading to the development of strategies addressing the collective good and responsible change (Stern and Dietz 1994; Karp 1996; Waddock 2014). The interviews emphasized that within this type of value system, stronger environmental and social welfare orientations determined the development and the intensity of behavioral intentions in acting as RLs. Accordingly, we developed the following research proposition:

*P1. Self-transcendence and openness to change characterize RLs' individual value systems, where the strength of environmental and social welfare orientations determines the degree of internalization of RL behavior*

The second aspect that contributes to the internalization of RL behavior is related to organizational value system. Organizational values foster engagement in RL by motivating and supporting individual action that align with the company's responsible mission. Previous literature contributions highlight that organizational values guide RLs in addressing environmental and social issues by suggesting types of preferred behaviors and by proving a framework for

interpreting action (Chen et al. 1997; Bansal 2003). Moreover, organizational value system determines organizational structures that build the space of action and interaction for RLs. Our evidence suggests that responsible companies are characterized by a value system comprising activism, authenticity, entrepreneurship, self-transcendence and openness to change as core values. By being centered on action and proactivity, this value system accelerates the alignment between individual and organizational value systems that trigger the internalization of RL behavior.

P2. Organizational value systems that characterize a responsible company are based on activism, authenticity, entrepreneurship, self-transcendence and openness to change. This type of value system activates individual value systems by fostering action that lead to the internalization of RL behavior.

The third aspect that contributes to the internalization of RL behavior is related to the ability of generating socio-psychological mechanisms that align individual and organizational value systems. We found that passion, peer support, trust and inspiration generate virtuous cycles that feed a sense of belongingness, meaningfulness and purpose at work among executives. These mechanisms boost a sense of identification which helps develop affective reactions towards the company's values and efforts. The organizational identification literature suggests that when organizational members share the same attributes with those of the organization, they are likely to increase their sense of identity (Dutton et al. 1994). This triggers positive emotional responses that prompt members to devote further efforts to reinforce identity by internalizing and expressing organizational values through individual behavior (Carmeli et al. 2017). We show that similar effects can be found in responsible companies, which activate identification processes through trust, passion and inspiration that align organizational and individual value systems thus leading to RL behavior. Accordingly, we put forth the following proposition:

P3. The ability of fueling organizational identification through trust, passion and inspiration supports a positive affective reaction of executives towards organizational values that align individual and organizational value systems and lead to internalize RL behavior

The fourth aspect that contributes to the internalization of RL behavior is related to organizational practices. Prior research has demonstrated that organizational-level factors appear to facilitate or constrain leaders' ability to engage in RL behavior (Stahl and de Luque, 2014). Specifically, four cluster of organizational practices emerged as significant antecedents of RL behavior by executives: 1) recruiting, training and engagement practices, 2) communication practices, 3) knowledge-sharing practices and 4) organizational structure.

Recruiting executives and employees who have an individual predisposition towards the *raison d'être* of the organization appeared to facilitate the formulation of an open dialogue between leaders and followers which effectively supported RL behavior. The development of this open dialogue was found to be related to training and engagement practices such as environmental internship or internal events with stakeholders that created spaces for RLs to 'live and breath' organizational values together with their followers. This finding is consistent with previous research that demonstrated the strength of training programs (Pless et al. 2011) and engagement opportunities such as corporate-sponsored volunteer programs (Caligiuri and Throughgood 2015) in predicting the development of RL behavior. Frequent and transparent communication emerged to drive the internalization of RL behavior. On the one hand, we found written guidelines to empower executives with the knowledge of the right course to take for acting as RLs. On the other side, storytelling emerged as a key communication mode for driving engagement by conveying inspiration and fueling passion to act responsibly. Effective communication also fostered knowledge sharing that strengthen the internalization of RL behavior. Our results showed that information and data sharing provided executives with a systemic and comprehensive understanding of environmental and social impacts that supported responsible decision making. Additionally, knowledge sharing boosted a continuous learning process that enabled executives to evolve as RLs by deepening either their knowledge of sustainability challenges or their ability to manage them through RL behavior.

Finally, flat organizational structures were found to sustain the internalization of RL behavior. Flat structures enabled leaders to manage genuine and informal relationships with their followers and with external stakeholders. This activated the learning processes at the core of RL behavior. Additionally, flat structures emerged to facilitate the sensing and fast implementing of promising ideas by the company as well as the agile reconfiguring of activities according to responsible business logics in response to changes in external conditions. This meant, for example, RLs recognizing a disruptive idea suggested by a junior employee and scaling it up for execution at the global level in order to create massive environmental and social value, even at the cost of profitability in the short term. It also meant readjusting the strategy in order to re-establish profitability in the medium term. These capabilities supported by flat organizational structures were found to force executives to rethink their conventional approach to business and to address cognitively the complexity of prioritizing sustainable value creation by developing a new mindset. We summarize these findings by suggesting the following proposition:

P4. Slow and careful recruiting practices, regular engagement practices, inspiring and guiding communication practices, constant flows of knowledge-sharing and flat organizational structures moderate the relationship between individual-organizational values and the internalization of RL behavior

**Research limits.** We examined the internalization of RL behavior by identifying the mechanisms and practices that supported this process; however, we are unable to predict future outcomes and trends. Additionally, and more important, although we selected a leading responsible company for conducting our study, we acknowledge that our work can just guide further investigations that can be usefully performed to observe and to generalize our findings to a wider number of companies.



**Practical implications.** Our research informs practitioners that the development of a RL behavior is a complex process and requires a different approach than traditional engagement models. In particular, a focus on value alignment together with higher informality, flexibility and openness and greater opportunities to learn from stakeholders may facilitate executives' internalization of RL behavior that support the development of responsible business logics and provides environmental and social improvements. Such factors might be more effective than reward and sanctioning systems in driving RL behavior. Consequently, organizations adopting practices that create a sense of belongings, meaningfulness and purpose by activating individual value systems in line with those of the organization may experience greater involvement by executives in developing as a responsible company. This may achieve through several organizational practices. First of all, creating a clear codification of organizational value systems providing guidance rather than dictating rules of behavior may prompt a sense of direction, responsibility and trust that facilitate emotional attachment to the organization, thus leading executives to a deeper internalization of RL behavior. This effect may be enforced by constant and fluid communication based on either environmental and social data or on storytelling. Second, creating organizational structures that encourage direct interactions between leaders and followers on a daily basis may strengthen internalization of values by providing spaces for role-modelling and inspiration. Finally, engaging with external stakeholders to develop common programs and initiatives that are integrated in the core business strategy may provide opportunities for executives to understand and replicate through action responsible business logics.

**Originality of the study.** Based on stakeholder theory with an ethical focus (Freeman et al. 2004, 2006), responsible leadership (RL) focuses on the role and behavior of leaders in acknowledging and balancing different stakeholder interests to address simultaneously social, environmental and economic value creation (Hunoldt et al., 2018). RL research has evolved from micro-level perspectives with normative roots to multiple levels of analysis in terms of antecedents and outcomes, debating on RLs' relationships within networks of multiple stakeholders (Stahl and de Luque 2015). However, this research has treated RL as a static property of individuals which is enabled by individual, organizational or institutional conditions. Little attention has been paid to RL as an organizational property that lead leaders to embrace and reproduce responsible behavior. In particular, little is known about the interconnected effect of individual and contextual antecedents in driving leaders to internalize RL behavior (Miska and Mendenhall 2018; Orlitzky et al., 2011). In order to fill this gap, in this research, we examined how executives internalize RL behavior by looking at the mechanisms and organizational practices that align individual and organizational values. Although previous literature has examined the role of individual and organizational values in relation to RL behavior (e.g., Maak and Pless 2006; Pless 2007; Pless et al. 2012), previous studies have rarely considered either their reciprocal influence or their relationship with organizational practices in determining RL as an evolutionary process. However, an increasing number of studies are calling for cross-level research that investigate connections among micro and meso antecedents in order to fully conceptualize RL as a process (Stahl and De Luque 2014; Miska and Mendenhall 2015).

To this regard, our research answers the calls to study responsible leadership by investigating multiple influences across different levels of analysis and categories of predictor variables (Stahl and de Luque 2014; Miska and Mendenhall 2018). Specifically, we contribute to this debate by describing individual and organizational values and the role of organizational mechanisms and practices that lead executives to internalize RL behavior.

We show that the internalization of RL behavior is an evolutionary learning process. The process starts with alignment between individual and organizational values. We provide empirical evidence of individual and organizational value systems in the context of RL. Individual value systems are characterized by self-transcendence and openness to change, with environmental and social welfare orientation at the core. Organizational value systems include values such as activism, authenticity and entrepreneurship. These values activate individual value systems by encouraging action, thus speeding up the internalization process. We show that the process then proceeds with executives identifying with the mission of the organization through trust, passion and inspiration. Finally, we identified the combined effect of recruiting, training and engagement, open communication, fluid knowledge sharing and flat organizational structures in creating a space for executives to understand and engage in RL behavior with their followers.

**Key words:** Responsible leadership; responsible leadership behavior; value congruence; organizational identification; corporate sustainability; sustainable organizational practice

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# Family firms in times of digital innovation: transferring knowledge across generations

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**Objectives.** *Industrial economy is undergoing a radical shift in paradigms due to digital innovation, i.e. the use of digital technology during innovation processes as well as the outcome of innovation (Nambisan et al., 2017), and the rise of the “knowledge economy”. In the industrial age, knowledge and skills were closely linked to the individual’s experience and seniors, equipped with very deep knowledge, gradually transferred it to juniors before being replaced by them (Joshi et al., 2010). Such experience-based knowledge is considered tacit (Nonaka and Toyama, 2007) and can constitute a source of competitive advantage (Nonaka and Takeuchi, 1995). In the digital age, however, this paradigm is radically changing, because organizations increasingly rely on new knowledge (Suh and Chen, 2007). While digital innovation, comprising changes of the nature as well as the structure of new processes, products/services and business models (Iansiti and Lakhani 2014; Porter and Heppelmann, 2014; 2015; Nambisan et al., 2017), is revolutionizing traditional business models and long-established industries (Loebbecke and Picot, 2015; Archibugi, 2017), the knowledge economy leads to an increased emphasis on knowledge as the major resource (Powell and Snellman, 2004; Schot and Kanger, 2018).*

*Especially, issues in the generational interactions and turnover, i.e. senior generations teach and next generations learn (Joshi et al., 2010; Joshi, Dencker and Franz, 2011), are on the verge of collapse. The (digital) knowledge economy is highly dynamic and requires digital literacy, e.g. in managing digital knowledge for the purpose of (digital) innovation (Porter, 1998; Mihalcea, 2017). In contrast to the senior generation, being embedded with deep tacit knowledge about industrial business models, the (digital savvy) next generation is embedded with the essential digital mind-set and knowledge. As a result, the industrial organizational lifecycle and especially the traditional life-cycle model of the generations including knowledge transfer (Churchill and Hatten, 1997) are doomed to fail in the knowledge economy. However, research has scantily investigated how organizations should manage the interaction of generations in relation to knowledge transfer in current circumstances. In particular, it is still unclear how the next generation could capitalize on the senior generation’s knowledge while at the same time developing and transferring its new (digital) knowledge back to them. This is becoming paramount for firms to foster digital innovation and generate/sustain competitive advantages.*

*In this study, we investigate knowledge transfer in the context of family firms, considered as extreme to explore intergenerational interaction and knowledge transfer. In family business, the gap between senior and junior generation is larger, because of the broader age distance from one generation to the next (Joshi et al., 2010), and employee turnover is lower compared to non-family firms. Consequently, their traditional model of intergenerational knowledge transfer, which has been working very well in the industrial age, has become outdated. The challenges coming with the digital age increasingly require new (digital) knowledge from various sources. To analyze the unique dynamics of intergenerational knowledge transfer in family business, we conducted a qualitative multiple case study on twenty family business cases in Germany, a geographical context globally considered at the edge of digital innovation, and address the following research question: How does intergenerational knowledge transfer occur to enable digital innovation in family firms?*

## Theoretical background

*We subdivide our theoretical background into three major sections which together lead to the gap in the literature*

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we are addressing in this paper. First, we look at the literature on generational interaction in the knowledge economy, highlighting the tensions between senior versus next generation (Joshi et al., 2010; 2011), tacit versus the explicit knowledge (Polanyi, 1966; Tsoukas, 1996; Nonaka and Konno, 1998) and the generational turnover and transfer of knowledge (Nonaka and Takeuchi, 1995; Nickerson and Zenger, 2004; Svahn et al., 2017; Schot and Kanger, 2018). Secondly, we investigate the intergenerational knowledge transfer in family firms, examine the extreme case of family business (Cabrera-Suárez et al., 2001; 2018; Kammerlander and Holt, 2018) as well as the seminal life-cycle model of generations (Churchill and Hatten, 1997). Given that digitalization is changing traditional industries and their long-established business models (Zott and Amit, 2017), we lastly delve into digital innovation in family firms by looking in particular at the creation and transfer of new digital knowledge and capabilities through generational turnover and knowledge transfer.

**Methodology.** Since intergenerational knowledge transfer has become crucial for firm survival, the family business emerges to be an extreme organizational context to explore its unique dynamics in the context of digital innovation. Therefore, we explore digital innovation in family firms' generational transition. We conducted a qualitative multiple case study (Eisenhardt, 1989; De Massis and Kotlar, 2014) on twenty family business cases in Germany, a geographical context globally considered at the edge of digital innovation. To identify a pool of firms suitable for the exploration of the phenomenon under investigation, we isolate some theoretical criteria related to the family involvement in the firm, the inter-generational leadership and digital innovation. The ownership majority of the firm has to be in the hands of one family, where the family CEO refers to the firm as a family firm (Westhead, Cowling & Howorth, 2001). Moreover, the family firm needs to involve two family members as leaders of two subsequent generations and has to be at least at the second generation. Finally, we focus on manufacturing family firms, because these are expected to be the first to be affected by advancements in digital technology and forced to implement digital innovation. Therefore, we address our research question by collecting primary data through 20 semi-structured interviews with family members in the top management and over 40 informal expert interviews. In addition, we analyzed almost 2,000 pages of archival data.

Tab. 1: Sampled Family Firms

Case Firm	Founding Year	Generations	Employees	Revenues (in Mio €)	Interview Duration	Observations	Secondary Data
Alpha	1386	27&28	100	20	1:09:33	Corporate HQ	Website, Articles, Corporate Documents
Beta	1949	2&3	120	17	5:39:45	Corporate HQ	Website, Articles, Corporate Documents
Gamma	1799	7&8	4,000	1,000	7:28:24	Corporate HQ	Website, Company Chronicles, Articles, Corporate Documents
Delta	1982	3&4	2,900	616	3:04:52	Corporate HQ	Website, Articles, Corporate Documents
Epsilon	1917	3&4	12,100	2,370	3:42:39	-	Website, Articles

Number of Interviews with independent experts: 40

Source: Authors' elaboration

Data collected were scrutinized through within and cross-case analysis (Eisenhardt, 1989; Eisenhardt and Graebner, 2007). First of all, we independently read interview transcripts and archival data. If information was missing, we contacted the firm again and filled in details for clarification. At the beginning, we conducted the within-case analysis by examining the extensive account developed for each individual case from the transcripts and secondary data, we started developing first-order codes. We continued with the cross-case analysis (Eisenhardt, 1989) to detect any patterns across cases. Moreover, we were able to compare the cases to identify common challenges of intergenerational knowledge transfer in the context of digital innovation. In the cross-case analysis first-order codes were aggregated into lesser, wider and especially theoretically more relevant second-order categories and overarching dimensions which helped us to address the spanning research question in more details.

**Findings.** The findings show that successful digital innovation is less dependent on firm size, but rather on the role of the family and especially the intergenerational interaction and knowledge transfer of multiple generations in the family business. We find that there is a radical change in the way knowledge is being created and transferred between generations and intergenerational succession can represent a unique context to drive digital innovation under the new paradigms of the knowledge economy. Through the analysis of our data, we conceptualize how different types knowledge are transferred from the incumbent to the next generation and vice versa in the scope of digital innovation. The incumbent generation is embedded with particularly deep knowledge of its family's ties with the family business, its internal and external stakeholders and the overall industry structure. Given that family firms are typically characterized by flat hierarchies, long-term employment and the unification of ownership, management and control, the incumbent generation's unique knowledge base largely constitutes the family firm's organizational knowledge and thus

determines its industrial business model. Employees in family firms are in many cases not only considered as a crucial resource to family business, but often even as a part of the entrepreneurial family. As a result, the incumbent generation's unique knowledge is transferred directly and indirectly across the entire organization and thus constitutes the family firm's industrial business model (industrial production). Like their predecessors, the next generation is also naturally equipped with a deep family-specific knowledge through vertical knowledge spillovers within the family. But, as soon as entering the family business, the next generation also develops firm- and industry-specific knowledge through horizontal knowledge spillovers with employees and stakeholders. At the same time, the next generation have entirely new knowledge networks, which stem from the new opportunities before entering the family business that give them access to a unique pool of additional knowledge. In contrast to their predecessors, the next generation's knowledge partners do not mainly stem from within the family business and its industry, but rather from various adjacent or even completely different industries, which grant them invaluable access to necessary new knowledge.

There is also a horizontal knowledge transfer the other way around, namely from the next generation to the family business and especially its employees. The "knowledge revolution", i.e. the transformation from industrial to knowledge economy, forces (family) firms to establish new (family) business cultures that enable the creation of new digital knowledge. Although family businesses are often considered as traditional and path-dependent, they may actually have a unique competitive advantage given that their next generation is naturally equipped with the required digital mind-set. This gives them the unique opportunity to complement their family-specific with completely new (digital) knowledge (knowledge production). However, successful digital transformation in family business is not only about having access to new digital knowledge through the next generation, but also to transfer their digital vision and knowledge to the incumbent generation, which is yet in charge of the family business.

In the same way as the next generation acquires an in-depth knowledge about the family business from their predecessor, the incumbent generation is now more than ever dependent to learn - vice versa - from the next generation. The incumbent generations investigated support digital innovation with very specific knowledge, stemming from their long-term experience at the family business, providing contextualization and adaptation to available solutions or help in designing novel ones. With the family firm's idiosyncratic characteristics in mind, the incumbent generation can generate a solid ground for digital innovation and create a feeling of stability and safety among the workforce despite the required change. Next generation, in turn, provides the business with the necessary new digital mind-set, knowledge and network. By entering the family business and taking an active role in its digital development, it creates a new working and learning environment. Only through continuous learning and the input of new digital knowledge the family and non-family employees can successfully move toward the family firm's digital innovation. The combination of long-lasting family-, firm- and industry-specific knowledge with new digital literacy and its cooperative implementation by the family together with a motivated and loyal workforce, open for digital innovation and willing to change, as well as with knowledgeable network partners lead the five investigated cases to successful digital innovation (knowledge transfer in family firm's generational turnover).

**Discussion, contributions and future research directions.** Through an in-depth qualitative study of five multi-generational family-owned firms from the German Mittelstand, we have begun to unpack the mechanisms of knowledge transfer that enable incumbent and next-generation of family members to cooperate in the development of digital innovation. Our findings draw attention to how the specific knowledge developed by incumbent generation through experience in the family firms has to be intertwined with novel digital knowledge and connections of the next generation in order to foster the production of new knowledge that allows the firm to develop digital innovation. As the case of German Mittelstand shows, next-generation can feel legitimated to enter in the business and stimulate the innovation of traditional business models through the digital skills developed as well as its connections with university, former employers and networks from their external entrepreneurial experience.

Our study offers a two-fold contribution. First, we contribute to research on family firms and enterprising families by challenging the established life-cycle model of generations (Churchill and Hatten, 1997). Former conceptualization assumed that incumbent generation builds experience and skills and then teaches and trains next generation to prepare their turnover. The majority of studies consider such processes as one directional from the incumbent to the next generation (e.g. Cabrera-Suárez et al., 2001, 2018). Therefore, next generation is considered as the apprentice that needs to learn and accumulate experience within the business before taking the lead. Furthermore, family business research adopting a knowledge perspective mainly focuses on "conventional" or "analogue" knowledge in traditional industrial contexts (e.g. Woodfield and Husted, 2017). While such paradigm could be relevant for industrial economy, we argue that digitalization fuels the radical transformation to knowledge economies, thereby increasing the importance of new (digital) knowledge (Schot and Kanger, 2018). By developing a model of knowledge transfer in family firm's turnover we shed light on the mutual mechanisms of knowledge transfer occurring between generations involved in the family firms as well as the involvement of external connections in the creation of novel knowledge.

However, building on our evidence, it emerges that the knowledge transfer requires the willingness of both incumbent and next generation to engage in role exchange in the apprenticeship process, either acting as teachers or learner in relation to the knowledge domain. Therefore, family businesses have the unique opportunity to combine the best of both worlds, namely the innate and cultivated understanding of digital opportunities by next generation and the incumbent generation's transmitted knowledge of family firm enduring and lasting values of the family. Such contribution spans the boundaries of family business field, since generational turnover occurs in every organization (Joshi et al., 2011). Research focused on organizations with dispersed ownership should examine how it is possible to

create trust among generations so that they can engage in the process of knowledge transfer, beneficial for the digital transformation of business models.

Second, we contribute to knowledge-based literature by adopting a dynamic approach and improving our understanding about the important role of intergenerational knowledge transfer. “Digital natives” increasingly enter the corporate world and incumbent employees are - sooner or later - about to retire. Therefore, it is crucial to foster knowledge transfer at all levels and the next generation’s digital literacy can be used to preserve and leverage the knowledge and skills of incumbent employees.

**Practical implications.** Our study offers important practical implications. Incumbent family business entrepreneurs, their executives and consultants can reflect on how to stimulate knowledge transfer among generations and to boost next generation connections through external experiences in new ventures although not specifically related to the core family business. Although there is an increasing amount of available knowledge, an entrepreneurial family’s long-lasting, highly specialized experience and knowledge about the business and its industry can help to navigate the wide range of digital opportunities.

**Research limits.** We show that knowledge-based view is a useful theoretical lens to examine generational turnover in the digitalization age. Our study focused on an ‘extreme’ case, and therefore our theoretical insights are sensitive to the peculiarities of the German Mittelstand context. Nevertheless, our findings speak more generally to any group of firms that involves multiple generations and are in the process of innovating their business model through digitalization. Our methodological approach allows us to analyze the peculiarities of family business as a means to explore how family firms can foster digital innovation through intergenerational knowledge transfer during generational succession. Promising contributions can emerge from large-scale investigations analyzing the extent to which digital innovation emerges from the process of intergenerational knowledge transfer during succession within more heterogeneous family firms within other industrial and/or regional contexts. Moreover, scholars should analyze the phenomenon of digitalization beyond the manufacturing sectors, exploring whether operating for instance in the service sector has implications in the inter-generational knowledge transfer.

**Conclusion.** The unique ability of family firms to transfer their specific knowledge across generations has been providing them with a competitive edge during the industrial age. However, in the rise of the knowledge economy, their unique ability could become a constraint for the development of novel digital knowledge. By investigating such tension in a multiple case study based on five family firms of the German Mittelstand, we develop a model of knowledge transfer of family firm’s generational turnover that illustrates how different generations can mutually transfer knowledge and cooperate.

**Originality:** We declare that this is an unpublished paper that have not been submitted for publication and that have not been already published as conference proceedings.

**Key words:** Intergenerational knowledge transfer; Digital innovation, Family business.

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# Narcissistic CEOs in family firms and their role in innovation

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**Objectives.** *Narcissism consists in “the degree to which an individual has an inflated sense of self and is preoccupied with having that self-view continually reinforced” (Chatterjee & Hambrick, 2011, p. 204). This personality trait entails “an exaggerated sense of self-importance, fantasies of unlimited success or power, need for admiration, entitlement, lack of empathy, and exploitation of others” (Blair et al., 2008). The increasing prevalence of narcissistic individuals covering top management positions contributed to make this personality trait a relevant and timely topic in both academic and practitioner literatures (Campbell & Campbell, 2009; Chatterjee & Pollock, 2017; Maccoby, 2012; Tang et al., 2018). Anecdotal evidence shows that, generally, one of the most visible characteristics of CEOs is indeed a high level of narcissism (Chatterjee & Hambrick, 2007, 2011; Vogel, 2006). Narcissism is nowadays considered a necessary component for individuals who aim at reaching the apex of firms (Kets de Vries, 2004). However, despite on average CEOs might emerge from the population because of their relatively higher narcissistic personality, there is still heterogeneity among them (Buyl et al., 2012). In fact, narcissism is a personal dimension on which all individuals, with different extents, can be placed (Emmons, 1987; Raskin & Terry, 1988).*

*In spite of the existing interest towards CEO personality, few works investigated CEO narcissism avoiding a strictly psychoanalytic viewpoint (Chatterjee & Hambrick, 2007). Still, some studies already highlighted the (positive and negative) consequences of leaving the firm in the hands of a narcissistic CEO. Narcissists are visionary individuals whose decisions not only affect themselves, but also those with whom they interact and the firm they manage (Chatterjee & Hambrick, 2007). For instance, narcissistic CEOs have been found to be associated with a higher propensity to take risks (Li & Tang, 2010) and innovation (Gerstner et al., 2013), higher firm value (Olsen et al., 2013), a higher number of acquisitions (Chatterjee & Hambrick, 2007), and overinvestments in R&D and M&A expenditures (Ham et al., 2018). Nevertheless, firms led by narcissistic CEOs change strategy more frequently (Chatterjee & Hambrick, 2007), and achieve lower financial productivity in terms of profitability and operating cash flows (Ham et al., 2018). In general, narcissistic CEOs typically experience extreme and fluctuating performance (Chatterjee & Hambrick, 2007), and they are also prone to commit crimes to improve firm performance (Olsen & Stekelberg, 2015). Given their intrinsic nature and behaviors, narcissistic CEOs may thus bring to the firm big wins as well as big losses.*

*Together with volatile firm performance, narcissistic CEOs are more likely than others to undertake actions at their own benefit, even if these might damage firms' interests (Kets de Vries & Miller, 1985). They prefer actions that reinforce their self-image and ego (Buss & Chiodo, 1991), without considering the potential negative effects on others. Thus, narcissistic CEOs might prove to be particularly hurtful for a specific type of business organization where altruism towards others is particularly manifest - that is, the family firm. Nevertheless, despite recent attempts to study CEO personality (e.g., Kelleci et al., 2018), the family business literature has remained largely silent on the specific narcissistic personality traits and the implication of narcissistic CEOs for family firms. This is unfortunate for a number of reasons. First, more narcissistic CEOs may act as a destroying force in terms of socio-emotional wealth (SEW) preservation, which characterizes family firms (e.g., Gomez-Mejia et al., 2007). Narcissistic individuals may show irrational behaviors that, when exhibited by principal decision makers in a family firm, can seriously affect the firm (Kets de Vries & Carlock, 2010) and the family's SEW. Second, the effects of having a narcissistic CEO are even more pronounced due to the personalism characterizing family firms (Carney, 2005). In these firms, organizational authority is typically concentrated in the hands of the individual who owns and manages the firm. Therefore, firm strategy, decisions, functioning, and outcomes directly depend on the CEO's choices, and are thus expected to be deeply connected to CEO personality. At the same time, narcissistic individuals need constant attention, and tend to undertake extreme behaviors and to overcentralize the organization (Kets de Vries & Carlock, 2010). Taken together, these aspects are likely to amplify the positive and negative consequences of narcissistic personality on the family and firm behavior. Third, while they may potentially damage SEW, narcissistic CEOs might also be beneficial for family firms. CEOs are considered as essential in driving innovation (Zhang et al., 2017). In this respect, literature claims that*

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narcissistic CEOs positively relate to innovation (Gerstner et al., 2013; Smith & Webster, 2018), and they have been proven to introduce a greater amount of innovative products and a greater proportion of radical innovations (Kashmiri et al., 2017). This might be particularly helpful in the context of family firms, which may lag behind nonfamily ones due to their lower willingness to engage in innovation (Chrisman et al., 2015). There are therefore important reasons to believe that CEO narcissism is conducive to unique firm behavior and outcomes in the context of family firms.

To address this gap, we draw on SEW arguments. We start by investigating whether the degree of CEO narcissism differs in family versus nonfamily firms, and among family firms depending on CEO status. Then, we study if CEO narcissism matters for family firms' exploitation of innovation opportunities, and we explore if the way in which the CEO organizes the TMT strategic decision making process, specifically referring to its comprehensiveness, plays a role in this relationship.

**Methodology.** To test our hypotheses, we used a database including information on Italian firms and their CEOs. Since data on the characteristics of the decision-making process, the exploitation of opportunities, and the narcissistic personality of individuals are not publicly available from secondary sources, we created our database by means of a survey and the administration of a psychometric questionnaire. Specifically, we administered to CEOs the Narcissistic Personality Inventory (Raskin & Terry, 1988), which is the most commonly used instrument to measure narcissism (Andreassen et al., 2012). We then used balance sheets obtained from the AIDA database managed by Bureau van Dijk to gather data to control for possible confounding factors. The database that we used to test hypotheses consists of 198 firms and it is representative of the population, as well as does not present issues of non-response bias and reliability. We analyzed data by means of a series of OLS models; moreover, to investigate the relation between family firms' CEO narcissistic personality and the exploitation of opportunities, and the mediating effect of the TMT strategic decision comprehensiveness, we adopted the traditional four-steps approach of Baron and Kenny (1986), together with the more modern bootstrapping approach (Bollen & Stine, 1990; Shrout & Bolger, 2002).

**Findings.** Our results demonstrate that CEOs leading family firms have a less pronounced narcissistic personality compared to those leading nonfamily firms. Indeed, a negative and significant relation emerged between being a family firm and CEO narcissism. Family firms are also less likely to hire external CEOs who are high in narcissism. Nevertheless, heterogeneity exists among these firms with respect to CEO narcissism. Specifically, in family firms, family CEOs and heir CEOs are less narcissistic than nonfamily CEOs and founder CEOs, respectively. Our results also demonstrate that family firms managed by a more narcissistic CEO get benefits in term of innovation opportunities: the greater the CEO narcissism, the greater the amount of innovation opportunities exploited by the family firm. This is made possible as more narcissistic CEOs shape the TMT strategic decision-making process in a way that it becomes more comprehensive; indeed, the comprehensive TMT strategic decision-making process fully mediates the positive relation between CEO narcissism and the exploitation of innovation opportunities.

**Research limits.** Our study has limitations that provide opportunities for future research. First, our sample includes only firms located in Italy. Therefore, issues of generalizability of results may arise. Further tests in other empirical settings are thus advised. Second, to test hypotheses we used a cross-sectional database we personally developed using a psychometric instrument. While the narcissistic personality trait is developed in infancy and then remains stable across life (Freud, 1914), it would be interesting to have longitudinal data on firm's CEO, organization and innovation opportunity exploitation to understand whether changes happen in the relation between CEO narcissism and opportunity exploitation and, if it is the case, what factors intervene affecting these changes over time. Third, other firm-level aspects might be affected by CEO narcissistic personality trait and worthy of investigation. For instance, future research might assess whether it affects the firm's goals, organizational structure, and performance, as well as the family's involvement in the firm. Also, not only the personality of the CEO may matter in opportunity exploitation, but also that of other family members involved in the firm or of other top executives. We thus invite scholars to investigate the interaction between CEO's and other family members' or top executives' narcissistic personality, which might determine the extent to which the family firms exploits innovation opportunities.

**Practical implications.** Our results suggest that families tend to grow next generation family members with a limited narcissistic and oneself-centered personality, favoring the development of a family-centered personality, which is in line with the aim of preserving their SEW. Moreover, family firms tend to increase the stock of SEW over time and generations, as testified by the fact that heir CEOs have a less narcissistic personality compared to founder CEOs. In addition, we inform family firms that CEO narcissism turns to be beneficial if they aim to exploit innovation opportunities. Indeed, a more narcissistic CEO frames the TMT strategic decision-making in a way that is more comprehensive, so as s/he has at her/his disposal all the information needed to allow taking the risk of exploiting innovation opportunities but at the same time reducing the potential losses (i.e., negative implications on her/his wealth and reputation) that might be associated to the innovation opportunities. This means that having this kind of personality might be positive for family firms. For instance, self-confidence, risk-taking behavior, and locus of control or ambition that are typically associated with narcissism (Buss & Chiodo, 1991; Chatterjee & Hambrick, 2007; Kets de Vries, 1994; Lubit, 2002) may foster innovation in family firms that are typically reluctant to do so (Chrisman & Patel, 2012). Hence, while they may potentially damage SEW, narcissistic CEOs might also be beneficial for family firms.

**Originality of the study.** Our paper advances the literature in several directions. First, we enhance our understanding of why and how narcissistic CEOs are more likely to be present in some firms than others. Second, we offer a theoretical perspective to explain why, in family firms, narcissistic CEOs exploit a greater amount of innovation opportunities - namely, because they favor a greater TMT strategic decision comprehensiveness in order to reduce risk bearing and the perceived risks to their reputation. Thus, we advance the debate on innovation in family firms by revealing the influential role of narcissistic CEOs, which has been under-investigated in relation to family firms (Kellermanns & Eddleston, 2006; Kraus et al., 2012; McKelvie et al., 2014). Third, by studying the presence and consequences of narcissistic CEOs, we add to family business literature by answering the call for more research on the psychological foundations of management in this organizational setting. In so doing, we contribute to the newborn stream of research on CEO personality in family firms (e.g., Kelleci et al., 2018). In short, we extend the mainstream literature on CEO narcissism by uncovering new antecedents and adding to the debate on the consequences of being managed by CEOs with this type of personality.

**Key words:** CEO; family firms; narcissism; top executives; upper echelons

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# Exploration or exploitation? That's the problem through the lenses of stakeholders

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**Abstract.** *In recent year, scholars and practitioners are dedicating increasing attention to the management of stakeholders. Starting from March's (1991) contribution, we introduce a stakeholder domain of the exploitation and exploration strategies. As a result of in-depth analysis of the literature, we define new concepts of exploitative/explorative stakeholder orientation. Moreover, their balance allows firms to develop what we define as ambidextrous stakeholder orientation. Finally, we focus on a double stakeholder-orientation prospective, which refers to the ability of a firm to take advantage of simultaneously balancing exploration and exploitation across internal and external stakeholders, that we refer to as cross-boundary ambidextrous stakeholder orientation. As a consequence, the mediating effect of the above strategies is tested on the relationship between innovation strategies and firm performance. The empirical analysis relies on a sample of firms listed on Fortune 500 covering the years 2010-2018. Therefore, this study contributes to the theory responding to a twofold request: developing a dynamic approach to managing stakeholder; and studying the balance between exploitation and exploration as regards to firm performance.*

**Introduction.** *Starting from the pioneering article of March (1991), the notion of exploration and exploitation is on the interest of several research. Exploitation is closely connected with activities and behaviours aimed at exploiting existing resources and skills, increasing efficiency and reducing costs; exploration is instead connected with the search for new knowledge and resources, as well as opportunities to be found in the reference context, and with continuous experimentation (March, 1991). If exploitation leads to predictable, near and generally positive results, exploration leads to uncertain, distant and sometimes negative returns. Moreover, simultaneously exploitation and exploration are two distinct approaches firms use for implementing a sufficient level of innovation, necessary to obtain both economic and competitive advantage. In order to ensure the present and future profitability, it is important to pursue two strategies at the same time (He and Wong, 2004). The combined abilities to meet the different needs of exploration and exploitation, have been associated with the concept of ambidexterity. Firms should exploit the resources owned and improve the existing business model in order to consolidate the current competitive position; at the same time, they should move towards new markets and new customer segments to explore and respond to emerging needs and improve profitability.*

*Recent literature on stakeholder theory has identified unanswered questions, which can be answered thanks to the contribution of March (1991). "How can firms create different types of value for different stakeholders?" ((Parmar et al., 2010, p. 432), and "How [can firms] create value simultaneously for multiple stakeholders?" ((Freeman et al., 2007, p. 53). Although over time many other authors have developed studies to bridge this gap (Tantalo and Priem, 2016), there isn't any clearly defined relationship between stakeholder theory and ambidexterity (Moreno Luzon and Valls Pasola, 2011). This study is a first attempt to fill this gap proposing an innovative theoretical framework enriched by several categories of stakeholders.*

*Our framework addresses the issue of value creation, describing how it is simultaneously possible to create value for multiple groups of essential stakeholders through the adoption of March (1991) strategies. Therefore, we introduce the concept of exploitative/explorative stakeholder orientation, as well as a balance between the two, which in turn refers to the concept ambidextrous stakeholder orientation.*

*In more detail, this paper aims first to define a stakeholder orientation of firms that pursue exploration and exploitation practices, that we label exploitative/explorative and ambidextrous stakeholder orientation; then, investigating the relationship between these new stakeholder orientation notions and firm performance. Second, we analyse the balance between exploration/exploitation towards internal/external stakeholder orientation, namely a cross-boundary stakeholder orientation, and its effect on firm performance.*

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To do this, we use a sample of firms listed in the Fortune 500 list in 2018. To test our hypotheses, we run panel regression models covering the years 2010-2018. In particular, longitudinal analysis explains the effect of strategic choices on firm performance because it facilitates the use of sophisticated econometrical methods that control for endogeneity and unobserved heterogeneity (Uotila et al., 2009). To build the innovative explorative/exploitative stakeholder orientation variables, we develop a content analysis of non-financial reports on a firm-year level based on enriched vocabulary linked to the theoretical and practical concept of exploitation and exploration.

Through this research we respond to the request to develop a dynamic approach to managing stakeholder (Sachs and Maurer, 2009) and to study the balance between exploitation and exploration as regards to organizational performance (Maletić et al., 2014). In the following section the literature review, research hypotheses and the methodological strategy are proposed.

**Literature review.** Following March's article (1991), the concepts of exploration and exploitation have been the focus of numerous studies in the field of innovation management. March (1991: 71) presents the two concepts as follows: "exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution." Several studies have further improved our knowledge on exploration and exploitation, providing evidence of the effectiveness of these strategies across single (e.g., industry forces, firm size) or multiple domains. For instance, Lavie and Rosenkopf (2006) delineate distinct domains of exploration-exploitation, advancing the notion that firms balance exploration and exploitation over time within as well as across domains, namely function, structure and attribute domains.

Recent research provided new light on the social and relational implications of pursuing strategic orientation towards innovation. At a broad level, Jansen et al. (2006) assert that managers capable of developing capillary social relationships increase the ability to simultaneously pursue both exploration and exploitation (Jansen et al., 2006). Investigating specific stakeholders, O'Sullivan and Dooley (2009) define innovation as the process of making changes to something established by introducing something new that adds value to customers.

In this paper, we propose a stakeholder-oriented perspective of the above concepts to highlight the performance consequences of relationships that the firm develops with both internal/external stakeholders to pursue the two innovative strategies. We, therefore, argue that firms' innovation via exploitation and exploration is the process of making changes to something established or new by introducing something improved that creates value to all relevant stakeholders.

In this sense, the new paradigm of innovation requires significant integration of both internal and external stakeholders. In detail, organizations need to develop external and internal linkages, leveraging opportunities to access innovative ideas inside-out organizational boundaries, that is, through both external/internal exploitative/explorative stakeholder orientation. Moreover, the importance of simultaneously pursuing exploration and exploitation (i.e., the ability to pursue an ambidextrous strategy) emerges clearly by analysing the literature. Scholars agree in attributing to the ambidexterity the quality of a prerequisite for the survival and prosperity of the organization (He and Wong, 2004; Lubatkin et al., 2006). Over time, several authors have tried to verify the link between ambidexterity performance revealing conflicting results. Therefore, it is necessary to better analyse the relationship between these strategies and performance.

For these reasons, we translate the idea that ambidexterity is the result of a balance between explorative and exploitative stakeholder-oriented strategies. Up until now, no study has provided a solution to the dilemma of exploration-exploitation through ambidexterity with the lens of stakeholder orientation. Moreover, it is evident that in this vision the firm that pursues ambidexterity must be able to satisfy the concerns of its current and future stakeholders. Therefore, the link between exploration, exploitation, and ambidexterity with the firms' stakeholder orientation deserves more analysis.

Already in 1984, Freeman stated that the "new business environment" depended on both internal and external stakeholders and owners and employees should be considered as a "matter of everyday occurrence rather than an exception" (Freeman, 1984, p. 7). Bosse et al. (2009) suggest that a firm able to generate a cycle of positive reciprocity among its stakeholders should create more value than a firm that does not. The ability of a firm to establish good long-term relationships with a variety of stakeholder categories is defined as a stakeholder orientation (Sharma and Vredenburg, 1998). The firm adopts a high stakeholder orientation when considering a series of stakeholders (Delgado-Ceballos et al., 2012); on the contrary, the firm has a low stakeholder orientation when it deliberately chooses to give priority to a small number of types of stakeholders (Porter and Kramer, 2006b).

According to the literature, the exploitation practices are focused on identifying and measuring the current needs and expectations of stakeholders; on the contrary, exploration practices refer to the organization's ability to identify the new needs and desires of stakeholders (Asif et al., 2010; Asif et al., 2011; Ayuso et al., 2011; Driessen and Hillebrand, 2013; Garvare and Johansson, 2010; Zink, 2005).

This paper is a first attempt to explain exploration and exploitation practices through a stakeholder-oriented perspective. Our main contribution to theory involves delineating a stakeholder domain of exploration and exploitation strategies by offering evidence that demonstrates the performance consequences for firms balancing these tendencies through a stakeholder-oriented perspective. Accordingly, it is crucial to both exploit existing stakeholder ties and needs - or the use and development of links already known - and/or explore new, entirely different stakeholder expectations - or the pursuit of new ties.



Therefore, we propose the concept of explorative/exploitative stakeholder orientation and, consequently, to the idea of pursuing an ambidextrous stakeholder orientation strategy. In more detail, we define explorative stakeholder orientation as the ability of a firm to orientate itself towards, and manage the relationships with, specific stakeholder(s) through exploration strategies; on the other hand, exploitative stakeholder orientation is the ability of a firm to orientate itself towards, and manage the relationships with, specific stakeholder(s) through exploitation strategies. Furthermore, ambidextrous stakeholder orientation is the ability of a firm to be oriented to specific stakeholder(s) balancing both exploration and exploitation strategies.

**Hypotheses development.** This paper aims at investigating four research questions, which recall different research hypotheses. A first higher-order research question refers to the relation between a firm orientation towards innovation and its propensity towards stakeholder orientation. In more detail, we question whether the propensity of the firm to explore and/or exploit, and/or to balance the two (i.e., ambidexterity), does affect a firm attitude to implement explorative/exploitative or ambidextrous stakeholder-oriented strategies. Relying on stakeholder theory, the creation of value for stakeholders is the driver of a firm survival; moreover, a firm's attitude towards innovation is a prerequisite for stakeholder-oriented strategies (Porter and Kramer, 2006a). Therefore, we argue that a firm with a greater propensity to innovation via exploration and/or exploitation reveal a higher propensity to stakeholder orientation, where an alignment between the two strategic approaches is expected. Several hypotheses can be derived as follows:

Hyp 1a: The greater is the propensity of a firm to explore, the higher is its attitude towards explorative stakeholder orientation;

Hyp 1b: the greater is the propensity of a firm to exploit, the higher is its attitude towards exploitative stakeholder orientation;

Hyp 1c: the greater is the propensity of a firm to balance exploration and exploitation, the higher is its attitude to ambidextrous stakeholder orientation.

The second research question intend to understand the conditions under which the explorative/exploitative stakeholder orientation influences the relation between innovation and organizational performance. The relationship between innovation (in terms of exploration, exploitation and ambidexterity) and performance has always been under the objective of researchers. Research shows conflicting results highlighting positive (He and Wong, 2004), negative (Lavie et al., 2011), insignificant (Venkatraman et al., 2007) or curvilinear results (Bierly III and Daly, 2007). It is clear that further investigations are needed. In particular, according to our stakeholder-oriented perspective it is possible that firms with a high level of explorative/exploitative stakeholder orientation tend to perform better. Following the first research question in this paper, we therefore suggest that exploitative/explorative stakeholder orientation is a mediating mechanism in the relationship between exploration/exploitation, as well as the balance between the two, and firm performance, which is herein explored in terms of financial, non-financial, and innovative performance. In particular, we argue that whether an alignment (or mismatch) does exist between a firm propensity towards innovation (in terms of exploration, exploitation or ambidexterity) and its attitude to an explorative/exploitative/ambidextrous stakeholder orientation, that would have a significant impact on firm performance. Therefore, a second set of hypotheses raises as follows:

Hyp 2: The relationship between the propensity towards innovation and firm performance is mediated by the explorative/exploitative stakeholder orientation of the firm. In more detail:

Hyp 2a: the propensity to explorative (exploitative) stakeholder orientation is a mediating mechanism in the relationship between exploration (exploitation) and firm financial performance;

Hyp 2b: the propensity to explorative (exploitative) stakeholder orientation is a mediating mechanism in the relationship between exploration (exploitation) and firm non-financial performance;

Hyp 2c: the propensity to explorative (exploitative) stakeholder orientation is a mediating mechanism in the relationship between exploration (exploitation) and firm innovative performance.

Hyp 3: The relationship between the propensity to balance exploration and exploitation and firm performance is mediated by the balanced explorative/exploitative stakeholder orientation of the firm. In more detail:

Hyp 3a: the propensity to ambidextrous stakeholder orientation is a mediating mechanism in the relationship between ambidexterity and firm financial performance;

Hyp 3b: the propensity to ambidextrous stakeholder orientation is a mediating mechanism in the relationship between ambidexterity and firm non-financial performance;

Hyp 3c: the propensity to ambidextrous stakeholder orientation is a mediating mechanism in the relationship between ambidexterity and firm innovative performance.

The third research question relates to what we identify as a gap in the literature on the antecedents of the balancing of exploration and exploitation. Prior research has produced inconsistent evidence because most of the studies examined ambidextrous practices focusing on a single perspective, which refers independently on internal (i.e., within firm's boundaries) exploration and exploitation, or external (i.e., outside firm's boundaries) exploration and exploitation, disregarding the balancing opportunities across boundaries of the firm. Russo and Vurro (2010) define cross-boundary ambidexterity as the ability of a firm to take advantage of the opportunities of simultaneously balancing exploration and exploitation across its boundaries.

Translating this definition within a stakeholder domain of ambidexterity, we propose that cross-boundary ambidextrous stakeholder orientation is the ability of a firm to take advantage of the opportunities of simultaneously balancing exploration and exploitation across internal (i.e., within firms' boundaries) and external (i.e., outside firms'

boundaries) stakeholder(s). Therefore, a last set of hypotheses emerges:

Hyp 4a: the tendency to exploit towards internal (external) stakeholder(s) will be compensated by the tendency to explore towards external (internal) stakeholder(s);

Hyp 4b: the tendency to explore towards internal (external) stakeholder(s) will be compensated by the tendency to exploit towards external (internal) stakeholder(s).

Given such potential equifinality, we posit that cross-boundary exploration or exploitation strategies are substitutive, leading to a lower firm performance. Thus:

Hyp 5a: there is a negative contingent effect between exploitation (exploration) towards internal stakeholder(s) and exploitation (exploration) towards external stakeholder(s) and firm financial performance;

Hyp 5b: there is a negative contingent effect between exploitation (exploration) towards internal stakeholder(s) and exploitation (exploration) towards external stakeholder(s) and firm non-financial performance;

Hyp 5c: there is a negative contingent effect between exploitation (exploration) towards internal stakeholder(s) and exploitation (exploration) towards external stakeholder(s) and firm innovative performance.

On the contrary, ambidexterity will be pursued across organizational stakeholder categories (i.e., internal or external stakeholders), with exploitation towards internal stakeholder(s) complemented by exploration complemented by exploitation towards external stakeholder(s), and vice versa. Thus:

Hyp 6a: there is a positive contingent effect between exploitation (exploration) towards internal stakeholder(s) and exploration (exploitation) towards external stakeholder(s) and firm financial performance;

Hyp 6b: there is a positive contingent effect between exploitation (exploration) towards internal stakeholder(s) and exploration (exploitation) towards external stakeholder(s) and firm non-financial performance;

Hyp 6c: there is a positive contingent effect between exploitation (exploration) towards internal stakeholder(s) and exploration (exploitation) towards external stakeholder(s) and firm innovative performance.

**Methodology.** We use several regression equations to empirically test the research hypotheses above developed. The analysis will be performed using panel regression models. In order to understand the temporal evolution and the relative impact of the adopted strategies in each model, the dependent and independent variables are delayed respectively by 1, 2 and 3 years, while the independent variables are considered at time  $t$ ). We have collected economic, financial and sustainable data from Thomson Reuters Eikon, and firms' patenting activity from Orbis Intellectual Property database. Based on the objective of the study, our analysis will follow different phases.

Initially, the first set of hypotheses will be tested in order to understand the relationship between the innovative exploration, exploitation, and ambidexterity strategies and the introduced concepts of explorative, exploitative and ambidextrous stakeholder orientation. Variables used respectively as independent and dependent variables.

According to the model proposed by Baron & Kenny (1986) the second and third set of hypotheses will be test by a causal step. The authors' model is the one most widely used to test the role of a mediation variables, which in this study are exploitative, explorative, and ambidextrous stakeholder orientation. In the second phase of the analysis, we will test the innovative consequences on the performance of the cross-boundary ambidextrous stakeholder orientation (Hypotheses 4, 5, 6). Consequently, firm performance will be the dependent variable and internal/external exploitative (explorative) stakeholder orientation will be independent variables, depending on the specific hypotheses. It is therefore clarified that each of the variables described below will receive a different role, depending on the phase of involvement in the test of each hypothesis.

**Dependent variable.** Firm performance. To obtain a balanced and complete view of firm performance, we consider more appropriate to combine different dimensions of this concept. Therefore, we will examine financial performance through well-recognized measure (i.e., Tobin's  $q$ , return on asset, return on equity). Following research with the lens of stakeholder theory, we consider it appropriate to study non-financial performance as well. In this sense, we refer to the measures of social and environmental performance. Finally, we consider innovative performance on the basis of a firm's patenting rate, specifically as the number of patents granted by application year. Since it takes time for firms to convert internal and external learning into output (innovation performance), we assumed a decay time of 2 years (Powell et al., 1996).

