www.sijm.it

sinergie

italian journal of management

sinergie

VOL. 38
Issue 1

JAN-APR
2020

Management and sustainability: creating shared value in the digital era

Selected papers from Sinergie-SIMA Management Conference 2019
Sapienza University of Roma - Roma 20-21 June 2019

Vol. 38, Issue 1, 2020

ISSN 0393-5108

S I
M A
Italian Society of
MANAGEMENT

FONDAZIONE
CUEIM

Official Journal of Italian Society of Management

sinergie

italian journal of management

Official journal of Italian Society of Management

Vol. 38 Issue 1 N. 111	**Management and sustainability: Creating shared value in the digital era**	JAN-APR 2020

Sinergie Italian Journal of Management is a peer-reviewed scholarly publication focusing on the principal trends in management studies.

Formerly *Sinergie rivista di studi e ricerche*

Published quarterly

Founded in 1983

ISSN 0393-5108

Open access at *www.sijm.it*

Indexed in Google Scholar, ACNP, ESSPER

FONDAZIONE CUEIM

Sinergie Italian journal of management is published by Fondazione CUEIM, a foundation aiming to carry out and to promote scientific research, especially in the fields of business administration and of organizations management, both profit and non profit.

SIMA Italian Society of MANAGEMENT

Sinergie Italian journal of management is the official journal of SIMA, the Scientific Society of Italian Professors of Management, whose aim is to contribute to the development and dissemination of management knowledge in the academic, economic and social fields, on an excellence basis.

CUEIM

The editing activity is sponsored by Consorzio Universitario di Economia Industriale e Manageriale - CUEIM - www.cueim.it

Peer reviewed journal

Journal accredited by AIDEA

Quadrimestrale associato all'USPI
Unione Stampa Periodica Italiana

Sinergie Italian Journal of Management
Via Interrato dell'Acqua Morta, 26
37129 Verona (VR), Italy
Tel. +39 045 597655
www.sijm.it

sinergie
italian journal of management
Vol. 38, Issue 1, 2020

sinergie
italian journal of management

Management and sustainability: Creating shared value in the digital era

sinergie
italian journal of management
Vol. 38, Issue 1, 2020

Original research paper

Book reviews

Useful information for readers e authors

A single aphorism, during the health emergence

sinergie
italian journal of management
Vol. 38, Issue 1, 2020

We have realized that we are on the same boat, all of us fragile and disoriented, but at the same time important and needed, all of us called to row together, each of us in need of comforting the other

(Papa Francesco)

Sustainability Transformation, the challenge is now!

Dear friends of Sinergie,

This issue of the Journal contains the best papers presented at the Sinergie-SIMA 2019 conference "Management and sustainability. Creating shared value in the digital era", which took place last June at Sapienza, University of Rome, Italy.

The Conference had a large participation, with around 350 participants, 51 full papers and 101 extended abstracts presented, and offered a rich and profound perspective of investigation on a theme that is of crucial importance at all levels: for institutions, for businesses, for people's lives.

The relevance and urgency of sustainability - environmental, social, and economic - in recent years have finally found increasing confirmation also in important political-institutional forums, translating into action plans, such as the 2030 Agenda for Sustainable Development, with its Sustainable Development Goals, and the European Green New Deal.

In the face of the imminence of major crises, such as that relating to climate change, there is a significant mobilization of thought and conduct, which however still appears not sufficiently incisive to determine a clear change of direction.

In recent months, in the spring 2020 which unfortunately we will remember for a long time, new events have significantly changed the scenario. The Coronavirus pandemic has led to a very serious health crisis, with a dramatic tribute in terms of human lives, and caused a huge economic crisis, bringing about changes in the living conditions and routines of billions of people.

To face this moment of crisis, a truly extraordinary effort will be needed, in terms of public intervention (at national and international level), of entrepreneurial initiative, of sacrifice and contribution from citizens. From the problem, then, an opportunity emerges: to convey this huge commitment within a new vision of sustainable development, which can respond to the challenges of our times and the real needs of human society and people.

This vision must contemplate the environmental dimension of sustainability, in the wake of the green economy and the circular economy, to face the great challenges of the conservation and healthiness of the natural environment through lowering emissions and developing renewable energies, reducing the use of natural resources, the reduction of pollution (soil, water, air), the elimination of waste, the maintenance of biodiversity and ecosystems, and so on.