**Independent variable.** Exploitation/exploration/ambidexterity. According to previous research, we use firms' patenting activities to measure exploitation, exploration, and ambidextrous strategies. In particular, we relied on the study by Katila and Ahuja (2002) to develop indicators for exploration and exploitation, on the basis of the theoretical distinction between search scope and search depth. Accordingly, the variable search scope, which corresponds to the theoretical notion of exploration, explains the firm's ability to expand its knowledge base. The following formula was used:

$$Scope_{it-1} = \frac{new\ citation_{it-1}}{total\ citation_{it-1}}$$

Where,  $new\ citation_{it-1}$  is the proportion of previously unused citations in a each firm's focal year's list of citations, and  $total\ citation_{it-1}$  is the total used citation in a firm's focal year.

Thus, the variable search depth, which corresponds to the theoretical notion of exploitation, assumes that

refinement in the knowledge can depend on how often it is used over time. The following formula was used:

$$\text{Depth}_{it-1} = \frac{\sum_{Y=t-6}^{t-2} \text{repetition count}_{iy}}{\text{total citation}_{it-1}}$$

Where  $\sum_{Y=t-6}^{t-2} \text{repetition count}_{iy}$  is measured as the average number of times a firm repeatedly used the citations in the patents it applied for, during the past three and five years.

*Mediating and dependent variable*

*Explorative/exploitative/ambidextrous stakeholder orientation.* With reference to our concept of stakeholder orientation, the information useful for determining the exploitative/explorative/ambidextrous stakeholder orientation will be found in non-financial reports. In this report, firms highlight the goodness of the relationship established with stakeholders. Moreover, following the previous studies, the ambidextrous stakeholder orientation will be measured as the average of the factorial scores of the measures of exploitative/explorative stakeholder orientation. Uotila et al. (2009) sought to quantify the annual relative amount of explorative orientation of the firm through content analysis. In particular, they base their operational definition of exploration and exploitation on March's (1991) previously quoted conceptual definition of exploration and exploitation, using these lists of words directly to operationalize exploration versus exploitation orientation of firms' activities. We propose a much richer vocabulary of words based on the reference literature on exploration and exploitation, so as to have a precise and complete picture of the meaning and of the different interpretations attributable to these concepts. In relation to each contribution, a form has been created where the bibliographical references, the definitions, and the main topics treated with reference to the two innovative approaches have been indicated. Based on this information, key words and significant terms related to exploration and exploitation concepts were identified for each study; from the union of all these expressions two vocabularies are built, one referring to exploration and the other to exploitation. The first vocabulary is composed of 76 words that refer to exploratory strategies, and includes terms such as disruptive, emerging, external and pioneer; the exploitation vocabulary, on the other hand, collects 79 words that include terms such as existing, inside, and past. A further upgrade compared to the previous analyses carried out by other authors, expand the responsibility towards various internal and external stakeholders. To run our measure of explorative/exploitative stakeholder orientation we rely on previous literature; in particular we revisit the concepts by Vurro and Perrini (2011). The authors proposed a disclosure depth and breadth index in order to study the level of disclosure of integrated reporting in terms of stakeholder management.

Therefore, we adapt the depth measure, that provides a good representation of exploitative strategies, measuring exploitative stakeholder orientation as the average volume of exploitative practices by firm  $i$  at time  $t$  towards (internal/external) stakeholder  $j$ , relative to all the others in the sample do. The following formula was used:

$$\text{Exploitative stakeholder orientation}_{itj} = \text{exploitative practices}_{itj} \times \frac{\sum_{t=1}^8 \text{exploitative practices}_{itj}}{\sum_{t=1}^8 \text{exploitative practices}_{it}}$$

Where,  $\text{exploitative practices}_{itj}$  is the amount of total number of exploitative sentence by firm  $i$  on stakeholder  $j$  at the time  $t$ ;  $\sum_{t=1}^8 \text{exploitative practices}_{itj}$  is sum of number of exploitative sentence by firm  $i$  on stakeholder  $j$  for period observed, and  $\sum_{t=1}^8 \text{exploitative sentences}_{it}$  is the amount of number of exploitative sentence by firm  $i$ , on all stakeholder for the entire period of analysis. This variable has been calculated for both internal (i.e., shareholders, managers, and employees) and external stakeholders (i.e., external investors, competitors, suppliers, customers, local community, NGOs, and the natural environment).

So, for example, imagine that the content analysis has attributed to company  $i$ , with reference to stakeholder  $j$ , a total of 44 exploitation strategies for 2010, 57 for 2011, 59 for 2012 and so on ... for a total of 602 strategies for the entire observation period; while the total of exploitation strategies for the same company  $i$  in the period from 2010 to 2018 and for all the categories of stakeholders was equal to 5,850. Therefore, the exploitative stakeholder orientation of the company  $i$  with respect to the stakeholder  $j$  is equal to 4.53 ( $44 \times 602 / 5,850$ ), and so on for each firm  $i$ , for each stakeholder category, at the all-time.

Thus, the breadth index provides us with a good proxy of explorative practices; therefore, we measure explorative stakeholder orientation as the variety of stakeholder-related explorative practices pursued by firm  $i$  at time  $t$ . The number of reported stakeholder areas for each stakeholder  $j$  is divided by the total number of possible exploration issues for that stakeholder. The following formula was used:

$$\text{Explorative stakeholder orientation}_{itj} = \frac{\sum_{s=1}^n \text{exploration practices}_{itj}}{\text{exploration practices}_{itj}}$$

Where,  $\sum_{s=1}^n \text{exploration practices}_{itj}$  is the total amount of explorative sentences  $s$  used by firms  $i$  on

stakeholder  $j$  at time  $t$ , and  $\text{exploration practices}_{itj}$  is the number explorative sentences used by firm  $i$  on stakeholder  $j$  at the time  $t$ .

This variable has been calculated gain for the above mentioned internal and external stakeholders, for each firm in the sample during the period of analysis.

So, for example, imagine that the content analysis has attributed to company  $i$ , with reference to stakeholder  $j$ , a total of 210 explorative practices for 2010, 210 for 2011, 200 for 2012 and so on ... while the total of exploration strategies identified with a dictionary is 27 for 2010 and 2011, 28 for 2012 and so on for each time  $t$ . Therefore, the explorative stakeholder orientation of the company  $i$  with respect to the stakeholder  $j$  is equal to 7.78 (210/27) both for 2010 and 2011, and equal to 7.14 in 2012.

**Control Variables.** We will use variables usually adopted in the literature to control for the impact of both dependent and mediating variables on the independent variable. Financial data were will collected from Orbis database, as above explained. In our analyse several firm-specific factors will be included to account for potential heterogeneity in the tendency to engage in exploration and exploitation at the firm and industry level. Consistent with previous studies, we control for firm size (e.g., measured as the log of the number of employees), which has been shown to affect exploration-exploitation strategy. We will control also for R&D investment (Hull and Rothenberg, 2008; McWilliams and Siegel, 2000), and industry effects in our analysis, because performance may vary by industry, using two-digit US Standard Industrial Classification codes (industry dummy variables) (Wang and Berens, 2015). Finally, we will control for temporal effects (year dummy variables), as well as for country effect considering the geographical location of each firm in the sample (country dummy variables).

**Sample strategy.** To test the hypotheses of this study, the target population corresponds to firms belonging to the Fortune 500 listed in 2018. The companies belonging to the Fortune 500 are the largest US companies ranked by total turnover for their respective fiscal years. The list is compiled using the most recent revenue and file their financial statements with government agencies. It includes both public and private companies, with publicly available revenue data. In order to examine the phenomenon on the long-time horizon we will collect data over the period 2010-2018. This long-time horizon increases the probability to collect a potentially higher amount of data, increasing the external validity of obtained results. Moreover, we have the possibility to conduct the analyses using this long-time period due to the availability of non-financial reports by encompassing the main limitation of prior studies. The sample strategy is due to several reason. Initially, as reported on the Fortune 500 website these companies, with \$ 12.8 trillion in revenue - 2/3 of US GDP - and 28.2 million employees worldwide, are the most important engine not only for the United States, but the global economy too.

Furthermore, other reasons can be found in some idiosyncratic characteristics of these firms. First, being able to serve such an important revenue means manage two different kind of relation: upstream with the supply chain, downstream with consumers, more or less close. Secondly, if we think about the nature of these companies, they are dealing with several banking institutions, and investors of various kinds. Finally, their business has direct impact on the environment and local communities. Thus, managing the different interest of all these stakeholder categories is critical for all kind of business. The adoption of an innovative business model based on the exploitation and exploration strategies could be a revolutionary key for them. For the purpose of our study, understanding the stakeholder orientation – as expressed in the proposed meaning of exploitative/explorative and ambidextrous stakeholder orientation - is not only crucial for scientific reason, but also for managerial ones.

**Expected implications.** This paper will have implications for both theory in the field of management and practice.

For scholars, we contribute to the theoretical debate on stakeholder orientation providing a new concept referring to a stakeholder domain of exploration and exploitation. In particular, it aims to outline a new perspective that embraces stakeholder theory with the emerging strand of ambidexterity. In this sense, we provide evidence of the mediating role of exploration/exploitative stakeholder orientation on the relation between innovation and firm performance.

Moreover, through our project, we will respond to the request both to develop a dynamic approach to managing stakeholder (Sachs and Maurer, 2009), and to study the balance between exploitation and exploration as regards organizational performance (Maletič et al., 2014).

From a practitioner perspective, this study will address how it is possible to think about firm value creation (Freeman, 2010) for multiple stakeholders (Freeman et al., 2007), embracing exploitative and/or explorative stakeholder oriented strategies. Moreover, a cross-boundary stakeholder orientation would be suggested as the best in class strategic option for those firms oriented towards innovation.

**Key words:** ambidexterity; exploitation; exploration; exploitative stakeholder orientation; explorative stakeholder orientation; stakeholder domain

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# The commercialization of highly technological products in the context of Industry 4.0: a B2B SMEs perspective

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**Objectives.** *The aim of this paper is to shed light on the issues and challenges that a SME faces in commercializing new and highly technological products in the context of Industry 4.0. Despite the pivotal role played by commercialization processes in SMEs new product development journeys, the issue remains still not enough understood by practitioners and scantily researched by academics. In addition, the fact that nowadays “highly technological products” can also be conceived as part of an Industry 4.0 paradigm makes the subject even more complex. As a matter of fact, firms are struggling to bring digital transformation into their manufacturing processes; consequently, firms that create and develop highly technological products are facing several challenges when it comes to commercialise these new solutions. In order to turn these new technical solutions into usable and marketable products, firms should be able to develop inexpensive and easy to use products capable to adapt to buyers’ existing manufacturing processes (Baraldi et al., 2009; Porter and van der Linde, 1995, Stone and Wakefield, 2000).*

*In order to grasp the complexity of this theme the present paper draws from two established streams of research: new product development - in particular, new products commercialization - and Industry 4.0 in the context of SMEs. These two topics are closely intertwined since they deal with different aspects of the innovation process.*

*Thus, the study begins by defining Industry 4.0 domain. Currently, there is no consensus in the literature about the definition of Industry 4.0 (Piccarozzi et al., 2019; Hoffman and Rusch, 2017) even if its implementation is at the center of the academic and political interest. Researchers and practitioners referred to Industry 4.0 with different labels, such as Industrial Internet, Internet of things, smart factories, Human-Machine-Cooperation, smart manufacturing, etc. In line with previous researches (Burrit and Christ 2016; Herman et.al 2015) this paper considers Industry 4.0 as a term to describe a group of connected technological advances that provide a foundation for increased digitisation of the firm; in addition, Industry 4.0 term include four main technological components: Cyber-physical systems (CPS), Internet of Things (IoT), Internet of services (IoS), and smart factory.*

*According to new product development (hereafter NPD) literature, the innovation process is often conceived as a sequence of linear phases (Cooper, 2008), whereby the commercialisation is the final step. The process usually begins with the idea generation, followed by its technical and technological development, and ends when the developed and commercialized product creates new wealth (Cooper, 2008; Aarikka-Stenroos and Sandberg, 2012; Medlin and Törnroos, 2015). To be recognized as an innovation, any R&D programs must be commercialized and adopted among users (Van de Ven 1986). However, in the NPD literature the attention has been mainly focused in the “exploration phase” (Durst et al., 2018) - the early stages of the process, such as the “idea generation” or “the development” phase - paying far less attention to the “exploitation phase” - the process of identifying the potential buyers for the new products (Aarikka-Stenroos and Sandberg, 2012). In this work we define the commercialization of innovation and new products as the last step of new product development, the process of turning ideas into new products (Cooper 2018, Pellikka and Lauronen 2007). The study assume commercialisation to begin with the introduction of the production amongst potential buyers and that continue with the management of the interactions with these buyers (Aarikka-Stenroos and Sandberg 2012). Therefore, the innovation commercialization process can be analyzed both from an innovator and an adopter perspective. While the adopter perspective is well developed, with a specific stream of theory about adoption barriers and drivers (Aarikka-Stenroos et al., 2014, Von Hippel 1986), few studies actually focused on the innovator commercialization process providing insights from cases. In addition, literature on new products commercialization is traditionally focused on startups and MNEs (Durst et al., 2018, Carter and Gibson 2019, Chersbrough 2006, Christensen 2013, Cooper 2018) while far less attention has been paid to the SMEs technological commercialization process (Durst et al., 2018, Carter and Gibson, 2019, Pellikka and Lauronen 2007). SMEs usually suffer resource scarcity, lack of personnel capabilities and limited time (Leithold et al., 2015). The lack of time and*

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resources (both human and financial) are well-known barriers that prevent them to experiment and develop innovation path as well as new strategies (Bouwman et al., 2019). In the commercialization process marketing resources play a key role. These resources can be addressed to product demonstration, advertising, communication, events, free trials and distribution strategies.

Based on these assumptions, the present work aims at understanding what are the major challenges and issues faced by SMEs when commercializing new high technological products. In addition, considering the fact that nowadays highly technological products can be considered part of the Industry 4.0 paradigm, the present work wants to analyze if this can either boost or hinder the innovation commercialization process.

The novelty and multi-faceted nature of the phenomenon under investigation calls for a qualitative approach in order to provide an in-depth analysis of the elements that hinder the commercialization processes of SMEs in the context of Industry 4.0.

In sum, the study's research question is the following:

1. What are the major issues and barriers that hinders SMEs high technological product commercialization process?
2. Does Industry 4.0 support or hinder the commercialization of new products?

**Methodology.** Due to the explorative nature of the study and according to the limited extant knowledge about the topic of commercialization of new Industry 4.0 products, the study adopts a single case qualitative methodology, (Eisenhardt 1989, Yin 2014). Hence, a single case study of an Italian small-sized company has been adopted to shed light on how firms commercialize new high technological products. The reasoning behind this choice lays in the suitability of single-case study methodology in enabling a holistic and in-depth analysis of a complex phenomenon in its real-life context (Yin, 2014; Scapens, 2004).

The case has been purposefully chosen for its revelatory potential (Coviello and Joseph, 2012), since it offered a distinctive and extraordinary setting to observe the phenomenon under investigation and to “gain certain insight that other organizations would not be able to provide” (Siggelkow, 2007, p. 20). The case company, ALFA, is a SME which designs and sells products for industrial printing. One of its main activities is the optimization of the printing process and the waste reduction generated by it. In the end of 2015, the firm begin to apply the new Industry 4.0 technologies to develop a new category of smart printers able to reduce both the costs and the environmental impact of labeling solutions. The data collection started in February 2019 and is still ongoing. Data were collected through a series of semi-structured interviews with key informants (Corbin and Strauss, 2015, Yin, 2014; Eisenhardt and Graebner, 2007). Data collection so far involved 5 different key informants and deployed through 6 interviews for a total of more than 4 hours of recorded audio. Data were analyzed adopting a systematic combining approach (Dubois and Gadde, 2002). Systematic combining is often used to analyze case studies and means cycling back and forward between theories and data as the study proceeds to produce new insights or patterns (Dubois and Gadde 2002, O'Toole and McGrath 2018). Data were processed adopting a processual perspective that allow the researchers to gain insight in how events unfold over time in context (Pettigrew 1997, Langley 1999).

**Findings.** The study pinpoints that a technology-oriented SME focused on Industry 4.0 new product development faces several issues in commercializing new products.

The internal issues and obstacles are related to the innovation and NPD-process management. First of all, ALFA faces what in literature is called “innovation inertia” in incumbent firm (Carter and Gibson, 2019). These firms usually struggle to develop new product as an every-day task, and this also emerged from the investigated case. The two smart printers can be considered the first new products development in more than 25 years of activity.

Then, in line with extant literature, the firm lacks a formalized plan for product innovation and technology development and thus missing to set-up the NPD stage-gate model (Cooper 2018, Crawford and Di Benedetto, 2008). As a matter of fact, ALFA didn't plan any activities in advance and the linearity of the NPD process has been mostly disregarded in each phase, resulting in a disorganized and messy process (Cooper 2018, Crawford and Di Benedetto, 2008). The process seems to be focused on the development of technical and engineering tasks, rather than on strategy and planning (Huang et al., 2002, Leithold et al., 2015). However, in contrast with the extant literature that acknowledges the outsourcing of many marketing and sales activities during the NPD process by Smes (Pellicka and Lauronen, 2007), the analysis of the case outlines the outsourcing of technological development activities instead. In 2015, ALFA started a continuous relationship with an Industry 4.0 certified partner, the engineering department of Università Politecnica delle Marche. The university helped the firm in developing a broad set of technologies capable of managing the machines' data in the cloud environment both for maintenance purposes and for assessing in real-time their impact on sustainability. Despite the great benefits brought by this partnership - especially in terms of warranty and authority towards stakeholders - the firm failed to exploit its potential in the NPD process and especially in the commercialization phase. In this regard, the case unfolded how SMEs often lacks the experience to manage novelty, uncertainty and technological viability embedded in the new product development process (Carter and Gibson 2019). When supported from external actors, the SMEs' entrepreneur often appears to be confused on how to deploy a technological avenue. In the firm this is reflected by the lack of a product portfolio selection and an NPD pipeline (Cooper 2018, Schilling and Hill 1998). In addition, the company failed to develop a standardised solution to be effectively commercialised and it confirm a well-known SMEs approach, the development of several one-off products for all the buyers (Leithold et al., 2015). As a consequence, the firm struggled with the configuration of an adequate revenue model that allows them to exploit the resources invested in the NPD process. ALFA's core business lies in the



production of neutral and customized adhesive labels in huge amount to a variety of firms, belonging to different sectors (food, healthcare, etc.), therefore the commercialization of a brand-new products such as the machines requires a new business model, with different resources. Although Industry 4.0 ease to adapt product's requirements, the case company do not find a standardized way to deploy a revenue model in the two year of commercialization observed.

Like many other SMEs, the investigated company doesn't have a marketing function inside the organization, thus showing a typical Italian approach to the discipline, that is called the "Marketing without Marketing" (Varaldo, Dalli, & Rescinti, 2006). Marketing in SMEs is frequently underdeveloped and characterized by informal, reactive, and spontaneous techniques (Gilmore et al., 2007); firms, doesn't usually apply the codified principles and techniques of marketing, therefore they choose to follow improvised approaches based on entrepreneur's intuition.

This is also what happened in ALFA, where the absence of a formalized marketing strategy (Cooper 2018, Schilling and Hill 1998) negatively affects the entire new product commercialization process. Before deploying the NPD process, firms should develop a marketing plan in order to determine how the product will be presented to the market (Saji and Mishra, 2013). However, in this case the company didn't plan any marketing activities regarding either the launch of the new products or the way how to reach new buyers. The entrepreneur said that for the commercialization of the new product they mostly rely on the engagement of their customer base, thus revealing a lack of a clear go-to-market plan (Cooper 2018). In literature the launch plays a critical role in the NPD commercialization process and it has been demonstrated how any missteps in this phase can negatively affect the whole NPD (Durst et al., 2018). However, in the investigated case the new product's launch is something that it wasn't not only planned, but also disregarded. The analysis of buyers and user's involvement according the product characteristics - a critical activities for a successful launch - has been mostly ignored by the company. Other critical factors in planning and executing the launch that the company ignored, are the timing of the launch, the choice of the buyers' segment to be targeted and the communication strategy (Saji and Mishra, 2013).

The lack of a clear marketing and communication strategy seems to affect the firm's ability to promote and communicate the benefits of their products, thus limiting new leads generation. Besides, the sales team and the customer service are mainly internal, but there are different sale reps that are external brokers. Today, the firm has not yet appointed any salesperson specifically dedicated to the commercialization of the new machines, as well as it lacks a marketing department or any marketing figure inside the overall organization. The communication effort has been limited to the presentation of the products at some important fair trade where, in addition to the dashboards previously explained, they delivered advertising flyers explaining the sustainable benefits attached to their machines. As a matter of fact, the printer's innovativeness brought about the need to develop mixed competencies that integrate technical and marketing skills going beyond the expertise of a small manufacturing firm like the one considered in this work.

The lack of resources and skills needed to successfully commercialize new products is related to a typical characteristic of small business: the liability of "newness" (Stinchcombe, 1965) and "smallness" (Aldrich & Auster, 1986). The latter refers to the limited resources and capabilities that can lead to greater vulnerability in new ventures, while the liability of newness comprehend both internal and external factors as lack of experience, reliance on a limited network and market resources, and lack of perceived legitimacy (La Rocca et al., 2019; Freeman, Carroll, & Hannan, 1983; Stinchcombe, 1965). Even if these characteristics are usually linked with the success of new ventures the case shows the same barriers as the firm has just tapped into a completely new business. Therefore, it appears that it suffers from an organizational legitimacy and authority problems among the actors of his network. The company is new in the production of Industry 4.0 and sustainable printer machines and it is not perceived as meaningful, predictable, and trustworthy as other competitors that are in the market for a longer time.

Regarding the external issues and barriers that can affect the new product's commercialization process, we were able to identify three important elements: change resistance, customer's innovation culture and Industry 4.0 policy and incentives. During the commercialization process ALFA struggled with buyers' resistance to adopt new machines and innovative solutions, and ultimately with their resistance to change. Moreover, in this case the resistance seems to be linked to a "career dynamics" problem, where the decision of introducing such a complex solution in the production system of the buyers requires courage and a strong belief in the future benefits of these technologies.

Strictly related to the change's resistance issues, innovation culture emerged as another important factor that can either hinder or foster commercialization process. The CEO pointed out that there are two different type of firms: the ones that truly believe in in Industry 4.0 opportunities and benefits, pursuing innovativeness and embracing new products; and the ones that look at innovation only if "the price is lower than standard products." However, to embrace innovation and the related organizational and operational changes, the customer has to be ready to adopt a new technology compliant with Industry 4.0 principles. Unfortunately, this seems a prerogative of large companies, as suggested by the CEO.

Finally, policy issues emerged as important external factors that can either hinder or boost the commercialization of Industry 4.0 products. In particular, Industry 4.0 adoption, as many other industrial innovations, is supported by normative regulations and low incentives. This happened also in the investigated firm, whose buyers are willing to adopt such innovation only if there are policies that force them to be compliant with some standard or if they can benefit from some incentives. As a consequence, the firm should be able to exploit the government measures in order to support the commercialization process of Industry 4.0 products. However, politics and special interest groups emerged as another critical factors that can either hinder or foster the adoption and diffusion of these technologies among the other firms. In this regard, the firm had to deal with lobbying activities of bigger firms that are not eager to change the status quo. Particularly, they faced the resistance of paper industry's companies whose business could be disrupted by

the Industry 4.0 new technological devices.

A further element that is emerging from the ongoing study as a major issue, is the effect of the pandemic spread in the current and future commercialization processes of the new products. According to the CEO, the lockdown started in March 2020 that is forcing most Italian firms to stop the production, has completely blocked the new machine sales and roughly interrupted the chance to develop new business relationships. In particular, the impossibility to meet in person and the uncertain situation that generates fear and discourages firms to invest in future initiatives, emerges as the most important coronavirus' implications that are affecting ALFA. Luckily for the firm, their traditional business (consumables paper labels) held up and the CEO is expecting to experience only a 15-16% turnover drop.

**Research limits.** The study design is subject to several limitations, some of which offer interesting avenues for developing further researches. First, our research is explorative in nature, relying on a single case study, and accordingly, the findings cannot be generalized. However, although the case study is considered a single context method (one case, one industry, one country), it is increasingly and widely applied in different research fields (Dubois and Gadde, 2002). Nevertheless, the study of other organizations might lead to different results and show different paths. Notably, the study identified the several elements that hinder the commercialization of new high technological products in SMEs operating in the B2B context. Then, with this study the aim is also to encourage other scholars to conduct additional researches involving different cases which might identify other hindering factors to NPD commercialization and, thus, add further knowledge to the theory. Furthermore, the study is a work-in-progress and so far, it relies on some key informants inside the firm: the CEO, the customer service, a salesperson and the academic who was in charge on supporting the firm in the technology development. Albeit following a strict methodological protocol that ensure the informants reliability, future interviews are planned to gather additional insights and help in triangulating the key informants' perceptions.

**Practical implications.** The technological changes brought by Industry 4.0 calls for major innovations for businesses. The study aims to deploy managerial implications to support SMEs operating in the B2B context in their commercialization of innovation path of Industry 4.0 devices. The study abductively reveals the potential issues gathering from a single case study of an Italian small firm who developed and commercialized industry 4.0 devices.

The internal perspective of the study identifies the pivotal role of strategy and planning as the first step to manage commercialization. The strategy should incorporate the firm's R&D vision and offers a guidance for the entire organization. First of all, to develop the strategy, SMEs should create a cross-functional team headed by a team-manager who oversees the whole process and deals with eventual drawbacks or pitfalls. Concurrently, they should plan a marketing strategy without ignoring some important commercialization activities such as the accurate market analysis to identify new potential buyers' profile and the launch planning. Regarding the first activity, usually SMEs find useful to start the commercialization of new product by approaching their existing customer portfolio and trying to sell them their new products. This is also happened in ALFA, but then their lack of any marketing analysis prevents them to engage with the right buyers' profile. SMEs should develop a gradual activity to interact with further key users and key buyers consistent with the profile identified in the strategy.

In addition, once key actors have been identified, the launch should start by involving and convincing them to start using the new product. Thanks to potential buyers' engagement, SMEs could also overcome buyers' change resistance and innovation culture issues. In addition, firms might develop several types of communication strategies in order to demonstrate and try the effectiveness of the product. Providing free or controlled trials allows the firm to understand how to build-up the user experience thus creating confidence over the products. Moreover, planning and deploying the launch of a new product become relevant when introducing innovation since it allows the firm to establish a clear position in the business context in order to avoid being copied from other firms.

In order to commercialize Industry 4.0 products and to ease the buyer's willingness to change, SMEs should exploit the incentives enacted by policy makers and governments in order to support the digital transformation of the industrial ecosystem. The commercialization process should leverage this fact and promote the incentives among the key potential buyers. In addition, in the investigated case, the partnership with the University seems to have a strategic role in certifying the Industry 4.0 features both for the potential users and for the government.

Lastly, we might draw early implications concerning the coronavirus' impact on Industry 4.0 products' commercialization. Firstly, reaching and engaging new customers appears to be problematic not only for the social distance's regulations that limit visits and meetings, but also for the motivations that can push the customers to buy products in such a difficult time. As a matter of fact, the business relationship may start for the wrong reasons in the customer's moment of need and may turn out as a spot initiative, rather than backed with strong and long vision on the firm as a supplier. Secondly, managing the relationship through digital tools only makes difficult to discuss important issues such as investments in new products, since the introduction of highly technological solutions requires training activities in how to correctly set and use the new products, as well as personalization activities to better integrate the machines into the customer production lines. Finally, the fear related to the uncertainty of the future economic situation make firms to be cautious and to avoid high and risky investments.

**Originality of the study.** For the best of our knowledge few previous studies attempted to provide a clear and thorough understanding of the several commercialization issues SMEs faces in the NPD commercialization process while developing Industry 4.0 products.

*Theoretically, the study contributes to the NPD literature by developing new evidences on SMEs. As a matter of fact, previous studies mostly investigated the NPD process of startups and large corporations. The study confirms the existence of different initial setting faced by incumbent SMEs in comparison to the ones' faced by other organizations. In addition, our work is one of the few papers that focus on the innovator's perspective rather than on the innovation adopter's perspective. There is a well-established literature about Industry 4.0 - and innovation in general- adoption barriers and drivers (Müller et al., 2018; Horváth and Szabó, 2019), while very few studies analyzed how an incumbent innovator can actually commercialize new highly technological products.*

*Then, the case analysis outlines both internal and external issues that can hamper the commercialization process of new Industry 4.0 products, thus allowing us to understand what is still missing in the management of this process. The lack of a deliberated NPD and innovation strategy, as well as of any marketing activities - especially related to the new products launch - and the presence of some SMEs typical liabilities - liability of newness and smallness - emerged as the main internal issues faced by the company. On the other side, buyer's change resistance and its attitude toward innovation are external issues that appear to be critical as well challenging in the commercialization of highly technological products. However, Industry 4.0 incentives appear to be an important external factor that can help the commercialization of these technological products. Therefore, managing policies and policy maker decisions become paramount for a successful commercialization.*

**Key words:** Industry 4.0 product, Commercialization, SME, B2B, New product development

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# Personal branding: an exploratory study

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## Objectives.

*With the technological developments creating about the improvement of communication across the Internet and numerous social media platforms, a lot of people have personal brands that need to be managed in a virtual age (Gioia et al., 2014). If they don't manage this, the others will do it. Personal branding (PB) is about building a reputation with the surrounding people that will let promoting and enhancing relationships that open up opportunities in life. PB is not a fast tactic to impress people in an authentic way, but a way to express yourself (Coyte G., 2014). Everyone has an online reputation nowadays, for this reason, it is essential to control it. The term "personal brand" initially was born from an article titled "The Brand Called You" by Tom Peters (1997), in which he affirmed that a personal brand can be detected as the brand of ourselves as if we were organizations. Tom Peters defines PB as a method in which people differentiate themselves from others (Peters, 1997). This phenomenon practices have become common as subjects of self-help manuscripts, websites and in business, although they are still mostly based on spontaneous, casual and informal approaches, professional assistance is often done in unconfirmed case-study experience. Despite the issue of PB is spreading more and more, less attention has been paid to the topic in academia, and its theoretical notions and how it is connected to other scientific fields was not explored until the 2000s. Along with its diffuse position in scientific language, there is also a significant lack of empirical research focusing on the common characteristics and structure of this topic. The first academic study of PB was written by Shepherd (2005), the aim of his study is to compare the newly established discipline with marketing knowledge. Also, according to Zarkada (2012) the essay PB is considered to be an emerging new concept in the practice oriented marketing literature. Shepherd (2005) also underlines the truth that there seems to be a conflict between marketing standards and personal brand. The change that Shepard notes is as follows: while in self-marketing individuals renew themselves to respond to market demand, with PB people express themselves and discover what the products that represent themselves. So, they are looking for targets in the market who are able to support their identity. Therefore, Shepard said that it is difficult to apply the roles of traditional marketing, but it is necessary a conceptualization of the topic that includes a formalized approach to personality development should be identified.*

*According to Philbrick & Cleveland (2015), the original concept of PB, is people's perception of someone. For example, a student constantly gets the highest grade in school, he is identified as intelligent student. He socially makes his reputation (PB) as a smart student. Furthermore, Labrecque, Markos, and Milne (2011), tell that the PB is not just a view that is framed spontaneously, but, there is a purpose from that one to commemorate his self-narrative to people, especially related to strong points and distinctiveness. Still, the inspiration of people for creating PB is different.*

*Arruda (2008) claims that successful personal brands are not created but discovered, strengthened and supported. In creating a PB, people try to create statements about their qualities, their differences, and try to express these aspects visually (Chen, 2013). The process of constructing a topic can be defined as creating benefit for value of work and life, as well as differentiating the prospective in the future (Morgan, 2011). Value building can appear through individual skill and performance; this value can make differences and it has been as an indicator of reputation. In the process of PB development, people present their personal identities; this encourages a meaningful emotional response to their supporters regarding their position and status (Chakrabarti, 2014). PB is the art of building a name in your business: it is the way with which it is possible to promote starting from what makes us unique and noteworthy. It consists in developing and communicating the reason why a client or an employer work should choose us: a decisive step, therefore, to activate the important professional opportunities.*

*Khedher (2014) defined PB as the process of making unique personal identity, creating effective contacts of a brand with its precise target market, calculating its effect on image and authenticity of the entity, as well as a tool for recognition of personal and professional objectives. Making PB requires a strategy that needs to be defined before looking over the network: only when it will be clear the message that you want to communicate you can switch to search online the right tools to do so. For this argument the social network has an essential role. Hence, PB has become significant in the digital era, social media (i.e. Facebook, YouTube, Google, Twitter, Instagram, LinkedIn)*

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entered the scene and complete it virtually impossible for someone to keep from making a personal brand, whether they needed to or not (Vasalou and Joinson, 2009; Marwick and Boyd, 2010; Way, 2011; Labrecque et al., 2011). Facebook, blog networks, have become a universal trend as well as increasingly PB chiefly for millennials who were digital native and grow up as the internet developed (Khedher, 2014). Overall, online PB can be achieved by everyone (writers, teachers, students, online shop owners, etc.) through social media such as Facebook, Twitter, Instagram, LinkedIn, Pinterest, Blogs (Brems et al., 2017; Chen et al., 2016). Thus, online PB can be classified as an effort to describe oneself digitally for specific reasons. The present study come about verifying how in reality the PB was already present in academic studies. The desire to explore this topic was born because we noticed that PB is not a recent phenomenon, but at the same time it is in strong increase. Reading a lot of papers, we noticed that there isn't a formalization of the phenomenon, but to begin to investigate we start with "Bibliometric", which is a software to be able to generate a Systematic literature review (SLR). The present method has emerged as processes elements to foster research in academia, to map existing knowledge production, and to produce new research questions (Frank and Hatak, 2014).

**Methodology.** Aiming to develop a particular research's mainstream synthesis of past investigation results is one of the most important tasks. There are two major approaches with this aim: the qualitative approach for a structured literature review and the quantitative approach of meta-analysis (Schmidt, 2008). Furthermore, there is a third method --the mapping of science-- which is based on the quantitative approach of bibliometric research methods and is becoming increasingly used to map the design and evolution of scientific fields and disciplines (Calero-Medina and van Leeuwen, 2012). Science mapping, when reduced to its most basic components, is a combination of classification and visualization. We assume that there is a structure for science and then we create a representation of that structure by partitioning sets of documents into different groups (Boyack and Klavans, 2013). Science mapping is becoming an essential activity for scholars in all scientific disciplines. As the number of publications continues to expand at increasing rates and publications develop patchy, the task of accumulating knowledge becomes more complicated. Bibliometric research method uses metadata from scientific database searches. A bibliographic database can be defined as a collection of articles, books, and reports able to provide data to answer research questions and the database is usually accessed online. These methods have the potential to introduce a systematic, transparent and reproducible literature review process and thus improve its quality (Zupic and Čater, 2015). A systematic literature review is explicit and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners. The systematic literature reviews are useful to describe and explain current knowledge, to identify research streams and future development, to determine sources and work in progress. Online database searches are usually the most efficient, but to use them effectively you need keywords, inclusion and exclusion criteria, research areas, research sources, learning to use Boolean logic (Gallagher, 2006). The software tool used in our work to run the complete SLR is the open-source R-package bibliometrix and its subsequent developments. The bibliometrix R-package provides a set of tools for quantitative research in bibliometrics and scient metrics. The bibliometric analysis instrument is able to complement the general overviews on PB provided in past studies and has the advantage of mapping the research field without subjective bias, in a systematic, transparent and reproducible way (Garfield, 1979). Specialized software tools commonly perform only certain steps of science mapping analysis. The bibliometrix R-package allows scholars to execute a comprehensive science mapping analysis of scientific literature (Aria and Cuccurullo, 2017). We employ the Scopus database with the word "Personal branding" in the title, abstracts and keywords getting 185 outputs. Subsequently, we include the research areas in the category "Business, Management and Accounting" and "Social Science" (with 122 results) followed by only scientific paper sources (94) and only written in English. The search was carried out and closed on April 07, 2020 and achieved 85 results. The string adopted on Scopus: TITLE-ABS-KEY("personal branding") AND ( LIMIT-TO ( SUBJAREA,"SOCI" ) ) OR LIMIT-TO ( SUBJAREA,"BUSI" ) ) AND ( LIMIT-TO ( DOCTYPE,"ar" ) ) AND ( LIMIT-TO ( LANGUAGE,"English" ) ). Our reading of abstracts as a protocol for a rigorous systematic literature review did not provide any evidence to exclude papers that were not relevant. Finally, by cleaning the dataset, 14 duplicates were eliminated with a final number of 71 elements.

**Findings.** The first results concern the overview of the analysed dataset, extracted from Scopus with the inclusion criteria expressed above. The most interesting data concerns the number (71) composed only by scientific articles as well as the reference period of the papers starting from 2005. This allows us to affirm how the mainstream research is very novel.

Given the small number of the dataset in question it emerges in contrast that there is a considerable number of authors involved (140) but with a low replication of paper on the theme. Moreover, there is a rate of collaboration relatively important (2.49) and the average number of authors per document is low (2.07).

Scientific production starts in 2005 with the production of a single paper, but in the year 2015 important numbers of growth begin to emerge (8). In 2018 and 2019 there has been the highest number of productions equivalent to 14 respectively.

The countries with the highest scientific production are the USA (45) followed by UK (13) and succeeded by Spain (6) and Canada (5).

The journal ranking of the most scientifically produced reports "Digital Journalism" with 5 papers followed by "Journal of Marketing Education" (3), "Journal of Product and Brand Management" and "Sport Business and

*Management: An International Journal*” (2). Instead, with regard to the scientific impact of the journals, the first position is reserved to “*New Media and Society*” with 2 publications with a total of 1369 citations, followed by “*Digital tourism*” with 5 publications and 283 citations and “*Journal of Consumer Culture*” with 235 citations with a singular paper.

The findings also report which are the most cited papers and the first place in the ranking of our dataset is the paper “*I tweet honestly, I tweet passionately: twitter users, context collapse, and the imagined audience*” by Marwick A. and Boyd D. published in 2010 in “*New Media and Society*”.

The number of citations in relation to this article is 1366 with an annual average of 136,6. In this paper there isn't main topic of “personal branding” but employs this issue to talk explain “identity” and “self-presentation” on social media, specifically twitter. In second rank with 235 total citations we can find Hearn A. (2008) with the paper “*Meat, mask, burden*”: probing the contours of the branded ‘self’ in “*Journal Of Consumer Culture*”. Also, this paper does not discuss ‘personal branding’ directly, but describes related topics such as generic branding, cultural promotion and social networks. The third position is filled by the paper that discusses the topic in focal point and is by Lair Dj., Sullivan K., Cheney G. with the title “*Marketization and the recasting of the professional self: the rhetoric and ethics of personal branding*” (2005) on “*Management Communication Quarterly*”.

The results also reveal which words are the most frequent in the title, abstract and keywords sections of the authors in our analysis unit and also confirm the data emerging from previous results. In fact, the main confirmation concerns the word “personal branding” with a frequency of 47, followed by the word “social media” (13). This, as said, confirms the link between these two themes, where one is the phenomenon and the social media is the most used communication channel. To complete the descriptive part of the results, we highlight how over time the important topics related to this research mainstream have been “identity” in 2011, then in 2015 the main topics are “branding”, “Social Media”, “Twitter”, but in 2018 the theme of “personal branding” emerges as the most prominent.

**Research limits.** This analysis study presents the conventional limitations due to the research method adopted. The limit on Scopus search for the word “personal branding” refers to several sections — keywords, title, abstract — and not only in keywords in order to avoid the loss of important analysis units.

The selection of the three sections has been preferred to try to identify the present topic. The presence of the expression “personal branding” in the abstracts and not as authors’ keywords allows to identify as the theme is related to other related subjects and is useful as a tool and not as a study purpose. The presence of the term “personal branding” in the title is always also linked to the presence in the author keywords and therefore to the presence as a focal theme of study.

The first limit related to the methodology concerns the one technically present only in the database used, therefore the possible not complete research of the papers presents in the literature. The second limit is the only selection academic articles and the lack of not selection of book chapters, as well as the lack of classification of journals according to international rankings. An endogenous limit to the methodology concerns the impact of papers, it is not known given the novelty of the issue and thus recent publications as the relative impacts of scientific papers will evolve.

**Practical implications.** This preliminary approach towards this topic we have observed how more academic research could help the managerial field. This phenomenon was born and evolved in the managerial field and was not very analysed by academics and a formalization of the fact could help to better evaluate people that invest in personal branding.

“Personal brand is a set of characteristics of an individual (attributes, values, beliefs, etc.) rendered into the differentiated narrative and imagery with the intent of establishing a competitive advantage in the minds of the target audience.” (Gorbatov et al., 2018)

But how can we really measure what has been perceived by people? A better and constant academic research could answer many quantitative questions.

PB has been defined as an “arcane activity” (Shepherd 2005), “a programmatic and proactive approach” (Lair, Sullivan et al. 2005) a tactical process (Montoya, 2002) or an unspecified type of “proactive behaviour” (Mobray 2009) and a “powerful tool” (Post, 2005). It is as just a ‘process’ (Schawbel 2009). Like any process, it has inputs and method.

What is the best method for each business?

In addition, the link between personal branding and social media keywords is very relevant. The reason is that this topic has become very remarkable with the birth of social network (such as Facebook, Myspace, Twitter) among others (Marwick and Boyd, 2010). We suggest in future studies with the empirical methods (i.e. case studies, surveys) to identify the correlation between each one social media and the business areas more performed, thus, to apply this in managerial area to optimize the online reputation. In order to make authentic disclosure in online platform, individuals should engage in self- assessment and strive to find out significant aspects (Shaker, F. and Hafiz, R., 2014).

With more academic research and the creation of conceptual models it may be possible to identify what are the strengths and weaknesses of personal branding for the several industry.

**Originality of the study.** The aim of this research is to make a SLR through the bibliometrix on the issue Personal branding. After a long trial research, we realized that there are not previous studies. Therefore, since the birth of

“personal branding’s issue there are not academic papers that use this methodology on managerial research area. In addition, we have noticed that PB is a phenomenon in not recent years, but today such phenomenon is in continuously growing. The news is about the connection between SLR in academia with this methodology, which has only recently become widespread in the social sciences.

**Keywords:** *Personal branding, systematic literature review, bibliometrix, SLR*

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# L'innovazione del business model dell'Università per le attività di formazione

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**Obiettivi.** Il sistema universitario deve affrontare una crescente intensità competitiva, inedita rispetto al passato, derivante dalla frammentazione dell'offerta formativa in un numero sempre più folto di atenei, pubblici e privati, operanti sia nella modalità tradizionale che a distanza, attraverso la didattica on-line domestica e internazionale, nonché derivante anche da servizi sostitutivi quali ITS (Istituti tecnici specialistici), Corporate Academies e Open Universities.

D'altro canto, a valle del processo di diffusione del sapere, vero e proprio cuore della mission universitaria, si manifesta un'evoluzione della conoscenza specialistica molto rapida, che mette alla prova la capacità dell'Università di formulare una proposta d'offerta consonante e di successo, in tempi altrettanto rapidi.

Obiettivo del lavoro è analizzare, nella prospettiva imprenditoriale sistemico-vitale (Golinelli, 2017), le modalità attraverso cui l'università crea valore, nonché verificare le possibili innovazioni gestionali ed organizzative, applicabili alle stesse attraverso l'ausilio delle tecnologie digitali. Muovendo da queste considerazioni, le domande di ricerca che lo studio si pone sono:

RQ1: il business model dell'Università è adeguato al contesto attuale e, dunque, sostenibile?

RQ2: in che modo l'Università può ripensare il suo processo di creazione di valore, così da essere consonante al contesto competitivo e raggiungere l'equi-finalità sistemica (risonanza)?

Per argomentare alcune possibili risposte alle sopra citate domande di ricerca, lo studio prende in esame:

- i driver di valore che orientano le scelte e l'operato dell'Università;
- in che modo questi driver stanno evolvendo;
- i destinatari della proposta d'offerta dell'Università e i bisogni che riesce a soddisfare;
- la modalità di creazione di valore e i fattori che ne possono determinare l'inefficienza e l'inefficacia;
- le caratteristiche dei flussi finanziari e la possibilità di valorizzare i flussi informativi connessi all'attività.

In una prospettiva sistemica, l'Università è orientata a fornire servizi in favore dei sovra-sistemi economici e sociali (Barile et al., 2013) non solo nel supportare le attività di Ricerca & Sviluppo (De Marco e Piccaluga, 2016), ma soprattutto nel formare le risorse umane: è possibile, pertanto, immaginare l'Università come un'impresa produttiva, il cui output è rappresentato essenzialmente da risorse umane qualificate destinate ad essere acquisite dalle organizzazioni economiche e sociali, ripensando una rinnovata relazione business-to-business (B2B) in una logica di marketing (Hakansson, Snehota, 1989).

In questo senso, una rivisitazione del modello di business dell'Università può determinare un capovolgimento dei ruoli, in cui:

- gli attori economici, in cerca di capitale umano qualificato, si rivolgono all'Università quale "fornitore" di risorse umane in linea con i propri tratti aziendali e con le caratteristiche di settore, riconoscendo, in cambio, la contribuzione ai costi necessari alla loro formazione;
- l'Università mette a disposizione degli studenti interessati a conseguire il titolo di laurea e, dunque, ad approcciarsi al mondo del lavoro con un maggior grado di qualifica, uno o più percorsi di formazione in linea con le esigenze delle organizzazioni committenti;
- gli studenti aderiscono al corso di laurea prestabilito, conseguendo il titolo per essere assunti dagli operatori economici che hanno "selezionato" e guidato in itinere le loro competenze.

In un siffatto sistema, l'Università, oltre a diventare un interlocutore cruciale per i sovra-sistemi, legittima il proprio ruolo chiave nella creazione di valore in ambito economico e produttivo, incrementando il proprio prestigio sociale e la propria reputazione grazie ad un più efficace placement.

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*Le imprese e gli operatori economici sono proiettati in una logica del prosumer, in cui, oltre a finanziare i percorsi universitari, partecipano con l'Università nella progettazione dei corsi di studio, in funzione delle proprie esigenze operative e dello sviluppo delle proprie attività.*

*Analogamente, anche gli studenti diventano prosumer, quali attori protagonisti (generando flussi informativi da capitalizzare e valorizzare) di un percorso formativo, la cui destinazione non risulta più essere casuale e imprevedibile (logica push), bensì mirata e coerente con il proprio sbocco professionale (logica pull).*

*Si tratta di immaginare nell'Università un nuovo processo di co-creazione del valore il cui output è rappresentato da profili professionali customizzati e consonanti alle attività produttive, tale per cui è richiesto il coinvolgimento simultaneo dei tre sovra-sistemi interessati da questa rivoluzionaria filiera della formazione secondo una logica win-win-win.*

*Muovendo da questi elementi, emergono le seguenti ulteriori domande di ricerca:*

- 1. Come può cambiare il processo finanziario nell'Università? La logica della gratuità è applicabile? C'è un modo per esonerare gli studenti dal pagamento delle tasse/rette?*
- 2. In che modo l'Università potrebbe incrementare la propria reputazione e rivolgere il proprio servizio direttamente anche alle imprese e organizzazioni che compongono la domanda sul mercato del lavoro?*
- 3. In che modo i diversi investitori e le imprese che usufruiscono delle informazioni e dell'output universitario (ovvero lo studente formato) possono sostenere finanziariamente l'Università?*
- 4. Può il cliente/pagante dell'Università divenire sostanzialmente l'impresa o altro operatore economico, in sostituzione dello studente?*
- 5. Come si può trasformare e capovolgere il business model dell'Università?*

*Obiettivo dello studio è cercare di dare risposta alle domande di ricerca sopra riportate, in modo da problematizzare l'attuale modello di business dell'Università e ipotizzare un'innovazione dello stesso, attraverso il capovolgimento dei ruoli degli interlocutori interessati al processo di formazione, i quali, grazie al supporto delle nuove tecnologie, possono assumere la veste di prosumer, riducendo le asimmetrie informative e spazio-temporali.*

*Un nuovo multisided business model sarà così basato sulla co-creazione di valore, puntando a rendere l'offerta formativa tarata sulle aspettative degli Studenti e delle organizzazioni del mondo produttivo.*

**Metodologia.** *Il presente è uno studio esplorativo di carattere qualitativo proteso a sviluppare una nuova concettualizzazione della relazione fra Università, studenti e attori del sistema economico utilizzatori di capitale umano qualificato, nell'ottica di un più ampio processo di creazione del valore, di cui società ed economia divengono beneficiari, cogliendo la sfida per un ripensamento delle dinamiche correlate ad una migliore società.*

*In particolare, muovendo dalla prospettiva di studio Sistemico Vitale (Golinelli, 2017; Barile, 2009), il lavoro problematizza il vigente modello di business dell'Università attraverso la tecnica del brainstorming (Bezzi & Baldini, 2006; Rawlinson, 2017), al fine di individuare gli elementi di non consonanza sistemica dell'Università con l'ecosistema socio-culturale emergente nell'era digitale e con le caratteristiche del contesto competitivo da essa derivante. Attraverso il confronto creativo, volto a far nascere domande e idee, piuttosto che risposte, sugli aspetti palesemente dissonanti e ancor più sugli elementi occulti o latenti del processo di creazione di valore dell'Università, il lavoro analizza e sviluppa i concetti di co-creazione del valore attraverso la condivisione dei dati e informazioni con le organizzazioni economiche e con gli studenti, capovolgendo il ruolo di questi ultimi, da ricettori del servizio di alta formazione a co-creatori di profili professionali ad alto valore aggiunto in termini di competenze specialistiche e trasversali, in linea con le esigenze degli attori economici.*

*Questa prospettiva innovativa vede le organizzazioni che esprimono la domanda nel mercato del lavoro assumere la veste di cliente finale e lo studente quella di fornitore di dati e informazioni utili per la sua profilazione, nonché risorsa da formare e fornire all'impresa cliente.*

*Il lavoro, infine, sviluppa un'ipotesi di concettualizzazione, in via del tutto sperimentale, di un nuovo business model per l'attività universitaria di formazione, attraverso l'ausilio del tecnica design thinking (Cautela, 2007; Pande & Bharathi, 2020): sono stati esaminati (What is) e messi in discussione (What if) i bisogni dei diversi attori coinvolti nella trasmissione e diffusione del sapere, per immaginare soluzioni possibili diverse e più ampie (What Wows!), utili a soddisfare le esigenze di una rete ampliata di attori (What works?).*

*Attraverso l'ausilio di una piattaforma digitale di co-creazione e con le tecniche di data science, l'Università acquisisce ed elabora dati sul comportamento e sulle performance degli studenti universitari al fine d'individuare le caratteristiche di ciascun individuo da considerare funzionali in un percorso virtuoso di formazione, e al contempo fornisce loro uno strumento per personalizzare il proprio percorso formativo, trasformandoli in prosumer dell'istruzione, recependo le esigenze formative in termini tanto di modalità di fruizione delle nozioni quanto di scelta delle materie utili al proprio percorso formativo.*

**Risultati.** *Il business model universitario che s'intende proporre poggia sull'idea di capovolgimento del flusso dei servizi erogati e del relativo flusso finanziario, e, dunque, sul capovolgimento del complessivo modello di creazione di valore, secondo una prospettiva di sincronia fra domanda e offerta che permetta la personalizzazione di quest'ultima (Barbera, 2017).*

*In una logica sistemica (Golinelli, 2017), l'Università agisce sul grado di apertura nei confronti degli attori della struttura ampliata, facendo leva sul concetto secondo cui per le imprese e le organizzazioni economiche alla ricerca di persone ben formate, l'Università diviene un attore più rilevante che in passato: da essere mero ente deputato a*

erogare e certificare l'alta formazione degli individui di una società può divenire partner nella formazione dei profili qualificati utili allo sviluppo dell'attività economica stessa. In questo senso si può configurare un processo d'integrazione di risorse e competenze degli attori della struttura ampliata.