The new development model must also embrace the social dimension of sustainability, adopting themes such as ethics, human rights, employment, diversity, security, welfare, education, community. And of course, today more than ever, intergenerational solidarity and health.

At the same time, the new development model must cover the economic dimension of sustainability, impacting on the purpose of companies, which can no longer be profit maximization. The economic dimension of sustainability leads to adopting a multi-stakeholder approach and a long-term orientation, considering also the economic impact that companies and organizations return to society and their communities.

The new development model should support and incentivize companies that integrate sustainability into their business model, and therefore in strategies, governance mechanisms, objectives, performance evaluation systems, processes, customer and business partners relations.

In the business world, this major transformation with a focus on sustainability requires a profound cultural change, to start and manage which the company must have adequate dynamic capabilities, which allows it to create, integrate, reconfigure the available skills (internal and external) to be able to face the challenges posed by the changing context.

The Sustainability Transformation, in particular, requires a Sustainable Leadership, namely a managerial action based on specific and defined qualities. The Sustainable Leader is a manager capable of identifying, inspiring and implementing strategies, policies, managerial behaviours consistent with the principles and purposes of sustainability. He must hold certain values (i.e., environmental sensitivity, human solidarity, quality of life, economic and social justice), he must be endowed with certain personality traits (such as openness, empathy, generosity, courage, holistic thinking), he must follow a defined managerial style (i.e., visionary, creative, open, inclusive). Besides, the Sustainable Leader must have specific technical skills, directly tied to the role, and also particular managerial skills, such as understanding and managing complex and interdependent contexts, long-term vision and management of change, orientation to stakeholders and creation of shared value, creativity and aptitude for innovation and redefinition of business models.

Cultural change in the business world is a critical success factor in the Sustainability Transformation process, and this underlines the responsibility that the Academic system must take on it.

Our community of management scholars and teachers must be aware of the role it is now called to play in the Sustainability Transformation challenge. The impact on cultural change that our action in the field of research, training, teaching and third mission – together with our personal example - can provide is significant. Each of us should strive to contribute in this direction. We have before us a splendid opportunity to give substance to the mission that we assigned to our profession some time ago, that of "creating value for society and the economy". For the 'Sustainability Transformation', the challenge is now!

Enjoy th reading.

Alberto Pastore e Marta Ugolini

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.01
pp. 11-12

Keynote speeches

Navigating wicked problems: do businesses have a role?

Irene Henriques

It is a pleasure and honor to be invited to speak at the 2019 Sinergie-SIMA Management Conference here in Rome. As a professor of Sustainability & Economics who has been studying sustainability and business for over 25 years, the question I am often asked is: Have things improved across time? My response is "it depends…".

Environmental and social issues are not alike. Some are tame in that the issue originates from a specific source and can be reduced by the source by choosing to reduce or eliminate certain activities that cause the problem, but others are wicked (e.g., income inequality, climate change, information overload, achieving zero waste) because they originate from multiple sources and cannot be reduced unless all sources agree to change their behavior. The wickedness does not only stem from their biophysical complexity but also from multiple stakeholders' perceptions of them and of potential trade-offs associated with problem solving. In my research with Michael Barnett and Bryan Husted (Barnett *et al.*, 2018, p. 128), we summarize the differences in Table 1.

Tab. 1: Tame versus Wicked Environmental Problems

Characteristics	Tame Environmental Problem	Wicked Environmental Problem
Definition and nature of the problem	Clear definition of the problem elicits the solution Outcome determined by whether solution is successful or not - Scientific-based protocols guide solutions - Problem associated with low uncertainty as to system components and outcomes - Shared values as to desirability of outcomes - Problem largely unchanging across time - Problem usually confined to a specific area	Disagreement as to definition of the problem as each possible solution changes the problem No single outcome - assessment whether things are better or worse - Solution(s) based on judgement of multiple stakeholders - Problem is associated with high uncertainty as to system components and outcomes - No shared values with respect to societal goals - Problem changes over time - Problem not confined to specific area or region
Social context and type of knowledge	Handled by limited number of stakeholders including those who created the problem - a mostly private problem - Solution dictates the knowledge necessary to proceed	Public problem dispersed amongst a host of actors that cannot be resolved by a single actor alone - Requires co-creation of knowledge to bridge social, environmental & economic tensions
Problem resolution	Few stakeholders, so easier to bargain for solution	No definitive solution; depends on judgements of many key stakeholders
Examples of problems	Point pollution (single source of pollution is known), food contamination, soil erosion, energy efficiency	Climate change, income inequality, biodiversity, deforestation, water, poverty