Nella nuova proposta di business model l'Università fornisce agli studenti il servizio di alta formazione in cambio non di denaro (sotto forma di tasse o rette) bensì di dati e informazioni personali.

Un supporto in tal senso può derivare dall'infrastruttura tecnologica digitale in grado di accumulare e gestire il flusso informativo (data science) dallo studente all'Università: attraverso una app mobile lo studente cede costantemente, durante tutto il percorso di studio, informazioni sul proprio stile di vita, nonché sul curriculum universitario, non solo in termini di performance relativa agli esami di profitto, ma anche di tempistiche di studio, di materie scelte: in definitiva di inclinazioni, di ciò che appassiona e che non appassiona, di comportamento e di interazione sociale.

Tutte le informazioni sul percorso formativo dello studente, dirette e indirette, relative non soltanto alla mera didattica e al profitto negli studi, ma anche e soprattutto in merito alle caratteristiche soggettive della persona, quali stile di vita, ore di studio e ore di sport, propensioni caratteriali, attitudini e aspirazioni personali e professionali, soft skills (attitudini al team working e problem solving, flessibilità, capacità di gestire le risorse efficientemente, ecc.), possono contribuire a fornire ai potenziali destinatari finali della formazione universitaria, un profilo preciso e completo delle risorse umane da valutare per l'assunzione. Al contempo l'Università può lavorare sulla costruzione di profili tailor made sulle esigenze specifiche delle organizzazioni economiche, opportunamente enucleate e comunicate ex-ante alla stessa nell'ambito di un vero e proprio canale di fornitura di risorse umane ad alto potenziale.

Una collaborazione di siffatta natura deve prevedere la formalizzazione di un contratto di fornitura attraverso cui le parti (organizzazione economica in qualità di acquirente e Università nella veste di fornitore) si impegnano reciprocamente e in modo costante e continuativo, per un periodo medio-lungo, da un lato a trasmettere le esigenze professionali e formative, dall'altro a fornire le risorse umane allineate a dette esigenze.

In questo senso, il processo di creazione di valore modifica il proprio assetto, in quanto da One-to-Many vira verso il Many-to-Many (Barile et al., 2012): gli attori coinvolti nella co-creazione di valore divengono:

- I. l'Università, nella nuova veste di catalizzatore di dati e informazioni e fornitore di profili utili alle organizzazioni economiche;
- II. le organizzazioni economiche, quali clienti diretti in quanto beneficiari delle risorse umane qualificate;
- III. gli studenti, che da essere meri fruitori della didattica, divengono prosumer co-creatori del loro stesso profilo e del loro curriculum, oggetto del nuovo core business universitario.

Questa inversione di ruoli, oltre a incidere positivamente sull'equilibrio finanziario delle famiglie, interviene a vantaggio degli studenti in termini di qualità ed efficacia della didattica in virtù di una conoscenza più approfondita del target finale di riferimento; inoltre, il collegamento diretto fra Università e organizzazioni economiche può favorire l'avvio di meccanismi virtuosi di sviluppo condiviso, nell'ottica della co-creazione di valore, così incrementando sia il livello di servizio fornito alle organizzazioni economiche e agli studenti, sia la reputazione dell'Università stessa, con un ulteriore vantaggio in termini di apprezzamento degli studenti formati.

Il ciclo finanziario sposta l'asse principale sulle organizzazioni economiche che divengono così le principali fonti di ricavo per le Università, e i catalizzatori degli sforzi didattici di Università e studenti.

In quest'ottica circolare, il ruolo dello Stato nell'Università pubblica può cambiare solo formalmente: da finanziatore delle attività didattiche e di ricerca, secondo un'ottica push, senza una chiara visione sistemica della finalizzazione di tali investimenti, può divenire:

- finanziatore diretto della sola attività di Ricerca attraverso il MIUR;
- finanziatore indiretto della didattica, attraverso le proprie organizzazioni economiche (imprese controllate in toto o in parte dallo Stato ovvero Enti pubblici).

Quindi per la Pubblica Amministrazione si tratterebbe di uno spostamento delle voci di costo da imputare alle diverse organizzazioni, anziché tutte e unicamente al MIUR. Questo implicherebbe per il settore pubblico una maggiore efficacia ed efficienza nel processo di selezione e addestramento delle risorse umane nonché nel raggiungimento degli obiettivi strategici delle singole organizzazioni.

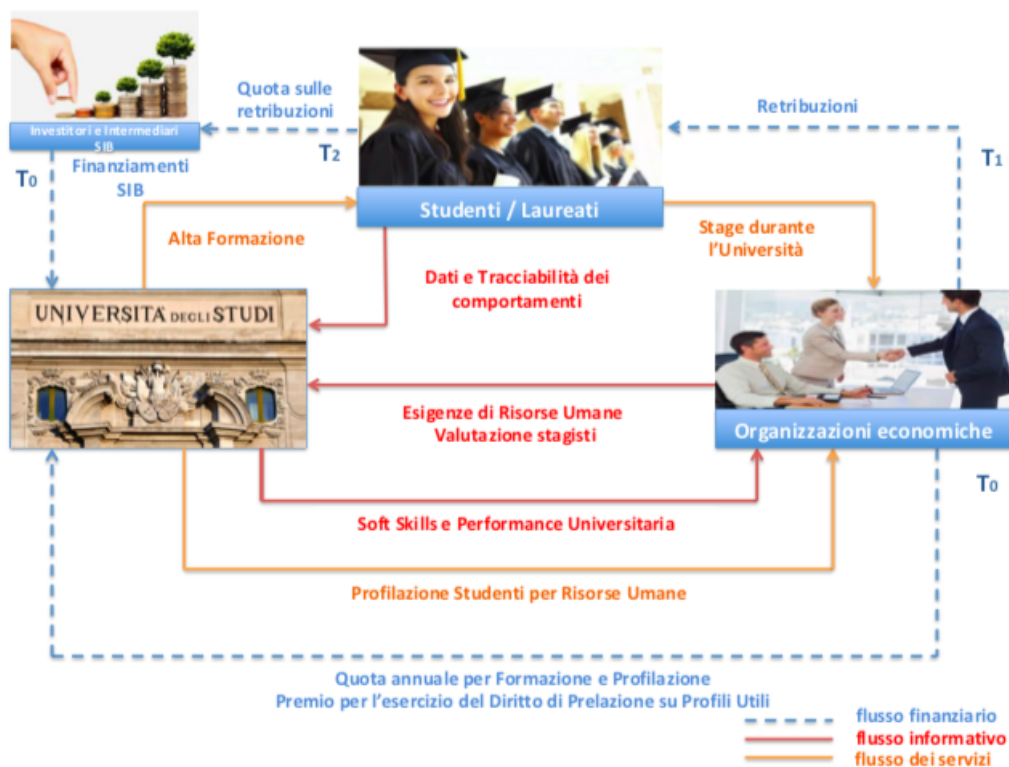
Sarebbe, dunque, necessario invertire la logica finanziaria:

da push MIUR => finanzia la didattica delle Università

a pull Organizzazioni economiche => finanziano le Università in cambio di profili qualificati.

Come si desume dalla Figura 1, questa nuova relazione tra Università e Organizzazioni economiche si caratterizza per la maggiore attenzione rivolta agli aspetti cognitivi, come il processo di generazione e applicazione della conoscenza, mirata a soddisfare le esigenze produttive.

Fig. 1: Modello innovativo di Business dell'Università basato sulla prosumer co-creation



*Fonte: Ns. elaborazione.*

*Dal punto di vista operativo, si ipotizza una sezione dedicata della piattaforma online, ove le organizzazioni economiche possono richiedere profili professionali indicando le competenze necessarie, rivestendo, dunque, il ruolo di prosumer, e corrispondendo in favore delle Università le risorse utili a finanziarie detti percorsi di laurea ( $T_0$ ).*

*Le Università interessate, sulla base di tali esigenze, disegnano percorsi di laurea che prevedono l'inserimento di tutte quelle discipline necessarie a fornire agli studenti (che si dichiareranno interessati alle posizioni lavorative aperte) le competenze richieste dalle organizzazioni economiche, garantendo, con il conseguimento della laurea (triennale o magistrale, a seconda delle esigenze), la formazione delle risorse umane richieste.*

*Su un'altra sezione della piattaforma, questa volta dedicata agli studenti che intendo iscriversi all'Università, saranno pubblicate lauree e percorsi "messi a bando" dalle organizzazioni economiche.*

*Gli studenti interessati a dette posizioni lavorative e, soprattutto, inclini alle discipline interessate dal percorso formativo delineato dall'Università, in conformità con le richieste formulate dalle organizzazioni economiche, formalizzano la propria adesione prenotando il (per)corso di laurea aperto, attraverso la propria iscrizione.*

*L'iscrizione a ciascun (per)corso di laurea aperto sarà, dunque, finanziata (To) dall'organizzazione produttiva committente, corrispondendo una quota annuale e/o premio, in cambio dell'accesso privilegiato alle profilazioni e/o del diritto a opzionare in prelazione le migliori risorse umane in uscita.*

*Da questo momento in poi si genera una connessione tra Università, organizzazioni economiche e studenti, tale per cui si avvia un percorso formativo condiviso volto a soddisfare le esigenze di ciascun player coinvolto, in una relazione win-win-win.*

*L'Università, infatti, raggiunge il proprio obiettivo di attrattività, richiamando a sé, da un lato, le organizzazioni interessate ad avere (nel medio termine) personale con un qualificato livello di formazione ed un elevato grado di specializzazione, e, dunque, con un profilo professionale aderente alle specifiche di settore in cui opera l'organizzazione; dall'altro, gli studenti interessati ad assicurarsi nel breve termine il finanziamento del corso di studio, mentre nel medio termine uno sbocco sul mercato.*

*Una via alternativa e innovativa di finanziamento in favore degli studenti può essere individuata nei c.d. Social Impact Bond – SIB (come anche riportato nel modello proposto in Figura n. 3) che, per il tramite di Intermediari, possono essere emessi sul mercato finanziario al fine di far affluire all'Università le risorse necessarie a finanziare ciascun percorso formativo ( $T_1$ ).*

La remunerazione e il rimborso dell'investimento potranno, successivamente, derivare da una quota parte delle retribuzioni che ciascuno studente riceverà allorché troverà collocazione nel mondo imprenditoriale ovvero in una delle organizzazioni economiche committenti ( $T_2$ ), la quale sarà dunque liquidata in favore degli investitori/intermediari ( $T_3$ ).

*Si ritiene che lo stesso rendimento di tali SIB (e, dunque, il loro trend di andamento sul mercato) possa risultare un ulteriore elemento di monitoraggio e valutazione della reputazione e dell'efficacia della formazione universitaria, nonché della conseguente performance dell'ex studente, divenuto risorsa umana qualificata.*

*Maggiore, infatti, sarà la retribuzione, in corrispondenza di una più rilevante e prestigiosa posizione lavorativa*

assunta dai laureati, migliore sarà il rendimento dei Social Impact Bond ad esso associati, con tanto di ritorno sull'immagine e sulla reputazione dell'Università che li ha formati e collocati nel mondo del lavoro.

Questa rivisitazione del modello di business delle Università, non più rivolto ad attrarre (in prima istanza) l'attenzione degli studenti che intendono conseguire il titolo di laurea, bensì quella delle organizzazioni economiche alla ricerca di specifiche professionalità, mette in luce, ancora una volta, come la collaborazione tra il mondo delle Università e quello del mondo produttivo sia di importanza strategica per l'innovazione e lo sviluppo di un intero Paese e della propria economia.

E, infatti, lo scambio sinergico di conoscenze tra Atenei e organizzazioni economiche, assieme all'attuazione di progetti comuni, sono fondamentali per l'attrattività delle Università, la competitività delle aziende latu sensu, l'occupabilità degli studenti, e la crescita economica e sociale dei territori.

**Limiti della ricerca.** Lo studio, di natura concettuale ed esplorativa, sconta i limiti legati all'impossibilità di validare le ipotesi con evidenze empiriche e di trovare in letteratura riferimenti diretti al ruolo dello studente come prosumer. Infatti, nell'implementare il nuovo business model universitario sarebbe necessario verificare l'idoneità dell'attuale modello di governance (Genco, 2014) nel gestire le novità emergenti nel processo decisionale, nel flusso informativo e nelle dinamiche del ciclo finanziario.

Un altro aspetto, non trascurabile, concerne la difficoltà nel prevenire quante organizzazioni economiche, ovvero investitori/intermediari in caso di adozione di un modello finanziario fondato sui SIB, possano davvero essere lungimiranti e interessate a investire sulle Università e quale grado di propensione alla spesa in tal senso possiedono: si può presumere che entrambe tali variabili siano influenzabili dalla dimensione strutturale, dall'orientamento strategico e dalla cultura organizzativa e manageriale possedute.

Inoltre, per quanto concerne la Pubblica Amministrazione, sono da valutare le difficoltà di cambiamento nella governance dei meccanismi finanziari e gestionali, derivanti dai processi decisionali di carattere politico e dalla burocrazia che regola il funzionamento della struttura operativa.

Altro aspetto problematico di cui tenere conto è relativo all'elaborazione dati (data science): l'Università deve farsi carico non solo della tecnologia digitale necessaria ad acquisire i Big Data provenienti dagli studenti, ma anche (e soprattutto) della struttura e delle competenze necessarie ad elaborare tali dati, nell'ottica di business intelligence; si prefigura così un cambiamento organizzativo imponente da confrontare con: la governance del sistema universitario (Baccarani C., 1999, Sciarrelli et al. 2019, Schillaci et al., 2015), la cultura organizzativa e mentalità del personale, i vincoli economico-finanziari del sistema, la fiducia e la reputazione del sistema universitario.

Tali aspetti potrebbero rappresentare potenziali limiti al cambiamento del modello di business universitario, per cui si auspica possano essere oggetto di successivi approfondimenti scientifici e applicati.

**Implicazioni pratiche.** Il presente contributo permette di delineare un nuovo business model per l'Università, rivedendo i ruoli degli attori coinvolti nel processo di creazione di valore e le dinamiche economico-finanziarie, in modo funzionale e per il raggiungimento dei seguenti obiettivi:

1. rendere più efficace la formazione universitaria, dal momento che può essere indirizzata ad un target di studenti conosciuto più nel dettaglio, adeguando la proposta d'offerta formativa e le modalità didattiche alle esigenze palesi e latenti del fruitore finale;
2. le organizzazioni economiche costituenti la domanda di mercato del lavoro possono individuare più agevolmente personale qualificato e specializzato, senza eventuali "cattive sorprese", in quanto possono controllare tutto il percorso di formazione dello studente, collaborando attivamente alla costruzione del suo profilo attraverso il costante interscambio informativo con l'Università e lo svolgimento degli stage formativi in itinere;
3. lo studente ha già uno sbocco sul mercato del lavoro, sin dal giorno della sua immatricolazione, e accelera il processo di acquisizione e valorizzazione di competenze professionali e trasversali;
4. l'Università può presidiare il mercato dei servizi di alta formazione specialistica, difendendosi così dalle minacce derivanti dai servizi sostitutivi esistenti e dai possibili nuovi entranti, come i seguenti competitors:
  - a. ITS (Istituti Tecnici Superiori);
  - b. Corporate Academy;
  - c. Open Universities.

Un altro aspetto fondamentale è la possibilità per il sistema universitario di far fronte e superare le minacce provenienti dall'Intelligenza Artificiale applicata ai processi di apprendimento e all'autodidattica sul web.

Tuttavia, è necessario verificare l'idoneità dell'attuale modello di governance (Genco, 2014) nel gestire le novità emergenti nel processo decisionale, nel flusso informativo e nelle dinamiche del ciclo finanziario.

**Originalità del lavoro.** Il business model attuale dell'Università, con riferimento alle attività di formazione superiore, generalmente si può presentare con alcuni punti di debolezza. In prima istanza, il pagamento delle tasse o rette universitarie può incidere negativamente sull'equilibrio economico-finanziario dei nuclei famigliari degli studenti, rappresentando così una barriera all'entrata per famiglie con capacità di spesa ridotta.

Lo sforzo dell'Università nel perseguire l'obiettivo del placement spesso non consente alla stessa di esercitare un'influenza rilevante sull'ingresso degli studenti nel mercato del lavoro. La condizione di debole connessione con il mondo produttivo, basata prevalentemente su relazioni istituzionali ex post rispetto al percorso degli studenti, può incrementare i costi di ricerca e di adattamento dei profili a carico delle organizzazioni economiche; queste ultime non

riuscendo a individuare risorse umane già pronte ad affrontare la complessità del contesto competitivo, devono sostenere extra costi di formazione specialistica per assumere profili adeguati alle proprie esigenze.

Un'altra potenziale debolezza dell'Università riguarda gli indicatori di performance, dei propri studenti, inerenti esclusivamente gli esami di profitto e il voto finale di laurea, mentre sono pressoché assenti elementi segnaletici degli aspetti personali caratterizzanti l'individuo oltre che lo studente (soft skills). In questo senso, non elaborare né valorizzare tali informazioni relative agli studenti rappresenta un gap da colmare nell'attuale economia della conoscenza (Rullani, 2011, 2004)

Anche i piani di studio sembrano seguire una logica rigida di stampo industriale, secondo cui si offre una proposta didattica indifferenziata nella fase iniziale e alcune varianti di carattere specialistico nella fase che avvicina al titolo di laurea: tale impostazione prevede poche deroghe, rivelandosi poco consonante con il contesto liquido (Baumann, 2011) e nell'era della conoscenza.

Un ulteriore aspetto che tende a essere trascurato riguarda l'engagement degli studenti, che spesso risulta formale piuttosto che sostanziale, in quanto gli stessi restano di fatto distanti dal processo di creazione del valore dell'Università, lontano da una logica di marketing (Mattiacci e Pastore, 2015, Mazzei 2000, Forlani e Pencarelli, 2019).

Infine, un aspetto di grande importanza per l'Università, e per gli stessi studenti, risiede nella reputazione che l'Università ha nei confronti del mondo economico e produttivo che, se impregnata di elementi negativi (riconducibili al concetto di Brand dislike - Dalli, Fornari 2014, Dalli et al., 2006) può influenzare negativamente la percezione della qualità del percorso formativo e della risultante preparazione degli studenti, specie agli occhi di un potenziale datore di lavoro.

Tutte queste possibili debolezze espongono potenzialmente il sistema di formazione universitario alle minacce derivanti:

- dalla sostituibilità dei concorrenti indiretti (ITS, Academies, Open Universities);
- dall'efficacia d'azione delle Università straniere, che riescono a esercitare maggiore appeal e attrattività;
- dalle tecnologie digitali per la didattica a distanza che, se utilizzate efficacemente da competitor con strutture molto più snelle (quali Open Universities e Università Telematiche), possono permettere a questi ultimi di colmare i gap sopra citati, ponendoli, nel lungo periodo nella condizione di possibili sostituti.

Tutto questo espone il sistema universitario ed il modello di business ad esso connesso al rischio di non risultare sostenibile in termini produttivi, economici e sociali.

Seguendo la logica dell'innovazione incrementale alimentata dal basso, lo studio ha affrontato la problematizzazione dei bisogni che il sistema universitario cerca di soddisfare, degli attori che manifestano tali bisogni, del grado di soddisfazione percepita dagli attori osservati e delle risorse utilizzate per svolgere le attività necessarie alla creazione di valore.

L'analisi svolta conduce all'ipotesi che il capovolgimento dei ruoli cliente-fornitore fra Università, studenti e organizzazioni economiche, secondo la logica del multi-side-business che passa dal B2C al B2B2C, possa ottimizzare la capacità dell'Università di creare valore, consentendole di ottenere e rinforzare la risonanza con il sistema sociale. Si può ipotizzare, cioè, d'innovare il business model dell'Università interpretando lo studente non più come utente finale fruitore del servizio didattico, ma come fornitore di dati e informazioni, e gli attori del mercato del lavoro come i principali clienti, per i quali l'Università è chiamata a soddisfare l'esigenza di individuare e attrarre risorse umane con elevata professionalità, ottimizzando così i vantaggi per le organizzazioni economiche e riducendo anche costi di inserimento nelle stesse.

L'Università trasforma, così, il proprio output integrando il titolo di laurea, avente mero valore legale, con la valorizzazione di competenze aggiuntive certificate dalla stessa Università e profilate per le esigenze delle organizzazioni economiche destinatarie.

Una possibile ed efficace realizzazione di siffatta ipotesi dipende da diversi fattori: innanzitutto da quanto e come le organizzazioni del mondo produttivo percepiscono l'utilità di tale servizio in una prospettiva lungimirante, e conseguentemente dalla propensione all'investimento da parte delle stesse; in secondo luogo, dalla capacità organizzativa e gestionale dell'Università nel raccogliere, elaborare e valorizzare i Big Data forniti dagli studenti-prosumer, nonché nell'avviare e gestire le relazioni con le organizzazioni economiche.

Le interazioni basate sulla condivisione delle informazioni nella logica del prosumer, sia per gli studenti che per le organizzazioni economiche, consentono di invertire il flusso finanziario, sviluppando così la gratuità per gli studenti e l'innovazione finanziaria verso il mondo produttivo (Santovito, 2017).

L'Università, nel nuovo modello di business proposto, può essere finanziata in diversi modi: nel presente lavoro s'ipotizza il finanziamento da parte delle organizzazioni economiche al fine di ottenere la profilazione di studenti in linea con le esigenze organizzative (opzionando in prelazione i migliori), e/o attraverso l'emissione, da parte dell'Università, di titoli da collocare sul mercato finanziario. In quest'ultima ipotesi, investitori terzi potrebbero sottoscrivere titoli (SIB), aventi come sottostante capitale umano specialistico, i cui rendimenti e rimborsi saranno correlati alle retribuzioni spettanti ai laureati, una volta assunti dalle organizzazioni economiche.

Lo studente, così, non dovrà sostenere alcun esborso finanziario, bensì dovrà consentire la condivisione costante dei propri dati utili alla valorizzazione e profilazione del proprio percorso universitario. Tale ipotesi d'innovazione del processo finanziario, nell'ambito del nuovo business model, potrà essere oggetto di successivi approfondimenti scientifici, nonché di una mirata analisi di fattibilità per validarne la sostenibilità.

L'Università potrebbe, in definitiva, con tecniche di data science, rielaborare il proprio business model in



funzione della valorizzazione del capitale informativo, dell'innovazione dei servizi erogati e del relativo flusso finanziario: il capovolgimento e l'ibridizzazione dei ruoli cliente-fornitore fra Università, studenti e organizzazioni economiche può ottimizzare la capacità di creare valore per il sovra-sistema sociale e permettere di ottenere consonanza e risonanza nell'attuale contesto.

Pertanto, l'innovazione del business model proposto potrebbe favorire una riflessione degli organi di governo dell'Università per perseguire una maggiore efficacia nella didattica, nel placement e nel presidio del mercato dell'alta formazione, nonché favorire strategie di gratuità rivolte agli studenti, miglioramento dell'offerta di risorse umane qualificate, certificate e profilate alle esigenze del contesto socio-economico.

**Parole chiave:** Università; Imprese; Studenti; Prosumer; Innovazione del Business Model.

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# L'impatto del Coronavirus sulla comunicazione aziendale: analisi delle lettere dei CEO agli azionisti

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**Obiettivi.** La crisi determinata dalla pandemia da Covid19, sebbene di natura esogena rispetto all'organizzazione (c.d. victim crisis - Coombs, 2007), ha avuto un impatto significativo sui sistemi economici aziendali, soprattutto in specifiche business activity (trasporto, ristorazione, ricettività alberghiera, intrattenimento), le cui operation hanno subito forti limitazioni a causa delle misure di contenimento del rischio epidemiologico, più o meno simili nelle diverse parti del mondo (es. lockdown, divieti di assembramento). In questo contesto, diviene fondamentale il ruolo del top management aziendale che ha l'obbligo di comunicare in modo adeguato e tempestivo informazioni dettagliate agli stakeholder group (Seeger, 2006). In particolare, il chief executive officer (CEO), rappresentando il volto e il portavoce dell'azienda (Englehardt et al., 2004; Ferns et al., 2008; Lucero et al., 2009; Conte et al., 2017), è la principale figura professionale in grado di assicurare la coerenza dei messaggi comunicati, evitando che ci sia una frammentazione dovuta a messaggi ambigui (se non contrastanti) sul modo di affrontare la crisi (Barrett, 2005; Turk et al., 2012).

La comunicazione del CEO costituisce un asset strategico (Argenti et al., 2005; Segars e Kohut, 2001; Zeff et al., 2014; 2015), e rappresenta non soltanto un mezzo per affermare la propria capacità di leadership (Fairhurst e Connaughton, 2014), ma anche una modalità per gestire le relazioni con gli stakeholder e costruire l'identità organizzativa (Weick et al., 2005; Kuhn, 2008; Ngai e Singh, 2014). Nello specifico, nell'ambito della financial communication, le CEO letter rivolte agli azionisti costituiscono lo strumento chiave sia per esplicitare obiettivi, attività predisposte e risultati (Prasad e Mir, 2002; Conaway e Wardrope, 2010; Patelli e Pedrini, 2014), sia per orientare le decisioni di investimento (Matsumoto e Chen 2006; Henry, 2008; Yan et al., 2019).

Nonostante la letteratura metta in luce l'importanza del ruolo del CEO come responsabile aziendale nella comunicazione di crisi, limitati sono gli studi che tentano di esplorare le peculiarità della strategia retorica adottata dall'amministratore delegato nel comunicare una crisi in atto. Studi esistenti (Patelli e Pedrini, 2014; Veenstra, 2020) non riportano indicazioni esaustive relativamente alla necessità di affrontare direttamente il problema della crisi o di utilizzare un linguaggio più legato alla preoccupazione di ristabilire un legame emotivo con gli stakeholder, incrinato dalla situazione di crisi.

Il presente lavoro si propone, quindi, di esaminare, attraverso la comparazione delle lettere degli amministratori delegati agli shareholder, contenute nei proxy statement degli anni 2019 e 2020, le diverse strategie retoriche dei CEO dei settori più colpiti dall'esplosione della pandemia da Covid19 (trasporto aereo e ferroviario, servizi di ristorazione e di ricezione turistica).

Sebbene una crisi costituisca inevitabilmente una minaccia inattesa (Ulmer et al., 2007; Coombs, 2011), è altrettanto vero che un focus sulle minacce con scarse possibilità di recupero tende a sottovalutare le opportunità generabili dalla crisi in termini di corporate communication (Brockner e Hayes James, 2008; Ulmer, 2012). La crisi infatti può rappresentare una rilevante occasione per configurare modalità di interazione con gli stakeholder più trasparenti, per coinvolgere tutti gli attori in processi condivisi di sensemaking (Ulmer, 2012), ma anche per orientare l'impresa a conseguire vantaggi competitivi non previsti (Meyers e Holusha, 1986).

Pertanto, alla luce di tali considerazioni, la comunicazione di crisi acquista un valore performativo (Ashcraft et al., 2009), svolgendo un ruolo sia "aspirazionale", in grado di stimolare cambiamenti evolutivi nell'organizzazione (Christensen et al., 2013; Piciocchi, 2018), sia un ruolo di manipolazione volto a generare pratiche scorrette (Siano et al., 2017).

Relativamente all'impiego delle CEO letter per gli azionisti, la letteratura di management e accounting ha formulato due ipotesi, concorrenti tra loro. La prima ipotesi, obfuscation hypothesis, enfatizza i meccanismi di

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*impression management* mediante cui i manager tendono a nascondere i fallimenti e ad esaltare i successi (Hooghiemstra, 2000; Clatworthy e Jones 2003; Boudt e Thewissen, 2019). In questa prospettiva, tali strumenti di comunicazione risultano sistematicamente distorti attraverso una manipolazione delle figure retoriche (Merkel-Davies e Brennan 2007).

In un'altra ottica, altri autori tendono a supporre una certa trasparenza o assenza di manipolazione nelle lettere dei CEO (Lucero et al., 2009; Marynissen e Lauder, 2020), in quanto le aziende in situazioni di crisi necessitano di ristabilire la fiducia.

Uno dei segnali che i destinatari di un messaggio possono valutare per vagliarne l'autenticità è il tono del messaggio che rispecchia le intenzioni e il "sentire" del mittente. Per tal ragione, considerando l'oggetto del presente studio (strategie retoriche pre- e post- crisi da Coronavirus), si ritiene necessario analizzare il sentiment delle lettere degli amministratori delegati, allo scopo di verificare quanto tali lettere che fanno esplicito riferimento al Covid-19 si discostino, in termini di euforia/disforia, dalle lettere che non vi fanno riferimento. La prima research question è quindi la seguente:

*RQ1 - In che modo il riferimento diretto alla pandemia da Covid-19, controllando per l'appartenenza settoriale, influisce sul sentiment delle lettere dei CEO delle imprese nei settori maggiormente colpiti dalla crisi?*

Inoltre, utile a definire la strategia retorica adottata dai CEO in tempi di crisi, è l'insieme dei valori veicolati agli stakeholder. Si suppone che, in situazioni di crisi, le lettere dei CEO contengano richiami a valori comunitari, alla connessione emotiva con il gruppo (Heider, 1958) e al raggiungimento di obiettivi comuni, adottando un approccio alla leadership maggiormente trasformativa (Yucel et al., 2014). D'altra parte, l'affiliazione è stata spesso associata alla volontà degli individui di evitare compiti competitivi (Karabenick, 1977) e, quindi, in termini generali un alto bisogno di affiliazione è associato a performance superiori non competitive, slegate dalle performance economiche-finanziarie (Veenstra, 2020). Inoltre, un forte bisogno di affiliazione potrebbe ridurre la capacità del leader di prendere decisioni oggettive a causa dell'enfasi posta sugli aspetti emozionali (Koestner e McLelland, 1992). Tuttavia, il bisogno di affiliazione può aumentare il senso di appartenenza e migliorare il teamwork (Veenstra, 2020). A partire da queste considerazioni ci si può chiedere, quindi:

*RQ2 - Quale rilevanza danno le lettere dei CEO delle imprese nei settori maggiormente colpiti dalla crisi agli aspetti relativi agli obiettivi e ai valori comunitari (supportiveness) nei momenti immediatamente successivi allo scoppio della crisi da Covid-19?*

**Metodologia.** In questa indagine, le strategie retoriche adottate dai leader aziendali vengono analizzate attraverso l'ispezione delle lettere dei CEO agli azionisti. Nel contesto statunitense, queste lettere sono frequentemente incluse all'interno dei proxy statement redatti annualmente dalle aziende in occasione degli annual meeting degli azionisti. Pertanto ci si è concentrati su un campione di aziende incluse nell'indice Fortune 500, che contiene le maggiori imprese nordamericane per fatturato (Rybalko e Seltzer, 2010). Sono state selezionate le aziende appartenenti ai settori probabilmente più esposti ai danni economici provocati dalla pandemia e dalle limitazioni alla circolazione delle persone: trasporto aereo (9 aziende) e ferroviario (5 aziende), e quelli della ricezione turistica (10 aziende) e della ristorazione (10 aziende). Sono state raccolte, per ciascuna azienda, le lettere dei CEO contenute nei proxy statement (pubblicati di solito nel periodo di marzo-aprile) del 2019 e del 2020, cosicché ogni azienda ha fornito due osservazioni, una precedente (2019) e una successiva (2020) all'esplosione della crisi sanitaria.

Le due variabili dipendenti considerate sono il sentiment e l'indice di supportiveness rilevato nei testi delle lettere. Il sentiment indica il grado con cui un testo ha un tono positivo/negativo ed è computato tenendo in considerazione i modificatori di polarità contestuali di ciascuna parola (negatori, amplificatori, attenuatori e congiunzioni avversative). L'indice di supportiveness è stato, in seguito, ottenuto tramite la riduzione fattoriale di tre indicatori (affiliation, achieve e reward). Tali indicatori erano stati ricavati attraverso il software per l'analisi linguistica LIWC 2015 (Linguistic Inquiry and Word Count) (Pennebaker et al., 2007; Pennebaker et al., 2015), di recente utilizzato nelle analisi delle CEO letter nell'ambito del management e dell'accounting (Gamache et al., 2015; Yan et al., 2019; Veenstra, 2020). Ciascun indicatore di LIWC rappresenta la percentuale di parole del testo che rientrano in una data categoria.

Per ciascuna variabile dipendente, sono state effettuate due Analisi della Varianza (ANOVA) di tipo fattoriale misto. Come variabili indipendenti si è considerato, come fattore between subject, il settore di appartenenza, e, come fattori a misure ripetute, l'anno di pubblicazione (2019 vs 2020) e una variabile dummy indicante la presenza/assenza di riferimenti diretti al Coronavirus (con parole come pandemic, lockdown, infected, ecc.) all'interno delle lettere dei CEO.

**Risultati.** Il modello di ANOVA riguardante il tono delle lettere fa emergere che vi è un solo fattore ad avere un'influenza significativa ( $F=4.971$ ,  $p<.05$ ) sul sentiment, ovvero la presenza/assenza di riferimenti diretti al Covid-19. In particolare, il gruppo di lettere che si riferisce esplicitamente al Coronavirus presenta medie marginali stimate di sentiment significativamente inferiori al gruppo di lettere che non vi fa riferimento. Invece, l'anno di pubblicazione e l'appartenenza settoriale dell'azienda non hanno alcun effetto sulla polarità dei testi.

*Il modello di ANOVA che si riferisce alla seconda research question (e dunque l'indice di supportiveness) rivela ancora una volta che l'unico fattore ad avere un impatto statisticamente significativo è il riferimento diretto delle lettere al Covid-19 ( $F=4.895$ ;  $p<.05$ ), mentre l'anno di pubblicazione e il settore di appartenenza non hanno un effetto significativo. Questa volta le lettere degli amministratori delegati con un contenuto richiamante il Coronavirus tendono a presentare un indice medio di supportiveness significativamente più alto delle lettere che non richiamano direttamente il tema della pandemia.*

*Pertanto, sembrerebbe che, quando i CEO si preoccupano di menzionare direttamente il problema rappresentato dal virus nelle lettere agli azionisti, essi non possano fare a meno di mostrare un tono più pessimistico. Dacché si potrebbe dedurre che essi preferiscano adottare strategie retoriche improntate alla trasparenza, piuttosto che nascondere gli aspetti più spiacevoli della crisi con raffazzonati tentativi di impression management. Inoltre, nello stesso tempo, il tema della crisi impone agli emittenti dei messaggi (i CEO) di rinsaldare la coesione intra-gruppo e i legami con gli azionisti attraverso il richiamo al valore della comunità e degli obiettivi comuni.*

**Limiti della ricerca.** *La presente ricerca costituisce uno studio esplorativo sull'influenza di una crisi aziendale esogena sulle strategie retoriche adottate dai leader aziendali. Vi sono dei limiti insiti in tale tipo di ricerca. Anzitutto la prossimità temporale dell'evento critico (l'esplosione della pandemia) al punto di osservazione (il momento presente). A causa di questa prossimità non è stato possibile prendere in considerazione le lettere posteriori di più di pochi mesi allo scatenarsi della pandemia. Nelle ricerche future sarà ovviamente possibile prendere in considerazione un arco temporale più lungo (precedente e successivo all'evento traumatico) e quindi avere un riscontro più solido circa gli effetti (di breve e medio-lungo periodo) della pandemia.*

*Inoltre, bisogna sottolineare che la portata dei risultati è limitata dal fatto che nel presente studio viene preso in considerazione soltanto uno strumento di comunicazione - le lettere dei CEO - rivolto ad un audience specifica - gli azionisti. Nel contesto di questo studio, tale scelta è giustificata dal fatto che gli azionisti costituiscono uno dei pubblici che l'organizzazione necessita di ricompattare fin dalle prime avvisaglie di una crisi (endogena od esogena che sia). Ciò non toglie che ulteriori studi possano utilmente valutare l'impatto della crisi del Covid-19 tramite l'utilizzo di fonti diverse, come per esempio i sustainability report, gli earnings press release, gli account personali/aziendali su Twitter e Facebook, o i CEO blog.*

**Implicazioni pratiche.** *L'analisi mostra che le lettere agli azionisti che fanno riferimento diretto al virus tendono ad avere un indice di sentiment più basso e un indice di supportiveness più alto rispetto alle lettere nelle quali non viene menzionato il tema del virus. Questi risultati hanno interessanti risvolti manageriali per i professionisti di corporate communication. Infatti, sembra opportuno che la comunicazione da parte dei leader aziendali sia orientata alla sincerità, alla trasparenza e al commitment nel superare la situazione di crisi, richiamando una logica di appartenenza, al fine di non disperdere la fiducia dei portatori di interesse, destabilizzata a seguito di shock esogeni inattesi. Altre iniziative possibili da parte dei practitioner di comunicazione potrebbero riguardare l'attivazione di meccanismi al fine di aumentare la collaborazione da parte dei diversi stakeholder (ad es. raccolta sistematica di feedback, board partecipati, social media listening) per costruire consenso sul modo di affrontare la crisi (Lin e Abrahamsson, 2015; Vignal Lambret e Barki, 2018).*

**Originalità del lavoro.** *L'indagine affrontata nel presente studio parte dalla constatazione che una crisi aziendale innescata da un evento esterno debba avere necessariamente ripercussioni sul modo con cui l'organizzazione si relaziona con i diversi pubblici di riferimento. Per questa ragione, vengono analizzate le strategie retoriche degli amministratori delegati attraverso l'analisi del contenuto delle lettere che essi rivolgono agli azionisti. Utilizzando, per ciascuna azienda, le lettere dell'anno precedente e successivo all'esplosione della crisi ci siamo dotati di un termine di paragone per valutare i cambiamenti nelle strategie retoriche dei CEO per quanto concerne il sentiment e la supportiveness che traspare dalle lettere. L'analisi condotta ci consente di andare oltre l'assunto ormai consolidato della centralità dei CEO nella comunicazione di crisi e di gettare nuova luce sul tipo di strategia retorica e sul grado di trasparenza da adottare per mantenere la fiducia degli stakeholder.*

**Parole chiave:** *comunicazione dei CEO, crisi, coronavirus, sentiment, supportiveness.*

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# Data-driven talent management: quali prospettive di sviluppo in Italia?

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**Obiettivi.** *L'Industria 4.0 sta trasformando radicalmente il paradigma aziendale, comportando profonde innovazioni che coinvolgono in modo significativo la comunicazione d'impresa (Ihator, 2001; Schwab, 2016; Xu et al., 2018). Nel contesto della "fabbrica digitale", in cui i dati e i flussi di informazione crescono in modo esponenziale, la comunicazione diventa sempre più una componente strategica per il successo dell'impresa. La digital analysis dei big data favorisce la creazione di valore all'interno e all'esterno dell'organizzazione d'impresa, incentivando la nascita di modelli di business completamente nuovi, basati sullo sviluppo di relazioni più efficaci con gli stakeholder (McAfee, 2012). L'idea di fondo è che una maggiore e migliore analisi, interpretazione e utilizzazione dei dati consenta di acquisire informazioni di grande importanza nei processi organizzativi e decisionali, migliorando le azioni di corporate communication.*

*L'impiego delle tecnologie della digital transformation che abilitano la raccolta di nuovi dati - Internet of Thing in primis (Palattella et al., 2016) - e lo sviluppo di nuovi insight - Machine Learning (Michie et al., 1994; Bose et al., 2001; Dean, 2014; Alpaydin, 2020) e Artificial Intelligence (Mitchell et al., 2013; Nilsson, 2014; Duan et al., 2019) - favoriscono il dialogo con i fornitori (supplier relation), i distributori (distributor relation) e con le organizzazioni con cui l'impresa collabora stabilmente (partner relation) nell'ambito della comunicazione di filiera (o di sistema del valore) (Siano et al., 2015), consentendo di sviluppare rapporti di collaborazione fondati sulla fiducia e sulla reciproca soddisfazione. I benefici derivanti dall'impiego dei big data permettono di implementare strategie di data-driven supply chain (Chavez et al., 2017; Yu et al., 2018).*

*Nel contesto della corporate communication, la comunicazione di marketing è sicuramente quella più matura per quanto concerne l'adozione dei big data analytics e offre maggiori prospettive di crescita future in termini di personalizzazione delle relazioni con i consumatori (customer relation) (Prunesti, 2009; Wedel e Kannan, 2016). In quest'ottica, il data-driven marketing (Jeffery, 2010) rappresenta un nuovo approccio aziendale caratterizzato dall'adozione di tecnologie di raccolta e analisi dei dati sugli utenti per creare strategie multicanale più puntuali e precise, nonché messaggi tarati sulle esigenze di specifici target. Gli ambiti di applicazione abbracciano le attività di profilazione dei consumatori, le iniziative di cross-selling e up-selling, il direct marketing, ecc. (Fan et al., 2015).*

*Ma l'impiego dei big data non impatta solo sulle supplier relation, sulle distributor relation, sulle partner relation e sulle customer relation. I big data implicano radicali trasformazioni anche nella gestione delle relazioni con le risorse umane dell'azienda e nelle dinamiche comunicazionali ad esse connesse. Si aprono nuove prospettive per l'engagement di personale qualificato, soprattutto di talenti (labour market relation). Nelle organizzazioni che rispondono in modo proattivo ai mutamenti determinati dalla digital transformation, nel corso degli ultimi anni si sono diffuse nuove strategie di comunicazione e avanzati processi decisionali nell'ambito dell'human resource management (Sena, 2015; Berger L.A. e Berger D.R., 2018). Tale fenomeno viene definito in termini di people analytics, un'area emergente di innovazione nella gestione delle risorse umane volta ad ottimizzare in modo strategico la forza lavoro (Angrave et al., 2016; Isson e Harriott, 2016; Tursunbayeva et al., 2018). Si tratta di attività riferite alla raccolta e analisi di tutti i dati relativi alla singola risorsa umana, dalla fase di recruitment (labour market relation) alla gestione delle sue performance nelle dinamiche aziendali in veste di dipendente (employee relation), al fine di trarre informazioni utili per il successo dell'impresa.*

*Il nuovo approccio, definito "data-driven human resource", prevede la combinazione di dati tradizionali e non, con sistemi di analisi digitali per creare processi finalizzati ad identificare, selezionare, segmentare e valutare le risorse umane (Lipiäinen et al., 2014; Sparrow et al., 2015). Il big data recruiting evidenzia in maniera predittiva le*

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potenziali skill e abilità dei candidati, consentendo di perfezionare il processo di ricerca dei talenti (data-driven talent management) (Balbi et al., 2017; Jain, 2018). Tale processo fa leva anche sull'analisi dei contenuti presenti nei social media, per conoscere in modo più approfondito la personalità di un candidato (Silzer e Dowell, 2009). I profili social di un candidato sono utilizzati per dimostrare la sua esperienza su un determinato tema mediante l'analisi dei post e articoli condivisi, mettendo in luce le sue vocazioni e i suoi interessi. In questa prospettiva, l'utilizzo combinato di big data, intelligenza artificiale e machine learning supporta le attività dei responsabili di HR nello sviluppare programmi di talent analytics (Fink, 2017; Nocker e Sena, 2019) per gestire, trattenere e fidelizzare i talenti (Kaur et al, 2015; Mihalcea, 2017).

Nonostante la natura dinamica della ricerca in materia di Industria 4.0 (Lu, 2017; Rojko, 2017), soprattutto in Italia sono ancora limitati gli studi che approfondiscono la portata del complesso processo innovativo che investe, in particolare, la digital communication mediante l'utilizzo dei big data nell'ambito delle labour market relation (Russell e Bennett, 2015; Fontana et al., 2015; Wiblen e Marler, 2018). Pertanto, il presente lavoro si pone come obiettivo uno studio esplorativo destinato a fornire una prima visione circa l'adozione nel nostro Paese degli strumenti di big data recruiting ai fini dell'implementazione di strategie di data-driven talent management. Lo studio pilota si arricchisce di un'indagine empirica su un cluster di 45 aziende italiane classificate da Mediobanca (anno di riferimento: 2018). I risultati ottenuti potranno offrire indicazioni utili in materia, circa le prospettive di sviluppo futuro nel nostro Paese.

**Metodologia.** Lo studio pilota si basa su una web survey tesa ad indagare lo stato di avanzamento delle organizzazioni italiane in termini di adozione dei big data nell'ambito delle strategie di talent management. L'unità di analisi dell'indagine comprende i manager di comunicazione e di digital marketing di 45 organizzazioni presenti nel territorio italiano, prese in esame nel report di Mediobanca del 2018 sulle "Principali Società Italiane". Il campione include aziende di grandi dimensioni con un fatturato annuo non inferiore ai 50 milioni di euro, distribuite su tutto il territorio nazionale, in prevalenza nel nord Italia (79% del totale). Per ciascuno dei diversi settori merceologici classificati da Mediobanca (auto, sistema moda, alimentare, editoria e stampa, meccanica, legno/mobili, banche, assicurazioni) sono state selezionate cinque aziende, tenendo conto delle migliori business activity per fatturato.

Al fine di avere un quadro più ampio e preciso circa l'utilizzo dei big data in Italia nelle strategie di talent management, sono state aggiunte al campione di base cinque ulteriori aziende appartenenti al settore retail (presenti nel medesimo report di Mediobanca), in quanto quest'ultimo rappresenta un ambito di business molto attivo nell'adozione delle tecnologie abilitanti 4.0. La ricerca si riferisce al contesto italiano nel periodo settembre 2019 - gennaio 2020, nel corso del quale è stata condotta l'indagine. La web survey ha rilevato ed analizzato le risposte di 35 responsabili di corporate communication e digital marketing, campione effettivo dei partecipanti all'indagine (redemption).

**Risultati.** La web survey evidenzia che la maggior parte delle organizzazioni si trova attualmente nelle prime fasi di implementazione dei big data. In un'analisi introduttiva, agli intervistati è stato chiesto di identificare lo stato attuale di sviluppo dell'analisi dei big data all'interno del dipartimento/funzione di comunicazione delle organizzazioni in cui lavorano. I risultati suggeriscono tre fasi relative al processo di adozione dei big data da parte delle organizzazioni imprenditoriali, concettualizzate in termini di (Schroeck et al., 2012):

- "educate" (14,3%): le imprese sviluppano una preliminare conoscenza circa i benefici potenziali dell'utilizzo dei big data, per cui incominciano a predisporre attività di raccolta di nuovi dati e studi pilota;
- "explore" (46,2%): le imprese definiscono una roadmap sullo sviluppo delle tecnologie relative ai big data e implementano strategie digitali in linea con le esigenze e le sfide aziendali;
- "execute" (9,2%): le imprese sviluppano analisi avanzate di big data su vasta scala, conseguendo il massimo valore dalle loro risorse informative.

Dall'indagine si evidenzia, tuttavia, che circa il 30,3% non ha ancora avviato un processo di analisi dei big data. Nello specifico, il 19,2% non sta conducendo nessuna attività a riguardo, mentre il 11,1% intende avviare iniziative sui big data nel corso del 2020.

Esplorando nel dettaglio le attività di comunicazione aziendale che sono maggiormente supportate dall'implementazione di strumenti di big data analytics, si evince che gli obiettivi principali dell'adozione dei big data si inseriscono soprattutto nel contesto della marketing communication e consistono nello sviluppo di azioni di profilazione dei clienti (43,2%) e nel miglioramento dei processi di Customer Relationship Management (37,8%). Discreta attenzione viene posta sulla comunicazione di filiera - data-driven supply chain (15,4%), mentre sono quasi del tutto assenti azioni di digital analytics volte a supportare la comunicazione di reclutamento dei dipendenti (3,6%) e a migliorare la comunicazione interna (0%). Allo stato attuale, tali risultati mettono in luce, in sostanza, un'assoluta carenza circa l'adozione di strategie di data-driven talent management nel contesto italiano.

**Limiti della ricerca.** I risultati preliminari dello studio pilota non consentono generalizzazioni e richiedono ulteriori indagini su più ampi campioni di imprese. Necessita sviluppare su più larga scala le indagini empiriche al fine di giungere ad una visione d'insieme più approfondita e rigorosa circa l'implementazione effettiva delle strategie di talent management basate sui big data in Italia. Futuri sviluppi della ricerca potranno riguardare sia l'ampliamento del campione (per numero di imprese coinvolte e per tipi di settori merceologici presi in esame), sia l'adozione di un approccio metodologico integrato quali-quantitativo. Inoltre, in future ricerche potrà essere interessante analizzare in

chiave comparativa i risultati derivanti dai diversi settori merceologici, così da poter operare benchmarking intrasettoriali ed intersettoriali, facendo emergere best practice e best in class a cui ispirarsi.

**Implicazioni pratiche.** L'indagine empirica fornisce spunti di riflessione sullo stato di avanzamento delle organizzazioni italiane in termini di utilizzo degli strumenti di big data analytics in grado di supportare i processi di trasformazione digitale in azienda. I risultati offrono utili indicazioni per il management aziendale in quanto evidenziano aree di comunicazione, nello specifico di recruiting, non ancora supportate dall'analisi e interpretazione dei big data. Tale criticità evidenzia un sostanziale ritardo da parte delle aziende italiane nelle strategie di data-driven talent management, che si inserisce in un quadro europeo caratterizzato da un rallentamento nell'adozione di tali sistemi rispetto alle imprese nord americane (Guenole et al., 2017).