Source: Barnett, Henriques and Husted, 2018

Across time I have seen businesses improve their ability in dealing with tame problems such as end-of-pipe pollution, energy conservation, gender equality and diversity within their own organizations. On the wicked problem side, however, the jury is still out. The main question my research seeks to address is: *How can businesses successfully navigate wicked problems and with whom should they partner when seeking to do so?*

Wicked problems occur within what Rittel and Webber (1973, p. 160) call an open societal system where problems are ill-defined, dynamically complex, and "rely on elusive political judgment for resolution". Wicked problems require a system thinking approach. Wicked problems are public problems that are dispersed amongst a host of actors that cannot be resolved by a single actor alone. Let's play a thought experiment. Consider climate change. Defining the problem requires knowledge of the existing condition, the desired condition and the complex causal networks within which the problem really lies. These networks include both the physical and societal systems. A problem definition that states that burning fossil fuels causes climate change would inevitably result in a solution that stipulates we stop burning fossil fuels. Negotiating such a solution, however, would be extremely difficult as energy is a critical human need affecting a host of stakeholders and self-interested parties worldwide. A different solution would entail investment in clean technologies, but such a solution begs the question of who will undertake such an investment if fossil fuels continue to dominate. Another solution would suggest that countries with the greatest emissions should be obliged to reduce their emissions accordingly. The social context and the type of knowledge needed to address the problem make the decision process messy despite scientific evidence that climate change has moved firmly into the present and is affecting health, water, energy, and agriculture, thereby generating other wicked problems such as increased food insecurity and threats to national security.

Sustainability issues tend to be wicked problems that require cooperation across parties and over time to define and resolve. Barnett, Henriques and Husted (2018) explain why firms selectively responding to the most powerful, legitimate, and urgent demands of their stakeholders will not bring about sustainability and offer suggestions on what we should do considering this shortcoming. We argue that without government intervention, self-interested stakeholders will tend to pressure firms to move away from the complex, long-term challenges of wicked problems. Yet, stakeholder pressure is also necessary, as without it, industries may self-regulate in self-serving ways. Our analysis thus suggests that collaboration between business, government, and stakeholders is necessary to resolve the wicked problems of sustainability.

More specifically, wicked problems require *co-creation* of knowledge to bridge social, environmental and economic tensions (Barnett *et al.*, 2018). So, what is co-creation? A co-creation process, by allowing participants to critically reflect on each other's views, enables participants to reflect not only on their own preferences and viewpoints but also on how they might be changed (Batie, 2008). Such co-creation is emerging in the automobile sector where entrepreneurial firms have found creative ways to circumvent the drawbacks of electric vehicles (e.g., cost, range, charging time), forcing the incumbents to critically reflect on the future of the motor engine and invest in electric vehicles as a possible alternative to the motor vehicle given a carbon-constrained future (Bohnsack *et al.*, 2014) despite the "oil industry-backed attempt to discredit electric vehicles (EVs) and dismantle progress on transportation electrification by peddling misinformation through industry funded studies" (Todd Whitman, 2018).

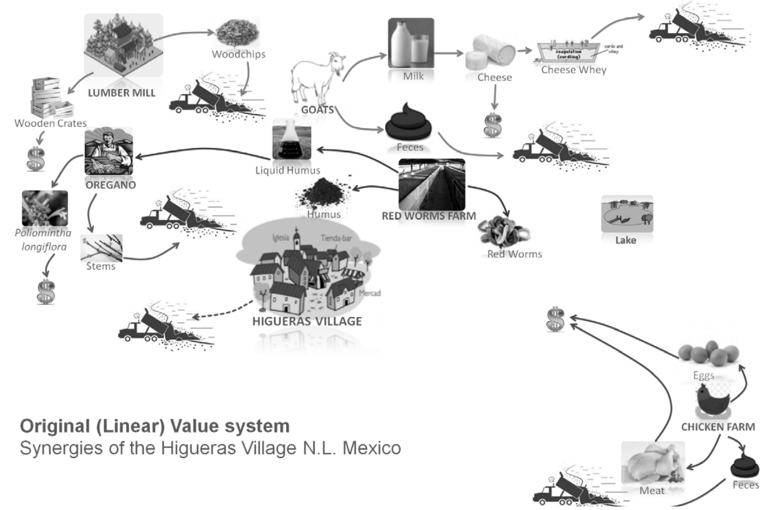
My research also suggests that greater leadership and cooperation is needed. Wicked problems involve uncertainty and disagreement over scale, scope and timeframe to resolve. Sustainability, for example, is an intergenerational dilemma where decisions made today will affect future generations. Unfortunately, self-interested and myopic firms and stakeholders can hinder the co-creation process. A 16-year-old climate activist, Greta Thunberg, is emphasizing this intergenerational aspect by stating "We deserve a safe future. And we demand a safe future".