Inoltre, tale carenza può far supporre che, nel contesto italiano, le imprese non abbiano ancora sviluppato sistemi consolidati di gestione dei big data nell'ambito della comunicazione aziendale che siano in grado di lavorare in maniera integrata e armonica, presidiando adeguatamente le relazioni con tutti gli stakeholder group, tra cui le labour market relation.

In Italia siamo, dunque, agli albori delle pratiche digitali più avanzate di attrazione e reclutamento delle risorse umane. Ad oggi, le prospettive di sviluppo del data-driven talent management nel nostro Paese sembrano piuttosto sfavorevoli. Una delle possibili ragioni connesse al ritardo delle imprese italiane nell'adozione di strategie di data-driven talent management - e nell'impiego dei big data più in generale - è connessa alla mancanza di competenze interne, in quanto molte organizzazioni faticano ad implementare strumenti di talent analytics nei propri processi decisionali (Davenport et al., 2010; Bradley, 2016; Fink, 2017).

Nei prossimi anni, una consistente accelerazione nell'impiego di strumentazioni di big data analytics potrà ribaltare queste attuali prospettive negative. In proposito, è destinato a svolgere un importante ruolo il fattore esogeno alle imprese rappresentato dall'implementazione del piano strategico per la Banda Ultra Larga, predisposto dalle autorità governative italiane per garantire condizioni più favorevoli allo sviluppo delle infrastrutture nell'ambito delle telecomunicazioni. Gli obiettivi fissati dall'agenda Digitale Europea e quelli in corso di definizione nell'ambito del Recovery Fund, potranno spingere ulteriormente in questa direzione. È presumibile che il cablaggio di un numero sempre maggiore di Comuni su tutto il territorio nazionale possa rappresentare una rilevante opportunità per le imprese. Tuttavia, bisogna considerare che in Italia la normativa in materia di privacy prevede delle discipline limitative rispetto all'uso dei big data nell'ambito delle pratiche di talent management (Dagnino, 2017).

Parallelamente alle trasformazioni infrastrutturali esogene, risulta necessario apportare adeguati cambiamenti organizzativi nelle imprese, nonché sviluppare nuove competenze aziendali, per cogliere al meglio le opportunità legate alla quarta rivoluzione industriale. Le realtà imprenditoriali italiane devono meglio attrezzarsi ad affrontare il sempre più competitivo mercato del capitale umano. In questa prospettiva, le strategie di talent management determinano profondi cambiamenti anche nel rapporto tra imprese e università, tema centrale di questo Convegno. Questi due mondi devono collaborare in modo sinergico nello scambio di informazioni relative al percorso di studi, alle conoscenze acquisite, alle competenze e abilità effettive dei candidati. Mediante gli strumenti di big data recruiting (Sahay, 2015) è possibile, infatti, raccogliere ed esaminare migliaia di curricula, nonché approfondire i background culturali e professionali di laureandi e laureati (Balbi et al., 2017). La cooperazione tra imprese e università deve essere basata su un approccio strategico al talent management, che prevede un piano a lungo termine strettamente associato agli obiettivi di entrambe le parti (Bradley, 2016).

La gestione delle risorse umane, ed in particolare lo sviluppo di attività di acquisizione e coinvolgimento dei talenti attraverso le indicazioni che derivano dai big data, devono pertanto essere parte attiva delle politiche aziendali di digital corporate communication. L'implementazione di un approccio proattivo al talent management rappresenta un asset strategico e un fattore di differenziazione per le grandi aziende (Ashton e Morton, 2005; Jain, 2018), determinante per garantire un vantaggio competitivo sostenibile e ottimizzare le performance aziendali (Heinen e O'Neill, 2004; Russell e Bennett, 2015; Akter et al., 2016).

**Originalità del lavoro.** Considerata l'esiguità degli studi attualmente disponibili sul tema, il lavoro offre una panoramica preliminare sull'utilizzo delle strategie di data-driven talent management nel contesto italiano, contribuendo al dibattito in corso sulle più generali dinamiche dell'Industry 4.0. Lo studio costituisce un primo step in un filone di ricerca ancora poco indagato ma che sembra promettere interessanti spunti di riflessione per gli studiosi di management, per i practitioner e i manager delle imprese.

**Parole chiave:** people analytics; talent management; data-driven; big data; Industria 4.0

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# Creative crowdsourcing: exploring the relationship between brand seeker and two-sided platform

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**Objectives.** *The digital revolution and the new dynamics of co-creation (Prahalad and Ramaswamy, 2004) have increased consumers' expressive potential and posed a challenge to companies: to experiment with new approaches to involve consumers who are increasingly "empowered" (Denegri-Knott et al., 2006) and, potentially, "creatives" (Berthon et al., 2008) eager to share their intangible resources like time, skills and knowledge to collaborate with the brand (Rossi, 2014). Therefore, in a hyper-connected and increasingly open context, companies must prove themselves adept at developing and exploiting the knowledge-based intangible resources available beyond their own boundaries. Among the various practices defined as inbound open innovation (Chesbrough, 2003), crowdsourcing has benefited the most from the powerful thrust of digitisation (Pisano and Verganti, 2008). Web 2.0 technologies were, in fact, the key element of a new digital process through which organisations can turn to networks comprising an indefinite and potentially unlimited number of individuals, with varying visions and backgrounds, to fulfil innovative tasks (Afuah and Tucci, 2012; Brabham, 2013; Howe, 2008; Poetz and Schreier, 2012). More generally, crowdsourcing can be defined as "a type of participative online activity in which an individual, an institution, a nonprofit organisation, or company proposes to a group of individuals of varying knowledge, heterogeneity and number, via a flexible open call, the voluntary undertaking of a task [...] " (Estellés-Arolas and González-Ladrón-de-Guevara, 2012, p. 198). Since it was first conceived (Howe, 2006), crowdsourcing has gained considerable significance in both academic literature and managerial practice. According to a recent survey (eYeka, 2017), this phenomenon is growing rapidly: the most active companies, such as Procter & Gamble and Unilever, belong to the fast-moving consumer goods category, which recorded the most significant increase in activity (+40% compared with 2015). The main applications involve product and service innovation (59%), marketing and communication (34%) and design (7%).*

*It should be clarified that, among the different types of crowdsourcing, this working paper restricts its scope to creative crowdsourcing, a process based on asking external stakeholders for ideas and creative contributions for marketing communication (Vernuccio and Ceccotti, 2017). This area is chosen as it is particularly affected by the effects of the digital revolution and by the change in the scenario described above. In this market, alongside traditional and digital agencies, new players are emerging: two-sided platforms (Agafonovas and Alonderiné, 2013). These platforms act as intermediaries to accomplish creative projects proposed by a client company, referred to as the brand seeker in this paper, and aimed at a network of creative talents called the crowd (Brabham, 2013).*

*To date, the academic literature on crowdsourcing has focused heavily on the defining question for delimiting a theme with blurred disciplinary boundaries (Howe, 2006; Estellés-Arolas and González-Ladrón-de-Guevara, 2012; Brabham, 2013). Several studies have adopted the intermediaries' perspective, defining the platforms' main business models (Boudreau and Lakhani, 2009; Kohler, 2015; Agafonovas and Alonderiné, 2013), the ways the process unfolds (Boudreau and Lakhani, 2013; Roth and Kimani, 2013) and the main operational approaches (Schenk and Guittard, 2011). Some scholars have explored the crowd's point of view in more detail by highlighting the different types of skills required (Boudreau and Lakhani 2013; Steils and Hanine, 2016), clarifying the main motivations that push users to take part in creative challenges (Boudreau and Lakhani, 2009; Agafonovas and Alonderiné, 2013; Pedersen, 2013; Acar, 2019), and the different reward systems. Finally, taking the brand seekers' perspective, other contributions have classified the different types of tasks best suited to this practice. Among these, "ideation problems" (Colombo et al., 2013) and creative tasks (Schenk and Guittard, 2011) represent the main field of application for creative crowdsourcing.*

*The academic literature particularly highlights the brand seeker's decisive role, especially in the initial stages: firstly, in the need to clearly outline the problem to submit to the crowd (Afuah and Tucci, 2012), and secondly in*

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drawing up an accurate brief (Brabham, 2010). The literature has also outlined how brand seekers can engage creatives. The first approach is the direct one whereby the company - usually large - develops a proprietary platform and uses its website or social media to interact with users on an ongoing basis (Bayus, 2013). The second method - indirect, more widespread and more relevant for this paper's cognitive objectives - occurs when the brand receives support from a specialised platform acting as an intermediary (e.g. eYeka, Zooppa) to accomplish some projects (Bayus, 2013; Blohm et al., 2018). According to the recent article by Vernuccio and Ceccotti (2017), in most cases the brand addresses the platform directly, thereby initiating the creative crowdsourcing process. The brand seeker can request participation from the entire network of creatives by launching an open call or choose to involve a category of users through a closed contest (Brabham, 2010). As far as applications are concerned, Terwiesch and Xu (2008) state that "ideation problems" in the advertising field are particularly well-suited to the crowdsourcing approach. According to Whittle (2009), companies resort to crowdsourcing for "advertising and promotion" activities, both to perform simple but repetitive tasks, and to create more articulated and complex projects. These can require the contribution of users, whether experts or simple enthusiasts, to develop different types of output such as commercials, promotional materials, slogans and creative concepts.

According to various Authors (Afuah and Tucci, 2012; Roth and Kimani, 2013; Gruner and Power, 2017; Ghezzi et al., 2018), the main reasons pushing companies to open up to creative crowd contributions and turn to specialised platforms are: (1) the opportunity to diversify creativity, (2) the process efficiency, (3) the quality and variety of output. This apparently simple process presents some critical issues: (1) protecting the confidentiality of some information which, being public, could also be easy for competitors to find (Roth and Kimani, 2013; Gruner and Power, 2017), (2) the difficulties of managing and evaluating a very high number of contributions, the so-called "crowding" effect (Piezunka and Dahlander, 2015; Blohm et al., 2013), and finally (3) the greater relational complexity between the platform and brand seeker in the new scenario of marketing communication services (Keegan et al., 2017).

In this context, new opportunities are emerging for specialised and hyper-specialised agencies (Ceccotti, 2018), and in particular for two-sided platforms that intermediate to provide companies with innovative and efficient ways to access knowledge, skills and creativity scattered beyond their geographical and organisational boundaries (Schenk and Giuttard, 2011; Agafonovas and Alonderiné, 2013). Considering these arguments, it seems worthwhile to go beyond previous studies and further explore the relationship between the two-sided platform and the brand seeker.

Alongside the evolution of the consumer's role, increasingly involved and collaborative, there is a change in the traditional role of advertising agencies, which no longer take sole responsibility for the creative activities of client companies. In fact, companies very often turn to advertising agencies after considering criteria aimed at saving time and money, which enable a more volatile and less structured relationship (Laurie and Mortimer, 2019). More generally, according to the literature, the deterioration of agency-client relationship is due to their different reactions to the scenario of marketing communication services, which has changed profoundly. On the one hand, most traditional agencies have preferred to keep embracing obsolete models and approaches, often showing hostility to change (Durkin and Lawlor, 2001; Wagler, 2013; Ceccotti and Vernuccio, 2014; Mortimer and Laurie, 2019) and, in some cases, scant professionalism and creativity (Keegan et al., 2017). On the other hand, the orientation of client companies towards short-term objectives has contributed to calling the relationship's stability into question (Vernuccio et al., 2018).

When delving into the topic of agency-client relationship, most academic articles, adopting the advertising agency's perspective, have investigated crucial issues (Keegan et al., 2017) such as relationship management, and possible relational problems. Regarding the first macro-theme, various research has proposed different models to define the phases of the relationship's life cycle (Wackman et al., 1989; Doyle et al., 1980; Waller, 2004). The literature highlights the factors that help consolidate the relationship's longevity, placing emphasis on the theme of trust, attention and openness towards the client company, as well as the importance of ensuring suitable performance quality standards. Some studies have highlighted the importance of establishing interpersonal relationships between those involved, in order to create an atmosphere of mutual trust and build the conditions for a lasting relationship (Lian and Laing 2007). The literature on the topic brings out the need to base the relationship on the principles of collaborating in and sharing decision-making processes, to ensure the parties are fully involved in relationship dynamics.

Regarding the issue of conflict and adverse behaviour, some studies focus on the main factors responsible, such as the lack of professionalism and creativity shown by traditional advertising agencies (Keegan et al., 2017). A particularly relevant aspect concerns the lack of transparency and clear communication between agency and client (Heo and Sutherland, 2015). Some scholars propose new approaches and strategies to tackle these critical issues, highlighting the importance of promptly defining roles and activities (Devinney and Dowling, 1999) or identifying sources of conflict, and consider these a motive to discuss and develop the relationship (Yuksel and Sutton-Brady, 2011).

In this context, creative crowdsourcing practices represent a highly interesting digital innovation in terms of relationships: brand seekers are increasingly aware that they can access new sources of creative ideas without necessarily or exclusively resorting to support from traditional advertising agencies. In the new scenario of marketing communication services, the two-sided platforms specialised in providing crowd-driven services become new relevant interlocutors for client companies interested in creating consumer-generated advertising (Berton et al, 2008; Campbell et al., 2011; Vernuccio and Ceccotti, 2017).

Previous research has focused more closely on the relationship dynamics between advertiser and agency, in the broadest sense, without making distinctions between different communication partners (Laurie and Mortimer, 2019; Mortimer and Laurie, 2019). Up to now, the only study that has investigated the relational effects due to the



development of specialised intermediaries in creative crowd-driven services is that by Vernuccio and Ceccotti (2017). By investigating the evolution of the marketing communication network, the research highlighted the objectives pursued by the various actors involved (brand, traditional advertising agency, digital and media, crowd) and the actors' evolving roles in the broader context of Integrated Marketing Communication (IMC). In line with the article by Vernuccio and Ceccotti (2017), the research outlined in this working paper intends to explore the features and critical issues of the relationship between two-sided platform and brand seeker, which have not yet been explored in depth.

The academic literature also highlights that most empirical research has adopted the agency's perspective, while there appears to be little exploring the client company's point of view. Tahtinen and Halinen (2002) also highlight the need to conduct studies that look more closely at the company's perspective from a relational perspective. In response to the recent call for research (Keegan et al., 2017), and given the paucity of studies conducted in the new marketing communication services scenario since creative crowdsourcing platforms emerged as new actors, the research outlined in this working paper aims to deepen the relationship dynamics that develop between the two-sided platform and brand seeker. By adopting the brand seeker's perspective, as yet little explored, the paper intends to deepen: (1) the company interlocutors involved in the creative crowdsourcing process (Vernuccio and Ceccotti, 2017; Ceccotti et al., 2019), (2) the criteria for choosing the platform, (3) the factors that affect the relationship's time horizon and (4) any relational issues.

In light of these considerations, this paper aims to contribute to the literature on creative crowdsourcing and to the broader line of research on agency-client relationships, by developing an interpretative framework of the relationship between two-sided platforms and brand seekers.

**Methodology.** Contextualisation of the crowdsourcing literature within the agency-client relationship research stream has revealed some gaps, highlighted above, to be filled with a subsequent empirical investigation. The nature of the cognitive objectives and the limited number of articles specifically on the subject require the adoption of a qualitative and inductive exploratory approach (Armstrong, 1979). The field will be built on in-depth personal interviews (Creswell, 1998) with professionals, belonging to platforms and brand seekers, involved in creative crowdsourcing activities. Different criteria will be used to define the organisations and professionals to involve in the study.

On the platform front, the intention is to consider the main crowd-driven intermediaries operating on an international scale (e.g. 99designs, eYeka, Zooppa, Userfarm, Freelancer and Innocentive). The interview subjects will consist of account managers, those responsible for contacts with the brand seeker and in charge of managing creative projects, from the early stages of defining the task up to selecting the most appropriate creative output to meet the client company's requirements.

On the brand seeker side, the organisations involved will be selected using the following criteria: 1) variety of brand seeker industry and size, in order to achieve the broadest possible view of the topic, 2) type of project, distinguishing open projects from private ones, 3) relationship intensity, meaning the number of collaborations started from 2013 to the present, the period in which there is an increasing use of crowd-driven services (eYeka, 2017). By selecting the briefs available for open projects, a distinction will thus be made between the most active brands, i.e. those that have used the platform repeatedly, and those that have only used the intermediary once during the considered period. The research also relies on platforms' collaboration in sharing more detailed information on private projects, in order to understand whether and how relationship dynamics change vis-à-vis the type of project, the number of contacts activated with the platform, and the sector of activity. The set of respondents will include marketing and communication experts (e.g. Marketing Director, Digital Manager, Head of Communication, Advertising Manager).

The information will be analysed using thematic content analysis (Langdrige, 2004; Braun and Clarke, 2006) as this is particularly useful for collecting insights into relationship dynamics.

**Expected Findings.** Regarding the criteria for selecting the platform, the research's results could suggest the relevance of platform reputation and image, or that the choice may be based primarily on the service's cost-effectiveness and therefore meet budget criteria. Furthermore, the choice of platform could, for example, be based on the variety of features offered, or on the opportunity to take advantage of professional support throughout the project. Concerning the configuration of the relationship between platform and brand seeker, relationship dynamics may emerge which impact on the relationship's duration and solidity, and therefore on its longevity or volatility. In this regard, the paper intends to understand whether the relationship, in the context of creative crowdsourcing, is taking a strategic or tactical orientation, and which factors affect its time horizon. The research could highlight a connection between high satisfaction levels, and probably greater loyalty from brand seekers that use the platforms on an ongoing basis, compared with brand seekers which occasionally use the platforms for isolated projects. The intention is to explore the relationship dynamics in detail to understand, for example, if transparency represents a distinctive aspect of the platform's value proposition or if, conversely, poor transparency can lead to relationship problems. The results could highlight that a collaborative and less formal approach from platforms can spur brand seekers to request support for many projects, or vice versa, makes the relationship more flexible but less stable and long-lasting. By adopting the brand seeker's perspective, this working paper plans to identify the company interlocutors responsible for managing creative projects and dialoguing with the platform, to understand whether their level of expertise and experience varies as the strategic importance of the project assigned to the platform increases.

**Research limits.** *In deepening the relational dynamics between brand seeker and platform, this research does not consider the case in which the platform is activated by the partner agency of the client company. In addition, the paper's exploratory nature does not allow the results to be generalised. However, its insights could provide new inspiration for future lines of research on creative crowdsourcing from a relational perspective. Further research could investigate the relationship dynamics from the crowdsourcing platform's perspective or identify best practices and cases of particularly virtuous relationships between two-sided platforms and brand seekers.*

**Practical implications.** *The research's results could clarify the relationship dynamics between brand seeker and platform and represent a useful conceptual reference for both actors involved in the creative crowdsourcing process. Firstly, the results could represent a support both for advertisers that have already experimented with this process and for those which, disoriented by the rapid spread and considerable variety of communication partners, are reluctant to adopt a still-evolving approach. Secondly, the results could provide useful insights for two-sided platforms which, becoming aware of the typical features and critical issues that brands encounter, could promptly align themselves with brand seekers' expectations and needs, thus building the foundations of a stable and continuous relationship.*

**Originality of the study.** *The expected results are intended to contribute to the literature on creative crowdsourcing and on the configuration of the agency-client relationship in the new scenario of marketing communication services. Within the creative crowdsourcing field of research, this study is original, firstly, for adopting a relational point of view. Secondly, the work could provide a new perspective on the creative crowdsourcing phenomenon, studying for the first time the relationship dynamics between intermediation platform and brand seeker from the latter's perspective, which has not yet been investigated in the literature.*

**Key words:** *creative crowdsourcing; marketing communication; agency-client relationship; two-sided platform; brand seeker.*

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# Mapping the conceptual structure of patent ecosystems: the case of Singapore

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**Objectives.** *The present study aims at mapping and visualizing the conceptual structure and evolutionary dynamics of patent ecosystems. We conceive patent ecosystems as the evolving interconnections between a set of actors—including academic, institutional, legal, and business entities—aimed at generating new knowledge via technological advancements. Patenting activity represents a crucial mechanism through which firms, universities, and other research institutions transfer their knowledge from the research community to society on a broader basis (D’Este and Perkmann, 2011; Del Giudice et al., 2017). The concept of ecosystems captures the self-sustaining evolving systems whose members benefit from participation via intertwined relationships (Dougherty and Dunne, 2011; Holgersson et al., 2018; Granstand and Holgersson, 2020).*

*A large number of scholars have shown that the evolution and dynamism of new technical knowledge are an essential element in economics and innovation diffusion. Mapping and visualizing the conceptual structure and evolutionary dynamics of patent ecosystems allow us to depict better technology-driven activities that take place in complex multi-technology systems spread among different actors and across various technological domains (Bessen, 2004; Somaya, 2012; Teece, 2018). The new technical knowledge produced (and protected) creates new technological links or reinforces the existing ones, contributing in this way at shaping the connotations of the innovation landscape. In particular, the evolution of connections between technologies is constantly triggered by the exchange and dissemination of novel shared ideas.*

*In this perspective, patent ecosystems can be considered a precondition to the more explored innovation ecosystems defined as an integrating mechanism between exploring new technical knowledge and exploiting it for creating value in business ecosystems (Jackson, 2011; Clarysse et al., 2014; Valkokari, 2015; Oh et al., 2016; Beltagui et al., 2020). According to Acs and Audretsch (1990), innovation is “a process that begins with an invention, proceeds with the development of the invention and results in introduction of a new product, process or service to the marketplace.” Patent ecosystems capture the first step of the potential evolution of the innovation ecosystem. Therefore, investigating how new technologies shape an ecosystem’s technological structure, we can also detect the dynamism and breadth of new knowledge generation. This can be the basis for comprehending to what extent technology shifts can subsequently affect the innovation ecosystem.*

*To capture the earliest dynamics, this study explores the evolving nature of patent ecosystems and identify the major players, the structural features of technology, as well as the effects of technology shifts. In this vein, we can further detect technological trends and future scenarios.*

*More specifically, our investigation focuses on the case of Singapore as the country has experienced an economical upgrade moving from labor-intensive industry to technology-intensive industry. The profound transformation over the recent decade has promoted Singapore as an innovation-led economy, making it particularly suitable for a more in-depth examination. Moreover, this changing role into a key actor within the international scenario has intensified the technological competition among other areas, such as Hong Kong, increasing the need to secure technologies via the patenting activity (Wang, 2018).*

*Furthermore, we use patents as they are important not merely for seizing the different dimensions of technology (Hall et al., 2001; Harrigan et al., 2017; Harrigan et al., 2018) or tracking the knowledge flows and spillovers (Jaffe, 1986), but especially for monitoring technology evolution (Curran and Leker, 2011; Karvonen and Kässi, 2013). In comparison with other sources, patents can signal the latest technological change. In this vein, the patent analysis represents a standard method to transform patent data into useful information. Additionally, patents are territorial property rights easing the conceptualization of ecosystems that generally capture the interaction dynamics between organizations located in the same geographical area (van der Borgh et al., 2012).*

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Finally, recent research pointed out that investigating the innovative capabilities of an ecosystem is a difficult task, highlighting the need for more efforts in providing new tools and techniques (Ritala and Almpapoulou, 2017). To take the challenge and to explore the multiple aspects of technology evolution in different time frames, we adopt a novel science mapping approach by applying a network analysis using the co-occurrence of technological concepts. This scientometrics perspective allows a more detailed visualization of the phenomena occurring, especially in contexts of technology shifts (Curran and Leker, 2011).

**Methodology.** This research adopts a patent co-word analysis to map and visualize the evolution of the conceptual structure of the Singapore patent ecosystem, tracking its patent activity in a 30-year timeframe. Co-word analysis is a scientometrics instrument commonly used in the management field to disentangle the conceptual profile of science (Ronda-Pupo and Guerras-Martin, 2012; Castriotta et al., 2019). When applied to patent documents, the underlying assumption of this method relies on the fact that the content included in abstracts, given their brevity, can capture core concepts of the document (Callon et al., 1983). Therefore, co-word analysis can be considered an appropriate tool for the examination of scientific constructs encompassed in patents.

In particular, the co-word technique combines science mapping and performance analysis (Cobo et al., 2011). The conceptual technology structure emerges by linking different concepts (Small, 1999). These links allow us to disentangle the connections not only between items but also between groups, signaling the centrality of items within and between clusters. The degree of connections between items is assessed using the co-occurrences of two words in the same abstract (Cambrosio et al. 1993). A high number of co-occurrences captures the degree of similarity within contents applied to a specific technology field (Ding et al., 2011).

Furthermore, this study introduces a new tool to investigate the conceptual structure and evolution of a patent ecosystem, the VOSviewer software. The latter is a validated tool in management studies used to map and visualize science (Zupic and Čater, 2015). It combines two mapping techniques, namely, clustering and multidimensional scaling (MDS). For this reason, it is widely considered a valuable alternative to other statistical software (Waltman et al., 2010). In particular, cluster analysis is commonly used to identify groups and subgroups in a science or technology domain, while MDS generates a map in a low-dimensional space and finds a structure in a set of proximity measures between items (Kruskal, 1977). Concepts with the highest degree of similarity will be positioned closer in the map (Leydesdorff and Vaughan 2006). The VOSviewer algorithm is used to compute the distance between the different concepts included in the patents' abstracts according to the degree of similarity between nodes. In this way, it allows a more accurate result investigation (Van Eck and Waltman 2007). VOSviewer is adopted as a network visualization tool to identify the links between items and clusters better and, therefore, to enhance the interpretation of the relationship between technology concepts and groups (Di Stefano et al., 2012; Van Eck and Waltman, 2017).

We used the Derwent World Patent Index database<sup>1</sup> (DWPI) to retrieve patent documents as it is one of the most comprehensive patent databases. Patents included in this database are gathered in families that consist of one basic patent filing and one or more equivalent patent filings; it was possible to reduce redundancy by considering only the basic patents (Luan, 2013). Specifically, we selected all patent applications whose application country was Singapore from 1990 to 2019, a thirty-year timespan to provide a more extensive overview of the overall phenomenon. We focused on Singapore international patents globally protected through the World Intellectual Property Organization (WIPO). In this way, we considered the most relevant patents in a global scenario (Criscuolo and Verspagen, 2008). This search led to 12.958 patent applications that compose our sample under scrutiny. Specifically, we collected information on DWPI abstracts, technology classification, earliest priority year application year, publication year, country of first protection, and assignee name. Besides, we gathered the backward patent citations, including their respective technology classification, earliest priority year, application year, and publication year. For a better understanding of the conceptual structure of the Singapore patent ecosystem, we analyzed three different time-periods, ten years each. This procedure allowed us to explore the patent ecosystem, not in static conditions but with a dynamic approach, looking at the distinct features that were driving the country.

While focusing on the selection process of the technological concepts mapped, we follow several steps. Considering the thirty-year window, a total of 366.330 different words was used for the patent analytics process. Following prior literature, we applied a threshold of (at least) 250 links between concepts (Small, 1999). This phase aimed at reducing noise on our data and providing evidence of the most essential items in the patent ecosystem.

**Findings.** The introduction of the patent ecosystem concept allows unveiling core characteristics of technological knowledge generated in Singapore. Patent ecosystems signaling the earliest step of technological change can be particularly helpful in predicting potential shifts in the innovation ecosystem. In the specific case of Singapore, the mapping and visualization of the conceptual structure of the patent ecosystem exhibit a significant transformation. Our results show that in the first ten-year time span that goes from 1990 to 1999, the Singapore patent ecosystem was characterized by a high heterogeneity of technological topics that appear spread in the technological space, and with several overlaps. Cluster analysis identifies eight groups showing a focus on a wide plethora of technology streams. In the second decade, it is observed a technological change: the technical knowledge of the patent ecosystem starts a

<sup>1</sup> "Derwent World Patents Index™ is the world's most comprehensive database of enhanced patent information. Subject experts from Derwent's editorial team analyze, abstract and manually index every patent record, making it easier for you to quickly find the information you need to make informed decisions. In DWPI, the use and advantage of a patent are clearly stated – not buried within an original patent document." [derwentinnovation.com/](http://derwentinnovation.com/).

specialization path that appears completely clear in the last window (from 2009 to 2019), characterized by four groups related to information, communications, networks, cancer disease, energy and sustainability (water waste). This finding is very interesting and insightful because the structural specialization might be transferred to the Singapore innovation ecosystem, changing its future dynamics.

Furthermore, results show a proliferation of the inventive activity, especially in the recent decade, confirming the increase of centrality of Singapore within the international scenario. Descriptive analysis of our patent documents evidences an increase in the role of Universities and agencies controlled by the government. Indeed, the significant players are Agency Science Technology and Research (2,131 patents), University of Singapore (984 patents), University of Nanyang (971 patents), Singapore Health Services PTE LTD (152 patents). This result is consistent with Clarysse et al., (2014), according to which ecosystems are generally characterized by the central role of universities or research institutes; however, different actors co-exist. Furthermore, technology trends highlight a rapid intensification of technologies related to computing, processors, communications, semiconductors, cancer treatments and detections, online payment, surgical ultrasound, among others.

To dig deeper into these findings, we further investigate the quality of the patenting activity in terms of the degree of patent novelty and originality, to unveil whether specialization has yielded lower quality of innovation outputs. More specifically, our novelty indicator was calculated as follows:  $\text{Novelty}_i = 1 - \sum_{j=1}^{n_i} t_{ij}^2$  where  $s_{ij}$  indicates the proportion of technological classes that patent<sub>i</sub> holds in class  $j$  among  $n$  total number of technological classes (Makri et al., 2010). We used the 4-digit DWPI manual codes. Similarly, the degree of originality can be formalized as:  $\text{Originality}_i = 1 - \sum_{j=1}^{n_i} t_{ij}^2$  where  $t_{ij}$  represents the backward citations of patent  $i$  (expressed in percentage terms) that have class code  $j$ , out of  $n_i$  different patent technological classes (Trajtenberg et al., 1997). We used the 4-digit DWPI manual codes as it allows capturing more fine-grained information, also considering technologies at a subsector level. Surprisingly, Singapore patents show a high level of novelty and originality, with a mean equal to 0.57 and 0.74, respectively, reaching values up to 0.98 (the indicators value, by definition, range from 0 to 1). The kernel distribution confirms this high level of patent quality. This result might signal processes of knowledge hybridization that are occurring in the patent ecosystem. Kaplan and Vakili (2015) highlighted the double-edged sword feature of recombination; the authors pointed out that high-quality inventions could arise either be focused or broad knowledge. Additionally, to capture the elements that have contributed to this unexpected result, we conducted a linear regression analysis. Results show that the number of inventors, the number of family countries, as well as the number of assignees, affect both novelty and originality positively.

In the case of Singapore, specialization has fostered the increase of quality and variety at the subsector level, confirming the shift of Singapore to a technology-led country. The deep focus of R&D efforts on a few groups of technology, considered as the core for the patent ecosystem, allows the achievement of more in-depth technical knowledge and expertise in those domains, becoming a key player in an ever more globalized world.

**Research limits.** Our research investigates the context of Singapore, a country where research direction and focus areas are influenced by government interventions and lead. This selection criterion arises generalizability issues and requires interpreting the results according to this specific climate. Future studies might provide an extension to different patent ecosystems in the attempt to draw comparisons with more laissez-faire policies or ecosystems with a pronounced organic development. Finally, from a more methodological perspective, in our analysis, we used the general abstracts of patents, additional facets of the overall phenomenon might be provided by future contributions which might exploit the information of the patent classification codes or other types of patent abstracts<sup>2</sup>, such as those with a deep focus on technology novelty, activity, or use.

**Practical implications.** The study presents several practical implications. First, the mapping and visualizing of the Singapore patent ecosystem, revealing insights on the core technologies and their interconnections, can be of help to both existing players and those interested in entering it. Indeed, knowledge of the current scenario supports firms in their decision-making process. Besides, analysis and monitoring of the technological structure reveal degrees of the attractiveness of the patent ecosystem on specific technological topics; this information might affect the number of new players willing to join.

Second, this work examined 30 years of evolution of a patent ecosystem characterized by several government interventions. Policy implications regard insights on how political maneuvers are shaping the connotations of the Singapore patent ecosystems. Whether more R&D efforts are needed on specialized knowledge or some degree of knowledge diversification could be introduced to foster cross-fertilization and the ecosystem's capabilities to master and recombine distant resources.

Third, the analysis of the patent ecosystem allowed disentangling the role of collaborations. Some considerations are worthy of note when considering the current COVID-19 pandemic. This systemic and symmetric shock experienced worldwide is actively demanding for collaborations in the attempt to respond promptly and effectively to this unprecedented condition. Many of the ongoing challenging problems might benefit from solutions from other players around the world. Sharing some of these issues, along with their relevant scientific and technical competencies, via new

<sup>2</sup> Derwent World Patents Index™ provides several types of abstracts highlighting the diverse focus on technology, use, advantage, etc.



collaborations, can contribute to the generation of novel ideas able to address pandemic problems. The new technical knowledge generated is expected to shape existing patent ecosystems by changing their technological structure and boosting interconnections and new opportunities for breakthrough innovation.

**Originality of the study.** In the present study, by introducing the concept of patent ecosystems as a crucial precondition and a key antecedent of innovation ecosystems, we offer a new lens for investigating the phenomenon. Mapping and visualizing the conceptual structure and evolutionary dynamics of patent ecosystems allow understanding better technology-driven activities occurring in complex ecosystems, including predictive considerations on the progress of the innovation ecosystems. We show the evolving nature of patent ecosystems, unveiling the conceptual structure, and highlighting its inventive capabilities focusing on several salient changing connotations. In so doing, we address the recent calls for an enhanced understanding of the phenomenon throughout its complexity (i.e., Gupta et al., 2019).

Moreover, we adopt a new approach exploiting bibliometric techniques and use a novel software to map and visualize the knowledge structure via detecting the conventional technology thematic areas developed in 30 years in the Singapore patent ecosystem. We could identify the major players, core technologies, and future trends. A methodological contribution was provided by introducing a novel (although validated) tool for mapping the word co-occurrence of the patent abstracts, the VOSViewer software. Our approach might help both researchers and practitioners for future investigations in the field.

**Key words:** patent ecosystem; mapping; innovation; co-word; VOSviewer

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# Academic governance insights of University spin-offs: a *micro-foundational* perspective of life-science ventures

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**Objectives.** *University Spin-offs (USOs) are increasingly recognized as effective drivers of regional and national competitiveness because of their ability to foster economic growth (Di Gregorio and Shane, 2003), create employment in science-based sectors (Clarysse et al., 2005; O'Shea et al., 2008), and bridge linkage between industry and science (Debackere and Veugelers, 2005).*

*At the same time, academic business ventures, if confronted with their non-academic counterparts are underperforming (Wennberg et al. 2011; Ortín-Ángel and Vendrell-Herrero, 2014) and, often they fail to grow (Mustar et al., 2008). Therefore, it could be useful to identify which factors might enhance USO performance.*

*Several scholars focused on factors affecting USOs growth such as the composition of their Top Management Teams (TMTs) (Heirman and Clarysse, 2004; Mustar et al., 2006).*

*Some studies (Amason, 1996; Kamm and Nurick, 1993; Miller, Burke, and Glick, 1998) have showed that heterogeneity can stimulate dysfunctional conflicts between team members while a certain degree of homogeneity may strengthen the integration between them. On the other side, heterogeneous teams are seen as positively influencing strategic change (Lant, Milliken, and Batra, 1992; Wiersema and Bantel, 1992) and economic performance (Bunderson and Sutcliffe, 2002).*

*Looking at the managerial literature on new ventures, several contributions are using the upper echelon theory or the resource-based-view (Barney, 2001) to evaluate new ventures performance (Klotz et al., 2014). Despite both approaches helped to open the “black box” of the firm, the relationship between TMT heterogeneity and USOs performance is still ambiguous. Indeed, a simple focus on the functions covered by their TMTs may overlook important interactions between USOs members which could affect corporate performance. Therefore, it is worth considering the degree to which knowledge, experience, skills, norms and cognitions between team members is different or overlapping (Visintin and Pittino, 2014). Research on microfoundations (Barney and Felin, 2013) may contribute to shed light on internal elements, processes, and highlight the individual interactions which are worthy of further investigation. This approach emphasizes the role of individuals, processes, and structures of companies in the acquisition of internal competencies and competitive advantage (Barney and Felin, 2013). In USOs context, the growing emphasis in understanding how TMT characteristics could favor the commercial exploitation of scientific knowledge has prompted an increasing interest in the micro-foundations of academic entrepreneurship (Ankrah et al., 2013; Jain et al., 2009).*

*This relevance comes in part from the complex challenges faced by academics in establishing a USO, as it requires the joint integration of different and conflicting norms or motivations (Tartari and Breschi, 2012). Indeed, while the norms of open science with the goal of publishing and disseminating research findings is strong in the academia historically, the past decade has shown a remarkable change in the way university approach the Third Mission and the commercialization of their research outcomes (Etzkowitz, 1998, Owen-Smith, 2005).*

*Hence, we assume that university spin-offs need to effectively balance scientific and business orientation. The former is necessary for the process of discovery and early technology development, whereas the latter is required for the effective commercialization of the products and services which incorporate the technology (e.g. Kasscieh et al., 2002).*

*However, the existence of two sub-groups with different professional expertise, may cause internal dysfunctional conflicts (Jain et al., 2009) with non-overlapping subgroups characterized by different norms and values. To assess to*

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what extent separation effects are likely to occur, we need to focus on those TMT characteristics that may affect group integration.

On this ground, an explanation of USO's performance has to factor in their inner entities, such as individuals or sub-groups, and the interactions between them (Whetten, Felin and King, 2009; Wright, Mosey and Noke, 2012). Thus, this ongoing research aims at filling this gap focusing on the relationship between TMT heterogeneity and USO performance according to a micro-foundations perspective. We want to understand (1) whether balancing academics and business perspectives may improve USOs' performance and (2) whether conflicts - such as the faultline effect (Jain et al., (2009) or individual-level factors such as their expectation or the individual competencies may influence the relationship between profile differentiation and USO performance. We focused on Italian USOs operating in the life-science sector which typically requires multiple business skills and competencies (Di Berardino, 2016). These USOs must be able to change their operations to follow the development of new scientific concepts and the transformation of technologies and prototypes into viable products or services (Fontes, 2005, Knockaert et al., 2011). On this ground, high diversity in TMT backgrounds and competencies may promote a wider range of alternatives and solution (Filley, House, and Kerr, 1976) which can contribute to preserve USO's competitive advantage over time.

Overall, the main contribution of this ongoing study will be to assess how entrepreneurial team features and skills may enhance the positive impact on USOs' performance of an appropriate balance between the scientific and business orientations.

### *TMT Heterogeneity and USOs' economic performance*

Several scholars focused on factors which can affect USOs success such as the composition of their TMTs (Heirman and Clarysse, 2004; Mustar et al., 2006; Shane and Stuart, 2002).

Indeed, it is worth noting that in small companies like USOs, top managers are more likely to be influential since information and decision-making are not mediated by strong hierarchical structures (Finkelstein and Hambrick, 1996). However, it remains unclear how teams should be structured to perform better. Visintin and Pittino (2014) hold that it is more useful to consider the degrees to which knowledge, experience, skills, norms and cognitions between team members are different or overlapping instead of focusing on just the different skills owned by TMTs as it may overlook some important interactions between members which could explain factors affecting corporate performance. Research on microfoundations (Barney and Felin, 2013) may contribute to advance in this important purpose, shedding light on internal elements, processes, and individual actions and interactions which are worthy of further investigation. This approach emphasizes the role of individuals, processes, and structures of companies in the acquisition of internal competencies and competitive advantage (Felin and Foss, 2005; Barney and Felin, 2013; Felin, Foss, and Ployhart, 2015). Researchers adopting a microfoundational approach to academic entrepreneurship highlighted the importance of individual differences in explaining the economic success of new business ventures (Clarysse et al., 2011; Fini et al., 2012; Goethner et al., 2012).

On this ground, an explanation of USO's performance requires consideration of their lower- level entities, such as individuals or sub-groups, and the interactions between them (Whetten, Felin and King, 2009; Wright, Mosey and Noke, 2012). There is still an ongoing debate on the relationship between TMT diversity and USOs' performance (Simons, Pelled, and Smith, 1999). According to some previous studies, academic members often lack the needed business skills to market their research outputs (Druilhe and Garnsey, 2004; Vohora et al., 2004). On this ground, non-academics with a business experience could be effectively involved in USOs' activities to work alongside the academic members (Mustar et al., 2006; Vohora et al., 2004; Franklin et al., 2001; Lockett et al., 2005). Therefore, the presence of both academic and non-academic members may integrate the "scientific" and "economic" conception of science, thus facilitating the effective pursuit of research and business goals at the same time, positively affecting performance (Visintin and Pittino, 2014). In contrast, others have argued that heterogeneity can stimulate dysfunctional conflicts between team members (Amason, 1996; Kamm and Nurick, 1993; Miller, Burke, and Glick, 1998), thus homogeneity may strengthen the relational network between members.

Overall, a contingency perspective (XXX) would suggest that a homogeneous team faces mainly routine problem-solving, while a highly-dynamic contexts should require heterogeneous TMTs since diversity of opinions, knowledge, and backgrounds foster a wider range of alternatives (Filley, House, and Kerr, 1976). In life-science sector USOs should leverage multiple business skills and competencies (Di Berardino, 2016), so we predicted a positive relationship between heterogeneity in TMT and USO economic performance. Therefore, we tested the following hypothesis:

*H<sub>p</sub> 1. The profile differentiation between academic and non-academic members in TMT positively affects USO performance.*

In USOs' TMTs the development of shared norms may be difficult because both the academics and non-academics tend to preserve the pre-existing behavioral norms and values stemming from their professional communities (Beckman, 2006; Gurdon and Samsom, 2010). Such differences might cause a "faultline effect" (Jain et al., 2009) in TMT with subgroups with different demographics or background features (Pelled et al., 1999). The differences between academic and not academic members in TMTs may bring out the faultlines and, as a consequence, this may negatively affect economic performance (Visintin and Pittino, 2014). Therefore, effective TMTs are those which successfully integrate the two sub-groups. On this topic, Visintin and Pittino (2014) found that team size may negatively affect internal

communication, mutual monitoring and members' motivation to participate. Indeed, the smaller the team, the easier the integration between academics and non-academics will be (Amason and Sapienza, 1997; Smith et al., 1994).

In reverse, a larger entrepreneurial team reduces members' ability to exert mutual monitoring so members may behave as "free riders" (Backes-Gellner et al., 2006; Carpenter, 2002). This problem is particularly relevant in USO entrepreneurial teams, where academic members may have different motivations and expectations in comparison to those of non-academics. Therefore, we can formulate the following:

*Hypothesis 2. Team size moderates the positive impact of profile differentiation on USO performance.*

Moreover, some studies (Beckman, 2006; Gurdon and Samsom, 2010; Visintin and Pittino, 2010; 2014) highlighted that team integration is more difficult when there is diversity of academic status in the academic group. Different groups may approach USOs with different expectation and motivations amplifying the difference between academic and non-academic sub-groups. Thus, we can propose the following:

*Hypothesis 3. Higher diversity in academic status moderates the positive impact of profile differentiation on USO performance.*

On the other side, similarities in scientific backgrounds could foster team integration and improve performance (Visintin and Pittino, 2014). Several scholars highlighted that homogeneity in academics' scientific backgrounds may improve cooperation (Tsui et al., 1992; Williams and O'Reilly, 1998) and help in developing shared norms (Beckman et al., 2007; Knockaert et al., 2011). Indeed, homogeneity along these traits makes communication among members easier (Zenger and Lawrence, 1989) and enhances the effectiveness of mutual monitoring (Grandori, 2000). On the basis of these arguments, we develop the following:

*Hypothesis 4. Common scientific background in academic subgroup enhances the positive impact of profile differentiation on USO performance.*

## **Methodology.**

### *Sample and data*

We employed data from the Netval directory to identify the entire population of Italian active USOs as in previous studies (Algieri et al., 2013; Muscio et al., 2016; Ramaciotti and Rizzo, 2015). Then, we selected both pure and hybrid spin-offs operating in life-science sector that had at least one academic member on the TMT and were started in a university, excluding those spin-offs proposed by public research centers. Applying these conditions to our sample selection, we came to a spin-off population of 71 firms established from 1994 to 2015. We identified the academic position and the scientific background of academics members using the CINECA scientific platform. And for those academic members not listed in the CINECA platform, such as PhD students and research fellows, we checked the website of their university.

Because our research goal is to investigate the impact of certain entrepreneurial factors on USO economic performance, we collected data on the governance structure and financial health of each spin-off from AIDA-Bureau Van Dijk (XXX).

### *Variables*

#### *Dependent Variables*

In this research effort we adopted a broad perspective, so we measured USO performance on three different perspectives: (1) a market-based measure (Westerberg and Wincent, 2008) using sales growth, expressed in terms of the natural logarithm of a one-year variation rate (Weinzimmer et al., 1998; Schmelter, 2004; Egelin et al., 2003; Lendner, 2003; Steinkuhler, 1994; Roberts, 1991; Kulicke and Krupp, 1987); (2) an accounting-based measure of the profitability rate of spin-offs in general, expressed by the ratio of return on assets (ROA) of USOs (Woo et al., 1992; Egelin et al., 2003; Steinkuhler, 1994; Roberts, 1991); and (3) an organization-based measure, expressed as the rate of employment growth (Schmelter, 2004; Egelin et al., 2003; Steinkuhler, 1994; Kulicke and Krupp, 1987), which is obtained by calculating the difference between the prior two years of a USO's activity (Delmar et al., 2003; Zhang, 2009; Visintin and Pittino, 2014). These approaches for quantifying USO economic performance take into account how management handles various corporate functions and provide an overall measurement of company performance.

#### *Independent Variables*

*Profile differentiation.* In assessing the TMT heterogeneity according to academic and non-academic composition, we calculated the percentage of members belonging to the two subgroups (Visintin and Pittino, 2014; Minichilli et al., 2010).

*Diversity in academic status and in Scientific Background* We used the difference in scientific background and academic status to evaluate the two diversity indexes. *Team size.* Team size is measured as the total number of members of the entrepreneurial team.

#### *Control Variables*

To improve the reliability of our analysis, we adopted control variables to account for variance. We selected variables that could reasonably influence variability in the dependent variables of the model such as Total Asset, University size, Share held by the University, and/or Spin-off age.

**Findings.** *In line with some prior studies (Franklin et al., 2001, Wennberg et al. 2011; Visintin and Pittino, 2010; 2014), we predict that a balanced structure of USO's TMT might favour the integration of scientific and business skills, improving the economic performance. This could be particularly relevant for USOs operating in highly dynamic context such as the life-science sector which face highly uncertain tasks involving the application of new scientific concepts and the transformation of technologies and prototypes into viable products or services (Fontes, 2005, Knockaert et al., 2011).*

*However, in line with some previous studies (Knockaert et al., 2011; Visintin and Pittino, 2014), the profile differentiation should improve USO performance even if its effect may be moderated by other features. This argument is consistent with recent theoretical reasoning on the topic (Knockaert et al., 2011) and may contribute also to reconcile the controversies in the literature on team heterogeneity and new venture performance (e.g. Amason et al., 2006).*

**Research limits.** *Our study has some limitations according to different perspectives. First, one-year observation could be a rather short time-frame to assess the impact of individual features on company performance. Therefore, future developments along this line of research should monitor USOs over longer periods of time and different stages of development. We can also extend this analysis to other sectors and/or countries, in order to provide more reliable empirical evidence. Additionally, we evaluate the heterogeneity of USOs managers, regardless of whether they are shareholders. This might be relevant for assessing the relationship between academic shareholding and USO strategic decisions.*

**Practical implications.** *Our expected findings have several practical implications. First, the profile differentiation in TMT can accelerate USOs' time to market, resulting in a better performance. This could be framed as a best practice for universities in fostering local economic development. Moreover, in academic technology transfer aimed at creating new entities from research, knowledge transfer managers should evaluate academic competences and capabilities in terms of scalability, thereby promoting a well-balanced governance model between academic and non-academic members, as supported by the literature. Indeed, academic entrepreneurs should recognize the need to engage external managers with market experience, preventing the rise of "academic norms" in the TMT. This is particularly relevant for life-science USOs which face highly complex tasks involving the application of new scientific concepts and the transformation of technologies and prototypes into viable products or services.*

*The relevance of the profile differentiation between academics and non-academics has also relevant implications for the management and policy support of academic entrepreneurship programs. On this ground, Technology Transfer Offices (TTOs) should assess different strategies according to USOs' peculiarities, distinguishing those having a pronounced market orientation from those aimed at enlarging and deepening researchers' scientific and technological competences (Colombo and Piva, 2012). Such contingency perspective would suggest that a heterogeneous team is better suited to the highly-dynamic life-science sector which requires strong market alliances and multiple business skills and competencies (Di Berardino, 2016).*

**Originality of the study.** *This ongoing work is part of the research field on academic business ventures, taking for the first time a micro-foundational perspective to analyze individual-level factors that affect USOs' performance (Barney, 1991). Particularly, this work tries to bridge a research gap in the USO literature, shedding light on the relationship between TMT composition and new venture performance considering some important interactions between team members following a micro-foundational perspective (Barney and Felin, 2013). Our expected findings also contribute to the general literature on entrepreneurial teams in new ventures and suggest a mean to reconcile some inconsistent results of the literature on TMT heterogeneity and USO performance.*

**Key words:** *University Spin-offs; Academic entrepreneurship; Top Management Team Heterogeneity; Economic Performance; University Technology Transfer; Microfoundations*

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# ESG criteria in the banking industry: A systematic literature review

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**Objectives.** Sustainable development has raised, in recent decades and especially after the global financial crisis, the interest of policy makers, managers, academics and, in general, stakeholders. As a multifaceted concept, it cannot exclude the financial and banking institutions as their fundamental role on channeling funds and supporting an efficient resource allocation into the economy. Especially after the recent financial crisis, banks are increasing their attention on socially responsible aspects in order to reinforce trust among stakeholders (Coulson, 2009).

The concept of sustainable development often recalls the role played by the firm, as a viable system, in the context in which it operates (Beer, 1985; Golinelli, 2016; Barile et al., 2018). Furthermore, there is an interrelation between the sustainability and the vitality of the firm, which needs to be formalized into practices, metrics and assessment criteria, that are instrumental to achieving survival, a goal common to the generality of viable systems (Golinelli, 2016).

In the banking industry, the implementation of sustainability metrics is attributable to the desire to raise the credibility and the confidence among stakeholders, pursuing an aim that goes beyond the neoclassical concept of maximizing profit for shareholders (i.e. shareholders theory) (Friedman 1970; Brenner & Cochrane, 1991; Key, 1999; Stormer, 2003), and consider a three-dimensional financial logic, such as risk, return and social impact (Amini & Bienstock, 2014; Ziolo et al. 2019), with the aim of creating value for all the stakeholders (Freeman, 1984). Moreover, Stubbs & Cocklin (2008), with reference to the traditional neoclassical concepts, argue that they have to be transformed rather than supplemented, by environmental and social aspects and priorities.

At the same time, environmental, social and governmental (“ESG”) criteria have become a new theme for academics in the field of management, and a number of contributions covering various issues and aspects have been published. However, a systematic formulation of all these contributions is still lacking in management literature.

Therefore, this paper aims to analyze and classify the main contributions published on the topic of ESG and the banking industry of developed countries in management literature, i.e. international literature on ESG impacts in the banking industry, seeking to provide a map of the existing intellectual territory, discover gaps still remaining in literature and outline future avenues of research in this domain. A systematic review of the literature of has been used as methodology to achieve the aim of the paper.

**Methodology.** The systematic literature review (“SLR”) methodology applies three main steps i.e. planning, execution and reporting (Tranfield et al., 2003) and was conducted from January 20<sup>th</sup>, 2020 to present.

The analysis has been developed by a series of steps (described below) that allowed the construction of a database containing all the characteristics of the selected papers. From the database, it was possible to elaborate the information using various points of view, that provided a complete picture of the characteristics of the international literature on ESG impacts in the banking industry.

In the planning stage, the specific aims of the research and the key data sources have been defined. On this point, we chose peer-reviewed journals (articles) as primary source, since they can be considered validated knowledge and are likely to have the highest impact in this field.

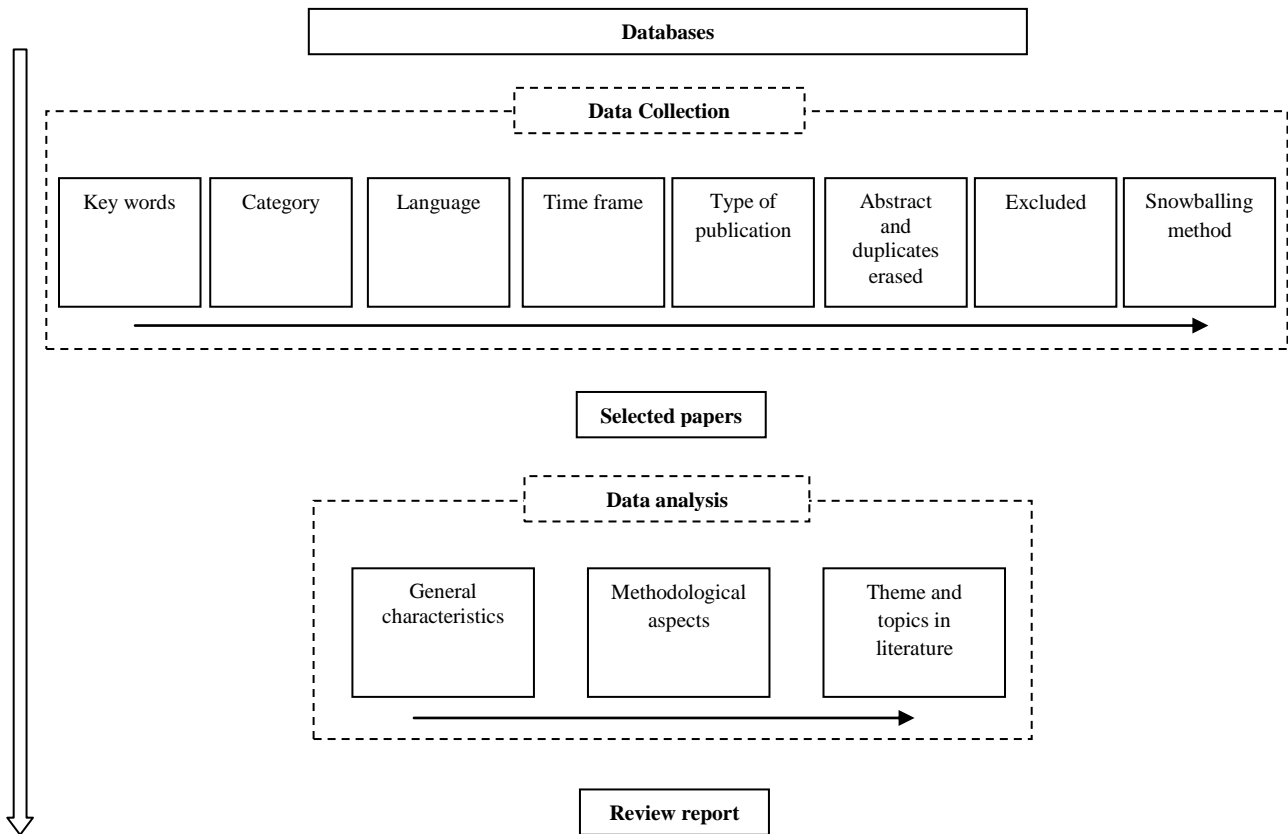
The figure below shows the entire review process.

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Fig. 1: Review process



Source: our elaboration

The research started identifying Web of Science (“WoS”) and EBSCO as databases from which the papers were extracted. The databases were selected considering those mainly used internationally in management studies and also selected by online libraries of major universities. These databases proved to be among the most complete in terms of collection of scientific publications and provided a great combination of variables, useful to perform the SLR. Moreover, filters were used to limit the research to the topic under analysis.

The execution phase of SLR process consisted in two steps, i.e. (i) data collection and (ii) data analysis.

The data collection step included the extraction of all materials from the electronic resources. The academic journals were screened looking at articles matching the following keywords in the box “title, keywords or abstract”, i.e. “ESG”; “Sustainability”; “Shared value”; “Banking Industry”; “Banks”; “Financial Intermediaries”<sup>1</sup>.

Tab. 1: Step I - Data collection

	Banking Industry	Banks	Financial Intermediaries	Total
ESG	3	26	1	30
Sustainability	60	1.756	12	1.828
Shared value	2	10	1	13
<b>Total</b>	<b>65</b>	<b>1.792</b>	<b>14</b>	<b>1.871</b>

Source: our elaboration

Moreover, the bibliographic research was conducted considering the following set of criteria:

- articles in the category “Management”, “Business” and “Business Finance”;
- articles written in English;
- a publication time frame that covers the period 1990-2020;
- papers and reviews published in academic journals.

Data analysis phase included different activities. First of all, materials were labelled and stored. In this phase, duplications (articles that may appear twice by searching with different keywords) were erased. After reading n. 249

<sup>1</sup> The selection of the keywords was based on previous review of the literature and brainstorming.

abstracts, only the papers that were relevant for our research have been considered, excluding those with scarce or null reference to the managerial and business domain. Furthermore, using the snowballing method (reference list of the papers and where they were referenced and cited), n. 28 papers have been added in our sample (Wohlin, 2014).

At the end of this screening procedure, n. 96 papers were selected.

Tab. 2: Step II - Data analysis

	Banking Industry	Banks	Financial Intermediaries	Total
ESG	1	12	1	14
Sustainability	21	243	2	266
Shared value	-	1	-	1
<b>Total papers</b>	<b>22</b>	<b>256</b>	<b>3</b>	<b>281</b>
Duplicate				32
<b>Refined papers</b>				<b>249</b>
Excluded				181
Snowballing method				28
<b>Selected papers</b>				<b>96</b>

Source: our elaboration

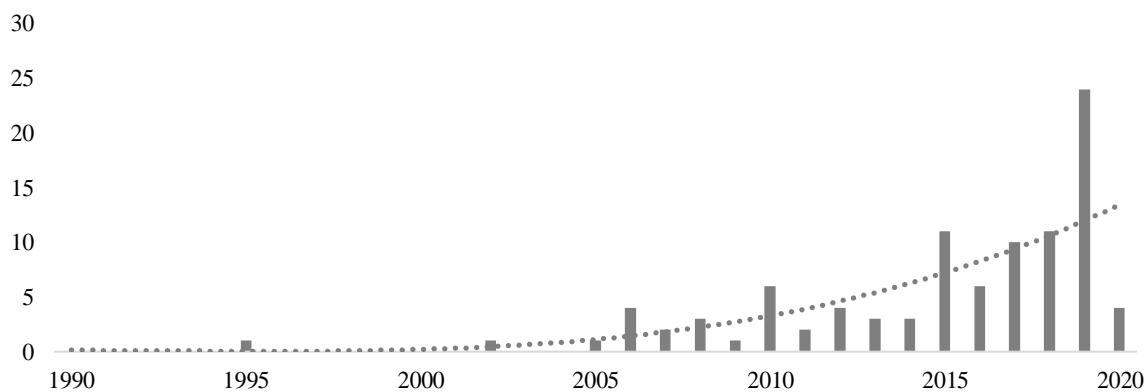
The data analysis step dealt with the analysis of each article, through a content analysis technique (Hsieh & Shannon, 2005) that considered the following categories:

- reference data: year, journal, country (first author's university affiliation);
- content issues: aim, main topic, process (if applicable), eco-system (if applicable), results and implications;
- context issues: geography;
- methodology issues: types (theoretical, empirical), sampling procedures or case studies selection criteria and data analysis technique.

**Findings.** The results achieved that in the banking industry there is a growing interest, from stakeholders and policy makers to the management, in order to assume long-term strategic choices that consider sustainability practices, metrics and assessment criteria, as well as procedures that are able to grab opportunities and manage risks of these issues. The improvement of the sustainability criteria and records in the decision-making process has been registered especially after the financial crisis (Cornett et al., 2016).

With reference to the growth of attention on these issues, the following figure represents the publications' distribution over the period 1990-2020.

Fig. 2: Publications' distribution in the sample (1990-2020)



Source: our elaboration

The major trends in the literature relating sustainability in the banking industry are internal and external, and both of them are influenced by cultural and legal factors.

The internal practices investigate how the sustainability criteria are integrated in the decision-making process (Ziolo et al., 2019) and into policies, strategies, products and processes (Weber, 2005), with a specific attention on risk management frameworks, lending practices, capital requirements and funding structure.

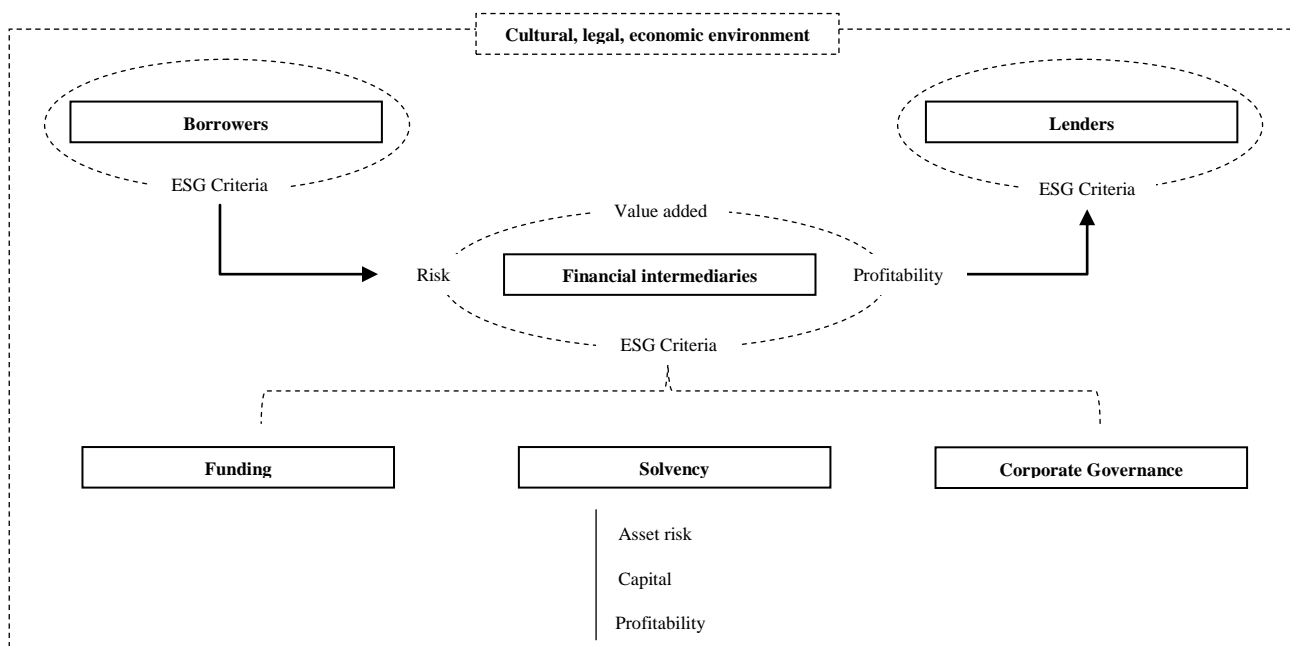
The external practices analyze the relevance of sustainability of the bank's communication to shareholders and stakeholders, and the use of information by the investors in the achievement of an optimal portfolio allocation (Zeidan et al., 2015).

With reference to the external practices, in recent years there has been an increasing disclosure from the banking industry on these issues (Martin-Sardesai & Guthrie, 2019), with the publication of sustainability reports following the

Global Reporting Initiative (GRI), the United Nations Global Compact and adopting the Equator Principles, with the intention of providing information concerning the ESG conduct, or to illustrate, according to framework of the International Integrated Reporting Council (“IIRC”), how the organization creates value over time, while reducing the information asymmetries between stakeholders and managers. At European level, the regulatory process resulted in the publication of Directives 78/669/EEC and 83/349/EEC, as well as the EBA’s “Consultation paper - Draft Guidelines on loan origination and monitoring” (EBA, 2019), regarding implementation in the credit granting and monitoring processes of customer ESG performances. The European Regulation 2019/2088 goes also in this direction, concerning the information on sustainability in the financial services sector (“Sustainable Finance Disclosure Regulation”) in force since March 10<sup>th</sup>, 2021, and aimed at implementing the “Plan of action to finance sustainable growth” approved by the European Commission in March 2018. Moreover, economical, legal and self-regulated aspects influence the financial firm behavior in acting in more socially responsible ways in order to enhance their competitive advantage in high market competitiveness contexts and to attract socially responsible investors (Chih et al., 2010; Oliveira et al., 2019).

Regarding the internal practices, the academic literature has seen a growing interest, which can be summarized in the following areas.

Fig. 3: ESG criteria - Strategic choices and implications



Source: our elaboration

In the literature it has been highlighted the relationship between ESG variables and bank’s solvency measurement, which is composed by asset risk, capital and profitability areas. The asset risk area investigates the relationship between the asset quality and sustainability variables, with a specific attention on the influence on the credit risk management process and rating criteria (Weber, 2005; Weber et al., 2010; Attig et al, 2013; Birindelli et al, 2015; Devalle et al., 2017; Witold & McGlinch, 2019). Furthermore, ESG variables seems to have also an impact on the cash flow of the debt repayment and, in the end, on the probability of default (Devalle et al., 2017; Hanson et al., 2017).

Weber et al. (2010) demonstrate that the integration of environmental risk leads to an improvement of the credit risk rating and therefore debtors being rated well regarding their environmental performance have access to better priced loans. Moreover, Weber (2012), assuming that environmental risks influence the counterparty risk, investigates the relationship between them and the impact on the credit risk management of banks and financial institutions. Thorough a two-step mixed method, he finds that all 6 Canadian commercial banks of the sample systematically examine environmental risks on credits, loans and mortgages.

Attig et al. (2013), extending these lines of research, investigate the relationship between corporate social responsibility and firms’ credit ratings, finding that credit rating agencies tend to value non-financial information and sustainability performance of the firms.

These results have been also confirmed by Devalle et al. (2017), who investigate the relationship between ESG performance and credit rating issues on a sample of 56 Italian and Spanish public firms, concluding that social and governing metrics affects credit ratings.

However, Birindelli et al. (2015), with the construction of a multidimensional ethical rating model on a sample of 30 European banks, highlight that banks are very sensitive to sustainability issues within their organizational and

management strategies, while there are critical issues regarding the banking practices, such as the use of ESG variables in the assessment of credit risk.

Moreover, also country sustainability performances seem to influence banks' credit rating. Hoepner et al. (2016) investigate the effects of corporate and country sustainability on corporate spreads of bank loans on a sample of 470 loan agreements from 28 countries in the period 2005-2012, concluding that country sustainability has an effect on direct financing and costs of bank loans. This impact is more powerful relating to environmental criteria than social ones.

The capital aspect focuses on the relationship between the ESG variables and the capital reserve requirements, where there is a growing consideration from the European supervisors to introduce green supporting factors and "brown" penalties (e.g. EBA) (Zeidan et al., 2015; Thomä & Gibhardt, 2019).

Thomä & Gibhardt (2019) analyze the impacts of changes in capital reserve requirements on the cost and availability of capital on a European bank's balance sheet data provided by the European Central Bank and conclude that green supporting factors could reduce the capital requirements and the cost of capital, with a consequential and potential lending reduction to "brown" assets.

The profitability aspect investigates the relationship between ESG criteria and profitability, with differences on time frame, before crisis (Soana, 2011), after crisis (Miralles-Quiròs et al., 2019) and over the crisis (Brogi & Lagasio, 2019; Gangi et al., 2019), on legal systems and specifically geographical areas (Soana, 2011; Cornett et al., 2016; Laguir et al., 2018; Miralles-Quiròs et al., 2019).

Soana (2011), using the correlation methodology in the pre-crisis period, investigates the relationship between corporate social and financial performance on a sample of international and Italian banks, argues that there is no statistically significant link between them.

On the contrary, Cornett et al. (2016) examine the relation between banks' corporate social responsibility and financial performance on a sample of 3.000 public traded companies over the 2003-2013 period, finding that banks appear to be rewarded for being socially responsible since financial performance is positively and significantly related to CSR scores. Moreover, with a distinction from the period before (2003-2007) and after (2010-2013) crisis, larger banks improve their CSR strengths after 2009, reflecting an improvement in the return on equity (ROE). The authors highlight that larger banks pursue socially responsible activities, such as lower deposit fee and increased services to low income communities, to a significantly greater extent than smaller banks.

A positive relationship has been observed also by Miralles-Quiròs et al. (2019), who investigate the role of socially responsible activities on shareholder value creation in a sample of 166 banks from 31 countries over the 2010-2015 period, concluding on the existence of a positive and significant relationship between them. The influence on the shareholder value creation (Tobin Q) of the ESG criteria are reflected by the bank size, return on asset, leverage, capital ratio and country's GDP.

On this point, Brogi & Lagasio (2019) investigate the association between ESG disclosure and company profitability (ROA) on a sample of U.S. intersectoral listed companies over the period 2000-2016, finding a positive association between ESG awareness and banks profitability.

In a nutshell, regarding the solvency area, the improvements of firms' ESG criteria can lead to lower loan spreads (Goss & Roberts, 2011), higher credit ratings (Attig et al., 2013) and lower credit default swap spreads (Witold & McGlich, 2019). On the bank side, the implementation of environmental and social criteria in their risk management frameworks and risk metrics lead to a better classification of risks in their portfolio (Weber et al., 2010). Moreover, the correlation between sustainability criteria, bank profitability (ROE, ROA) and shareholder value creation (Tobin Q) are also affected from the characteristics of the legal system (Miralles-Quiròs et al., 2019; Brogi et al., 2019).

A growing attention of academics has been focusing also on the relevance of the investors' ESG criteria on the banks' funding structure, that is strictly connected to external dimension, in terms of reputation against depositors and investors (Gangi et al., 2019). These elements can lead to an improvement of intangible assets as a source of competitive advantage (Wu & Shen, 2013).

Wu & Shen (2013) highlight that the implementation of sustainability criteria in the bank strategy can lead to an improvement of the net interest rate, because sustainability could reduce consumer price sensitivity, willing to pay higher loan rates when borrowing from a sustainable bank, and, at the same time, customers may receive a lower deposit rate due a sense of trust. In short, depositors may be more willing to accept a lower remuneration in exchange for grater bank reliability. This could lead to an improvement of the intermediation margin and in the loan quality.

However, on the contrary, Lev (2017), considering the importance on evaluating the competitive advantage of a company by investors and directors, argues that "no organization can be environmentally and socially sustainable without having achieved sustained competitive advantage" (Lev, 2017).

In a nutshell, the relationship between sustainability performance and competitive advantage seems to be not univocal but biunivocal, where these two variables can influence each other.

Another crucial aspect that has to be investigated, among the relationship between ESG variables and the banking industry, is the role of the corporate governance framework, which is correlated with the firm valuation and financial performance (Cremona & Passador, 2019), and the sustainability disclosure (Baldini et al., 2018). The successful implementation of sustainability criteria and policies seems to be influenced by the role of the board of directors, in creating and developing a corporate cultures and ethical values that consider sustainability aspects (Sethi, 2002; Baldini et al., 2018; Birindelli & Iannuzzi, 2019; Cremona & Passador, 2019).

The disclosure of corporate social responsibility aspects seems to lead to an improvement of firms' reputation (Gray et al., 1995; Li et al., 2010; Vanhamme et al., 2012), trust by stakeholders (Carnevale & Mazzuca, 2014) and, in the end, enhance competitive advantage (Aguilera et al., 2006; Money & Schepers, 2007; Gill, 2008; Kolk & Pinkse, 2010; García-Torea et al., 2016; Baldini et al., 2018). Board disclosure aspects have also been investigated in terms of numbers and presence of independent directors (Cheng & Courtenay, 2006; Patelli & Prencipe, 2007; Cucari et al., 2018; García-Meca & Pucheta-Martínez, 2018), age (Slater & Dixon-Fowler, 2009; Cucari et al., 2018), gender (Cucari et al., 2018; Galbreath, 2018; Birindelli & Iannuzzi, 2019) and environmental committee existence (Kent & Monem, 2008; Peters & Romi, 2014; Liao et al., 2015; Cucari et al., 2018).

However, despite the almost unambiguous findings related to the positive relationship between the existence of an environmental committee and independent directors, and sustainability disclosure, there is not a unanimous consensus of the other boards' variables (i.e. age and gender) on corporate socially responsibility reporting.

In conclusion, findings of our study indicate that, although in recent times research on sustainability in the banking industry has increase in relevance, it is clear that the ESG criteria are taking an active stakeholders' and policy makers' (e.g. European supervisors) interest, posing significant challenges for banks' strategies and business models. A corporate governance framework that considers and develops a corporate culture centered on ESG criteria, and that aims to implement them in the strategic plans and decision-making process, with a constant attention to the complexity, quantification and relationship with capital requirements (ICAAP), can create opportunities in terms of products, funding, and also, in the end, a chance to enhance profitability, both on the interest and commission sides.

Finally, as this field is still evolving, both on managerial and regulatory sides, it will be intriguing to explore more deeply the influence of ESG on banks' business models, also considering their crucial role in channeling funds and supporting an efficient resource allocation in the economy.

**Research limits.** As to the limitations of the study, we acknowledge that our focus is specific and there is a high degree of subjectivity in the evaluation and categorization of the articles. The present analysis aims to be illustrative, rather than exhaustive or definitive.

Future research directions should address further improvements of the identified framework by including other contributions published on the topic and using also other databases and/or research engines.

**Practical implications.** Results have important practical implications for policy makers, banks, and stakeholders, contributing to enrich the literature on the influence of ESG variables on banks' strategies and business models, highlighting the dynamical aspects of this issue in the present and in the near future.

**Originality of the study.** This SLR highlights that ESG in the banking industry is still an emerging topic in management studies.

Moreover, this paper provides several contributions to the ESG field from a theoretical point of view, using structured and replicable methodology and suggesting that this field requires a dedicated strategy to be formulated within the industry.

**Key words:** ESG; Sustainability; Banking Industry; Funding; Solvency; Corporate Governance.

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# Transformative value co-creation in healthcare services in the COVID-19 Era

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**Objectives.** *COVID-19 seems to have projected us all into that social and temporal dimension that anthropologists call “liminality”. The pandemic suspended all ordinary activities and identities. We no longer act from a project perspective but only in the contingency of the very short term. For example, in this period, attention has been focused on COVID-19 patients, while patients with other diffused and chronic pathologies, such as cardiac disease and diabetes, were neglected. Non-COVID-19 patients instead seem to have disappeared from social communication, as if their illnesses were also suspended. Unfortunately, however, they are not, though in many cases the clinics have been closed and appointments postponed. Even as activity in hospitals resumed, patients have been afraid of getting closer. This phenomenon has not only occurred in Italy but also in the rest of the world.*

*Among chronic diseases, cardiovascular diseases (CVDs) are the leading cause of death globally, according to World Health Organization (WHO) data (2020), taking an estimated 17.9 million lives each year and accounting for approximately 31% of all deaths worldwide. CVDs are a group of disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular disease, rheumatic heart disease and other conditions. Four out of five CVD deaths occur in people under 70 years of age due to heart attacks and strokes. One-third of these deaths occur prematurely. In Italy, there are 240,000 victims of heart disease per year; cardiovascular diseases are responsible for 44% of all deaths, and those who survive a heart attack become a chronic patient.*

*During the lockdown, the scenario in Italy changed because of the rapid reorganization of hospitals and the increased burden on the emergency system due to the pandemic. People with cardiovascular diseases preferred to stay home also a severe case. Based on the numbers of the first Italian multicentre study (De Rosa et al. 2020) conducted in 54 hospitals, the Italian Cardiology Society stated that during the COVID-19 emergency, mortality from heart attacks tripled and in most cases were linked to non-treatment or late treatment. About 7.5 million Italians suffer from cardiovascular diseases: during this pandemic, a reduction of more than 50% in hospitalizations for heart attacks has been registered. Hospitalizations for heart failure, heart rhythm abnormalities and dysfunction of pacemakers and defibrillators are down by about a third.*

*Given this scenario, it is necessary to re-consider the service ecosystem in healthcare and how digital health could represent, in this process, a long-term strategy for the healthcare system. Since the pandemic has boosted the use of digital technologies to address the need for social distancing, actors involved in the healthcare service ecosystem are moving towards transforming the crisis into a great moment of rethinking the organizational and relational models of care based on these types of technologies.*

*In cardiology, remote monitoring of electronic cardiovascular devices, such as defibrillators and cardiac resynchronization systems implanted in patients with severe arrhythmias or heart failure, already exists, and during the COVID-19 pandemic this use could be implemented in a more effective way. Information concerning both the state of the device and the patient’s clinical condition moves periodically through a secure and protected system from the patient’s home to computer platforms that are reviewed by cardiology technicians and cardiologists in the hospital.*

*The research aims at investigating how digital health impacts the evolution of the Italian healthcare service ecosystem in a transformative way, in particular during and after this epidemic era, how transformative value is co-created, who are the actors involved and how the resource integration mechanisms and logics are changing.*

**Methodology.** *The study adopts a qualitative approach based on in-depth interviews with patients with cardiovascular pathologies using digital health devices useful for their own body and its vital functions, with caregivers, doctors and key informants, experts of the Italian healthcare service ecosystem. The data were triangulated with those derived from participatory observation and those derived from the analysis of secondary data. The data were collected in parallel, and the various sets of results were interpreted concurrently to draw valid conclusions regarding the research problem.*

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**Findings.** *The value creation process, as depicted in Service-Dominant logic (Vargo & Lusch, 2011; 2016), is an interactive and collaborative process occurring in the context of a unique set of multiple exchange relationships among various actors in a service ecosystem.*

*Service ecosystems represent spatial and temporal structures of loosely coupled, value-proposing social and economic actors engaging in mutual service provision and value co-creation (Vargo et al., 2015). They reconfigure themselves: they are dynamic and potentially self-adjusting. Service provision and value creation through resource integration impact the nature of the system. These dynamics, in turn, determine a change in the context for future value creation processes (Chandler & Vargo, 2011). Resource integration, service provision and value creation change the system's nature to some degree and, thus, the context for the next interaction and determination of value creation.*

*Value co-creation in service ecosystems is thus a complex process involving the integration of resources from numerous sources in unique ways, which in turn provide the possibility of new types of service provision, and thus require coordination.*

*Individual as well as collective well-being represent the forms of transformative value that encompass the "social dimension of value creation which illuminates uplifting changes among individuals and collectives" (Blocker & Barrios, 2015, p. 2) within service ecosystems.*

*In the current epidemic context, a digitally mediated healthcare service ecosystem emerges as a disruptive reality useful to provide new solutions and manage new links and actors' and resources' integration to co-create transformative value.*

*Using data derived from our interviews, we found three key issues characterizing the recent evolution of the healthcare service ecosystem in a transformative way thanks to digital technologies:*

- *actors' engagement;*
- *digitally mediated resource integration; and*
- *barriers and tensions.*

#### *Actors' engagement*

*The improvement of the use of digital technologies in healthcare systems and the reshaping of the healthcare service ecosystem, which brings about the birth of a new one, has defined new ways to engage actors.*

*Our analysis shows the importance of actors' engagement, not only at the micro level as expected, but also at a macro level-such as the Ministry of Health and other institutional actors-and at the meso level-such as communities, non-profit organizations, companies and start-ups.*

*The evolution of the service ecosystem is driven, at the macro level, by institutional actors, such as the Italian Istituto Superiore della Sanità (ISS), which foresees and encourages the use of telemedicine to allow hospitals, located in the areas more affected by the pandemic, to use teleconsultation. After this notice, similar initiatives have multiplied.*

*The Ministry of Health has set guidelines for telemedicine in Italy. The document "Telemedicine - National Guidelines" states that "Technological innovation can contribute to a reorganization of healthcare, in particular by supporting the shift of the focus of healthcare from the hospital to the territory, through innovative citizen-cantered care models and by facilitating access to services in the national territory.*

*Given the importance of telemedicine during this specific COVID-19 pandemic, institutional actors' coordination is necessary. To facilitate patients' monitoring at home, the Ministry for Technological Innovation, together with the Ministry of Health and the WHO Higher Institute of Health, promoted a call to find telemedicine applications for patients who are at home, either because they are affected by COVID-19 or other diseases, including chronic ones.*

*In this new digitally mediated ecosystem, it is also important to consider private companies' engagement, such as Zucchetti SpA, which has made available to all Italian hospitals an advanced telemedicine software to monitor the parameters necessary to assess patients' health outside hospital structures.*

*Many non-profit associations, at the meso level, have implemented new forms of caring; for example, the community of Sant'Egidio implemented a remote consultation service for frail people and those with pathologies other than the coronavirus with about 200 referring doctors from 21 specialist branches. Other non-profits and voluntary associations have expanded their mission in order to continue their core activities in a new way, which is useful in caring for chronic patients from a distance.*

*The central role of the patient in this ecosystem also requires the development of new services based on subjectivity, culture, values and preferences, and the role of some health tech start-ups becomes more important, as they permit the patient to virtually interact with clinicians, nutritionists, psychologists and other members of the so-called care teams.*

*From these findings, it is clear that at the macro and meso levels, the different stakeholders are very sensitive to the theme of the continuity of care at home through telemedicine during this difficult period.*

*Considering the micro level, the correct management of digital devices by patients with heart disease from home helps cardiologists and technicians to analyse data transmitted to computer platforms in a better way. The role of the patient in this new healthcare ecosystem is transformed into a co-creator of value more than ever before.*

*In this new digital service ecosystem approach, the engagement and the contributions of all actors, at micro, meso and macro level, are important. They contribute in different but fundamental ways to value co-creation in order to give the right assistance to patients with chronic heart disease.*

### Resource integration for transformative value

*The revolutionary switch to telemedicine and video consultation in order to prevent the spread of COVID-19 is not as straightforward as installing a new service; rather, it involves introducing and sustaining major changes to a complex system. The use of telemedicine has to be considered as an integration and not a simple substitution of traditional healthcare systems, and nowadays is a valid support tool on the path of treatment of heart disease. It must be adapted flexibly, with personalized logic, to the needs of the individual patient. The evolution of the traditional service ecosystem emphasizes the role of the different actors as value co-creators in a new transformative way due to the integration of different resources.*

*In many Italian hospitals, such as Centro Cardiologico Monzino, telemonitoring is carried out using an application that can be downloaded to a phone, in which the patient records daily a series of fundamental data to understand the evolution of his or her clinical situation. The data are constantly analysed at the control centre, which in turn contacts the patients at least twice a day to evaluate their clinical progress, indicating or integrating the existing therapy, organizing a series of targeted diagnostic tests and with constant "virtual human contact", which helps the patient and their family to not feel abandoned and alone.*

*During this COVID-19 period, Centro Cardiologico Monzino has activated a new service to remotely monitor the cardiorespiratory health of patients discharged from the hospital with COVID-19 pneumonia. It is a cutting-edge technology that allows patients to control the main vital parameters through special sensors built into the fabric of a t-shirt, which the patient wears at home. The initiative is part of the Monzino model for phase 2 of the COVID-19 emergency, which aims to strengthen surveillance and home care. The service provided by the t-shirt was originally developed for decompensation and clinical cardiology patients of Monzino.*

*The shirts are given to patients at discharge and configured to allow reading and transmission of data. A portable router is also given to the patient, which allows the patient to transmit the registration data even without using the telephone connection or a home data network. In the kit there is also a series of practical instructions and a contact number to give constant assistance to patients and respond to any technical problems. The high-tech t-shirt records a twelve-lead electrocardiogram, the same that is performed in surgeries, and measures heart rate, arterial saturation, mechanics and respiratory rate (including apneas). Patients can keep the t-shirt for as long as they want. The device can be worn for any number of hours per day that the patient desires, though for a minimum of two hours, in which he must alternate, at set intervals, rest and standardized exercise, such as a walk around the home at a pace that everyone can sustain. In this way it is possible to compare the parameters in the two situations and to get information if the patient performs the amount of physical movement in the house that is functional to healing.*

*Telemedicine in this period is very important for patients with cardiac disease because through different instruments patients can stay in contact with their doctor, constantly monitor vital parameters through the use of wearable devices and manage one's emotional state through online support communities, mindfulness programs and so on.*

*The adoption of remote patient monitoring (RPM) is exploding during the COVID-19 pandemic: these innovative and disruptive systems help care teams monitor, manage and engage patients in the comfort of their homes, which contributes to reducing costs and mitigating risks while improving outcomes and increasing reimbursements.*

*These systems continuously stratify patients' risk via artificial intelligence (AI)-driven algorithms and alerting and empowering care teams with optimal windows of opportunities to intervene when needed. Automated visual/audio reminders and phone calls enable higher patient engagement and medication adherence. Integration with telehealth and virtual video conferencing and visits enables rapid patient health assessment, optimized for various chronic diseases.*

*According to a 2019 Spyglass Consulting report, over 88% of hospitals in the United States have plans to invest in RPM in 2020, which have been accelerated in the wake of the pandemic, validating the assessment that RPM, like telehealth, is a "smash hit" that will grow and see significant adoption post-pandemic.*

*Nowadays, patients can use different types of services. Here are some examples:*

- *Teleconsultation: Allows remote interaction between a doctor and patient. It requires adequate tools: technological equipment (PC, tablet or smartphone) and connectivity for doctor's office and patient.*
- *Remote monitoring with app: Chronic patients, elderly people and homebound patients who need to be monitored can be followed remotely by their doctor, with telemonitoring set on the specific parameters of the pathology of interest.*
- *Digital therapeutics: With therapeutic software it is possible to treat addictions, depression, anxiety, panic and sleep disorders as well as to improve patient adherence to treatment.*
- *Telerehabilitation: The exercise of remote assistance and rehabilitation activities.*

*Integration of different resources creates new resources in which the different actors act on different levels of engagement and co-create value to ensure the well-being of patients and society.*

### Barriers and tensions

*The new path defined by the evolution of the service ecosystem in a transformative direction is not without drawbacks. On one hand, there are some normative and technological barriers; on the other hand, there are tensions and resistance between the different actors in the process of resource integration.*

*The integration of digital health and health services could open the door to new, important but complex issues: the creation of a large amount of data, generated by users, is indeed useful for the health system but at the same time*

generates questions at the privacy level, highlighting the need to establish privacy policies.

Today, even if there are limited high quality and randomized data supporting telehealth, there is evidence suggesting the benefit to patients given by health systems.

Telehealth interventions in cardiology to date have largely focused on ambulatory management of hypertension and heart failure. Analyses of randomized trials of telehealth in heart failure have shown improved clinical outcomes.

For remote assistance, it is necessary to have safe technological tools that preserve the confidentiality of health data, but it is not enough for them to simply function and be used. It is essential to be able to co-construct diversified and customizable organizational and relational settings. The National Italian Health System today does not reimburse telemedicine services, and the adoption of new digital healthcare solutions by national systems must take into consideration this issue, but also issues related to the integration with current information systems as well as the legal framework in data processing.

Another critical point is the lack of the presence of clinical and non-clinical staff and their appropriate training.

Many Italian hospitals, moreover, lack the necessary and technical resources; the use of digital health requires that services looking to use video consultations must ensure they are using appropriate software that properly aligns with clinical workflows. Platforms designed for video conferencing do not provide the appropriate workflow and may require software downloads that breach local information governance policies. Bandwidth, audio quality and video quality should also be considered when implementing a system.

**Research limits.** The research shows the results deriving from in depth interviews, conducted during COVID pandemic, with patients with cardiovascular pathologies using digital health devices, with caregivers, doctors and experts of Italian healthcare service ecosystem. The findings of this study could be further enriched by data coming from a survey conducted among patients with cardiovascular diseases, useful to map the use of healthcare digital devices pre and post COVID and the use of telemedicine. Data could also be complemented by in depth interviews to the same actors in order to understand if the new service ecosystem will survive post COVID and to what extent pandemic will really speed up the process of digital transformation in healthcare. Moreover it will be interesting to investigate if and how digital health have impacted on the treatment of other chronic disease, such as diabetes or cancer, during and after this pandemic.

**Practical implications.** The use of digital technologies in healthcare systems brings out a new service ecosystem based on new adaptive interactions among actors that transforms the patient-provider relationship and on new social practices. In this new ecosystem, based on technology-mediated healthcare, new social practices grow and integration among actors changes.

The use of telehealth has been growing in the past few years, though more slowly than expected. One major reason has been the lack of a reimbursement model for telemedicine that puts it on par with in-person visits. We may be seeing a tipping point that takes telehealth mainstream in one stroke, transforming the way we experience healthcare in the future. Most importantly, the public at large will become accustomed to telehealth visits as an acceptable way of obtaining healthcare.

Digital health proposes new ways to produce and provide services that differ from models based on the hospital structure. These are considered limiting, since the COVID-19 pandemic has highlighted the need for better use of healthcare resources with a view to achieving greater efficiency gains. Increasing the quality means having a huge amount of detailed data of all kinds of patients, pathologies and/or lifestyles, thus being able to support medical figures in the delivery of personalized therapies without wasting resources and without incurring unnecessary expenses. Therefore, anyone could be a potential user of digital health devices, and this challenging context requires the development of people-centred services, which considers one's subjectivity, living environment, culture, values, constraints and preferences.

In such emerging healthcare ecosystems, smart devices effectively connect the emotional, social and physical needs of the actors (patients and their families, physicians, other service providers, etc.) to transform the patient into an active actor who integrates resources and co-creates value (Anderson et al., 2013; Danaher & Gallan, 2016; Anderson et al., 2018).

In this period in Italy, virtual experiences have multiplied, including the use of chatbots to detect COVID-19 from the first symptoms and free specialized nursing tele-assistance services that provide support to patients, caregivers and families and that create a new virtual network between partners.

**Originality of the study.** This study is original because it studies the development of healthcare system due to the acceleration of digital transformation driven by the pandemic. In particular we put our attention on non-COVID-19 patients that, in the first time of pandemic, seemed to have disappeared from social communication, as if their illnesses were also suspended. Among chronic diseases we put our attention on cardiovascular disease and we have studied the recent evolution of the healthcare service ecosystem in a transformative way due to the use of digital technologies.

**Key words:** service ecosystem; COVID-19; transformative value co-creation; healthcare; chronic disease.

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# Cashback programs in ecommerce retailers: the choice between pure cashback and donation

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**Objectives:** A cashback program can be defined as an incentive strategy that is offered to consumers of certain products and services by which they receive a cash refund when they accomplish a purchase. In most cases, the cash refund is a simple percentage out of the purchase monetary value but can also be associated to specific quantities or depend on the time period (Christino et al., 2019). The cashback program can be restricted to specific segments of consumers (Vana et al., 2018).

The significant growth of e-commerce websites and smartphone applications favored the implementation of cashback programs to online shopping. Independent cashback companies design websites and applications where consumers select the cashback offers and accomplish the purchase directly or are linked through a landing page to the website or application of the product or service supplier. The cashback companies can be assessed as intermediaries that negotiate the cashback offers with the e-commerce retailers. The cashback companies credit the cashback offers to the consumers and receive a commission, most often a percentage of the purchase monetary value, for the intermediary service. Cashback offers are accredited after the initial purchase, cashback companies pay on average between 30 days and 4 months after (Hargrave, 2017; Vana et al., 2018).

This research examines the choice between self-benefit and altruistic benefit (Eason et al., 2015) in cashback offers from online cashback companies. The self-benefit implies that the consumers will retain the cashback for their personal usage whereby the altruistic benefit means that the consumers will donate the cashback offer to a non-profit or public organization for a charity project. This research investigates both the propensity for consumers to choose one option over the other and the effects that their choice have on the cashback program performance. The cashback program performance is measured over immediate sales, probability of new transactions, and spending increase.

**Literature Review:** Different academic studies affirm that the performance and success of cashback platforms depend on a number of variables that consumers assess when they select their alternatives. Primarily, the variety and relevance of the e-commerce retailers influence consumers because cashback preferences appear to be autonomous from product categories (Battlestar et al., 2016 (1)). In addition, the quantitative value of the cashback transactions plays an important role since online cashback platforms facilitate the comparison of cashback offers (Battlestar et al., 2016 (2)). Christino et al. (2019) propose that both the ease of use and the responsiveness of the platform facilitate the purchasing process and increase the consumer retention to the platform. Consumers develop brand loyalty to the cashback companies rather than to the individual retailers and go back to the platform independently from the product category. In two related studies, Battlestar et al. (2018, 2016 (2)) emphasize the importance of social e-commerce for the cashback offers. Social e-commerce is associated to the integration of social media technologies in the business model of the cashback (Zhou et al., 2013). The social interaction is formed by a group of consumers that have formed a relationship with the cashback platform up to the second level through a referral program with established economic incentives for the participation. The consumers gain economic benefits as their social network grows through their referral activity (Zaglia, 2013). Battlestar et al. (2018, 2016 (2)) confirm that social e-commerce has a relevant positive effect on the cashback platform since consumers appreciate the economic benefits immediately after the introduction of the social network and receive most of their economic advantages through their social activity rather than their direct consumption in cashback offers. As a consequence, they grow more engaged and loyal to the cashback platform as the social network activity becomes their primary source of discounts and cashback companies continue to benefit from the referral activity by acquiring new consumers.

Consumers in cashback programs are not only influenced by the cashback value but also by the action of accrediting the cashback into their bank accounts. Vana et al. (2018) point out that the expectation of the cashback offer and the actual payment are two separate actions in the consumer's mind that prompt two distinguished behaviors. Although they can dispose of the cashback as they prefer, consumers still connect the cashback payment to the cashback program. For this reason, the cashback payment reduces the time gap for additional purchases on the cashback

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platform and increases the value of these purchases. In detail, one additional US\$ on the cashback payment is linked to an .02% higher transaction probability and US\$ .32 with a cumulative 10.03% on the impact of the cashback program (Vana et al., 2018).

Zhou et al. (2017) argue that a cashback system operates differently if it is centralized or decentralized within an e-commerce platform. Centralized means the e-commerce platform owns the system, while decentralized implies that the platform externalizes the cashback to a third-party provider. In both cases, the cashback system entails higher profits for the e-commerce platform because the e-commerce can benefit of price discrimination, however, the decentralized system generates lower sales prices because of the inner competition between third-party providers. Conversely, the centralized system does not compete for external cashback consumers, hence, the consumer surplus is inferior and the total profits for the e-commerce are higher. The e-commerce platforms have to carefully weigh the opportunity of internalizing the cashback programs, or else they may lose profits because third-party providers will decrease the sales prices and maximize the consumer surplus.

Cashback systems are in the majority of cases part of loyalty programs. Loyalty programs can be defined as promotional investments that attempt to strengthen the brand loyalty for a selected number of consumers, mainly, the most profitable and repetitive consumers (Yi and Jeon, 2003). Cashback is the primary instrument that is employed as a reward for consumers within the loyalty programs.

Loyalty programs require high managerial and marketing costs, however, they appear to improve the performance of the business unit. Chaudhuri et al. (2019) demonstrate that loyalty programs enhance sales and profits within the first year of introduction and generate positive outcomes for at least three years. Companies should prioritize loyalty programs with earning mechanisms, primarily the cashback, which result in higher increases in sales and profits comparing to service upgrades or priority lists. Loyalty programs can nonetheless cause problems in the corporate cash flow because the effects generally appear after six months while profit growth requires at least one year of operations.

Consumers show to distinguish between different typologies of reward when they join loyalty programs. Experiments within the self-determination theory (Deci and Ryan, 2012) establish that consumers that have precise deadlines and no available options for their rewards display a lower motivation in employing the loyalty programs comparing to consumers that have many available options and more flexible deadlines (Kim and Ahn, 2017). Rewards are important to guide behavior at any level (Ryan and Deci, 2000), however, restrictions and limitations in the reward may weaken the relationship between the pleasure of the reward and the purpose of the reward, in this case, brand loyalty. For this reason, loyalty programs should balance off the flexibility of their rewards with the additional managerial resources that are required to augment flexibility as consumers appreciate freedom and variety of options (Kim and Ahn, 2017).

An important issue in loyalty programs is determining whether consumers should be charged or not for joining the program. Free programs may be appealing for customers due to the zero-price effect (Ashley et al., 2016), which suggests that customers are inevitably more attracted by free items. Free items have no barriers of entry, and benefits are available at zero costs with a positive sum effect. If charged, consumers will show a lower propensity in participating to the loyalty program because they will carefully evaluate their perceived benefits with the program costs. Nevertheless, customers can be influenced by the sunk costs effect (Jang et al., 2007), which prompts customers to commit more to a program when they have invested their limited resources, such as time, effort, and money. The two effects, i.e. zero-price and sunk costs, are contradicting and can both influence the success and the performance of loyalty programs. Lee et al. (2019) argue that this evaluation depends on the typology of customer loyalty that is examined. Customer loyalty can be divided into behavioral and attitudinal loyalty. Behavioral loyalty is associated with the repetition of the sales from the same source (Lee and Jung, 2018), while attitudinal loyalty is linked with the affective and cognitive factors of the choices (Engel and Blackwell, 1982). Consumers in a free loyalty program will show higher behavioral loyalty, the opposite will apply for consumers in a paid loyalty program. In addition, the significance of the sunk cost effect is influenced by the reward timing. Dowling and Uncles (1997) maintain that consumers favor immediate rewards as they receive instant gratification. However, Lee et al. (2019) prove that immediate rewards are more effective in paid loyalty programs, whereby consumers in free programs will be more willing to accept delayed rewards as long as higher discounts are offered. In conclusion, Eason et al. (2015) emphasize that fees in a loyalty program decrease the propensity for joining, but paying customers will show higher consumption patterns in the long-term.

Rewards in a loyalty program are offered to either the participants that accomplish a certain activity and to members that are not necessarily part of the program. The most common external members are public, non-profit organizations, and actors within the civil society, such as hospitals and educational institutions. The rewards can therefore be classified according to the benefit structure, i.e. self-benefit, altruistic benefit, or a combination of the two. The opportunity to choose between self and altruistic benefits is shown to enhance the attractiveness of the program (Eason et al., 2015). Participants appreciate the option and the altruistic endeavor is linked to the entire loyalty program, nonetheless, they are willing to retain the option, they do not sympathize with mandatory altruistic rewards (Eason et al., 2015).

Altruistic benefits that participants devolve to charity can be classified as philanthropy, i.e. any act done or donation accomplished for humanitarian reasons (Barwise and Liebow, 2019). Altruistic benefits can be considered as

donations because participants to the loyalty program subtract their own financial benefits for humanitarian reasons. Donations are accomplished primarily because donors have a significant interest and commitment for a certain cause that they favor among the different philanthropic issues. Moreover, donors can look for the recognition of their humanitarian acts and can prefer donations over taxes, which they perceive as erroneously managed by governments or local public organizations (Barwise and Liebow, 2019).

The psychographic and behavioral variables that influence the choice of the cause to donate for are largely unexplored. Identities appear to play an important role in consumer behavior in general (Oyserman, 2009), and in donations in particular (Berger and Heath, 2007). Donors look to the desired identities and refrain from undesired identities when they make their choices. Individual and social identities are intertwined and are initiated according to the social context. Social accepted norms shape the donors' behavior because the donors are willing to comply with their context (Zagefka et al., 2013). Individual fundraising strategies should attempt to explore the social identities that are relevant for the cause as each social category shows a different propensity to donate. Also, the propensity will depend upon the accepted social norms and values (Chapman et al., 2018).

**Methodology:** This study concentrates on the choice between pure cashback and donation in online cashback programs. The cash is accredited to the participant's bank account in pure cashback whereby the cash is transferred to a charity in donation.

This research expands the investigation that is accomplished by Eason et al. (2015) on altruistic benefits in loyalty programs. Altruistic benefits enhance the attractiveness of the program in general, however, no inquiry is made on the propensity and the effects that the possibility of donating has over cashback programs. Vana et al. (2018) emphasize that consumers fail to treat cashback payments as fungible resources and tend to use the cashback in additional purchases on cashback programs, even though they can employ the cashback as they prefer and the cashback is minimal in a lifetime income. Donors compare perceived benefits and perceived costs when accomplishing a donation (Caserotti et al., 2019), hence, it is expected that cashback participants will have a higher propensity to donate because the imperfect fungibility of the cashback decreases the perceived costs of the donation while the perceived benefits stay the same. Nevertheless, Chapman et al. (2018) stress that psychological and social identity factors intervene when choosing to donate, participants to cashback programs can own distinct psychological and social characteristics that can contrast with the donation propensity.