Government has the power and ability to bring actors to the table and to set the collaborative agenda on wicked problems. Nobel laureate Elinor Ostrom argued that a "polycentric approach" with experimental efforts at multiple levels (governments, business, and community) is needed to assess and compare the veracity and efficiency of solution strategies to wicked problems across ecosystems and avoid free riding (Ostrom, 2014). Companies are leaders in piloting/designing products, can we not work together to pilot/design solutions to problems that will affect us all?

There is an urgent need to design sustainable business models. A business model describes the "design or architecture of the value creation, delivery and capture mechanisms employed" (Teece, 2010, p. 179). A sustainable business model seeks to address environmental/sustainability issues. It requires introducing sustainable thinking into the four elements of a business model, namely, the value proposition, the supply chain, the customer interface and the financial model (Boons & Lüdeke-Freund, 2013).

I also believe that sustainable thinking needs to be introduced at the regional level. Examples of a circular economy involving a whole city exist in China where the eco-industrial initiatives are mainly designed, supported and managed by central governments (Hu *et al.*, 2011). In Germany and Japan, governments and industry provide large incentives to support clean production initiatives or eco-industrial parks (Mathews and Tan, 2011; Triebswetter and Hitchens, 2005). But what happens in regions where governments are unable or unwilling to undertake or support such initiatives via changes in regulations, institutions or incentives? Working with colleagues at the EGADE Business School in Monterrey, Mexico, we set out to pilot a bottom-up circular value ecosystem governance framework in which government is not the main driver of the eco-initiatives in a village outside of Monterrey (Aguiñaga *et al.*, 2018). Figure 1 depicts the existing extended value chain that maps out the flow of materials from each process and identifies all the residuals generated in order to further analyze the best options available for its transformation to valuable products. We then measured, communicated and engaged community stakeholders in the circular potential of the region's sustainable readiness under different scenarios.

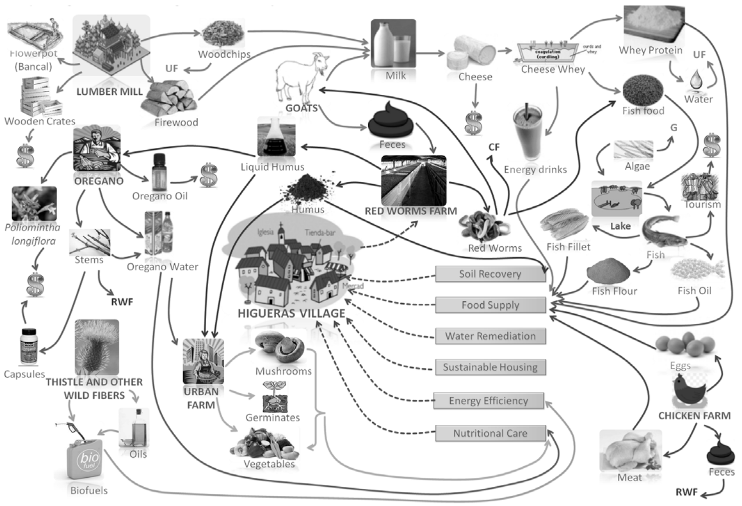
Fig. 1: Circular Value Ecosystem - before



Source: Aguiñaga *et al.*, 2018, p. 191

Figure 2 sets out the synergy map of the village's main stakeholders and the circular economic value flows - our aspirational model. Aguiñaga, Henriques, Scheel and Scheel (2018, p. 195) suggest that for a community-level circular value ecosystem governance approach to succeed you require "1) the building of stronger community trust by seeking the participation of stakeholders, especially those that are trust-laden, so as to establish a shared vision of what a resilient, equitable and sustainable community would look like; 2) the encouragement of greater collective action through partnerships with civil society and business to compensate for the lack of environmental leadership from government; 3) the placement of greater efforts in providing information and support in the development of technologies or services that sustainable entrepreneurs can use to transform residues into valuable economic increasing returns; 4) the seeking of support from government and religious officials so as to increase the framework's political (access to public resources, for example) and social legitimacy; and 5) the seeking of seed funding opportunities to support and encourage community and entrepreneurial involvement especially if the region is impoverished". Experimentation is key and the pilot provided valuable information on the process that involved an entire community.