Participants in cashback programs can also have a different subjective evaluation of the donation comparing to pure cashback, meaning that one additional unit of donation can have a dissimilar overall impact than pure cashback. The impact can be more or less significant according to the evaluation of the donors. As outlined by Keenan et al. (2017), donors may feel that they subtract value to their household budget when making a donation and can develop a feeling of guilt that limits their donation. Given the concept of cashback fungibility, they can favor cashback donations because the donation is not included in their household budget. Conversely, donations can have a less significant impact because they cannot be reemployed in a new purchase while cashback payments shorten the time for additional purchases and increase the size of the purchases (Vana et al., 2018).

The data analysis will focus at first on the propensity of selecting donations over pure cashback that participants to the program display. The website and proprietary application allow participants to make the selection any time that they make a purchase, hence, repetitive participants can show a different propensity during their cashback lifecycle. The start-up collects basic demographic and geographic data when participants enroll in the program, the propensity can be associated with specific characteristics that the participants possess.

Therefore, the first hypothesis (H1) for this study will be: Participants to a cashback program are more inclined to choose donations over pure cashback.

Secondly, the data analysis will investigate the relative effects that the selection between pure cash and donation has over the performance of the program. Vana et al. (2018) highlight that the effects of the cashback are not only relevant in the short-term but also in the long-term. Consequently, the effects will be measured on the variable immediate sales for the short-term, and on the two variables probability of new transactions and overall spending increase for the long-term.

As a consequence, the second hypothesis (H2) for this study will be: Donations have a more significant effect on immediate sales than pure cashback

The third hypothesis (H3) for this study will be: Donations have a more significant effect on the probability of new transactions than pure cashback

The fourth hypothesis (H4) for this study will be: Donations have a more significant effect on the overall spending in the program than pure cashback

The study will be accomplished on data collected from an Italian cashback program start-up. A nondisclosure agreement prevents from revealing the name of the company that is willing to share the data. The cashback program is offered on both a website and a proprietary application. The start-up provides a list of cashback offers on specific ecommerce retailers, the cashback program is external to and independent from the retailers. The participants are connected to the ecommerce websites through a landing page where they accomplish their purchase, after 30-40 days they receive the cashback. The participants can choose where to direct the cashback, either to their bank account or to a donation. If they choose a donation, participants have a list of charity projects at their disposal. When clicking on a

project, they will find a brief description, the overall budget of the project, the amount of donations collected so far, and the contact details of the organization that is responsible of the project. Organizations can offer up to three projects.

The available data extend from January 2018 when the start-up was launched to June 2019, the information is accessible for the 26,745 transactions accomplished by 5,413 users over 97 e-commerce retailers.

The collected data will be analyzed through quantitative methods that exclusively focus on objective methods of measurement for observable phenomena (Creswell, 2008). Quantitative methods are strictly deductive (Gill and Johnson, 2002), mostly employ statistical variation in observations, and theoretical generalizations can be inferred only at the end of the research (Neuman, 2005).

For the hypothesis H1, the calculation of the propensity for donors over cashback can be accomplished with the numerical counting of the participants' choice from the first data to the last. The association with specific characteristics of the participants, for example, age, profession, level of education, city of residence, will be carried out with statistical correlation models in order to estimate the degree to which the different variables are linearly related.

A correlation model will be used in order to evaluate the effects in the short-term for the hypothesis H2. Once consumers conduct a purchase in the cashback platform, they have to immediately make the choice between donations and pure cashback. The amount of the sales can be related to donations and pure cashback, the comparison of the total purchase values when donating or getting the pure cashback will test the hypothesis 2.

A semiparametric proportional hazard model will be employed in order to evaluate the effects in the long-term for the hypotheses H3 and H4. Proportional hazards models relate the time that passes before some events occur to one or more covariates that are associated with the quantity of time. If the participant chooses a pure cashback, the model will estimate if the cashback payment that the participant gains in the seven days before will increase the probability of a transaction on a given day in the cashback platform. If the participant chooses the donation, the model will be applied in a similar way and the probability of a transaction on a given day in the cashback platform will be estimated as a consequence of a donation in the seven days before. The model will assess the purchase decisions of the participants from the first to the last transaction, hence, the average amount of the transaction will be associated to each participant for pure cashback and for donations. The probability of the transaction will be multiplied for the average value of the transaction and the overall spending will be estimated.

The probabilities and the average values that are associated to pure cashback and to donations will be compared and the hypotheses H3 and H4 will be tested by the model.

**Research limits:** This study is affected by several limitations that can partially undermine the research results. To begin with, the time period that is under investigation is just one year and a half, which can be problematic when assessing long-term effects and behavior of repetitive participants. Secondly, the start-up is less competitive and attractive than established cashback companies that exist in the Italian market, the number of participants is limited, and the participants can be more inclined to employ other platforms that have more offers and e-commerce websites at their disposal. The limited number of e-commerce retailers can be a serious competitive limitation as well.

The participants to the cashback program cannot be totally representative as they can already possess a significant interest for charity projects and donations. Almost the entire promotional strategy of the cashback program is based upon the possibility of donating, the probability for a self-selection of participants exclusively interested in donating is high and can undermine the generalization of the results.

The cashback program only offers the opportunity of choosing between cashback and donation for the whole amount redeemed, no partial donation is allowed out of the total amount. The opportunity of a partial redemption can potentially modify the outcomes of the analysis because the participants can show a higher or lower propensity for donations if they can select a percentage of donations when they make a purchase.

The analysis exclusively examines the Italian market, which displays a lower inclination for individual donations comparing to more mature donor markets, such as the US or the UK (Tremblay-Boire and Prakash, 2017). The results can be biased because the data come from a national market that shows a lower interest for individual donations, the study should be validated in other national contexts.

**Findings:** if all the hypotheses in this study are confirmed, donations as an option are well-received by consumers and can improve the effectiveness of internal and external cashback programs. Even if the hypothesis 1 is not confirmed, the donations can enhance the positive outcomes and the marketing investments of cashback programs. If all the hypotheses are not confirmed, donations should be in any case assessed because of the favorable brand equity effects that sponsoring charity projects generate, in particular if the cashback program is internally offered by the e-commerce platform. In addition, donations can benefit of the fiscal incentives that are offered by many governments (Almunia et al., 2020; Layton, 2015) that can decrease the total costs of the cashback program.

**Practical implications:** The empirical evidence in this study will be useful to managers of cashback programs for assessing the opportunity of including donations as an alternative to pure cash redemption. Donations can also be introduced to a niche segment within the cashback program that may have a higher interest and propensity to charity organizations and projects. The donations can be offered as an initial opt-out choice when joining the cashback program and not submit it again to consumers that show no interest.

*Managers of cashback programs that only offer donations should also review the opportunity of offering pure cash to their participants if cash is significantly more effective. Programs with only donations can extend their network of ecommerce retailers and can propose corporate sponsorship for their charity projects to the retailers.*

**Originality of the study:** *This research sets out for the first time to investigate at depth the choice of pure cash or donations in cashback programs. The existing literature shows that donations can be an appealing option for participants to cashback programs, but no analysis focuses on the statistical significance of the donations as well as the short- and long-term effects of the donations within the program. If more effective than pure cash, donations will constitute an attractive possibility for enhancing the overall impact of the programs, otherwise, donations can offer significant brand equity and fiscal advantages that are to be assessed. Cashbacks are also well-established in loyalty programs, the donations can be evaluated by loyalty program managers as a possible alternative in order to improve the customer relationships.*

**Key words:** *Cashback, loyalty programs, donations, corporate sponsorship*

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# “Social spin-offs from established non-profit organizations; factors influencing the behavior of corporate donors”

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**Objectives:** *Social enterprises can be defined as organizations that combine a social direction and a purpose with business activities in the marketplace (Hall-Phillips et al., 2015). Social enterprises have the ability of generating and retaining profits when benefitting social causes in comparison with traditional non-profit organizations (Lee et al., 2017).*

*This research concentrates on a specific typology of social enterprise, a social enterprise that is generated as a spin-off from an existing non-profit organization (Schmitz and Scheuerle, 2012). Social spin-offs from non-profit organizations are designed to achieve different and often contradicting objectives (McKeever and Pettijohn, 2014; Addae, 2018; Leimisder, 2014) and can be affected by a number of problems that should be carefully evaluated by the non-profit organizations (Han, 2017). The focus for this research will be one factor that can influence the non-profit organizations when establishing social enterprises, i.e. the response of the corporate donors to the social spin-off.*

**Literature Review:** *Traditionally, public entities and non-profit organizations provided social services that are necessary for the society (Bode and Evers, 2004). Social services can be defined as services that benefit the community as a whole or specific categories of citizens in a state of need. Social services can be financially unsustainable in some cases because the subjects that receive the services are either unable to fully repay the provider or the community chooses to offer the services below the service cost or for free (Luo and Bhattacharya, 2006). For this reason, both the public entities and non-profit organizations may require funds in order to maintain their structure and offer the social services. The funds can take the form of government subsidies from taxpayers and donations from individuals, companies, foundations, and national and international public subjects (Galvin and Iannotti, 2014).*

*Since the beginning of 2000s, both the pressure on government budget deficits and the critique from the public and media moved towards a marketization of social services. The marketization is associated to the increasing propensity of employing strict market and marketing strategies to the social services (Dart, 2004). The marketization encompasses two interconnected aspects, the social entrepreneurship and the availability of open government contracts for purchasing the social services at market-base conditions (Han, 2017).*

*Social entrepreneurship comprises hybrid organizations that employ market strategies to implement social change (Dees and Anderson, 2003). The hybrid organizations combine for-profit and non-profit characteristics as they integrate a social mission with profit-making objectives (Addae, 2018). The entrepreneurship activities stem from both new ventures that have a social mission and spin-offs from existing organizations (Grohs et al., 2016). The concept of social entrepreneurship in this paper will focus on existing organizations that establish a social venture (Schmitz and Scheuerle, 2012), in particular, social spin-offs that are set up by non-profit organizations that are already involved in offering social services. For-profit companies that establish social enterprises are excluded.*

*Alter (2007) classifies the social spin-offs according to the consistency of their business activities with the mission of the non-profit organizations. Hence, the business activities can be strictly related with the social mission or can be partially or completely unrelated (Defourny and Nyssens, 2017). Social spin-offs are established in order to fill different strategic and operational objectives. The social enterprise as an organizational entity is perceived more positively by stakeholders and sets a supportive psychological response from the general public comparing to competing organizational forms (Shin and Park, 2019). Dees and Anderson (2003) assume that the profit component can strengthen the efficiency of the organization because the human and financial resources need to be properly channeled in order to generate the revenues. The financial sustainability allows for longer-term strategies and reduces the dependence from external subjects that can interfere with the social cause (Berry, 2013). According to Aaker et al. (2010), consumers appear to perceive for-profit organizations as more competent than non-profits because they are more experienced in the marketplace exchanges and customer service. Lee et al. (2017) incorporate the general positive associations of Corporate Social Responsibility (CSR) for consumers to the social enterprise. Corporate social responsible behavior generates support from consumers (Chernev and Blair, 2015) in terms of brand image and consumer identification (Lichtenstein et al., 2004), therefore, consumers would prefer the social enterprise's products and services because social enterprises show social behaviors in their very mission.*

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Social enterprises appear more flexible comparing to the slow-moving and extremely bureaucratized public organizations (Light, 2009). Public organizations seem resistant to change because they are based on hierarchical and fixed staff charts where the choices are based on a risk-adverse survival approach rather than a focus on results and continuous iteration (Bagnoli and Megali, 2009). Social enterprises employ the managerial models from for-profit companies in order to solve the failures of the public sector. Galvin and Iannotti (2013) also conclude that social enterprises offer more favorable conditions over public organizations because they may effectively adjust to local conditions and contexts and offer unique solutions that can generate economic and social benefits and encourage changes in institutionalized behavior. The entrepreneurial framework can favor path-breaking innovation that is uncommon in institutionalized scenarios where dense networks of actors respond to political and social priorities (Grohs et al., 2016). The pressure from the marketplace and competition can support new operational methods, especially in service delivery as social enterprises are required to be efficient and effective and are forced to implement marketing strategies. The enterprises have to constantly adjust to the changing trends in relationship to service provision (Weerawardena and Mort, 2012).

Access to funds and additional financial resources that can contribute to the mission of the non-profit organization is another strategic reason for establishing a social spin-off (Leimisdor, 2014). The social enterprise primarily responds to a social need through the commercialization of its products and services and competes vis-à-vis for-profit companies (Galvin and Iannotti, 2014). As mentioned above, the social spin-off is not necessarily consistent with the mission of the founding non-profit and the commercial activities may be separated by the scope of the non-profit (Defourny and Nyssens, 2017). As the model of social business imposes, the process of selling products and services should generate profits. The profits can be reinvested in the innovation and improvement of the business activities and/or can be directed to the founding non-profit. The profit allocation is chosen in most cases by the executives of the social enterprise, nevertheless, the allocation can be contractually stated when establishing the social spin-off (Neves and Franco, 2016).

Social ventures also have the possibility of getting access to equity investments (Achleitner et al., 2013). Non-profit organizations receive donations and government grants that are commonly associated to specific projects that are controlled by stakeholders and authorities. The expenditures are strictly linked to the projects that are often purely humanitarian in nature and allow no investments in developing innovative services and products (Glanzel and Scheuerle, 2016). Equity investments in social spin-offs can potentially solve the problem and provide the necessary financial resources for long-term development in a broader array of activities (Brown, 2006). Equity investments can encompass pure private equity, forms of unsecured debts, and intermediate forms of investment, such as mezzanine capital or convertible debt (Martin, 2013). Equity investments were traditionally provided by venture capitalists that merely look at the financial return of the investment. However, social enterprises can increasingly rely upon impact investors that expand the scope of the investment and look at social and environmental objectives in addition to economic factors (Achleitner et al., 2013). Impact investors vary according to their emphasis on non-economic factors and they can range from zero percent return on capital where the social and environmental objectives are maximized to market-based rate returns with a stronger commercial orientation (Hebb, 2013).

In conclusion, start-ups in general receive support from governmental entities and foundations that translates not only in accessible funds, but also in other forms of assistance, such as privileged access to loans and tax privileges (Smith et al., 2012). The social spin-offs can be classified as start-ups and can consequently apply for assistance with the additional guarantee of the founding non-profit organization.

Despite the apparent advantages, the social spin-offs are affected by numerous drawbacks that should be carefully assessed by the non-profit organizations.

Battilana and Lee (2014) emphasize that social enterprises that are involved in commercial activities can be less effective in obtaining external funds than pure non-profit organizational models. Addae (2018) argues that the capability of securing funds depends on the availability of conventional donations, i.e. funds that imply no repayment. If donations are widely diffused, the non-profit model could be more effective because it allows to get access to fiscal advantages and tax deductions. In addition, the non-profit model could generate reputation and legitimacy signals that can incentivize donors. Conversely, social enterprises that operate in less responsive donation environments can employ their market-based activities in order to attract venture investors.

In addition, establishing a social enterprise can activate a crowding-out effect for the founding non-profit organization. The crowding-out effect means that the individual donors reduce their donations when other sources of funding are secured because they may perceive that their donations are no longer necessary (Weisbrod, 1998). This effect can be extended to social enterprises since venture investments and commercial earnings can be regarded as alternative sources of funds and individual donors can choose to decrease their donations. Smith et al. (2012) demonstrate that the crowding-out effect occurs when non-profit organizations establish social enterprises although the effect is partial rather than full, i.e. the additional sources of funds from social enterprises are superior to the decline in individual donations.

Consumers can also regard the products that are offered by social spin-off in a negative way. Specifically, Lee et al. (2017) demonstrate that social enterprises may suffer of negative perceptions from consumers because consumers assume that the profits generated by the commercial activities undermine the social mission because the social aspect is opportunistically employed in order to accomplish the sales. The profits are achieved at the expense of the social cause and consumers may lose trust in the altruistic nature of the enterprise (Becker-Olsen et al., 2006). Conversely, the



*Corporate Social Responsibility (CSR) actions from pure for-profit organizations are positively perceived because the social impact is subtracted to the profit maximization (Lee et al., 2017).*

*Social enterprises may require significant managerial and administrative resources in order to be established and directed. The non-profit organization may not own the entrepreneurial capabilities that are essential for the social spin-off, particularly if the non-profit organization has never been involved in commercial activities. Non-profit organizations tend to follow an organizational path-dependency and form other non-profits simply because they own the capabilities of procuring new donations (Addae, 2018). Eikenberry (2009) emphasizes that the managerial energies and the concerns for short-term profits in a social spin-off can limit the focus on the main mission of the non-profit organization.*

*Social spin-offs are also established under the assumption that donations are less reliable than profits. While business ventures are more sustainable in producing financial resources, revenues are highly variable and profits are not necessarily more dependable than donations (Leimisdor, 2014). As an example, donations from individual donors appear to be less exposed to economic downturns comparing to other sources of revenues, such as venture profits (Khodakarami et al., 2015). Social spin-offs can incur losses that can draw significant financial resources away from the non-profit organization.*

*In conclusion, non-profit organizations can face an unexpected pressure from impact investors. Impact investors still tend to follow the attitudes and viewpoints of the conventional financial markets, even if they should prioritize the social and environmental impact alongside the financial returns (Glanzel and Scheuerle, 2016). As confirmed in other research scenarios (e.g. Battilana and Dorado, 2010), the professional backgrounds influence the behavioral patterns of impact investors that for the majority had operated as venture capitalists. Following the venture logics, impact investors stress the financial aspect of the social equity capital while social spin-offs approach the market operations with a social sector mindset with a consequent constant state of tension in the relationship (Glanzel and Scheuerle, 2016).*

**Conceptual Framework:** *The literature review shows that establishing a social spin-off by a non-profit organization is not a linear process and advantages and disadvantages need to be carefully assessed. The social spin-off is positively perceived by stakeholders (Andersson and Self, 2014), the for-profit corporate model can be more flexible (Galvin and Iannotti, 2014) and prompt path-breaking innovation comparing to non-profit and public organizations (Weerawardena and Mort, 2012). In addition, the social spin-off can get access to funds that are unavailable to public and non-profit organizations in the form of profits from commercial activities (Galvin and Iannotti, 2014), equity funds from impact investors and venture capitalists (Glanzel and Scheuerle, 2016), and privileged access to loans and tax privileges (Smith et al., 2012).*

*However, social spin-offs can be less effective in securing funds than non-profit organizations if conventional donations are widely available because of the fiscal incentives (Addae, 2018) and can initiate a crowding-out effect by which individual donors decrease their donations (Smith et al., 2012). Consumers can also react adversely to products from social spin-offs because the focus on for-profit activities can damage the social cause (Lee et al., 2017). The social spin-offs are not necessarily profitable and can cause the non-profit organizations significant losses (Leimisdor, 2014) as well as absorb significant managerial and administrative resources (Han, 2017). In conclusion, impact investors tend to follow traditional financial perspectives that can put pressure on the spin-offs (Glanzel and Scheuerle, 2016).*

*This research would focus on the effects that a social spin-off can have on large donors, in particular corporate donors, that is unexplored by the literature review and can potentially change the strategic assessment of the spin-off. This study answers the call for further research on this issue from Smith et al. (2012) that limit their analysis to small individual donors but leave the question on large donors that can perceive the social spin-offs differently. This study concentrates upon corporate donors and exclude other forms of donations because corporate donors are the most probable to favor the social spin-off as an extended concept of the path dependency theory (Stinchcombe, 1965). Organizations tend to implement an “organizational imprinting” where they feel familiar and prefer elements of their own organizational model (Johnson, 2007), hence, corporate sponsors are more probable to favor social spin-offs because they duplicate their corporate characteristics.*

*In detail, corporate sponsors can either replicate the negative reaction of individual donors and reduce their donations or can have a different positive reaction. The positive reaction can translate into both larger donations that may more than compensate the individual donors’ crowding effect and into a direct involvement of the corporate sponsor in the social spin-off. The involvement can be in the form of equity investments and managerial/in-kind support. Equity investments are particularly favored by the corporate sponsors because they can possibly translate in long-term sustainable brand effects in contrast to donations that need to be constantly renewed.*

*In this process, two factors can have moderating or multiplying effects on the corporate sponsors. The first factor is the consistency of the activities of the social spin-off with the marketing strategy of the corporate sponsors. The more the social spin-off is consistent with the marketing strategy of the sponsor, the more probable the corporate sponsor will be in investing in equity and in directly supporting the spin-off because the positive brand effects will be easier to obtain. In addition, the more the social spin-off is consistent with the marketing strategy of the sponsor, the less probable the company will be to withdraw the donations to the non-profit founder because of the positive brand effects.*

*The second factor is the long-term financial sustainability of the social spin-off’s commercial activities. The more*

*the social spin-off commercial activities are projected to be financially sustainable, the more probable the corporate sponsor will be in investing in equity and in directly supporting the spin-off because the investments on positive brand effects will be more efficient and effective. In addition, the less probable the company will be to withdraw the donations to the non-profit founder because the non-profit will be more reliable and dependable. Achleitner et al. (2013) emphasize that the sustainability of the social spin-offs activities can be signaled by voluntary accountability efforts, in particular, the disclosure of financial reports and business plans in order to decrease the information asymmetries with the corporate sponsors. The reliability and the social implications of the financial projections can be improved by using advanced financial indexes, such as the Social Return of Investment (SROI) (Manetti, 2014) that takes into consideration the social and economic benefits as well as the net present value of the investments.*

**Initial Exploratory Research:** *In February 2019, Oxfam Italy and John Cabot University established a joint research unit in order to accomplish a first exploratory study on the supply chain of the fashion industry in Italy. The study aimed at understanding the critical issues for the suppliers and their community with a specific focus on social and gender inclusion, use of non-registered immigrants, and work security. In addition, the study planned to analyze if and how the fashion corporate organizations manage the identified issues.*

*The study exclusively investigated the fashion production chains that are based in Italy belonging to the largest fashion labels, both Italian and international. Size was the primary selection criterion for the fashion labels because of the significant impact that is expected from the supply chain. Size included production units, number of employees, and financial value of the production. For the first exploratory research, twelve companies were chosen from the Fashion Transparency Index list ([www.fashionrevolution.org](http://www.fashionrevolution.org), 2019). The sources of information were publicly available corporate documents, such as Corporate Social Responsibility reports, official statements, supplier lists/maps, dedicated sections of corporate websites, as well as news and publications in Italian media and reports accomplished by other public and non-profit organizations, such as Clean Clothes Campaign and Fashion Revolution.*

*At different levels, the twelve fashion companies all disclose information that is related to their supply chain, the majority of them disclose a biannually updated supplier list and/or an interactive map, although each list/map differs in the type of information provided. Out of twelve companies, only four publish an exact number of employees for each factory, four disclose a men/women ratio, and only one provides information about employed migrant workers.*

*Fashion companies appear to have a different degree of transparency and willingness to share details about their supply chain. A number of companies provide a well-structured and informative overview of their worldwide supply chain strategy, however, information on specific countries and individual suppliers is more difficult to find and is assumed that worldwide general policies are also applied in Italy, unless stated otherwise. Given the limited information available for each supplier and factory, the discrete differences in policies, training and audit methods, risk assessment approaches and work conditions are problematic to detect and can potentially offer room for significant discrepancies.*

*Oxfam Italy submitted the research results to Assomoda ([www.assomodaitalia.it](http://www.assomodaitalia.it)), the Italian association of sales agents and distributors in the fashion sector. After a careful review, Assomoda indicated that numerous fashion brands within and outside the research sample expressed interest in receiving consultancy services from Oxfam Italy in order to plan, design, and implement improved and more generally accepted supply chain policies. Fashion companies are indeed under a growing pressure from their customers as well as public and non-profit organizations for more socially responsible supply chains. Despite significant investments of strategic resources in this area, fashion companies have an unclear opinion on how to employ the resources effectively and they require support, guidance, and external recognition for their supply chain policies.*

*In this perspective, Oxfam Italy plans to set up a social spin-off that would offer consulting services to the fashion companies where the services would be directed to the improvement of the supply chain policies in terms of social inclusiveness, labor rights, work security, and use of non-registered immigrants. The social spin-off activities will be consistent with the Oxfam Italia's mission and part of the profits could be redirected to the main Oxfam Italia's projects. Once the consulting activities in the fashion industry get established, the social spin-off will expand to other industrial sectors where the supply chain has a strong social impact, for example, the food industry where Oxfam International had accomplished the global research project Behind the Brands in 2016 ([www.behindthebrands.org](http://www.behindthebrands.org)).*

**Methodology:** *The methodology research that will be applied is qualitative methodology, specifically a case study methodology (Yin, 1994, 2002). The corporate sponsors for Oxfam Italia will be contacted and the business plan and financial projections of the social spin-off will be submitted to the organization units that supervise the corporate sponsorship, primarily, the marketing and the Corporate Social Responsibility (CSR) departments.*

*The main sources of evidence will be in-depth open-ended interviews where the list of questions is unstructured and respondents are encouraged to talk liberally about different topics (Gubrium and Holstein, 2001). In addition, this research will rely upon public and corporate documents and archival records. Five corporate sponsors and fifteen in-depth interviews are estimated to be analyzed in order to improve the theoretical generalization.*

*Qualitative methods appear to be appropriate for the research problem being investigated. Indeed, most variables are exploratory and qualitative methods allow to further investigate the subjective motives and impressions that social spin-offs can generate in corporate managers. In this research, it is required to "get inside" the meanings that*

corporate managers give to social spin-offs and process their beliefs, attitudes and intentions (Creswell, 1994). Unstructured in-depth interviews are appropriate for evaluating subjective issues and opinions of respondents in contexts that are not influenced by theoretical assumptions (Gubrium and Holstein, 2001; Burgess, 1982). In addition, corporate documents and archival records are useful to validate or disconfirm data collected from in-depth interviews (Stake, 2005) and get access to facts that were impractical to observe (Yin, 2002).

The first objective of this research is to assess the effects that the establishment of a social spin-off has on corporate sponsors. The social spin-off can generate positive or negative effects on corporate sponsors that would influence the final outcomes of the spin-off.

The second objective of the research is to assess if the consistency between the social spin-off's mission and the corporate sponsor's marketing strategy could improve the effects of the corporate sponsors.

The third objective of the research is to evaluate if the long-term financial sustainability of the social spin-off could enhance the perceptions of the corporate sponsors over both the social spin-off and the non-profit. The financial sustainability could be demonstrated with voluntary accountability efforts and advanced financial indexes.

**Originality Of The Study:** This study is the first attempt to analyze the behavior that corporate sponsors have when a non-profit establishes a social spin-off. Previous studies have demonstrated that the social spin-offs initiate a crowding-out reaction on individual donors that lower the donations, however, corporate sponsors can react differently and even support and invest in the social spin-off. This study would explore how corporate sponsor executives perceive the non-profit organizations venturing into the business realm and which factors they can possibly use in order to evaluate the spin-off.

This research will be particularly useful to practitioners in non-profit organizations in their decision-making process when they assess the possibility of setting a spin-off. A social spin-off can absorb significant managerial and financial resources and reduce individual donations, the reaction from the corporate sponsors can modify the very opportunity of establishing the spin-off and need to be carefully assessed.

**Key words:** Social spin-offs, start-ups, corporate fundraising, non-profit organizations

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# Comunicare e promuovere la sostenibilità: il caso dei portali turistici regionali

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**Obiettivi.** La sostenibilità rappresenta una prospettiva imprescindibile nel governo dei processi di sviluppo turistico delle destinazioni, alla luce dei significativi impatti sistemici che il turismo ha sul territorio in termini economici, sociali e ambientali (UNEP-UNWTO, 2005; Lu e Nepal, 2009; Weaver, 2012). La crescente attenzione alla sostenibilità del turismo è conseguenza anche del costante aumento del numero di turisti motivati nel loro viaggiare dal desiderio di entrare in contatto con l'autenticità dei luoghi, con la comunità locale e, al contempo, desiderosi di contribuire allo sviluppo e alla tutela dell'economia, dell'ambiente e del patrimonio socioculturale locale (Del Chiappa, 2018). Si diffonde progressivamente una nuova tipologia di turista, il cosiddetto turista "4L", che unisce alla ricerca di "landscape, leisure & learning" la consapevolezza dell'esistenza di un "limit" allo sfruttamento delle risorse del territorio e, quindi, alla loro fruibilità a scopi turistici (Franch et al., 2008).

La capacità di soddisfare le richieste di questi nuovi turisti rappresenta quindi una determinante fondamentale per il successo competitivo delle destinazioni, nonché una leva chiave per costruirne il posizionamento e l'immagine da parte delle destination management organization (DMO) (Ritchie e Crouch, 2005).

In questo processo, le attività di comunicazione esterna indirizzate dalla DMO ai suoi stakeholder e interlocutori, primi fra tutti i turisti, rivestono un'importanza fondamentale nella definizione di un posizionamento allineato con le esigenze della domanda e capace di evolvere in linea con i mutamenti del contesto competitivo e socio-economico (UNWTO, 2010). Attraverso questo tipo di comunicazione, avente carattere informativo, promozionale e commerciale, la destinazione costruisce e diffonde un'immagine di sé attrattiva e coerente con i valori di trasparenza, solidarietà, equità che sono alla base di un approccio sostenibile e inclusivo allo sviluppo turistico.

All'interno del mix di strumenti di comunicazione a disposizione delle destinazioni, il sito web gioca un ruolo primario (Ip et al. 2011). Ci riferiamo, in particolare, ai portali ufficiali, creati direttamente dalla DMO e i cui contenuti sono sotto il suo diretto controllo (Mich, 2017). Questi siti propongono informazioni sui fattori di attrattiva del territorio e i servizi disponibili e spesso dispongono anche di funzionalità di promo-commercializzazione (Martini, 2017); in essi, la partecipazione degli utenti è prevalentemente passiva, soprattutto se confrontata con altri "spazi virtuali" quali i profili social delle medesime destinazioni.

Per esprimere pienamente il proposito strategico di perseguire uno sviluppo turistico sostenibile, la DMO è quindi chiamata a sviluppare un portale allineato a questo obiettivo, a livello di struttura, contenuti e servizi proposti (Tölkes, 2018). In ragione di ciò, ci si è proposti di indagare quanto l'orientamento alla sostenibilità sia diffuso nella comunicazione online di Regioni e Province Autonome italiane (da qui in avanti, per brevità, "Regioni"), gli enti pubblici a cui il dettato costituzionale e la normativa conseguente assegnano le maggiori competenze in materia turistica. Il paper si propone quindi di valutare il contenuto dei portali turistici regionali italiani, verificando inoltre l'esistenza di un'associazione tra tale orientamento e alcune caratteristiche delle destinazioni in termini di sviluppo turistico e approccio alle tematiche di sostenibilità.

**Metodologia.** La ricerca adotta, adattandola alle specificità dei portali turistici regionali, la metodologia proposta da D'Angella e De Carlo (2013, 2016) nei loro studi sull'orientamento alla sostenibilità della comunicazione online da parte delle destinazioni turistiche urbane.

L'analisi si articola in due fasi. La prima ha come obiettivo la misura dell'orientamento alla sostenibilità della comunicazione online degli enti considerati, analizzando i contenuti dei loro portali turistici ufficiali (il cui elenco è disponibile in sitografia). La seconda fase verifica la sussistenza di un'associazione statisticamente significativa tra l'intensità di tale orientamento e il profilo delle destinazioni in termini di caratteristiche strutturali, approccio alla sostenibilità e grado di sviluppo dei fenomeni turistici sul loro territorio.

La raccolta dei dati e la valutazione dei portali sono state effettuate tra dicembre 2019 e gennaio 2020.

L'orientamento alla sostenibilità dei portali viene misurato tramite il Green D-web score, uno strumento di

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valutazione dei siti web che D'Angella e De Carlo (2013, 2016) hanno elaborato a partire dal D-Web di Morrison et al. (1999). Si tratta di una check-list di 35 item, ripartiti in sette aree di analisi: generale, infrastrutture, trasporti, esperienze, cibo, shopping e ricettività. Gli item identificano una serie di contenuti ritenuti indicatori significativi di una comunicazione orientata alla sostenibilità; fanno riferimento, infatti, a forme di turismo, servizi, attrattive, strutture ricettive connotate da particolare attenzione nei confronti degli impatti economici, sociali e ambientali delle attività turistiche. La lista degli item è presentata nella Tabella 1, secondo l'ordine proposto da D'Angella e De Carlo (2013, 2016).

Tab. 1: Indicatori costitutivi del Green D-web score

#	Item	Area di analisi
1	Sono disponibili in homepage informazioni relative al turismo green, sostenibile, responsabile?	Generale
2	Esiste all'interno del sito una sezione specificatamente dedicata al turismo green, sostenibile, responsabile?	Generale
3	Il sito presenta il turismo green come un segmento chiaramente identificato?	Generale
4	Il sito suggerisce comportamenti per un viaggio green?	Generale
5	Il sito fa riferimento a possibilità di "carbon offset"?	Infrastrutture
6	Il sito promuove programmi di accreditamento ambientale, di qualità e di sostenibilità?	Generale
7	Il sito promuove attrattive del territorio eco-friendly?	Infrastrutture
8	Il sito promuove opzioni di trasporto green?	Trasporti
9	Il sito fa riferimento alle problematiche del cambiamento climatico?	Generale
10	Il sito fa riferimento a eventi o incontri dedicati alle tematiche green?	Esperienze
11	Il sito fornisce informazioni sulle vacanze in fattoria?	Esperienze
12	Il sito fornisce informazioni sulle possibilità di turismo-volontariato?	Esperienze
13	Il sito fornisce informazioni sulle vacanze a piedi?	Trasporti
14	Il sito fornisce informazioni sulle vacanze in bicicletta o mountain bike?	Trasporti
15	Il sito fornisce informazioni specifiche per viaggiatori "zaino in spalla"?	Esperienze
16	Il sito fornisce informazioni sugli itinerari naturalistici?	Esperienze
17	Il sito fornisce informazioni sulle possibilità di utilizzo dei trasporti locali?	Trasporti
18	Il sito fornisce informazioni sugli itinerari di birdwatching?	Esperienze
19	Il sito fornisce informazioni sugli itinerari botanici?	Esperienze
20	Il sito fornisce informazioni sui laboratori gastronomici?	Cibo
21	Il sito fornisce informazioni sugli itinerari gastronomici?	Cibo
22	Il sito fornisce informazioni sulle opportunità di enoturismo?	Cibo
23	Il sito fornisce informazioni sulle opportunità di turismo del benessere?	Esperienze
24	Il sito fornisce informazioni sui tour fotografici?	Esperienze
25	Il sito fornisce informazioni sulle opportunità di viaggio a basso impatto di CO <sub>2</sub> ?	Trasporti
26	Il sito fornisce informazioni specifiche per vacanze adatte a vegetariani e vegani?	Cibo
27	Il sito fornisce informazioni sulle possibilità di acquistare prodotti locali "bio"?	Shopping
28	Il sito fornisce informazioni sui negozi dei circuiti del commercio equo o comunque legati a produzioni sostenibili?	Shopping
29	Il sito fornisce informazioni sull'accessibilità di località e attrazioni?	Infrastrutture
30	Il sito fornisce informazioni su B&B e guesthouse?	Ricettività
31	Il sito fornisce informazioni sulle possibilità di campeggio?	Ricettività
32	Il sito fornisce informazioni sulla presenza di eco-lodge?	Ricettività
33	Il sito fornisce informazioni su agriturismo e strutture ricettive rurali?	Ricettività
34	Il sito fornisce informazioni sugli hotel accessibili?	Ricettività
35	Il sito fornisce informazioni sulle strutture ricettive dotate di certificazioni di qualità ambientale?	Ricettività

Fonte: adattato da D'Angella e De Carlo (2013, 2016).

Il valutatore è chiamato a esaminare il sito web oggetto di analisi e attribuisce un punto ogniqualevolta riscontri la presenza dei contenuti indicati da un item; il massimo punteggio ottenibile è quindi 35. Si tratta, come evidente, di uno strumento di analisi semplice e di immediata applicazione, le cui criticità vengono peraltro discusse nella sezione del presente contributo dedicata ai limiti della ricerca.

Il profilo delle destinazioni è rilevato attraverso quattro variabili, riprese o adattate da D'Angella e De Carlo (2013, 2016): il livello di adozione di regolamentazioni e pratiche sostenibili; l'intensità di sviluppo turistico; la dimensione; la maturità turistica.

Per la misura del livello di adozione di regolamentazioni e pratiche sostenibili è stato necessario individuare un indicatore ad hoc, poiché l'"Eco city ranking index" utilizzato in D'Angella e De Carlo (2013, 2016) non è disponibile per le Regioni italiane. La scelta è ricaduta sui punteggi ottenuti da ogni territorio nel Rapporto BES (Benessere Equo e Sostenibile) 2017, ultimo disponibile al momento della rilevazione. Il Rapporto BES, realizzato da Istat, offre un quadro integrato dei principali fenomeni economici, sociali e ambientali che caratterizzano l'Italia, attraverso l'analisi di un ampio set di indicatori suddivisi in 12 domini: salute; istruzione e formazione; lavoro e conciliazione tempi di vita; benessere economico; relazioni sociali; politica e istituzioni; sicurezza; benessere soggettivo; paesaggio e patrimonio culturale; ambiente; ricerca e innovazione; qualità dei servizi. Il rapporto BES non riporta un punteggio di sintesi per i territori ma solo i punteggi relativi ai domini; per ogni Regione, si è calcolata quindi la media dei 12 punteggi ottenuti e la si è utilizzata come punteggio di BES complessivo.



L'intensità di sviluppo turistico è stata stimata attraverso il valore di pressione turistica, calcolato come rapporto tra presenze turistiche totali e popolazione residente, per l'anno 2018 (fonte Istat). D'Angella e De Carlo (2013, 2016) lo hanno stimato attraverso il rapporto tra arrivi internazionali e popolazione residente ma si è ritenuto che l'utilizzo della pressione turistica fosse più adeguato, poiché tale indicatore è comprensivo anche dei flussi turistici domestici.

La dimensione della destinazione è stata invece misurata in termini di popolazione residente nel 2018 (fonte Istat), in linea con D'Angella e De Carlo (2013, 2016).

Infine, anche nel presente lavoro la maturità turistica è stata misurata come variazione del numero di presenze turistiche totali nel corso del quinquennio 2014-2018 (fonte Istat). Un differenziale basso o negativo è segno di maturità turistica elevata, poiché rileva una stabilità, quando non un calo, dei flussi in entrata; viceversa, un valore alto è indice di maturità turistica bassa, poiché la destinazione sta ancora sperimentando una crescita dei flussi in entrata.

Come suggerito da Weaver (2000), le variabili di profilo della destinazione sono state trasformate da continue a discrete, discriminando rispetto al valore mediano; i valori assoluti rilevati sono stati quindi ricodificati in "alto/a" o "basso/a" a seconda che fossero maggiori o minori del valore mediano della relativa distribuzione. Questa trasformazione, da un lato, rischia di semplificare la struttura dei dati ma, dall'altro, minimizza l'effetto di eventuali outlier. La verifica dell'esistenza di un'associazione tra il Green D-web score e le variabili di profilo si realizza quindi confrontando il Green D-web score medio tra i due gruppi identificati da valori "alti" o "bassi" della variabile di profilo; si segnala peraltro che, come ulteriore verifica di robustezza dei risultati, è stata realizzata anche un'analisi di correlazione tra il punteggio del Green D-web e i valori assoluti delle variabili di profilo, i cui risultati sono totalmente coerenti con quelli emersi dall'analisi delle differenze tra le medie.

**Risultati.** Va innanzitutto segnalato che durante l'intero periodo di rilevazione dei dati (dicembre 2019 - gennaio 2020) il portale ufficiale della Regione Calabria ([www.turiscalabria.it](http://www.turiscalabria.it)) è risultato offline ed è quindi stato escluso dall'analisi. Il campione finale risulta composto da 20 portali: quelli delle altre 18 Regioni nonché i due delle Province Autonome di Bolzano e Trento (in seguito indicate come Alto Adige e Trentino).

La Tabella 2 riporta i valori delle variabili oggetto di rilevazione; le colonne "Ricodifica" presentano per ciascun valore continuo delle variabili di profilo il corrispondente valore discreto ricodificato rispetto alla mediana della distribuzione.

Tab. 2: Valori delle variabili

Destinazione	Green D-web Score [tra 0 e 35]	Adozione di regolamentazioni e pratiche sostenibili		Stadio di sviluppo turistico		Dimensione		Maturità turistica	
		BES 2017	Ricodifica	Pressione turistica 2018	Ricodifica	Popolazione residente 2018	Ricodifica	Variazione presenze 2014-18	Ricodifica
Abruzzo	14	100,79	Bassa	4,83	Basso	1.311.580	Bassa	0,83%	Alta
Alto Adige	30	118,40	Alta	62,62	Alto	531.178	Bassa	16,99%	Bassa
Basilicata	19	95,81	Bassa	4,63	Basso	562.869	Bassa	23,98%	Bassa
Campania	11	87,54	Bassa	3,74	Basso	5.801.692	Alta	20,10%	Bassa
Emilia-Romagna	23	111,37	Alta	9,11	Alto	4.459.477	Alta	14,87%	Bassa
Friuli Venezia Giulia	23	110,34	Alta	7,42	Alto	1.215.220	Bassa	18,61%	Bassa
Lazio	15	102,18	Bassa	6,24	Basso	5.879.082	Alta	19,07%	Bassa
Liguria	23	106,99	Bassa	9,79	Alto	1.550.640	Bassa	12,68%	Alta
Lombardia	24	109,30	Alta	3,89	Basso	10.060.574	Alta	14,06%	Alta
Marche	18	107,26	Bassa	6,33	Basso	1.525.271	Bassa	-14,95%	Alta
Molise	5	99,42	Bassa	1,47	Basso	305.617	Bassa	6,91%	Alta
Piemonte	16	107,62	Alta	3,47	Basso	4.356.406	Alta	15,61%	Bassa
Puglia	20	90,96	Bassa	3,77	Basso	4.029.053	Alta	14,49%	Alta
Sardegna	17	95,44	Bassa	9,11	Alto	1.639.591	Alta	31,48%	Bassa
Sicilia	19	86,91	Bassa	3,03	Basso	4.999.891	Alta	1,80%	Alta
Toscana	24	109,10	Alta	12,77	Alto	3.729.641	Alta	10,35%	Alta
Trentino	32	117,05	Alta	33,55	Alto	541.098	Bassa	18,13%	Bassa
Umbria	16	107,72	Alta	6,73	Alto	882.015	Bassa	1,34%	Alta
Valle d'Aosta	24	108,46	Alta	28,69	Alto	125.666	Bassa	20,76%	Bassa
Veneto	21	110,28	Alta	14,11	Alto	4.905.854	Alta	11,91%	Alta

Fonte: elaborazione propria.

L'analisi restituisce punteggi del Green D-Web Score compresi tra 5 e 32, su un massimo di 35, con un valore mediano di 19,5. I portali più ricchi di contenuti legati alla sostenibilità sono riconducibili a territori dell'Italia settentrionale e centrale, con Alto Adige e Trentino che ottengono risultati nettamente migliori del resto d'Italia. Ben sette Regioni - tutte nell'Italia centro-meridionale o insulare, fatta eccezione per il Piemonte - ottengono invece risultati inferiori a 18/35 (valore assimilabile alla "sufficienza"), con il caso estremo del Molise nel cui portale sono stati rilevati solo 5 dei 35 item ricercati.

Richiamando le sette aree in cui si articola lo strumento di analisi, si nota una marcata variabilità rispetto alla quantità di item rilevati. Ad un estremo troviamo l'area del cibo: a fronte di 80 possibili rilevazioni (quattro attributi per 20 siti), ne sono state riscontrate ben 67 (77,5%); la gran parte dei portali ospita infatti informazioni relative alle vacanze gastronomiche, l'enoturismo, i laboratori di cucina, le vacanze per vegetariani e vegani. Quasi tutte le altre aree di analisi restituiscono buone percentuali di copertura, comprese tra il 54% e il 67%; nel complesso, quindi, le relative tematiche sono ben trattate, anche se non in forma esaustiva. Fa eccezione l'area generale, la cui percentuale di copertura è inferiore al 30%. In nessun portale, infatti, sono presenti in homepage evidenti riferimenti al green travel, ai viaggi sostenibili o responsabili e solo in cinque casi è disponibile una sezione specifica dedicata a queste tipologie di turismo. Ancora, il green travel è esplicitamente considerato un segmento di mercato in soli tre casi e sei sono i portali in cui vengono forniti consigli e suggerimenti per un viaggio sostenibile. Limitati sono anche i riferimenti ai cambiamenti climatici, argomento presente in soli due portali che ne approfondiscono le conseguenze su montagne e ghiacciai del territorio. L'unico elemento di quest'area presente in tutti i portali (escluso quello del Molise) è l'indicazione di certificazioni green. Va tuttavia evidenziato come la maggioranza delle certificazioni indicate sia relativa a elementi riconducibili alla sostenibilità solo in senso lato: ci riferiamo alla presenza di prodotti tipici (IGP, DOC, ecc.) o di bandiere blu (per la qualità delle spiagge), arancioni (per i borghi più belli d'Italia) e verdi (per le destinazioni "a misura di bambino"). Solo nei casi di Alto Adige, Piemonte e Trentino si richiamano certificazioni strettamente legate ai temi della sostenibilità, quali la presenza di comuni certificati "100% rinnovabili" (Brunico, Vipiteno e Dobbiaco), il riconoscimento di "Riserva della Biosfera" per alcuni parchi piemontesi, la presenza di marchi di qualità come "Marchio di Qualità Trentino" e "Ecoristorazione Trentino" o di certificazioni quali "Green Way Primiero" (economia circolare), "PEFC" (gestione sostenibile delle risorse forestali) ed "EMAS" (performance ambientale).

Come anticipato, la presenza di un'associazione statisticamente significativa tra l'orientamento alla sostenibilità della comunicazione e il profilo della destinazione è stata verificata attraverso un confronto tra il Green D-web score medio dei due sottogruppi di destinazioni, identificati da valori delle variabili di profilo superiori o inferiori alla mediana. Sono stati quindi realizzati dei t-test, a valle di preliminare test di Levene per la verifica dell'uguaglianza della varianza.

In primo luogo, esiste una relazione significativa tra l'orientamento alla sostenibilità della comunicazione online e il livello di sostenibilità complessivo della destinazione, misurato attraverso l'indicatore sintetico del BES. Le destinazioni con punteggio BES superiore alla mediana presentano un valore di Green D-Web medio pari a 23,30, mentre per quelle con punteggio BES inferiore alla mediana il valore si attesta a 16,10 ( $p=,006$ ).

Analogamente, esiste una relazione significativa tra l'orientamento alla sostenibilità della comunicazione online e la pressione turistica della destinazione. Le destinazioni con un livello di pressione turistica superiore alla mediana presentano un Green D-Web score medio pari a 23,30, a fronte di un valore medio di 16,10 per quelle con pressione turistica inferiore alla mediana ( $p=,006$ ).

Al contrario, non si rileva una differenza statisticamente significativa nell'orientamento alla sostenibilità della comunicazione online tra destinazioni di dimensioni superiori o inferiori alla mediana (19 vs 20,4,  $p=,627$ ), né tra destinazioni più o meno mature a livello di sviluppo turistico (18,4 vs. 21,  $p=,363$ ).

Nel complesso non sorprende rilevare come le destinazioni più attente alla sostenibilità (quelle con punteggio BES alto) esprimano questo loro orientamento anche in termini di comunicazione turistica, includendo nei propri portali numerosi elementi che richiamano e suggeriscono modalità di vacanza rispettose dell'ambiente sociale e naturale. La medesima attenzione si rileva tra le destinazioni più marcatamente interessate dai flussi turistici in entrata (quelle con pressione turistica alta); in questo caso, l'interpretazione può essere duplice: da un lato, la forte pressione ha fatto maturare nei decisori locali la consapevolezza della necessità di riorientare i flussi in entrata verso forme di turismo più sostenibili; dall'altro, l'attenzione ai temi della sostenibilità rende la destinazione più attrattiva per i sempre più ampi segmenti di turisti che considerano questi elementi come decisivi nella scelta della metà delle proprie vacanze. La dimensione della località non gioca invece un ruolo decisivo nell'implementazione di tali politiche a livello di comunicazione; l'enfasi sulla sostenibilità rappresenta quindi un'importante leva di posizionamento a disposizione di tutti i territori, a prescindere dalla loro dimensione. Infine, l'orientamento alla sostenibilità risulta indipendente dalla fase che la destinazione attraversa nel suo ciclo di sviluppo; ciò conferma come uno sforzo in questa direzione sia indipendente dalla maturità della destinazione e possa rappresentare uno strumento tanto per stimolarne lo sviluppo quanto per consolidare i risultati o addirittura innescare un rilancio.

In ultimo, proponiamo una lettura congiunta dei valori di Green D-web score con il grado di adozione di regolamentazioni e pratiche sostenibili e l'intensità di sviluppo turistico. A tale scopo, richiamiamo la nota matrice proposta da Weaver (2000, 2012) per modellizzare i sentieri di sviluppo delle destinazioni turistiche in termini di regolamentazione (asse verticale) e intensità (asse orizzontale). Dall'incrocio di tali dimensioni si identificano quattro tipologie di sviluppo turistico: il turismo di massa sostenibile (SMT), regolato e intenso; il turismo deliberatamente alternativo (DAT), regolato e contenuto; il turismo alternativo circostanziale (CAT), non regolato e contenuto; il turismo di massa insostenibile (UMT), non regolato e intenso.

In questo studio, adottiamo come stima del livello di regolamentazione il punteggio BES, distinguendo tra destinazioni con valori superiori o inferiori alla mediana della distribuzione; analogo procedimento è realizzato per lo sviluppo turistico, stimato con il valore della pressione turistica. La Figura 1 presenta la disposizione sulla matrice delle destinazioni analizzate; per ogni cella sono indicati media e campo di variazione del Green D-web score delle destinazioni ivi comprese, nonché i valori di dettaglio.

Fig. 1: Posizionamento delle destinazioni sulla matrice di Weaver (2000)

REGOLAMENTAZIONE	Alta	<b>Turismo deliberatamente alternativo (DAT)</b> <b>Green D-web score medio 20</b> <b>(min 16 - max 24)</b>  Lombardia 24 Piemonte 16	<b>Turismo di massa sostenibile (SMT)</b> <b>Green D-web score medio 24,12</b> <b>(min 16 - max 32)</b>  Alto Adige 30 Emilia Romagna 23 Friuli Venezia Giulia 23 Toscana 24 Trentino 32 Umbria 16 Valle d'Aosta 24 Veneto 21
	Bassa	<b>Turismo alternativo circostanziale (CAT)</b> <b>Green D-web score medio 15,12</b> <b>(min 5 - max 20)</b>  Abruzzo 14 Basilicata 19 Campania 11 Lazio 15 Marche 18 Molise 5 Puglia 20 Sicilia 19	<b>Turismo di massa insostenibile (UMT)</b> <b>Green D-web score medio 20</b> <b>(min 17 - max 23)</b>  Liguria 23 Sardegna 17
		Basso	Alto
		SVILUPPO TURISTICO	

Fonte: elaborazione propria.