Fig. 2: Circular Value Ecosystem - after



Source: Aguiñaga *et al.*, 2018, p. 192

Wicks and Freeman (1998) argued a few decades ago that the purpose of organization studies should be to enable people to live better lives; a clearly normative intent. Research should be focused on discovering or creating innovative ways to achieve this goal. Here again, experimentation is critical. As researchers, we need to move beyond impacts on specific stakeholders by linking firm-level outcomes to impacts at the societal level. The key is to understand the relationship between changes at the firm level and changes at a population or ecosystem level. The development of conceptual models and the use of spatial methods are essential to linking these levels (Doh and Hahn, 2008).

Let me conclude with

It is among those nations that claim to be the most civilized, those that profess to be guided by a knowledge of laws of nature, those that most glory in the advance of science, that we find the greatest apathy, the greatest recklessness, in continually rendering impure this all-important necessity of life…

Alfred Russel Wallace (Naturalist and Explorer) in Man's Place in the Universe, 1903.

Although this was written in 1903, it is even more relevant today. Designing and producing impactful research is more important than ever and I call on my management colleagues to join me in this effort.

References

AGUINAGA E., HENRIQUES I., SCHEEL C., SCHEEL A. (2018), "Building resilience: A self-sustainable community approach to the triple bottom line", *Journal of Cleaner Production*, vol. 173, pp. 186-196.

sinergie
italian journal of management
Vol. 38, Issue 1, 2020

BARNETT M., HENRIQUES I., HUSTED B.W. (2018), "Governing the void between stakeholder management and sustainability", *Advances in Strategic Management,* vol. 38, pp. 121-143.

BATIE S.S. (2008), "Wicked problems and applied economics", *American Journal of Agricultural Economics,* vol. 90, n. 5, pp. 1176-1191.

BOONS F., LUDEKE-FREUND F. (2013), "Business models for sustainable innovation: State-of-the-art and steps towards a research agenda", *Journal of Cleaner Production*, vol. 45, pp. 9-19.

BOHNSACK R., PINSKE J., KOLK A. (2014), "Business models for sustainable technologies: Exploring business model evolution in the case of electric vehicles", *Research Policy*, vol. 43, n. 2, pp. 284-300.

DOH J.P., HAHN E.D. (2008), "Using Spatial Methods in Strategy Research", *Organizational Research Methods*, vol. 11, n. 4, pp. 659-681.

HU J., XIAO Z., ZHOU R., DENG W., WANG M., MA S. (2011), "Ecological utilization of leather tannery waste with circular economy model", *Journal of Cleaner Production,* vol. 19, n. 2-3, 221-228.

MATHEWS J.A., TAN H. (2011), "Progress toward a circular economy in China: The drivers (and inhibitors) of eco-industrial initiative", *Journal of Industrial Ecology*, vol. 15, n. 3, 435-457.

NEUGEBAUER F., FIGGE F., HAHN T. (2016), "Planned or emergent strategy making? Exploring the formation of corporate sustainability strategies", *Business Strategy and the Environment*, vol. 25, n. 5, pp. 323-336.

OSTROM E. (2014), "A polycentric approach for coping with climate change", *Annals of Economics and Finance,* vol. 15, n. 1, pp. 97-134.

RITTEL H.W.J., WEBBER M.M. (1973), "Dilemmas in a general theory of planning", *Policy Sciences*, vol. 4, n. 2, pp. 155-169.

TODD WHITMAN C. (2018, June 29) Oil industry is 'peddling misinformation' about electric vehicles. CNBC News. Retrieved from https://www.cnbc.com/2018/06/26/electric-vehicles-will-prevail-despite-oil-industry-misinformation.html

TRIEBSWETTER U., HITCHENS D. (2005), "The impact of environmental regulation on competitiveness in the German manufacturing industry - A comparison with other countries of the European Union", *Journal of Cleaner Production,* vol. 13, n. 7, pp. 733-745.

WALLACE A.R. (1903), Man's Place in the Universe, McClure, Phillips, New York.