Non sorprende trovare tra le destinazioni di massa sostenibili molti dei territori chiave per il turismo in Italia, nonché i best performer in termini di Green D-web score; si tratta di destinazioni profondamente interessate dallo sviluppo turistico e che sono state in grado di conciliare l'aumento dei flussi con una significativa tutela della qualità dell'ambiente sociale e naturale. La maggior parte di esse traduce tale approccio in termini di orientamento della comunicazione turistica ma si collocano in questa cella anche due destinazioni con un punteggio di Green D-web score appena sufficiente (Veneto) o addirittura insufficiente (Umbria); queste Regioni non sembrano quindi capaci di comunicare adeguatamente ai potenziali visitatori l'attenzione che nei fatti prestano verso percorsi di sviluppo turistico pienamente sostenibili.

Lombardia e Piemonte sono le uniche Regioni collocate nel quadrante DAT, caratterizzato da un elevato grado di regolazione e da un più contenuto livello di pressione turistica (dovuto in parte anche all'elevata popolazione residente in questi territori). Le due destinazioni si distinguono tuttavia nettamente in termini di Green D-web score. Mentre la Lombardia ottiene un buon punteggio, coerente con la sua ottima performance in termini di BES (quarto punteggio a livello nazionale), il Piemonte presenta una situazione assimilabile a quella dell'Umbria, in cui la comunicazione turistica online riflette solo in parte la qualità e ricchezza delle iniziative di sostenibilità implementate. Un miglioramento in tal senso potrebbe portare Piemonte e Umbria a una promozione del territorio più efficace, incentrata sull'esistenza di norme e pratiche sostenibili; così facendo, verrebbe comunicata un'immagine più virtuosa della destinazione e si sosterebbe lo sviluppo di un'offerta turistica sostenibile sempre più allineata con le richieste del mercato.

Spostandoci nella parte bassa della matrice, si nota in primo luogo il gruppo di Regioni nella cella CAT, che riunisce le destinazioni con contenuta pressione turistica e limitata regolamentazione. Si tratta di territori ancora marginali a livello turistico o di altri - si pensi al Lazio - in cui i flussi sono concentrati in poche zone o città a fronte di una popolazione regionale elevata, con indici di pressione conseguentemente bassi a livello regionale. Anche in questo caso le situazioni non sono uniformi. La maggior parte delle Regioni in questa cella, tutte nell'Italia centromeridionale, conseguono punteggi di Green D-web score bassi o molto bassi, coerenti con la bassa regolamentazione di sostenibilità. Vi sono però alcune eccezioni - Puglia, Basilicata, Sicilia e Marche - in cui il punteggio di Green D-web score è sufficiente. Tali destinazioni sembrano quindi piuttosto attive sul piano dello stimolo di forme di turismo sostenibile, pur mancando di un piano consolidato di pratiche sostenibili a tutto tondo, con conseguente limitata performance a livello di BES.

In ultimo, spiccano i casi di Liguria e Sardegna, uniche Regioni collocate nel gruppo delle destinazioni di turismo di massa insostenibile, poiché poco regolate e sottoposte a forte pressione turistica. Nuovamente notiamo però condizioni disomogenee. La Liguria associa a una bassa performance a livello di BES una buona enfasi comunicativa sui temi di turismo sostenibile, in termini analoghi a quanto sopra citato rispetto a Puglia, Basilicata, Sicilia e Marche. La Regione non sembra aver ancora attuato una efficace politica di sostenibilità a tutto tondo ma ha al contempo

*fortemente investito sul tema del turismo sostenibile. La Sardegna presenta invece un punteggio di BES molto basso, associato a un'importante pressione turistica; a tale situazione si associa uno scarso orientamento alla sostenibilità nella comunicazione turistica online, segno di una ancora limitata attenzione nei confronti di questa forma di turismo.*

**Limiti della ricerca.** *Da un punto di vista concettuale, il principale limite della ricerca è di concentrarsi sui soli siti web, tralasciando altri importanti strumenti di comunicazione a disposizione delle destinazioni per comunicare ai turisti e agli operatori il proprio orientamento in tema di turismo sostenibile. Ci riferiamo, in modo particolare, ai social media, il cui ruolo nella comunicazione turistica delle destinazioni è sempre più rilevante (Leung et al., 2013).*

*Da un punto di vista metodologico, il principale limite è relativo alla struttura dicotomica del modello di analisi prescelto; la necessità di fornire valutazioni forzatamente binarie, infatti, riduce apparentemente i margini di soggettività dell'analisi ma al contempo priva i ricercatori della possibilità di fornire un giudizio sfumato e graduale, limitando l'osservazione alla presenza o meno di determinati contenuti. Ciò può portare a situazioni di difficile interpretazione quando, ad esempio, un determinato contenuto è sì presente ma in forma minima o parziale. L'applicazione di modelli più sofisticati conferirebbe all'analisi una maggior capacità discriminatoria rispetto al livello di orientamento alla sostenibilità dei portali. Inoltre, la lista di attributi considerati potrebbe essere integrata con ulteriori elementi, onde analizzare a più ampio spettro i diversi aspetti della sostenibilità turistica. Un altro potenziale limite è legato alla scelta di alcune variabili relative al profilo delle destinazioni, come già accennato nella sezione metodologica. Innanzitutto, si è scelto di utilizzare il BES come proxy del livello di adozione di norme sostenibili, in sostituzione dell'Eco city ranking index. Si è coscienti di come tale scelta rappresenti una peraltro necessaria forzatura, poiché l'indicatore BES - di cui si è per di più costruita una misura di sintesi ad hoc - prende in considerazione un ampio set di elementi non tutti strettamente legati alla sostenibilità e al turismo sostenibile. Secondariamente, l'utilizzo della pressione turistica e della variazione delle presenze turistiche sconta il limite proprio dei dati ufficiali Istat, che risultano sottodimensionati a causa della difficoltà di rilevare le presenze in strutture "non convenzionali", in primis gli alloggi commercializzati su AirBnB e piattaforme analoghe.*

**Implicazioni pratiche.** *La ricerca presenta diversi elementi di interesse a livello pratico, in particolare per i responsabili della promozione turistica online delle destinazioni. Un primo contributo ha carattere empirico: viene infatti fornito un quadro esaustivo dell'orientamento alla sostenibilità dei portali turistici regionali, utile per valutare la completezza dei contenuti del proprio portale, in termini tanto assoluti quanto rispetto, ad esempio, a territori concorrenti nel mercato turistico. In particolare, la ricerca evidenzia le best practice a livello nazionale, che potrebbero essere di esempio per la generalità dei territori. La ricerca mostra inoltre l'articolato legame tra comunicazione di sostenibilità, adozione di regolamentazioni di sostenibilità e pressione turistica, presentando una varietà di situazioni la cui analisi può risultare di utilità per i responsabili del governo della destinazione. Apporta infine un contributo metodologico, fornendo agli operatori uno strumento di semplice applicazione per valutare periodicamente l'orientamento alla sostenibilità della comunicazione online della propria destinazione o di destinazioni concorrenti, anche in un'ottica longitudinale.*

**Originalità del lavoro.** *Lo studio si colloca nel filone della valutazione dei siti web come strumento di comunicazione in tema di sostenibilità (Dade e Hassenzahl, 2013; Siano et al., 2016), con specifica attenzione al comparto turistico. Si concentra sui portali turistici delle Regioni italiane, quindi sulla comunicazione di sostenibilità degli enti locali che più di ogni altro dovrebbero giocare un ruolo chiave nel sistema turistico italiano. Alcuni studi (Baggio et al., 2011; Pencarelli et al., 2011; De Carlo, 2013) hanno in precedenza analizzato la qualità di questi portali turistici ma il presente lavoro è il primo a concentrarsi sul tema del loro orientamento alla sostenibilità. La metodologia applicata, sebbene mutuata da D'Angella e De Carlo (2016), presenta infine tratti di innovatività riconducibili al suo adattamento per passare da un'analisi su scala urbana a una su scala regionale.*

**Parole chiave:** *turismo sostenibile; sostenibilità; portali web; Regioni; comunicazione turistica; Green D-web score*

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# Enhancing triple helix model through university educational offer

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**Objectives.** *What configuration may the educational offer of university assume to enhance its role of innovation driver in favour of different actors and institutions in the current knowledge society? The aim of the study is to explore how the university can take on that entrepreneurial and engaged role that it is called to play within the regional knowledge ecosystem (Etkowitz et al., 2000), and to generate and transfer the knowledge infused into that system through innovative educational programs. In the study here presented, still at its preliminary stages, we outline the analytical framework and the methodological setting adopted to examine the development of a set of educational programs launched by the University of Modena and Reggio Emilia (Unimore), located in Emilia-Romagna (E-R) region in Italy. We adopted the theoretical lens of the Triple Helix Model to study how innovative educational programs may improve interactions and collaborative relationships with the local motorvehicle industry and local policy makers.*

*While, in the last century, universities evolved from the original role of conservator and reproducer of knowledge and became a producer of genuine knowledge (the first academic revolution), more recently they were also recognized and accepted in their new role of generator of knowledge-based enterprises, thus entering a phase known also as the second academic revolution (Etkowitz and Dzisah, 2008). This more complex role is played not only through the traditional missions of educating new generations and fostering cutting-edge scientific research, but also in weaving the ranks of collaboration within local and national industries and policy makers. This requires also that universities evolve in their organizational structures, integrate new institutional purposes, develop new collaboration skills, and ultimately take on new roles as innovation agency in the local context. "As knowledge becomes an increasingly important part of innovation, the university as a knowledge-producing and disseminating institution plays a larger role in industrial innovation" (Etkowitz et al., 2000, p.314), thus fully delineating what is universally known as the third mission of university.*

*This evolution of the university has been analyzed by the literature under different and only partially converging perspectives. For example, Perkmann et al (2013) defined academic engagement as the knowledge-related collaboration of academic researchers with non-academic organisations and the consequent transfer of knowledge from the university domain to the industrial one. While the academic engagement is embedded into a diversified set of collaboration forms with no equity investment involved, the academic entrepreneurship is centred on a technology transfer perspective based on the founding of new ventures, having the objective to exploit commercially the output of academic research (Shane, 2004). In both literature bodies, relatively little attention has been reserved to the role of educational offer in the intersection with non-academic organizations. Indeed, after the first and second revolution, universities are called to make a further step forward, by reaching a greater understanding of how teaching innovation may result as a driver of innovation in the revisited university - industry context. Similarly, advances in the theoretical understanding on how university can evolve in its entrepreneurial-like role of proactive innovation agency has failed to offer, since now, a convincing systematization of teaching activities as mechanisms to infuse new knowledge into a local innovation system.*

*To investigate how the reinvented educational offer may play a role in enhancing university's entrepreneurial new role, we adopted the Triple Helix Model (Etkowitz, 1993; Etkowitz and Leydesdorff, 1995). At the basis of the Triple Helix Model lies the concept of boundary spanning, according to which innovation activities are favoured when academia, industry and regional government are able to interact in a systematic way and when a weaker delimitation across the three institutional spheres occurs (Etkowitz and Leydesdorff, 2000). This permeability of domains would allow the development of ties and collaboration among the institutions. Only through a collaborative new configuration of these three actors - university, industry and government - innovation can spread effectively into the local regional system. Such inter-institutions collaboration allows each actor to exert an influence upon each other and to bring the creation of new networks and trilateral agreements, with the purpose of stimulating organizational creativity and regional cohesiveness, obtaining ultimately positive externalities on the whole society. According to the Triple Helix*

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scholars, there are several ways in which this permeability of boundaries could be pursued - a permeability that is indispensable for university, industrial and governmental actors to come into contact and to instil innovation in the local regional system and society.

Within this model, a key role in making collaboration possible is played by those universities that show capabilities and strategic intention to assume a new entrepreneurial role. Etzkowitz and colleagues clearly pose that “the entrepreneurial paradigm is by no means confined to newly invented technologies or research-intensive universities. It can be enacted at teaching as well as research universities through innovations in undergraduate education and continuing education” (Etzkowitz et al., 2000, p.314). Innovation in teaching should be addressed to meet the evolving needs of the labour market for innovation, by using the collaborative approach at the intersections with industry and local government to obtain a constant fine-tuning with the sectorial patterns of change and the competencies required by the regional innovation system. Thus, through the implementation of new educational offer devoted to improving the interplay between university and industry, with the endorsement of local governmental institutions, students and interns may actively play an intermediary role in knowledge and technology transfer to local firms. “The assumption of an active role in economic development leaves existing academic missions in place, but it also encourages them to be carried out in new ways. In addition to translating research into economic development through various forms of technology transfer, the traditional teaching role is reinterpreted as the university assists the modernization of low- and mid-tech firms” (Etzkowitz et al., 2000, p.314). The innovative educational offer also lessens the separation of teaching, research and business activities within universities, allowing the incorporation of research and teaching missions with technology development and dissemination, under a pure entrepreneurial university paradigm.

Therefore, the Triple Helix perspective has contemplated and theoretically justified the role that teaching can play as driver of innovation. However, empirical works focusing on the relationship between Triple-Helix shaped collaborative approaches in innovating university education programmes in favour of the regional innovation system are still few. Furthermore, the educational first mission of university is then the vehicle through which the Triple Helix Model can be put in action and through which university may then account for a new interwoven configuration of institutional spheres within the regional innovation system. Despite that, no strong attention was addressed to investigate the effect that a strong reputation in teaching innovation can have on making the university a proactive and orchestrating actor in generating and supporting collaboration among institutions within a Triple Helix context, thus favouring the permeability of boundaries among the three institutional spheres. This work is an attempt to fulfil these two research gaps.

**Methodology.** We adopt a qualitative approach, and a case study methodology (Yin, 2003; Eisenhardt, 1989) by focusing on the activities held by a medium-sized university, UNIMORE, within the local motorvehicle industry and the Emilia Romagna regional government. Specifically, we draw on a theory-driven approach in order to uncover emergent variables and relationship patterns. The empirical analysis is based on the historical reconstruction of the educational programs promoted by Unimore and it is specifically grounded on the study of two recent programs. Data are collected from multiple sources at the university, firm and government levels, through participant observation, documental analysis and field interviews. All documentary data and interviews are content-analyzed in order to extract relevant pieces of information. The corpus of the texts analyzed is composed of formal institutional agreements, minutes of meetings, data on teaching courses, doctoral, post-doc and researcher mobility, contract research, patents and academic spinoffs; archival data referred to regional innovation policies; newspapers reports, reports and other sources related to industrial cluster. Personal interviews involved six key informants, who directly participated to the decision-making process and to the set-up of the programs. The interview track aimed at grasping the evolution of the program, reconstructing how the collaboration among the three institutions started and then developed, identifying the expected objectives and illustrating the first partial results of the projects, in a longitudinal perspective. That would help in highlighting breadth of interactions among the three institutions, their roles and contributions to define and adjust the programs over time; detecting the past relationships between academics, industry and institutional partners; evidencing a pattern of interactions to be replicable. The authors coded the materials independently, and then data were compared and divergent items discussed till reaching a common interpretation.

The context of this study is the E-R motorvehicle industry, which stands at national and European level as a leading region for its manufacturing-based economic growth and its important brands known worldwide. The vast majority of manufacturing companies are concentrated on some well-structured clusters, mainly linked to mechanical engineering and automotive, in particular sportscars, motorcycles, and agricultural machines, showing high innovation capabilities along with an attention and inclination towards R&D, testified by the number of work units (roughly 29.5 thousand) dedicated to research and development. Overall, the innovation model shows significant traits of distribution into the territory, facilitated by the geographical proximity of large enterprise (OEMs) with the actors of their supply chains. Not only big first-tier suppliers, but also smaller second- and third-tier suppliers contribute to innovation. Within this network of collaboration between small, medium and large companies devoted to innovation and sector specialization, it has developed the so-called Emilian Motorvehicle Valley, worldwide known as the regional cluster of automotive and sportscars. In such a context, the local university, Unimore, established and directly run the Automotive Academy Programme (AAP) and took a leading role in the formation of the Motorvehicle University Network of Emilia-Romagna (MUNER) program, which associates the four regional universities with the most important firms of the Emilian Motorvehicle Valley. Both the AAP and the MUNER programs are designed to be an innovation hub for the



local motorvehicle industry for education of the future engineers, held with the endorsement of the local regional government.

**Findings.** *The analysis of the corpus of the texts under a longitudinal perspective allows to identify the seeds that lead Unimore to take an important role in conjoint the academic, industrial and governmental spheres. The very first steps were taken within the university itself, with the creation of organizational structures, from the creation of the faculty of engineering in the 90s, to the integration of the first experiences of learning-by-doing projects (e.g. Formula Students Projects introduced in 2003) along with tradition degree and master degree courses. In the 2000s, Unimore also starts a massive reorganization aimed at developing network laboratories, at the beginning limited to and created in the specific disciplinary area of engineering, subsequently enlarged following a multidisciplinary perspective. All these activities have been possible thanks to the support of the central offices of the university itself, as well as to local policies aimed at favoring the creation of technopoles and network laboratories, as well as the involvement and interest of the industrial part. By looking at this longitudinal analysis, it is then possible to trace back the internal transformation of the academic sphere, and how the traditional roles and functions within a medium-sized university have been reinterpreted, updated and expanded in light of new objectives (Etzkowitz et al., 2000). We found that, in the early phases, Unimore has principally exploited the initiatives and opportunities promoted at the local level by political institutions (e.g. the creation of a regional network of technopoles). Lately Unimore started to promote initiatives and programs that extended significantly the variety of knowledge transfer activities provided to motorvehicle industry, by identifying a possible confluence of interests and needs between external stakeholders and trying to develop activities aimed to intercept those needs (Etzkowitz et al., 2000). As university has enlarged its role in innovation, expanding its third mission, also education and research activities passed through a process of reformulation that led to an integration of all the three university missions in a more entrepreneurial-oriented new paradigm.*

Based on the principle that education, research, and third mission are inherently connected, Unimore since 2017 has conceived two new programs, namely AAP and MUNER, as a collaborative platform with the aim to coordinate educational activities and to collaborate with the top automotive companies based in E-R region, with the support of the local regional government. Overall, both AAP and MUNER programs facilitate the introduction and diffusion of new technologies, skills and knowledge, by promoting an innovative and interdisciplinary approach in research and by introducing a new way of teaching and radically changing the training and education of future engineers.

The Automotive Academy program (AAP) started in 2017, as a strategic project by Unimore with the aim of enhancing its experience in the field of research at an international level, for the study and development of cutting-edge technologies in high-performance vehicles. However, AAP plays a great role also as a collector in the aggregation and consolidation of a public / private partnership, aimed at sharing objectives and methodologies that encourage direct application, improvement and use of teaching programs to contribute to the social and economic development of the community and territory. Indeed, one of the main objectives of AAP is to train engineers specialized in the design of high-performance and competition vehicles and motorcycles. The educational offers developed under AAP is studied on the basis of the needs of the local automotive sector. AAP therefore presents itself as a focal point in the mapping of the knowledge needs and skills of local firms. The interaction with the local innovative system, then, has been translated into a first realization of targeted courses. This line of action took the form of both the introduction of two specific undergraduate degree courses, which enriched Unimore's overall educational offer, and the creation of seminar and training activities for professionals of the automotive sector. Both actions allowed to infuse on the territory those skills that were required to feed the innovative and industrial system of the Motorvehicle Valley.

The MUNER program makes a step forward, since it specifically attempts to answer to the local growing training needs for highly qualified professionals to be introduced in the automotive industry. MUNER offers an innovative educational offer, whose main objective is to align, within a Triple-Helix collaborative approach, the knowledge generated at the university level and the skills needed by the local firms to support their innovation strategies. MUNER is presented as “a campus as big as a region”, which has its root in a land of worldwide-known brands and cutting-edge technology, where the history of the two- and four-wheels vehicles was written. The local university cannot be blind to the worldwide importance of the local automotive district, and must assume a predominant role in supporting its competitiveness. The actions undertaken to develop high-level professional competencies in order to sustain the firms of the Motorvehicle Valley include the redesign of existent degree courses; the development of new academic programs; the strengthening of learning-by-doing approach through numerous laboratory activities and internships in local companies, the massive introduction of practical classes in the laboratories of University and private companies. Under the MUNER program, then, two new Master's Degree Programmes were developed, in collaboration with the four regional universities (Unibo, Unife, Unimore, and Unipr) and ten innovative E-R-based motorvehicle manufacturers (Automobili Lamborghini, Dallara Automobili, Ducati, Ferrari, Haas F1 Team, HPE-Coxa, Magneti Marelli, Maserati, Pagani Automobili, and Toro Rosso), and with the support of the E-R Regional Government. Overall, the results of such a collaboration is the design of six curricula targeted to the automotive engineering careers of the future. The teaching methodology - with lessons taken by both university professors and industrial professionals, the structure of the courses - strongly based on laboratories activities and on a learning-by-doing approach, the frequency of moments spent within the partners automotive companies, and the presence of international students and teachers allow for a complete new configuration of the educational offer in engineering, that is designed to instill in the local Motorvehicle Valley the knowledge and skills that can make it competitive with respect to the great changes the whole automotive sector is facing worldwide.

The two programs introduced by UNIMORE are a concrete example of triple helix model applied to teaching innovation. Knowledge, skills and innovative attitude are no more transferred only through the traditional mobility patterns based on arm-length labor market mechanisms. These market mechanisms are complemented by mobility programs based on structured collaboration for joint education programs addressed to favour the innovative development of the motorvehicle industry. Through a program of internships, company visits, and joint research activity, students are educated to new methodological approaches, endowed with innovative skills to 'read' the technology trends, and trained to apply technology in the industry setting.

Indeed, in an evolutionary perspective, the collaborative creation of an educational offer allowed also for the strengthening of inter-institutional collaboration and of mutual support in enhancing innovation at the regional level. The collaborative work required to design and implement the AAP and the MUNER programs has created new complementarities between the three different institutional spheres, which inspired and are going to suggest new solutions for regional innovation challenges. In particular, UNIMORE has succeeded in assuming a role in smoothing out differences among stakeholders and in making more permeable the boundaries with local companies and the regional policymakers.

**Research limits.** As for any on-going research project at its early development, many steps further are needed in order to get more insights useful to cope with the research questions. Firstly, more documental data are needed in order to enrich the corpus of text, both from primary and secondary sources, and to clearly defined the emerging patterns of collaboration. Secondly, the monitoring of the results of the programs, in term of research projects conducted, number of graduates, and other outputs should be monitored in the medium and longer term to assure the sustainability and the replicability of the model. Thirdly, future research should investigate how the collaboration patterns and the partnerships are evolving and maintained by the time in a more empirically consistent way. Finally, results should be derived cautiously since case study assures only low generalizability.

**Practical implications.** We believe that our findings can provide useful patterns of collaborative and inter-institutional framework that could inspire other universities to take on a prominent role in order to support innovation policies thanks to the creation of cross-organizational and cross-institutional educational programs (Etzkowitz et al., 2000). The cases here presented, even if with the caution that arises from the research limitations, could be taken as model to be replicated in other industry clusters, in Italy and abroad. Specifically, the case study, if further developed, would allow to detect the further steps necessary to the improvement of that permeability of boundaries that lies at the basis of the triple helix model.

**Originality of the study.** The originality of the study resides in its contribution to delineate how a medium-sized Italian university has reinvented its educational offer to support an excellence of the local regional system to which it belongs, under the lens of the Triple Helix Model. The case study is in line with what suggested by some other works in the Triple Helix school, which offered virtuous examples of innovation in the educational programs, such as the study of Etzkowitz (2012), who traces the experiences of MIT and Boston, Stanford and Silicon Valley and that study of Etzkowitz and Dzisah (2008), who trace the evolution of the university system in developing countries. Specifically, our case study falls in a European context, and in particular in a national and local context with well-defined traits. Indeed, the peculiarities of the context influence the responses and the models of the institutional actors they adopt in realizing that permeability of borders and interwoven of spheres required by the Triple Helix Model. The originality of the case presented, also, lies in the focus on the educational offer and teaching activities as vectors of innovation within a Triple Helix model.

**Key words:** *Triple Helix Model; Academic Entrepreneurship; Academic Engagement; Case Study*

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# Sensibilità ambientale e accettazione pubblica della nanotecnologia.

## La relazione tra “new environmental paradigm” e “green trust” su benefici e rischi percepiti della nanotecnologia.

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**Obiettivi.** *L'obiettivo dello studio è investigare l'influenza della sensibilità ambientale dei cittadini sull'accettazione sociale delle nanotecnologie. Nello specifico, lo studio testa la relazione tra l'attitudine ambientale degli individui e le percezioni in merito ai benefici e i rischi derivanti dalla nanotecnologia. Inoltre, lo studio testa la moderazione della fiducia dei cittadini nei confronti dell'impegno ambientale delle aziende tecnologiche, degli enti governativi e dei centri di ricerca scientifica sulla relazione tra le attitudini ambientali e la percezione di rischi e benefici della nanotecnologia.*

*Nell'ultimo decennio, il tema dell'accettazione sociale delle tecnologie emergenti ha attratto molto interesse da parte di accademici, politici e delle imprese tecnologiche. Il dibattito sull'interazione tra società e scienza ha infatti messo in luce il ruolo cruciale dell'opinione pubblica nel determinare il successo delle nuove tecnologie e nel garantirne gli sviluppi futuri (Scheufele & Lewenstein, 2005; Scheufele et al., 2009). Tuttavia, questo dibattito ha portato solo recentemente all'attenzione delle scienze sociali la necessità di comprendere le dinamiche sottostanti allo sviluppo dell'opinione pubblica, al fine di elaborare strategie di informazione volte a sostenere l'accettazione delle tecnologie emergenti nella società.*

*La nanotecnologia è al centro di questo dibattito. Portata all'attenzione mediatica nei primi anni 2000 per il suo vasto impatto economico e sociale, la nanotecnologia si è distinta per la numerosità di ambiti in cui ha fruttuosamente trovato applicazione: dai beni di consumo (e.g. industria alimentare, tessile, cosmetica etc.) al settore medico (e.g. farmacologia e diagnostica), dal settore energetico all'industria pesante (e.g. edilizia, industria aerospaziale, trasporto etc.) (Bozeman et al., 2008).*

*Allo stesso tempo, lo sviluppo della nanotecnologia ha comportato un acceso dibattito intorno alle potenziali implicazioni ambientali e sulla salute pubblica che la dispersione di materiale nanotecnologico negli ecosistemi può comportare (Vandermoere et al., 2011). Gli echi di questo dibattito hanno inevitabilmente influenzato l'opinione pubblica, generando quindi preoccupazioni tra policy-makers, ricercatori e aziende tecnologiche circa la percezione pubblica della nanotecnologia e la possibilità di opposizione di cittadini e consumatori a questa tecnologia.*

*Numerosi studi sono stati condotti nei contesti più avanzati sul fronte nanotecnologico, quali Europa e USA, per sondare l'opinione pubblica in merito allo sviluppo nanotecnologico e alla percezione dei rischi e benefici di tale fenomeno. Tali studi hanno spesso evidenziato una manchevole conoscenza della nanotecnologia tra la popolazione, associata ad una limitata comprensione dei potenziali benefici e rischi ad essa associati (Cobb & Macoubrie, 2004; Siegrist et al., 2007).*

*Tuttavia, assumere che la conoscenza inadeguata di un fenomeno implichi l'impossibilità di crearsi un'opinione relativamente al dato fenomeno, e a prendere decisioni in merito ad esso, è una concezione semplicistica. Decenni di ricerca sulle dinamiche del processo cognitivo individuale, in relazione a temi complessi quali scienza, politica ed economia, hanno portato alla comprensione che gli individui tendono a risparmiare le proprie risorse cognitive quando alla prese con questioni di elevata complessità, esibendo una cosiddetta “avarizia cognitiva” (Scheufele & Lewenstein, 2005). Ciò implica che, piuttosto che attingere alle informazioni disponibili, le persone si affidano a “scorciatoie cognitive” quali valori personali, predisposizioni ideologiche, stereotipi, credenze religiose o frammenti di informazione recepiti dai media al fine di elaborare giudizi o opinioni riguardo a fenomeni di cui conoscono poco o nulla (Kahan et al., 2009).*

*Pertanto, esaminare il ruolo di preconcetti, attitudini o credenze nel modellare le percezioni pubbliche dei benefici e dei rischi della nanotecnologia contribuisce a comprendere le dinamiche cognitive alla base dell'accettazione sociale della nanotecnologia. A tal fine, la ricerca sui driver cognitivi delle percezioni in merito alla nanotecnologia ha preso in esame fattori quali la cognizione culturale degli individui (Kahan et al., 2009), le credenze*

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religiose (Ho et al., 2011), la fiducia negli scienziati (Ho et al., 2011) e nelle agenzie governative (Siegrist et al., 2007) come potenziali antecedenti di tali percezioni.

Il presente studio suggerisce che le attitudini ambientali possono svolgere un ruolo simile nel modellare le percezioni degli individui in merito alla nanotecnologia. Numerosi studiosi hanno infatti suggerito che le persone con una spiccata sensibilità ambientale hanno maggiori probabilità di intraprendere comportamenti ecologicamente consapevoli, come il consumo di prodotti ecologici (Royne et al., 2011) o l'uso di tecnologie ecocompatibili (Carrus et al., 2008), e di astenersi da comportamenti dannosi per l'ambiente (Stern, 1995).

Pertanto, il presente studio mira a esaminare l'influenza della sensibilità ambientale individuale sulle percezioni di rischi e benefici della nanotecnologia. Nell'ambito della psicologia ambientale, diverse scale psicometriche sono state validate per misurare le attitudini e predisposizioni degli individui verso l'ambiente. A tal fine, la scala denominata "New Environmental Paradigm" (NEP) è stata ampiamente utilizzata per misurare l'affinità degli individui con i principi della sostenibilità ambientale (Dunlap et al., 2000). Nello specifico, il NEP denota una visione eco-centrica del mondo, la quale concepisce "limiti naturali" allo sfruttamento delle risorse naturali da parte dell'uomo, esprime preoccupazione per la fragilità degli ecosistemi, valorizza le risorse naturali oltre gli scopi umani e spera in una relazione più armonica tra l'uomo e il ambiente naturale (Dunlap, 2008).

Le tecnologie emergenti implicano incertezza degli effettivi rischi ambientali che l'adozione e diffusione di una tecnologia potrebbero comportare. Alcuni studi hanno pertanto suggerito che individui affini a una visione eco-centrica sono meno inclini a supportare le tecnologie emergenti, a causa di una più acuta percezione dei rischi ambientali o dei rischi per la salute derivanti dalle nuove tecnologie (Vandermoere et al., 2011; Matin et al., 2012). Sulla base di queste considerazioni, il presente studio formula due ipotesi riguardanti la relazione tra NEP e le percezioni individuali dei benefici e dei rischi della nanotecnologia:

*Ipotesi 1: NEP influenza negativamente i benefici percepiti della nanotecnologia;*

*Ipotesi 2: NEP influenza positivamente i rischi percepiti della nanotecnologia;*

Come affermato in precedenza, le attitudini ambientali non sono i soli fattori cognitivi a modellare le percezioni degli individui in merito alle tecnologie emergenti. Un'ampia gamma di fattori può infatti mediare o moderare la relazione tra attitudini ambientali e percezioni dei benefici e dei rischi delle tecnologie emergenti (Carrus et al., 2008). Tra questi fattori, la fiducia del pubblico verso gli enti promotori del progresso tecnologico e dell'introduzione di nuove tecnologie nella società gioca un ruolo fondamentale (Siegrist et al., 2007; Ho et al., 2011). Diversi studi hanno difatti dimostrato come le percezioni del pubblico verso attori quali le aziende tecnologiche private, i centri di ricerca e gli enti governativi a cui è affidato il compito di regolamentare il mercato a tutela dei consumatori, possono largamente influenzare la percezione di rischi e benefici delle tecnologie emergenti e infine influenzarne l'accettazione (Macoubrie, 2004; Macoubrie, 2006).

Simili studi implicano che le preoccupazioni e aspettative del pubblico nei confronti di una tecnologia o prodotto/servizio spesso non sono direttamente e totalmente attribuibili alla tecnologia o prodotto/servizio in sé, quanto piuttosto al contesto sociale, commerciale e normativo in cui si inseriscono. La ricerca in tale ambito enfatizza pertanto la necessità di comprendere non solo la percezione del pubblico verso le tecnologie emergenti, ma anche verso il contesto istituzionale, commerciale e normativo in cui tali tecnologie sono inserite al fine di guidarne l'inserimento con maggiore efficacia.

A tal fine, Chen (2010) ha coniato il concetto di "Green Trust" con l'intento di misurare le aspettative di individui e consumatori in merito alla credibilità e affidabilità delle prestazioni ambientali di prodotti, aziende e altri enti. Il presente studio adatta quindi il concetto di "Green Trust" per investigare la fiducia dei cittadini nei confronti degli enti associati allo sviluppo, alla regolamentazione e commercializzazione della nanotecnologia, ossia aziende tecnologiche, enti governativi e università o centri di ricerca.

Nello specifico, lo studio utilizza tre costrutti di "Green Trust: il primo rivolto alle imprese tecnologiche private (Green Trust - aziende), il secondo rivolto agli enti governativi (Green trust - governo), e il terzo rivolto alle università e enti di ricerca scientifica (Green trust - università). Questi costrutti misurano la percezione in merito all'impegno di tali enti nella tutela dell'ambiente, della credibilità delle loro affermazioni in merito alla tutela ambientale e alla priorità che tali enti ascrivono alla tutela ambientale piuttosto che ai propri interessi economici.

Il presente studio postula che la "Green Trust" possa influenzare l'accettazione sociale della nanotecnologia, moderando la relazione tra le attitudini ambientali (i.e. NEP) e la percezione di rischi e benefici della nanotecnologia. Un'elevata fiducia verso l'impegno ambientale di aziende tecnologiche, enti governativi e centri di ricerca, può infatti ridurre l'avversione degli individui verso le tecnologie emergenti, attenuando l'influenza delle attitudini ambientali sui benefici e rischi percepiti. Pertanto, lo studio formula e testa le seguenti ipotesi in merito alla moderazione di "Green Trust" sulla relazione tra NEP e rischi e benefici percepiti:

*Ipotesi 3: "Green Trust" - verso aziende, governo e enti di ricerca - modera positivamente la relazione tra NEP e benefici percepiti della nanotecnologia.*

*Ipotesi 4: "Green Trust" - verso aziende, governo e enti di ricerca - modera negativamente la relazione tra NEP e rischi percepiti della nanotecnologia.*

**Metodologia.** Costruzione del questionario e somministrazione- I dati esposti nel presente report sono stati raccolti tra aprile e agosto 2019 mediante un questionario sviluppato dagli autori dello studio. Il questionario consiste in 6 domande a risposta multipla ed è stato redatto in modo da risultare di facile compilazione e comprensione: a tal

fine, le domande sono state mantenute concise e specifiche, è stato evitato l'utilizzo di concetti ambigui o vaghi e di sintassi complesse. Inoltre è stato garantito il completo anonimato dei rispondenti al fine di limitare il bias di desiderabilità sociale (King & Bruner, 2000).

Per garantire la validità dello strumento di misura, i costrutti investigati sono stati basati su contributi precedenti, e sono misurati su una scala Likert a 5 punti, dove 1 corrisponde a "totalmente in disaccordo" e 5 a "totalmente in accordo". Nello specifico, la variabile NEP è tratta dagli studi di Dunlap (2008) e Zhu & Lu (2017). I costrutti su benefici e rischi percepiti della nanotecnologia sono stati adattati da Cobb & Macoubrie (2004). I tre costrutti inerenti la "Green Trust" sono adattati da Chen & Chang (2013). Infine, sulla base della letteratura esistente, lo studio considera alcune variabili di controllo, ossia l'età dei rispondenti, il genere e il livello di informazione in merito alla nanotecnologia (misurato su una scala Likert a 5 punti da "per niente informato" a "molto informato").

Il questionario è stato somministrato ai rispondenti online tramite i canali social network dell'università. La somministrazione online via social networks ha prodotto 370 rispondenti. Una volta ripulito il campione dalle compilazioni parziali, 264 compilazioni complete sono state utilizzate per l'analisi.

**Composizione del campione** - Il campione è composto prevalentemente da giovani adulti di sesso maschile residenti in Italia. Il 57.7% dei rispondenti ha meno di 30 anni. In particolare, il 16.9% ha meno di 20 anni, mentre il 40.8% si attesta nella fascia di età tra i 21 e i 30 anni. La terza fascia d'età più popolata è quella tra i 31 e i 40 anni, la quale rappresenta il 16.7% del campione. A seguire, troviamo la fascia d'età tra i 41 e i 50 anni (11.4%) e quella tra i 51 e i 60 anni (10%). Solo il 4.2% dei rispondenti ha più di 60 anni. In termini di sesso dei rispondenti, il campione si divide pressoché a metà, con una leggera prevalenza di rispondenti di sesso maschile. In particolare, il 53.5% dei rispondenti è di sesso maschile, mentre il 46.5% è di sesso femminile.

Per quanto riguarda la provenienza geografica, la totalità del campione risiede in Italia. Tutte le regioni italiane, seppur in percentuali diverse, sono rappresentate nel campione, con eccezione del Molise. Ciò nonostante, il campione si caratterizza per una forte presenza di rispondenti residenti in Toscana, i quali costituiscono il 30.8% dei rispondenti. La seconda regione maggiormente rappresentata è la Lombardia, nella quale risiede il 12.2% dei rispondenti. A seguire troviamo la Sicilia (6.2%), il Friuli Venezia Giulia (5.4%), il Lazio (5.4%), la Puglia (4.9%) e il Veneto (4.9%). I rispondenti provenienti da regioni del Nord Italia rappresentano quindi il 36.5% del campione, mentre le regioni del Centro e del Sud Italia rappresentano rispettivamente il 38.4% e il 23.8% del campione.

Per quanto riguarda il livello di educazione, il 39.3% dei rispondenti dichiara di aver conseguito il diploma di maturità, mentre il 19.2% ha concluso il percorso di studi con il diploma di scuola secondaria di 1° grado. I rispondenti con un titolo universitario triennale, specialistico o magistrale costituiscono il 37.6%, così ripartiti: laurea triennale 15.7%, laurea specialistica 7.3% e laurea magistrale 14.6%. I rispondenti in possesso di un titolo accademico di livello superiore, master di secondo livello o dottorato di ricerca (PhD) costituiscono il 5.7%. Infine, solo il 4.3% dichiara di aver concluso solo il ciclo della scuola primaria.

Verifica del modello di misura e test delle ipotesi - I dati sono stati analizzati mediante un'analisi fattoriale. Tutti i costrutti forniscono coefficienti di affidabilità soddisfacenti. In particolare, i coefficienti alfa di Cronbach sono superiori a 0,7 per tutti i costrutti considerati nel modello (Cortina, 1993).

Le ipotesi dello studio sono state testate mediante due equazioni di regressione gerarchica. La regressione gerarchica consente infatti di testare una o più moderazioni sulla relazione tra una variabile indipendente e una variabile dipendente, includendo termini di interazione o di prodotto nell'ultima porzione dell'equazione di regressione (Frazier et al., 2004). Di conseguenza, sulla base di Frazier et al., 2004, sono stati generati tre termini di prodotto moltiplicando il predittore (vale a dire NEP) con i moderatori (ovvero Green Trust nei confronti di aziende, governo e università).

La prima equazione di regressione gerarchica include i benefici percepiti della nanotecnologia come variabile dipendente, mentre la seconda equazione include i rischi percepiti della nanotecnologia come variabile dipendente. Entrambe le equazioni sono state strutturate seguendo la stessa procedura. Nella prima porzione, sono state inserite nell'equazione solo le variabili di controllo (ovvero età, sesso, livello di informazione). Nella seconda porzione sono stati inclusi il predittore (ovvero NEP) e i moderatori (ovvero la Green Trust nei confronti di aziende, governo e università). Nel terzo e ultimo segmento dell'equazione sono stati inclusi i tre termini prodotto.

**Risultati.** I risultati delle due regressioni gerarchiche supportano solo parzialmente le ipotesi avanzate.

Per quanto riguarda la prima equazione, la relazione tra NEP e i benefici percepiti della nanotecnologia risulta essere positiva e significativa. Pertanto l'ipotesi 1 non è supportata. I risultati della moderazione dei tre costrutti di "Green Trust" sulla relazione tra NEP e benefici percepiti sono variabili: la moderazione di "Green Trust - aziende" è positiva e significativa; la moderazione di "Green Trust - governo" non è significativa; la moderazione di "Green Trust - università" è negativa e significativa. Pertanto l'ipotesi 3 è supportata solo per quanto riguarda "Green Trust - aziende", mentre non risulta supportata per quanto riguarda i costrutti relativi a enti governativi e centri di ricerca. Per quanto riguarda le variabili di controllo, solo l'età dei rispondenti emerge essere significativa e negativamente correlata alla percezione di benefici, mentre il genere e il livello di informazione non sono significativi.

Per quanto riguarda la seconda equazione, la relazione tra NEP e i rischi percepiti della nanotecnologia risulta essere positiva e significativa. Ipotesi 2 è quindi supportata. Anche in relazione ai rischi percepiti, i risultati della moderazione di "Green Trust" sono variabili: solo la moderazione di "Green Trust - università" emerge essere positiva e significativa, mentre non sono significative le moderazioni di "Green Trust - aziende" e di "Green Trust - governo". Ipotesi 4 non è pertanto supportata. Per quanto riguarda le variabili di controllo, solo il livello di

informazione in merito alla nanotecnologia risulta essere significativo e negativamente correlato alla percezione dei rischi della nanotecnologia.

**Limiti della ricerca.** Il presente abstract presenta i risultati preliminari dello studio, e pertanto risente di alcune limitazioni, che al contempo costituiscono opportunità per la ricerca futura sul tema delle dinamiche cognitive sottostanti l'accettazione pubblica delle tecnologie emergenti. In primo luogo, lo studio si focalizza su un limitato insieme di fattori cognitivi, in quanto limitato a investigare il ruolo della sensibilità ambientale individuale nel determinare le percezioni di rischi e benefici. Tuttavia, numerosi fattori cognitivi o comportamentali possono influenzare significativamente il processo di "sense-making" in relazione alle tecnologie emergenti. Tra questi, le norme sociali possono ricoprire un ruolo fondamentale. In secondo luogo, lo studio si limita a esaminare le percezioni individuali di rischi e benefici, senza progredire nell'esaminare come questi vadano ad influenzare variabili comportamentali, quali ad esempio l'intenzione all'acquisto o utilizzo di prodotti nanotecnologici.

Alcuni aspetti metodologici, relativi alla composizione del campione e agli strumenti di indagine (i.e. questionari) possono limitare l'affidabilità dei risultati preliminari (Tourangeau e Yan, 2007). In primis, l'analisi si concentra su un campione limitato di cittadini italiani, con una sovra-rappresentazione delle fasce di età tra i 21 e i 30 anni e delle regioni del centro Italia. Inoltre, variabili indipendenti e variabili dipendenti sono misurate attraverso la stessa fonte. Nonostante questo costituisca un approccio tipico nello studio di variabili cognitive e comportamentali, questo metodo può comportare il rischio di "common method bias" (Campbell & Fiske, 1959). Per verificare la presenza di simili bias, è stato condotto il test "single factor" di Harman. Il test evidenzia che il fattore maggiore rappresenta il 32% della varianza, inoltre emergono cinque fattori distinti con eigenvalue superiori a 1. Pertanto il "common method bias" non appare influenzare significativamente lo studio (Fueller et al., 2016).

**Implicazioni pratiche.** I risultati dello studio evidenziano numerose conclusioni utili a comprendere meglio le dinamiche dell'accettazione sociale delle tecnologie emergenti, con specifico riferimento alla nanotecnologia, e dalle quali è possibile derivare implicazioni utili allo sviluppo di politiche e strategie a supporto della comunicazione scientifica e della commercializzazione di prodotti o servizi nanotecnologici.

In primo luogo, le attitudini ambientali degli individui emergono influenzare positivamente sia i rischi percepiti che i benefici percepiti della nanotecnologia. Questo risultato pone l'accento sullo stretto legame tra il tema dello sviluppo nanotecnologico e quello della protezione ambientale, quale leva determinante nel supportare l'accettazione sociale delle tecnologie emergenti. La sensibilità ambientale di cittadini e consumatori è confermata essere un potenziale limite all'accettazione sociale della nanotecnologia (se consideriamo la percezione dei rischi), ma appare anche essere un'opportunità qualora aziende e ricerca fossero capaci di chiarire le implicazioni ambientali della nanotecnologia e veicolare efficacemente i benefici ambientali che l'applicazione di tale tecnologia potrebbe comportare in svariati settori.

I risultati della relazione tra NEP e benefici percepiti della nanotecnologia evidenziano come un'elevata sensibilità ambientale non implichi a priori un'avversione verso le nuove tecnologie. Individui e consumatori con una visione eco-centrica appaiono essere consapevoli delle opportunità di miglioramento ambientale derivanti dallo sviluppo tecnologico. Questo risultato contribuisce pertanto a smentire l'assunto secondo il quale una visione eco-centrica (quale ad esempio il NEP) implichi un'avversione verso il progresso tecnologico (Corral-Verdugo et al., 2008). Ne emerge quindi l'opportunità di promuovere e rinforzare i benefici percepiti della nanotecnologia negli ambiti della salute e della tutela ambientale, comunicando più efficacemente le applicazioni esistenti e potenziali della nanotecnologia in tali ambiti, quali ad esempio le applicazioni nanomediche e i servizi di nanoremediation.

I risultati derivanti dal test di moderazione dei tre costrutti "Green Trust" (aziende, governo, università) sulle relazioni tra NEP e percezioni dei rischi e benefici della nanotecnologia contribuiscono a definire ulteriori implicazioni pratiche inerentemente al ruolo di tali enti nel supportare l'accettazione sociale della nanotecnologia. Mentre non sorprende che un'elevata fiducia verso l'impegno ambientale delle aziende tecnologiche agisca positivamente sulla relazione tra sensibilità ambientale e benefici percepiti, è interessante analizzare il ruolo della fiducia verso l'università e i centri di ricerca scientifica.

Diversamente da quanto atteso, i risultati dello studio asseriscono che un'elevata fiducia verso le istituzioni della ricerca scientifica amplifichi l'effetto del NEP sulla percezione dei rischi, e riduca l'effetto positivo del NEP sulla percezione dei benefici. Ciò evidenzia il ruolo degli enti della ricerca nel guidare l'accettazione sociale della nanotecnologia, fugando i dubbi relativi all'impatto ambientale e sulla salute umana delle nanotecnologie e veicolando risposte univoche in merito a tali quesiti nella società. Nell'ottica del cosiddetto principio di precauzione, ossia la concezione cautelativa del progresso tecnologico che considera prioritaria la tutela della salute pubblica e dell'ambiente rispetto allo sviluppo tecnologico, tale risultato risente dei dubbi che il mondo scientifico tuttora nutre relativamente ai risvolti ambientali che la diffusione delle nanotecnologie può comportare. A differenza delle aziende tecnologiche e degli enti governativi, l'università e i centri di ricerca emergono essere percepiti come maggiormente attendibili su questi temi, suggerendo quindi un coinvolgimento maggiore della ricerca universitaria nella promozione delle applicazioni nanotecnologiche in ambiti sensibili.

**Originalità del lavoro.** L'originalità del lavoro consiste nell'investigare la relazione tra le attitudini ambientali individuali, la fiducia verso gli enti promotori del progresso tecnologico e le percezioni di rischi e benefici della nanotecnologia. Sebbene il ruolo della sensibilità ambientale nel determinare il supporto verso le tecnologie emergenti



sia stato già avanzato da studi precedenti (Vandermoere et al., 2011; Marin et al., 2012), l'influenza della visione eco-centrica individuale (NEP) e della fiducia di cittadini e consumatori nell'impegno ambientale di aziende tecnologiche, enti governativi e enti di ricerca (Green Trust) sulla percezione di benefici e rischi della nanotecnologia costituisce un ambito innovativo di ricerca. In particolar modo, l'adattamento del concetto di "Green Trust" all'ambito di indagine delle tecnologie emergenti (Chen, 2010), nonché l'indagine del suo ruolo di moderatore nella relazione tra NEP e percezione di rischi e benefici della nanotecnologia contribuisce all'originalità dello studio.