WICKS A.C., FREEMAN R.E. (1998), "Organization studies and the new pragmatism: Positivism, anti-positivism, and the search for ethics", *Organization Science*, vol. 9, n. 2, pp. 123-140.

Academic or professional position and contacts

Irene Henriques
Professor of Sustainability and Economics
Schulich School of Business, York University - Canada
e-mail: ihenriques@schulich.yorku.ca

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.02
pp. 15-20

FONDAZIONE CUEIM
SIMA
Italian Society of MANAGEMENT

Marketing and sustainability in the 21st Century[1]

Philip J. Kitchen

1. Introduction

One of the most appreciated and yet at times - most vilified - topics in the 21st century and especially as we enter the third decade, are ongoing marketing activity by organisations of all types, and that of sustainability in terms of businesses and national and global environments[2].

These can be seen from multitudinous perspectives and all cannot be discussed fully here except in summary form.

We will commence by considering marketing in the broadest sense. What is known about the topic? It is a vibrant active force in all markets and nations. It is widely embraced by businesses and other organisations and apparently deeply rooted, in fact, integral at all business levels. It is contemporaneous and deeply relevant. It is an artefact of the 20th century and despite kudos and criticisms, legitimized everywhere by widespread adoption, usage and publicity. This said, there is no generally extant acceptable theory of marketing available at this time. If such a theory existed, it would likely rest or rely on three foundation principles:

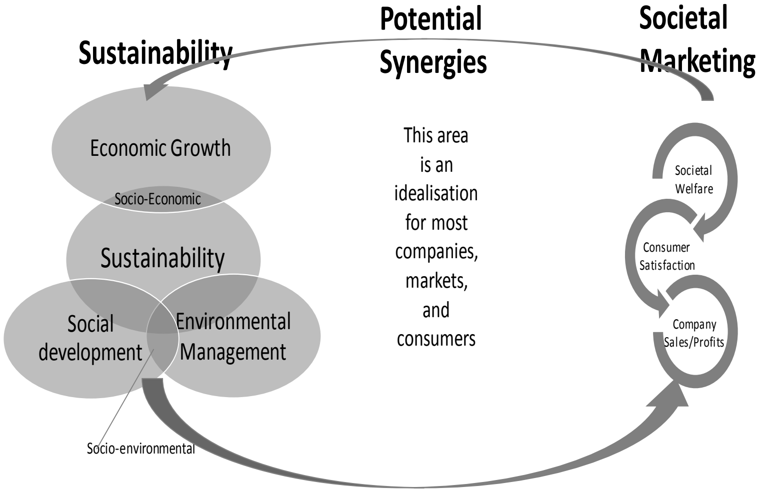
- A sound understanding of the dynamics of served markets
- Critical examination of opportunities for competitive advantage and implementation of marketing strategies
- Inside a marketplace/space that is global in form, structure and ubiquity

And the outcomes are …. market transactions for goods and services which *appear* to offer to satisfy some need. In an equally general sense, we see more and more announcements of business 'sustainability' which are frequently proclaimed via online and offline media spaces. A regularly quoted definition of sustainability is that it is: 'a way of utilising resources, which meets present generation needs *without compromising* the ability of future generations to meet their own needs' (World Commission on Environment & Development, 1987). This raises a host of interesting questions such as: are businesses really the drivers of a sustainable society? And, should they be the drivers? Figure 1 below notes that synergies apparently accrue when societally oriented marketing and sustainability work together.

1 This article is founded upon a keynote address presented at the Sinergie-SIMA Management Conference, Sapienza University of Rome, June 2019.

2 At the time this paper was written, little did we know that in a matter of months the global economy, and each national economy would severely disrupted by the Coronavirus pandemic. It is still too soon to ascertain what the consequences are.

Fig. 1: Marketing, Sustainability, Synergy



Source: Author, adapted from multiple sources

Undoubtedly, sustainability is big news for the media industry. Just a brief look at recent financial news, illustrates the desire for, readability and relevance of sustainable issues. For example, speakers were confirmed recently for an Edie climate emergency seminar which brought together on 27th June 2019, leading experts from across the world to discuss the climate emergency and 2050 net-zero target at a webinar. At the same time, the UK government rashly rejected environmental targets for big-name brands where recommendations for mandatory carbon, waste and water targets to be applied to all large UK fashion businesses were rejected despite many requests for action by MP's. This is the same government that has dilly-dallied and shilly-shallied for three years over Brexit, but on something much more important and of far greater societal significance, acted with speed, decisiveness and alacrity *in the wrong direction*. Meanwhile, the G20 group of nations have spearheaded a new framework for combating marine plastic pollution (17 June 2019, Edie Newsroom) where environment ministers agreed to a new framework tackling increasing ocean waste (note, agreement to a new framework means the old one has/ is not working and agreement doesn't necessarily match implementation or operationalisation). At the same time, large scale institutional investors grilled business multinationals such as BP, Amazon and Exxon Mobil as to their non-disclosure on environmental impacts. There are other trends of concern.