**Parole chiave:** Accettazione pubblica delle tecnologie emergenti; Nanotecnologia; New Environmental Paradigm; Green Trust

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# Effectiveness of training methods for SME managers

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**Objectives.** *In order to succeed smaller firms have higher needs of good management compared to large firms (OECD, 2000). Management training is expected to provide firms with better management (Wightman and McAleer, 1995; OECD, 2002). In fact, positive correlation between training and firm performance (e.g. Feltrinelli, Gabriele and Trento, 2017). Research on the effects of training in small and medium enterprises (SME) concentrated on the overall employee training (Kotey, 2004). It is generally recognized that employee training leads to higher efficiency of firms, measured by firm survival, higher profits and sales (e.g. Marlow and Patton, 1993; Storey, 1994; Kotey and Folker, 2007). Moreover, it is demonstrated that while SME express preference for informal training, formal training methods are associated with higher firm performance in the domain of SME (Aragon-Sanchez, Barba-Aragon and Sanz-Valle, 2003; Kotey and Folker 2007; Jones, Beynon, Pickernell and Packham, 2013). Although SME owners/managers are aware of the possibilities of training smaller firms are less likely to invest in training (Marlow, 1998).*

*Regardless high interest of policy makers and academic research in improving performance of SME*

*little empirical assessment of the impact of management training schemes on firm performance had been done in SME. The present study aims to close this gap and concentrates on the effect of management training in the domain of SME. Our contribution focuses on the role of middle managers in upgrading firm performance through their effect on better managerial practices used in the organization. In particular, we study if and how different training methods employed by firms have differential effects on performance, as measured by total factor productivity.*

*Most existing research on training impact on SME efficiency is based on some form of self-reported measures of training intensity and resulting firm performance. The novelty of the present study lies in addressing management training through register of training activities of managers enrolled in publicly owned agency providing training to middle managers in Italy. We consider management training and firm performance during a time period from 2006 to 2011. We chose to concentrate our attention on the study of total factor productivity (TFP) as a measure that can be directly influenced by training as opposed to financial measures and employee turnover that can be caused by many other factors out of control of the managers.*

*A robust piece of evidence in studies on productivity of firms is the existence of differences in productivity performance between firms and plants within countries, even within narrowly defined sectors (Bartelsman and Doms, 2000; Foster, Haltiwanger, and Syverson, 2005). In particular, in Italy such differentials seem to be persistent over time if not increasing (Dosi et al, 2012).*

*The applied literature tried to explain and/or control for these productivity differences taking into account: (i) Several heterogeneous firm's characteristics that should have contributed to this dispersion of firm's productivity (i.e. export activity and innovation); (ii) better measures of inputs (capital, materials, skills, etc.) (Bloom and Van Reenen, 2008).*

*In addition, part of the studies assigns a key role to technology and have attempted to measure how much of the residual related with the production function estimation can be accounted for by explicit measures of technology, such as research and development or information and communication technologies (Bloom and Van Reenen, 2008).*

*Nonetheless, all these factors seem to account only partially, and a substantial unexplained productivity differential still remains, which panel data econometricians since a long time (see Mundlak, 1961) often label as managerial quality a particular kind of fixed effect.*

*In particular, Bloom and Van Reenen (2008) consider an additional factor that could be added to the picture: the management practices, that are, on average, good for firm productivity, i.e. better managerial practices are responsible for higher firm productivity. Better managerial practices are related with high quality and/or more effective managers of firms.*

*The present study focuses on investigation of comparative effectiveness of different training methodologies applied to SME middle managers, comparing formal, informal and e-learning training methods and their combinations. Notwithstanding the vast literature about the impact of training method on human capital of firm, there is no evidence*

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about the role of training methods for middle manager. Nonetheless, middle managers play a key role in determining firm performance (Dragony, Park, et al, 2014; Feltrinelli et al 2017) and the study of the impact of different training methods effectiveness could contribute to explain the heterogeneity of firms performances.

#### *The role of middle managers*

Bertrand and Schoar (2003) emphasise the role of the practices of middle management. Management practices have to be viewed as more than the attributes of the top managers: they are part of the organizational structure and behavior of the firm, typically evolving slowly over time. Indeed, MM can play a crucial role in boosting productivity through their downstream influence (they are responsible of operations, i.e. implementation of the strategy of firm) and upward influence given that they can nudge change in strategy design interacting with Managers of firms thus altering the managerial practices adopted by firm (Floyd and Wooldridge, 1992; Ahearne, Lam, and Kraus, 2013).

Form a dynamic point of view, a new management practice takes time to spread throughout the economy because the absorptive capacity of firms has to be developed over time to enable them to capture new practices (GL90). Learning effects, as information about the new management practice diffuses across firms, are possible only if firms "upgrade" their managers capabilities and their middle managers and HRs.

Hence, such frictions in changing managerial practices are related with the fact that upgrading management is a costly investment and some firms may simply find that these costs outweigh the benefits of moving to better practices (Bloom and Van Reenen, 2008). Hence, the adoption of best management practice slows down.

#### *Training in SME.*

Given the importance attributed to training in SME in preventing firms from failure and stimulating growth and government interest on the topic, impact of training in SME received much attention in academic literature.

Investigation of the training impact suggests that formal training methods, consisting in structured courses internal or external to the firm, workshops, seminars and similar, demonstrate superior results in terms of firm performance. Thus, according to Jayawarna, Macpherson and Wilson (2007) formal training provision has more significant influence compared to informal training on firm survival and turnover reduction. In line with these findings, Aragon-Sanchez et al (2003) observed that training performed within the firm but with outside training have positive impact on key performance indicators, like quality, productivity, labour turnover and financial results. At the same time, Jones, Beynon, Pickernell and Packham (2013) considered a whole range of different training methods and related them to the perception of firm performance by managers. It was found that the most influential training methods were formal trainings within the firm, learning by doing, formal training outside the organization, e-learning.

On the other side, empirical evidence on SME demonstrates strong preference of SME for informal training provision (Marlow and Patton, 1993; Storey, 1994; Kotey and Folker, 2007). Informal training takes the form of feedback, experience exchange and social interaction of employees at workplace without investing into explicit employee development programs (Anderson et al, 2001).

Partly, this preference is attributed to overall more informal management style of SMEs, where less emphasis is put on formally defined strategy keeping objectives and general structure more flexible (i.e. Barry and Milner, 2002). Among other reasons it is worthwhile mentioning higher costs associated with external training provision and time constraints. Smaller firms have lower budgets to be dedicated for training (Lange et al, 2000). On the one side, fewer employees make the group of learners too limited to offer economies of scale for external training. As a consequence, there is a need to pull groups of learners from different firms which makes training less firm specific. On the other hand, diverting already limited employees and/or managers for off-the-job training may not be feasible in the realities of smaller firms for which contribution of each employee is critical (Marlow, 1998). In fact, reliance on formal training provision remains higher for larger firms within SME category (Kotey and Slade, 2005; Kotey and Folker, 2007).

All the studies mentioned above consider overall training received by SME without division into training aimed at managers and learning activities for employees development. Investigation of management training is particularly challenging in the domain of SME due to the difficulty of data collection.

Literature on managerial training addressed the reasons that push SME managers seeking for training (Patton and Marlow, 2002), reasons of why SME managers do not take training opportunities (Marlow, 1998; Walker, Redmond, Webster, and Le Clus, 2007).

Efficiency of training for SME managers in terms of company performance did not receive much attention in the literature. Devins and Gold (2000) in a qualitative study of long-term mentoring for SME managers concluded that while the program helped participating firms in developing survival strategies during the recession, it is not possible to relate financial performance of the company to manager's participation in the program. Rigg and Trehan (2002) in a qualitative study of three firms found that involvement of key company figures in formal learning leads to the spread of learning to the whole company and better working practices.

Overall, regardless strong interest to management training from decision makers and academic research impact of SME management training remains under researched.

**Methodology.** Training methods can be classified in different ways. We refer to the standard classification used by OECD (2002) that allows to distinguish between formal and informal training activities. The logic behind the classification is related with the evidence that these two categories activate differently the individuals involved in the training activities. Such different reaction leads to differential results. In the case of human capital formation this could mean also a different effect on firm performance. Fondirigenti in our case classifies different training activity using the

Italian ISTAT standards (<https://www.istat.it/en/archive/52132>). Table 1 column (b) enumerates these different methods. Matching these categories with the one used in literature we come out with a three categories classification (Table 1 column (a)): formal traditional lectures that comprises Courses internal and external, workshops, seminars, simulations (role play, in-basket, business games); formal e-learning activities consisting in Knowledge forum, on-line communities, platform, blended, training pills; informal training i.e. T-group. Learning communities, coaching.

Using this classification of training activities for middle managers we investigate the effect of differential use of these methods on SMEs performance as measured by total factor productivity.

From an econometric point of view this objective is problematic because each firm can use contemporaneously the three methods on different middle managers. This in turn can lead to a collinearity problem. To solve it we built the following orthogonal variables:

*F*: training hours of formal traditional learning for firms that use only formal traditional learning;

*E*: training hours of e-learning for firms that use only e-learning;

*I*: training hours of informal training for firms that use only informal;

*FE*: training hours of formal traditional learning and e-learning for firms that use formal traditional learning and e-learning only;

*EI*: training hours of e-learning and informal learning for firms that use e-learning and informal learning only;

*FI*: training hours of formal traditional learning and informal learning for firms that formal traditional learning and informal learning only;

*FEI*: training hours of all the three methods of learning for firms that use all the three methods of learning.

#### Method

We employ a two-step method. First, we estimate the TFP using the Levinsohn and Petrin (2003) method, which has the advantage of coping with the issue of correlation between unobservable productivity shocks and input levels. Secondly, coherently with Bloom and Van Reenen (2007), we regress the estimated TFP on a set of control variables and on a set of variables that gives the training hours for different combinations of use of the MM training methods. The model takes the form:

$$\log(TFP_{it}) = \alpha + \beta_{IFE}IFE_{it} + \beta_I I_{it} + \beta_F F_{it} + \beta_E E_{it} + \beta_{IE}IE_{it} + \beta_{IF}IF_{it} + \beta_{FE}FE_{it} + \gamma' X_{it} + \delta_{it} + \varepsilon_{it}$$

where the training variables of interest, *IFE*, *I*, *F*, *E*, *IE*, *IF*, *FE*, are expressed as the overall number of hours per year used by firms; *X<sub>it</sub>* is a vector of control variables that comprises: the age of the business, the capital intensity of firm, the sector of activity (SIC 2-digit level) and the geographical area of activity at NUTS 1 level.  $\delta_{it}$  is a time dummy indicator. Finally,  $\varepsilon_{it}$  is a white noise i.i.d. disturbance. Note that it is possible to employ the training variables because of their orthogonality granted by construction.

The model is estimated using the GMM-Sys technique to cope with endogeneity issues. In particular, endogeneity arises from the fact that we cannot exclude that past performance influences the level of training activity in a firm. Under this condition, standard regression coefficients are biased (Wooldridge, 2002). As prescribed in the IV-GMM technique, we introduce in the model variables that are correlated with training but not with productivity, i.e. lagged values of the variables into the regression models. Moreover, we use an external instrument, i.e., the yearly amount of money that Fondirigenti put together to be used by each firm for training activity, the so called *conto formazione* (amount of money saved annually for financing middle manager training). This sum of money is generated via administrative legislation related to the Fondirigenti membership. Such variable is related to the training activity but not to firm performance and should be useful in solving the issue.

#### Data

The empirical analysis is based on a longitudinal database covering the time period 2006-2011 which has been created by merging two data sources: Fondirigenti and AIDA. The dataset from Fondirigenti contains detailed information about the middle management training activity of Italian firms. It is a firm-level dataset that includes the number of managers in training, number of days spent on training by managers of the firm, overall number of hours and overall amount of money spent on training, and information about different training methodologies and the amount of money that is at the disposal of firms to finance manager training each year. Furthermore, this information has been used to classify those firms which spend just a portion or over the credit balance (active' firms) and those which do not use the credit ('inactive' firms). From the second data source we collected all accounting data of firms for the corresponding years. The final dataset consists of a balanced panel data for the period 2006-2011 consisting of 10,169 firms. The original sample contained 11,857 firms observed over eight years. However, an accurate work of data cleaning has reduced the sample size. Observations for years before 2006 have been excluded, due to severe reduction in the number of firms with reported information compared to the following years. Preserving those observations would have severely affected the representativeness of the sample, due to the fact that only information for a smaller subset of firms is available for the early years. From this balanced panel we extracted 3,734 SMEs that was used to carry on the analysis.

## Findings.

### *Descriptive results*

Overall our sample is composed by 3,734 firms followed from year 2006 to 2011 (balanced panel). This is a subset of all SME that are enrolled in Fondirigenti. On average 8,7% of total SMEs enrolled in Fondirigenti provide training to managers. This is in line with previous research demonstrating that although SME owners/managers are aware of opportunities to receive training they do not take it (Walker et al, 2007). On average firms took 70 training hours in a year during analyzed time period. Average training hours grew from 29 hours in 2006 to 149 hours in 2011.

Table 2 presents the yearly distribution of training hours used by firms. 36% of firms choose traditional formal training. However, the proportion of firms relying exclusively on formal training is reducing in time from initial 45% in 2006 to 18% in 2011. This reduction is explained by the switch to the combination of formal and informal training in 2011. This training method is chosen on average by 31% of all SMEs in the sample. However, a pick of 50% of choices toward formal-informal combination is observed in 2011. Probably increase of average training hours in 2011 is explained by more hours invested in informal training that supplements traditional formal training. 22% of firms relied on informal training exclusively. Only e-learning is chosen by only 4% of the sample. Representation of other categories is residual.

### *Inferential results*

All results were obtained using the IV-GMM technique, employed to control the endogeneity of the training variable. We present in the tables the p-values of 95 the following two tests: the Hansen test/J-test which is a test of overidentifying restrictions and the Kleibergen-Paap Wald underidentification test which is a test of whether the equation is identified. The results of both tests suggest the validity of the IV approach because the instruments are proved to be valid and training can be treated as exogenous. Furthermore, a set of dummy variables for geographic area and sector are included as control variables in all estimated models.

Table 3 summarizes the effect of training hours based on training method strategy undertaken by the firm on its TFP. The results indicate high variability of different types of training methods and their combinations in terms of their influence on TFP. The most represented choice of training method, formal training, generates positive and significant effect on TFP. Thus, an increase by 100 hours allocated to formal training will lead to a corresponding increase of 0,18% of TFP in the following year. Given that on average firms engaged in 70 training hours in a year, allocation of this budget exclusively to formal training should gain an average an increase of 0,13% with a peak of 0,27% corresponding to average training hours in 2011.

A combination of formal and informal training methods is the second most popular choice of SMEs in our sample. The effect of this training strategy is half the effect of exclusive formal training. In particular, additional 100 hours dedicated to this training methodology will gain the firm 0,09% increase in TFP in the following year.

Our results suggest that there is no significant effect of informal training on TFP of SMEs.

**Research limits.** The present work concentrates on the evidence of Italian SMEs that are members of Fondirigenti. These firms are prevalently manufacturing firms. Accordingly, the present results are relevant for manufacturing firms or services for manufacturing. Analysis of SME in service industry requires additional attention.

**Practical implications.** The present study demonstrates that SME in Italy undertake different training strategies. The most popular strategy is exclusive formal training. However, the primacy of this method is being undermined by growing tendency to choose a combination of formal and informal training.

While research on SME training generally agrees on the superiority of formal training for company performance improvement, this evidence is based on overall employee training. The limited evidence on management training in SME suggests that merely investing in formal training may not be enough for boosting firm performance. Organizations need to align managerial practices as well as internal structures to allow managers to spread the skills acquired through training to all levels of the company (Rigg and Trehan, 2002; Beer, Finnström and Schrader, 2016). In fact, properly designed combination of formal and informal training is aimed to help managers getting over the resistance of the old structure. On the other hand, exclusive reliance on informal methods for managers does not lead to significant improvements of productivity in the firm.

Encouraging evidence from this research is that companies that choose to invest in training choose the right combination of training methods. However, only 8,7 % of SME that are enrolled in Fondirigenti actually use their right to access management training.

The study suggests that SME should invest in managerial training if they want to improve TFP and succeed in the market. While investing in training careful analysis of training method should be performed.

**Originality of the study.** Previous study of the impact of management training on TFP of Italian firms found that there is no significant relationship between total training hours and TFP of SME (Feltrinelli et al, 2017). The present study demonstrates that this relationship depends on the training method chosen by firms.

The present research contributes to management training research in many ways. First of all, it is the first quantitative study of the effect of management training in SME. Our study underlines the importance of management training for SMEs by demonstrating higher productivity in firms participating in managerial training. Secondly, we find

that not all training methods are equally effective for boosting productivity growth. In particular, formal and combination of formal and informal training methods provide best results.

The originality of the present study is reflected in the dataset which is used for the study of training methods. Previous research on training in SME is based on interviews with business owners where they recall undertaken training and subjectively evaluate impact of training on financial results or competitiveness of the firm. The present work employs more reliable data in which the exact number of hours in training in each training method in a given year is recorded. This data is enriched by objective estimation of firms' FTP based on information recovered from balance sheets. The present analysis allows for objective estimation of effectiveness of training in SME domain.

**Keywords:** SME; middle manager training; methods of training; TFP

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# Exploring and comparing the impact of reward crowdfunding and equity crowdfunding on company performance

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**Objectives.** Crowdfunding is a new opportunity for entrepreneurs to raise capital from non-professional investors. In the last few years, crowdfunding has experienced a high growth rate, and its global market will expect significant numbers in the coming years (Massolution, 2016; World Economic Forum, 2016; Technavio, 2018; Politecnico di Milano, 2019). Being one of the most important new players that entered the entrepreneurial arena (Block et al., 2018a: 240), crowdfunding is becoming more and more a popular financing choice among innovative start-ups (Macht and Weatherston, 2014; Vismara, 2016; Oo et al., 2019; Ralcheva and Roosenboom, 2019)

Among the crowdfunding models (i.e. donation, lending, reward, equity), the equity-based crowdfunding (ECF hereafter) (Ahlers et al., 2015; Vismara, 2016) and the reward-based crowdfunding (RCF hereafter) (Mollick, 2014; Koch et al., 2019) are considered the main financing alternative for startups to traditional funding sources - such as Venture Capitalists (VCs hereafter) and Business Angels (BAs hereafter). The differences between ECF and RCF are well known. According to Ahlers et al. (2015: 958), "Equity crowdfunding is a method of financing, whereby an entrepreneur sells a specified amount of equity or bond-like shares in a company to a group of (small) investors through an open call for funding on Internet-based platforms". With regard to RCF, Belleflamme et al. (2014: 588) argued that it "involves an open call, mostly through the Internet, for the provision of financial resources either in the form of donation or in exchange for the future product or some form of reward to support initiatives for specific purposes". According to Davis et al. (2017: 90), "Rewards-based crowdfunding enables entrepreneurs to garner funds in support of a specific purpose, which often centers on the development or distribution of a new, unfinished, or unproven product".

In crowdfunding literature, the vast majority of studies focused on the determinants of campaigns' success and on the main motivations of non-professional investors to commit financial resources to support entrepreneurial initiatives. Over the years, a growing number of scholars have detected some successful drivers of the campaigns in both ECF (Ahlers et al., 2015; Lukkariinen et al., 2016; Vismara, 2016, 2018; Vulkan, 2016; Block et al., 2018b; Dorfleitner et al., 2018; Piva and Rossi-Lamastra, 2018; Polzin et al., 2018; Kleinert and Volkmann, 2019) and RCF (Mollick, 2014; Cholakova and Clarysse, 2015; Colombo et al., 2015; Cordova et al., 2015; Yuan et al., 2016; Cha, 2017; Courtney et al., 2017; Davis et al., 2017; Josefy et al., 2017; Parhankangas and Renko, 2017; Wang et al., 2018; Koch et al., 2019). These scholars have also disclosed different types of motivations that seem to determine the investors' decisions to finance a project for equity or rewards.

While all these contributions have provided useful insights and results concerning how to improve success of crowdfunding campaigns (in terms of both amount of funding collected and number of investors), lower attention has been given by scholars to the crowdfunded companies' performance after the end of the campaigns (Mochkabadi and Volkmann, 2018). Undoubtedly, the issue of the post-funding performance of crowdfunded ventures is very relevant. A recent report (Politecnico di Milano, 2019) highlights that crowdfunded ventures face huge difficulties in growing, innovating and reaching the targets previously set in their business plans.

As just stated, few exploratory studies have investigated the issue of the post-campaign performance of crowdfunded companies. With regard to ECF model, Decarre and Wetterhag (2014) found that equity crowdfunded companies (ECFed hereafter) experienced growth in sales but also a decrease in profits. Signori and Vismara (2018) provided insights on several predictors affecting the likelihood of ECFed to survive, raise further capital, or get mergers and acquisitions or seasoned equity offerings. Di Pietro et al. (2018) have found that equity crowdfunded companies exploit crowd network and have higher success rate two years later as compared with startups that do not use ECF and do not exploit the crowd. Hornuf et al. (2018) investigated the determinants of follow-up financing and the

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survival rate of ECFed companies, and revealed that these companies have a lower survival rate but show a higher likelihood to get follow-up funding through VCs and BAs. Walthoff-Borm et al. (2018) explored the post-campaign innovative and financial performance of ECFed matching them with non equity-crowdfunded (NECF) companies (i.e. the companies that did not raise ECF but collected capital from other sources such as entrepreneurs, friends, family, VCs and BAs). The scholars found that companies funded through ECF show more patent applications but have higher failure rates as compared to NECF companies. The study by Eldridge et al. (2019) highlights that ECF has no impact on SMEs innovation. However, the scholars also found that ECF positively influences SMS' growth opportunity (i.e. annual sales growth to total asset growth). Troise et al. (2020) found that equity offered, product innovation and founders' prior industry experience are positively related to the growth of ECFed companies.

With regard to RCF, there seems to be no study that has investigated the post-funding performance of reward crowdfunded companies (RCFed hereafter). In the RCF context, entrepreneurs launch online campaigns in order to get feedback on products/services or ideas (Belleflamme et al., 2014; Macht and Weatherston, 2014; Mollick, 2014). Thus, differently from ECF, RCF is not only addressed to already established companies - it is often directed to ideas that do not become companies. This peculiarity is probably one of the reasons that explain why the investigation of the post-funding performance of RCFed companies has received scarce attention in the literature. This limited attention has not only inhibited the understanding of the actual impact of RCFed, but it has also impeded the comparison of post-funding performance between the latter and ECFed. To the best of our knowledge, in fact, there are no previous studies that specifically compare ECFed and RCFed matching their performance after being funded.

Overall, the issue that definitively needs further investigation is the ability of crowdfunded companies to actually grow and introduce successful innovations after being funded. In this vein, we decide to focus our attention on the post-campaign performance of both ECFed and RCFed and to measure it in terms of post-funding growth and innovation capability. This appears in line with those scholars who underline the need to improve our knowledge on whether crowdfunding - both ECF and RCF - can act as catalyst for growth and innovation (Eldridge et al., 2019).

Building on these premises, this study poses the following research questions:

RQ1: What impact does ECF campaigns have on company performance in terms of innovation and growth?

RQ2: What impact does RCF campaigns have on company performance in terms of innovation and growth?

RQ3: How do ECFed companies perform relative to matched RCFed companies?

**Methodology.** We focus on Italy as it is a developed country in terms of crowdfunding, especially with regard to ECF. Italy was the first country in Europe to regulate the ECF market (Decreto Legge, n. 179/2012 - Decreto Crescita Bis) and introduce a specific register for ECF operators. It can be definitively considered an interesting country for the study of the crowdfunding sector, as witnessed by several recent studies (e.g. Piva and Rossi-Lamastra, 2018; Rossi and Vismara, 2018; Feola et al., 2019).

This research is a work in progress. We are currently collecting data from both RCF and ECF Italian platforms. We are considering the successful campaigns only (and not the failed ones) for both the types of crowdfunding models - we are collecting data since the origin of the campaigns to the end of 2018. Among the ECF platforms, we use seven of the oldest ECF platforms listed in the specific registry of ECF operators provided by Consob (Commissione Nazionale per le Società e la Borsa), i.e. CrowdFundMe, Equinvest, Mamacrowd, Nextequity, Opstart, StarsUp, 200crowd. A more difficult task is the identification of the sample of RCFed, as this model - as stated above - also includes common people or innovation-seekers. A previous research authored by Cordova et al. (2015: 118) limited the sample to technology initiatives as these projects "aim at becoming long-lasting enterprises". This approach, although promising, would not guarantee the creation of a final sample made up of established companies, given that the probability of becoming a firm may not materialize (or at least not for every initiative). In order to solve this problem, we decided to focus our attention only on established companies that resort to RCF. Among the RCF platforms, we consider three of the most popular platforms - i.e. Eppela, DeRev and Produzioni dal Basso - and we leverage respectively the categories "Technology" (Eppela), "Technology & Startups" (DeRev) and "Startup & Business" (Produzioni dal Basso).

At the end of data collection phase we shall be able to obtain a final sample of 187 ECFed initiatives and about 254 RCFed initiatives. We will leverage the Business Register of start-ups / SMEs and CrunchBase in order to collect our control variables. Data related to companies' performance measures - i.e. our dependent variables - will be collected through the database AIDA-Bureau van Dijk. In order to measure innovation capability, we use the number of patent applications (Michaelas et al., 1999; Walthoff-Borm et al., 2018; Eldridge et al., 2019). Sales growth (Venkatraman and Ramanujam, 1986; Gronum et al., 2012; Decarre and Wetterhag, 2014; Walthoff-Borm et al., 2018; Eldridge et al., 2019) will be used to measure companies' growth. In line with the studies of Di Pietro et al. (2018) and Walthoff-Borm et al. (2018), it is considered the performance of crowdfunded companies two years after the end of the campaign. Leveraging on prior literature, the capital raised through the campaign (Decarre and Wetterhag, 2014; Eldridge et al., 2019) and the number of investors that invested in the company through the campaign (Decarre and Wetterhag, 2014; Signori and Vismara, 2018) are used as explanatory variables. We consider these two factors for both the investigated types of crowdfunding. We will perform some regression analyses (e.g. OLS regression and negative binomial or zero-inflated negative binomial regression) in order to test the effect of our explanatory variables on our two dependent variables. The final aim is to employ two models for both types of crowdfunding. Eventually, we will adopt a comparative approach in order to highlight the performance differences between ECFed companies and RCFed companies.

**Findings.** *At this stage of our research, findings cannot be discussed, as we will perform the analyses after the end of data collection. This study aims to add new knowledge in the current crowdfunding literature that explores post-campaign results. In particular, the aim is to shed some lights on the role of crowdfunding campaigns' on the performance of both ECFed and RCFed companies. We expect some differences between the two types of crowdfunding - i.e. that their campaigns' outcomes will have not the same effects on the performance of companies. An intriguing aspect could be the comparison between the two models - we think that this comparison may represent an original contribution of this research. Currently, in fact, little is known about the post-campaign performance of companies that used these two crowdfunding models - most of the previous research has focused on the comparative analysis of ECFed with companies funded through other different fundraising models (e.g. VCs and BAs).*

**Research limits.** *This study is not without limitations, which might encourage new research. The first limitation is related to the different timeframes of initiatives posted on crowdfunding platforms and consequently of their performance (in terms of growth and innovation). While ventures' performance has been measured two years after each successful crowdfunding campaign, not all the ventures were funded in the same year (the first platforms were born around 2014 and the most recent were born afterwards). The second limitation deals with the fact that the research focuses on a single country and on the main RCF and ECF platforms. However, the high growth rate of both ECF and RCF markets will offer the opportunity to test our models also in other countries as well as to extend the survey sample to other platforms. The third limitation is about the method. We use the main models of analyses (i.e. regression analyses) but recognize that other econometric techniques would be valuable to improve the robustness of the study. The last limitation of this research is the choice of the measures of performance (growth and innovation capability). Even if we leverage well-known parameters and follow the prior studies in the crowdfunding literature (e.g. Decarre and Wetterhag, 2014; Signori and Vismara, 2018; Eldridge et al., 2019), different variables can be used to measure ventures' performance.*

**Practical implications.** *Hopefully, this research will have practical implications for many stakeholders and will provide interesting information for them. We expect that findings can help entrepreneurs to improve their efforts during the campaigns in order to achieve superior performance after being funded. The study will suggest which crowdfunding campaigns' outcomes could have a greater impact on company performance. Insights deriving from the study may lead entrepreneurs to take advantage of one specific crowdfunding model over the other. As above stated, this is a work in progress, hence conclusions will depend on the results, but for example we can imagine that if a positive effect of the number of investors will emerge, it could lead entrepreneurs to "get more investors on board" and pay less attention to have only few professional investors. Based on the results of this study, entrepreneurs will also enhance their decision to resort to ECF or RCF as the campaigns' outcomes of these two models may have different effects on the future company performance. The study may also have relevant implications for policy makers/authorities and platform managers. Policy makers and authorities (e.g. Consob) usually pay high attention to the crowdfunding systems. Thus, the result of this study may be able to support their decisions to sustain ECF or RCF through specific tax incentives or additional benefits for both entrepreneurs and investors. Platform managers could also benefit from the insights of this study and improve the quality of their platforms by adding the performance data of crowdfunded companies after successful campaigns in order to show their growth and innovation capability. This will reinforce the importance of online crowdfunding platforms as a valuable alternative financing system for entrepreneurs.*

**Originality of the study.** *The post-campaign scenarios are topical, and there is an ongoing debate on whether and how crowdfunded companies grow and perform after successful campaigns. In this vein, there is a strong call for additional studies that can improve the knowledge about crowdfunding effects on company performance. This research contributes to the current crowdfunding literature as it explores the impact of ECF and RCF campaigns on both growth and innovation capability of companies as well as it proposes a new comparative approach between ECFed and RCFed companies. To the best of our knowledge, this is the first research in this sense. Furthermore, this study may be able to add new knowledge in the current research stream by exploring two performance measures for both ECFed and RCFed companies. Considering the lack of studies related to post-campaign scenarios of RCF, this research would also improve our knowledge on the post-offering lives of RCFed companies.*

**Key words:** *crowdfunding; entrepreneurs; reward; equity; innovation capability; company growth.*

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# From online experience to visiting the production plant: management challenges and communication opportunities

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**Objectives.** *Industrial tourism, understood as visiting working production plants, company visitor centres and corporate museums, is an area that has been relatively little investigated in the literature but which is an interesting tourism niche today, one that also offers opportunities for companies to diversify and innovate their communication activities and to test new hybrid marketing channels. Additionally, industrial tourism could represent an asset in country image and reputation building processes, if it is communicated and shared strategically (Otgaar et al., 2016).*

*The interest of destinations and tourists in industrial tourism is relatively recent and has developed especially since the mid-90s with the first dedicated tourist guides such as “Watch it Made in the USA: A visitor Guide to the Companies that Make your Favorite Products” (Axelrod and Brumberg, 1994).*

*However, some scholars place the origins of industrial tourism as early as the 1960s, in the US, where the guide, “Plant Tours in the United States”, was published in 1962 by the United States Travel Service and the United States Department of Commerce. During that same period, a number of companies in Europe also began to open their doors to promote their products and showcase themselves to new consumers (Otgaar, 2012).*

*It is therefore no coincidence that, in those years, in 1964, one of the great classics of children’s literature was published, a book that helped crystallize the wonders - and horrors - of a factory tour in the collective imagination: “Charlie and the Chocolate Factory” by the British novelist Roald Dahl. “I, Willy Wonka, have decided to allow five children - just five, mind you, and no more - to visit my factory this year. These lucky five will be shown around personally by me, and they will be allowed to see all the secrets and the magic of my factory. Then, at the end of the tour, as a special present, all of them will be given enough chocolates and sweets to last them for the rest of their lives! So watch out for the Golden Tickets!”<sup>1</sup>. With this announcement, published in the newspapers by confectionery businessman Willy Wonka, the hunt for the golden ticket to visit the chocolate factory is unleashed: a brilliant corporate communication idea in a fantasy and pre-digital world. In writing it, Dahl is said to have drawn on his childhood school experiences in Cadbury.*

*Indeed, the essence of industrial tourism is precisely this: plant tours, tours in visitor centres and in the museums of companies that are still in business with the aim of offering visitors an experience of the product, of company organization, and production process that would draw them closer to the brand and stimulate consumer loyalty. Tourists can savour and experience the culture of a brand, get to know certain products in depth and have fun discovering the production phases, also by participating directly in some passages of the production process with hands-on activities.*

*In the era of digital tourism, then, the physical experience of visiting a company is amplified through digital applications and the online world, with the opportunity for companies to better understand and intervene in all the different phases of the “factory visits cycle”.*

*In fact, the tourist-consumer is influenced during the pre-experience stage by the institutional and other information available online. During company visits, appropriate technology can be provided to support the experience - this is the case, for example, of advanced signage, gaming, mobility apps, maps, augmented reality, interactive company museums and immersive environments - and for sharing the experience itself on social media or reviewing apps, etc.*

*And then, finally, comes the return from the trip. Here technology also plays a role in the post-experience for uploading videos and photos on Instagram, for putting together travel blogs and for leaving online comments and reviews.*

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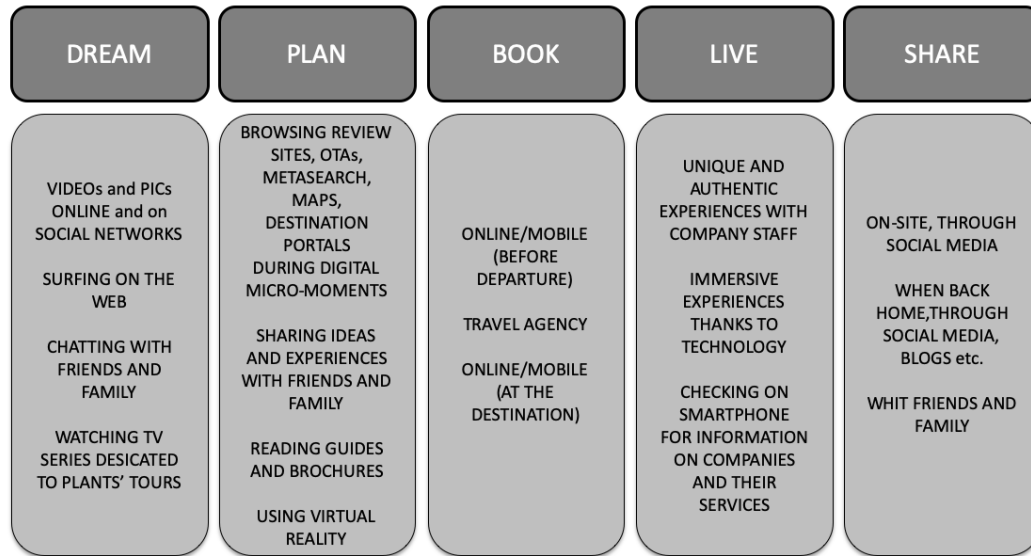
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<sup>1</sup> Dahl, R. (1964), *Charlie and the Chocolate Factory*, Alfred A. Knopf, New York.

Fig. 1 The five stages of the travel cycle and associated activities for industrial tourism and plant visits



Source: authors on Friel and Peres, 2018

The physical and digital impact of company tours, therefore, is very interesting for businesses, as also demonstrated by giants like Amazon which has opened its fulfilment centres to visits. "Amazon Fulfilment is where our employees, technology and innovation come together every day to delight customers" we read on the amazon.uk website: an experience that begins online, becomes physical immersion, and returns to the web and social networks to be shared.

Despite this interest from companies and visitors in plant tour experiences, academic literature has not dealt with this issue very much. Lee (2015) investigated, for example, the factors that determine the attractiveness of industrial tourism, Otgaar, et al. (2016) and Jansirani and Mangai (2013) analysed the impacts of industrial tourism both for businesses and for the territories in various areas of the world, from Turin to Shanghai, to India; Chow et al. (2016) examined the effects of industrial tourism in terms of brand equity. Some scholars have also analysed how opening to tourism promotes learning processes in "guest" companies that can reinforce internal organization (Brunetti, Bonfanti, Castellani and Giarretta, 2018).

Much less analysed - see for example the studies by Mitchell and Mitchell (2001) and Mitchell and Orwig (2002) - are the effects of opening plants to external visitors in terms of developing customer relationships, and on the strengthening and innovation of the company's customer education strategies (Ben Youssef et al., 2018).

Furthermore, there are no studies on a national scale on the expectations and motivations of the industrial tourist, and on the relationship between these expectations and the offer strategies of companies.

This study therefore intends to deepen the understanding of "living industry tourism" as a corporate communication initiative, with specific reference to Italy. It aims to explore what opportunities emerge both from the supply side and from the point of view of a growing tourist / consumer market interested in coming into direct contact with the world of manufacturing and how corporate communication could contribute to the development of a win-win strategy.

More specifically, the research intends to answer the following research questions:

- RQ1: What are the main opportunities for companies and territories coming from Living Industry Tourism?
- RQ2: How could corporate communication contribute to effectively manage Living Industry Tourism activities and generating impact on local territories?
- RQ3: What are visitors looking for in attending plant tours?

**Methodology.** A survey was conducted on 30 of the companies participating in the 2019 edition of the Openfactory event to investigate some of these aspects in greater depth.

Openfactory is the main Italian industrial tourism event: it is held every November and opens the doors of some of the most important Made in Italy enterprises to the general public for a day, promoting the organization of dedicated information events, tours of the production plants, publications, workshops and other activities.

This event, although representing a relatively small section of the phenomenon - 30 companies and 600 visitors were interviewed for the survey - provides a valuable and quite unique occasion for understanding the trends underway in this type of experience and identifying its development potential for companies and territories.

These are companies that are based in various regions of Italy, of different sizes and that operate in different sectors - from confectionery, such as Loison, to the production of fabrics (Ratti), steel mills such as ABS or designer furniture such as Lago.



## Findings

### *RQ1. Living Industry Tourism: opportunities for companies and territories*

Industrial tourism is certainly still a niche area but with growing demand: indeed this type of tourism product offers an answer to the needs for experience, learning through play and participation that characterize the sector today. Nevertheless - despite all the imaginable difficulties in organizing the offer - it remains an interesting form of tourism.

From the destination point of view, plant tours and industrial tourism allow diversification and innovation of the local tourism product and attainment of new market segments. In Italy, Emilia-Romagna's "Motor Valley" is an excellent example of how a destination has used the appeal of an industrial district to diversify its tourist offer and to reposition itself in the tourism market (Alberti et al., 2012). The non-profit Motor Valley Development Association was established with the aim of bringing together the region's major motor brands including Ferrari, Ducati, Lamborghini and many others, with their corporate museums, private collections, circuits, driving schools, and events in the motoring field to make the Emilia-Romagna Motor Valley of one of the most important tourist assets on international markets, within the project "La Via Emilia - Experience the Italian Lifestyle".<sup>2</sup>

Furthermore, working on industrial tourism allows destinations to develop and strengthen relationships with local businesses, capitalizing on the very significant investments that these make in terms of communication, services and (cultural) infrastructures at the local level. This is the case with the corporate visitor centres, museums and representative offices in which many companies are investing millions of euros today, and that sometimes end up becoming real architectural and cultural landmarks, as shown by the cases of companies such as Swarovski in Austria, Vitra in Switzerland and Germany, Mercedes-Benz in Germany, Lavazza and Ferrari in Italy, and many others, large and small.

This phenomenon is even more evident in the wine world. In recent years the benefits deriving from wine tourism and from opening up wine companies to tourism have been flowing well beyond the winery doors to benefit the whole local economy, creating employment in tourism and favouring the development of local associations, stimulating innovation in the tourism supply and in the other complementary forms of tourism, such as food tourism, slow tourism and, above all, cultural tourism, and contributing in a sometimes crucial manner to place-branding strategies in a process for the transformation of "landscapes" into "brandsapes".

This is particularly evident in those territories that are capable of capitalising on the proactivity of the wine&food businesses and introducing experiential and cultural elements unto the private and public offering. In this way, they exploit to their own benefit the need increasingly felt by the wineries to create a bond with customers, not simply on the basis of the product but also of the drinking experience. This can be done, for example, by designing itineraries that explore the production process, the architecture and design of the wineries, and the exploitation of the wine landscape with the organisation of cultural events in the establishments themselves and offering packages that combine hospitality, spas and wellness.

There are many examples at international level from the Napa Valley with the architecture of Herzog and de Meuron and the wine design resorts, to the Rioja valley where the structures and furnishings of the wineries bear the signatures of world-famous architects and designers like Santiago Calatrava, Zaha Hadid or Norman Foster, or the Tuscan wineries by Mario Botta and Renzo Piano. Not to mention museums, exhibition areas and visitor centres dedicated to wine such as the Vivanco Museum of Wine Culture and many others.

Also from the point of view of companies, the interests in opening up to visitors and developing closer collaborations with the world of tourism can be manifold, especially in a corporate communication perspective.

Opening up to tourism provides an important opportunity for innovating communication strategies, stimulating greater customer-visitor understanding of the value of the product, and strengthening the sense of trust and attachment to the brand. Interesting implications of tourism activities also concern the activation of virtuous processes of internal communication and intra-company education on corporate values thanks to the involvement of employees, workers and managers in the activities for the public.

These effects, as already mentioned above, can also be amplified by digital communication activities.

Finally, also worth mention are the commercial opportunities provided to companies by a closer relationship with tourism. The marriage of tourism and manufacturers offers occasions for promoting locally made goods, with the exploitation of the profitable virtuous circle not only of the place in product<sup>3</sup> but also of the product in place. There is no better place than Italy for realising this today. Simply enter the shipping department of any of the great Italian design enterprises in Brianza or Piedmont or of a leading winery in Valpolicella or Chianti: the destination countries indicated on the labels are the great current and wish-list tourism markets for Italy: Germany, the Scandinavian countries, China, Russia, Brazil, the Arab Emirates and South Korea, above all.

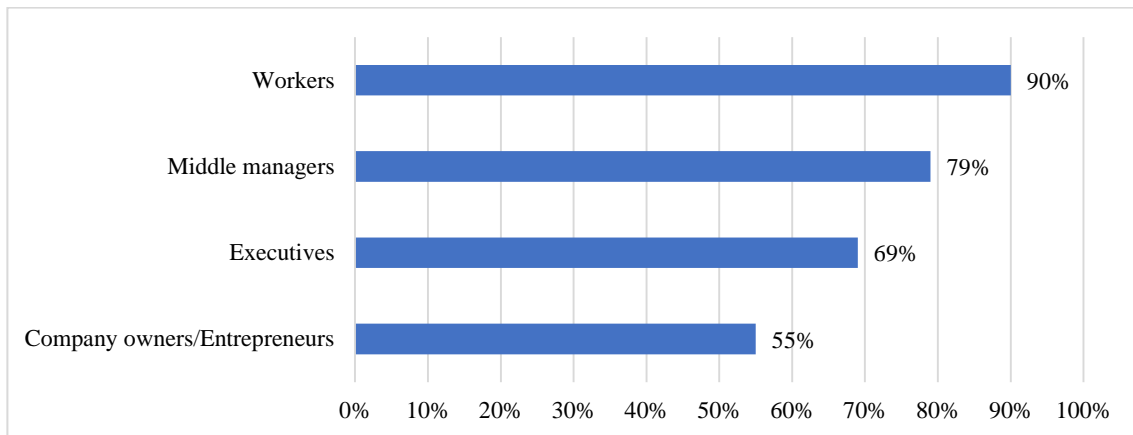
What can companies bring home from a closer relationship with tourism today? When asked about the usefulness of joining corporate tourism openings, companies cite three elements as the most relevant: 1) identifying and testing new external communication narratives; 2) reflecting on how to communicate the personal history of the entrepreneur and of the enterprise more effectively; 3) taking advantage of the opening event as an opportunity for strengthening the processes for communicating corporate values internally.

<sup>2</sup> Source: <https://motorvalley.it/en/association/>.

<sup>3</sup> From the title of the famous 2002 article by the American sociologist, Harvey Molotch, who analysed the relationship between the quality of goods and their places of origin.

The latter is particularly interesting and relevant considering that those most involved in the activities with visitors are technicians, workers and middle managers (Fig. 2).

Fig. 2: Which employees are involved in Open Factory visits (multiple choice)?



Source: authors, 2019

The role of communications will be explored in the next section.

#### RQ2. The role of communication in Living Industry Tourism: the use of narratives for creating value

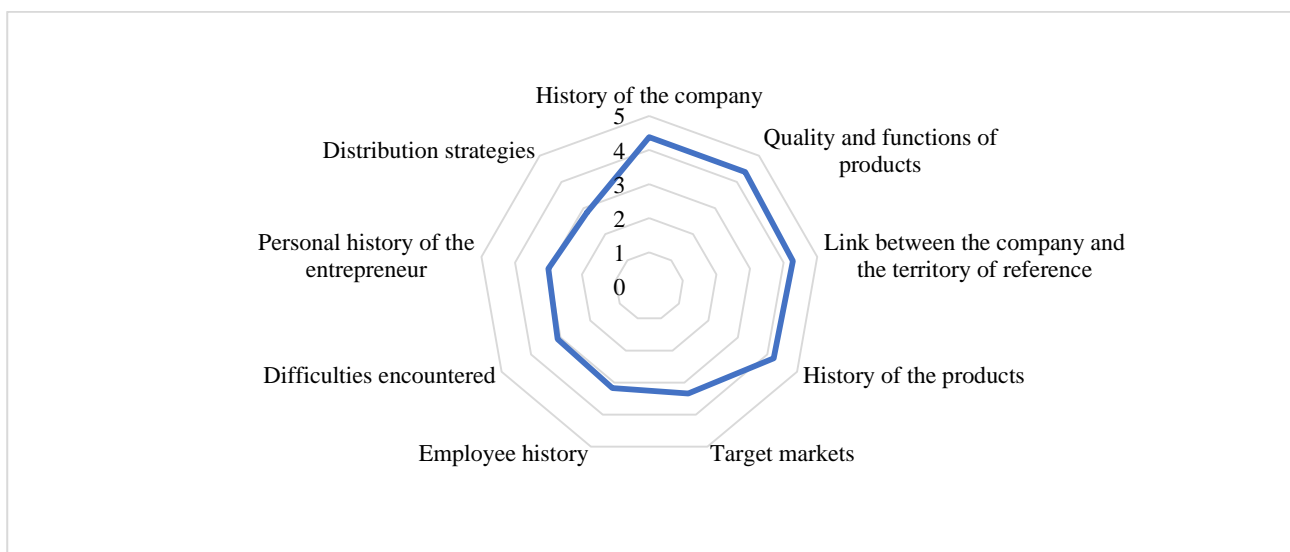
The survey also sought to investigate the narrative elements chosen for communication and the propensity for developing services and proposals for the tourism market. Narratives represent a useful tool for creating value for both companies and stakeholders and they could provide those parameters by which to create the Living Industry Tourism imaginary (Sadowski, Bendor, 2019).

The history of the company, the quality and functioning of the products, immediately followed by the history of the products and the relationship of the company with the territory of reference, are the communication themes considered as being the most important, and on which companies chose to focus their visiting activities during Openfactory (Fig. 3),

The personal history of the entrepreneur and of the employees as well as the more strategic aspects of product distribution were deemed less significant, indicating minor attention to B2D communication.

For some of the companies participating in the initiative, Openfactory is the only occasion during the year that is open to external visitors, while for others it is a special event that is integrated into a permanent and structured program of company openings and activities for the public at large.

Fig. 3: Communication narratives by companies on the occasion of Openfactory



Source: Authors on Openfactory, 2019.

Only a few companies use Openfactory to test new direct sales channels. Above all, therefore, tourism is looked on as an opportunity for developing new communication moments and strategies.

The companies interviewed are deeply aware of this and 40% intend to develop new services for visitors in the next 3 years. Moreover, 35% of the companies already employ staff who are permanently dedicated to welcoming tourists.

These are complex investments, of course, but they are also necessary for intercepting the new demand with ad hoc services and for efficiently managing reception activities so that these do not impact negatively on the everyday production operations.

*RQ3. What are visitors looking for in attending plant tours?*

Factory visits are attracting broader and broader public interest. This is shown by international reports (OECD, 2014), by the experiences displayed and promoted on the tourism promotion portals of many destinations and countries around the world, and by the numbers provided by companies that open their doors to tourists and visitors. Finally, proof of this interest is the great success of TV series and programs dedicated to the world of production such as “How It’s Made” on Discovery Channel, which reached 400 episodes, “Megafactories” on National Geographic, and many others.

But what do we visit and why? The opinions expressed by Openfactory visitors offer some interesting elements of understanding.

Enriching one’s knowledge is a central aspect of the tourist’s reasons for visiting a company’s production plants (Tab. 1): understanding the genesis of a product; seeing how a production activity is organized and an interest in getting to know the companies operating in one’s area are, in fact, the main reasons for visits.

Direct purchasing is not the lever - not even in the case of companies that produce food products - instead it is the experience and the possibility of acquiring new knowledge.

However, it is also interesting to note that 57% of respondents declared - post-visit - that they intended to purchase products from the company they had visited, a marked increase compared to the figures on direct and previous knowledge of the product (38%). This is indicative of how effective it can be for companies to structure B2C activities for the tourism market.

Furthermore, more than 90% of respondents gave a “high” or “very high” rating to the quality of the products and the expertise of the staff, and 96% believe that direct experience in the company helps “a lot” or “very much” to understand the real quality and value of a product.

Tab. 1: Motivation of tourists for participation in company openings, visits and workshops

	Low	Moderate	High
Better understand the genesis of a product	5%	17%	77%
To better understand how the production process is organized	5%	21%	74%
Interest in better understanding how a company operates in its territory of reference	16%	21%	64%
Specific professional interest for the sector / company	31%	24%	45%
Interest in having a different tourist experience	38%	28%	34%
Friends / relatives who work for the company	77%	5%	18%
Direct purchase of products	78%	14%	8%

Source: Authors on Openfactory, 2019.

A great many Openfactory participants declared previous experiences of industrial tourism in Italy (42%), and over 20% of visitors said they had visited companies and production plants during their holiday periods abroad. Moreover, when specified, such cases are interesting because they highlight the widespread diffusion of the industrial tourism phenomenon in Italy and across the globe, and the variety - even in a sectoral sense - of production plants that open to tourism today.

**Research limits.** The quantitative analysis doesn’t allow us to explore more in details specific issues that could be considered strategic for communication and management professionals. In order to overcome this limit, it could be useful to organize interview with professionals or focus groups addressed to analyse in depth topics of relevance for the strategic communication function.

**Practical implications.** As far as Italy is concerned, the data collected during the Openfactory event highlight the interesting opportunities that may spring for companies from a closer relationship with the tourism market and with the large public of tourists / visitors interested in visiting production plants. These opportunities mainly lie in the possibility of developing and testing new methods and tools of communication to stimulate greater understanding of the value of the product, strengthen the sense of trust and attachment to the brand and generate online word of mouth and experience sharing on social media. Interesting implications of these activities also include the activation of virtuous processes of internal communication and intra-company education on corporate values thanks to the involvement of workers and managers in reception activities.

*For most of the companies analysed, the flow of visitors is still relatively low, below 10,000 per year: of this, around 50% is made up of business tourism flows.*

**Originality of the study.** *Italian leisure tourism represents a “very important” share for about 26% of the companies, while international leisure tourism is considered “very important” only in 22% of cases. However, this is an expanding tourism niche, as is also shown by the growing attention of destinations and companies in organizing tourist packages and dedicated services and as declared by Openfactory visitors themselves. These are potentially interested in other industrial tourism/manufacturing tourism experiences: more than 70% of respondents consider it “probable” or “very probable” that they will visit a company or a production plant on their next holiday trip.*

*This study enriches the stream of research by putting on evidence how visitors could choose where to go and how to buy their trip. Based on results, more and more through (digital) word of mouth and by browsing online, as tourism businesses are increasingly selling to customers directly through the internet via websites and travel search engines (Camilleri, 2018).*

*And so in the industrial tourism sector too it is therefore mainly digital that channels tourists towards the physical experience at destination, an experience that begins online, not only for sourcing information but also for booking, and which is completed on the ground with complementary and coherent products during visit to the company.*

**Keywords:** *Industrial tourism; plant visits; corporate communication; corporate narratives; digital tourism*

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