For example, sustainability could be transmogrifying into materiality. A recent report cited from Ford whose aim is 'go further' was cited in Etzion and Ferrero (2010):

'… for the purpose of this … sustainability … report we consider material information to be that which is of greatest interest to, and which has the potential to affect the 'perception of those stakeholders' who wish to make informed decisions and judgements about the company's commitment to environmental, social and economic progress'

An initial study by Nishant, Goh and Kitchen (2016) found the following:

'The difficulty with materiality is that it may not take all stakeholders into consideration, but merely those likely to have the greatest organisational impact'.

Their study provided an initial understanding of the complexities and applicability of sustainability and materiality. From a theoretical standpoint, the study demonstrated the presence of materiality in the sustainability practices of Indian firms yet found sustainability practices adoption were focused mainly on resource efficiency. Water was the most critical resource for Indian firms. The literature is currently focussed upon energy and emissions i.e. not upon water and other resources. Further, product stewardship practices such as recycling, reuse, and remanufacturing were not very important for sampled firms, though these practices may well be elsewhere. Thus, as sustainability practices may have a strong local orientation, this article suggests that specific resource constraints and other contextual characteristics are salient in the embracing of sustainability by firms. Future research can provide more insights on how firms can benefit from focusing on practices they deem material.

In a report by Motorola, Greg Brown, Chairman and CEO, places emphasis on sustainability:

"We are proud to operate with integrity while delivering strong business results," "As we look ahead, we will continue to focus on innovation, sustainability and service as we strive to deliver on our purpose: helping people be their best in the moments that matter". (Motorola, Corporate Responsibility Report, 2018)

It is apparent there are very few, almost no, businesses and industries who have not declared themselves firm advocates of sustainability and some aspects of materiality. Just as, in another domain (of m".arketing), corporate social responsibility was proclaimed (and is proclaimed) as the friend of the consumer, environment and planet generally. But, we have yet to see a real change toward social responsibility across the board.

The above said, the stark reality for both marketing and sustainability is that brickbats, not bouquets, are needed. For example, the world is facing several major environmental disasters. The burning of the Amazon Rain Forest (August 2019), the rising presence of plastic waste in our oceans and now in tap water (UK, 2019), rising global temperatures, Greenland's glacier death… come to mind with immediacy. For years, China - at a price of course - has conveniently disposed of half the world's plastic waste. By 2030, 111 million tonnes of plastic waste will have nowhere to go due to a Chinese import ban. Yet millions of products i.e. future waste are made from plastic - all of it non-biodegradable (Carrig, 2018). Can we continue with good old-fashioned marketing of plastic products and planet-warming consumption?

Amid the swirl of conjecture, the world is changing rapidly, perhaps too rapidly. It is just over a century and a half since the completion of the world's first industrial revolution in the old 'Great Britain'. Other countries have since industrialised - in fact most of the world is industrialised. The full costs of this to the environment have never been stated or analysed to any significant degree. Yet, the consequences of industrialisation could mean the end of civilisation as we know it. Further, Marketing has become the main connection between businesses and organisations of all types and sizes and customers and consumers where the latter are reminded *ad nauseum* that marketing is *in their interest*, seeks to *fulfil their* needs, and changes are invariably presented in a way that are *supposedly beneficial to target audiences. But, it may not be seen in these ways by everyone*. (Kitchen, 2003a, 2003b; 2013; 2019 italics added). Speaking as a marketer, there are misgivings about marketing. It is evident that many organisations (business or other) do not adopt a customer, consumer or even an environmental orientation. This is manifest in many ways. One example is the growing demise of customer service where there are:

'…. difficulties in consumers being able to contact organisations save by labyrinthine methods; a [perceived] disinterest and disinclination by businesses to treat consumers with respect; products that do not deliver proclaimed benefits and perhaps are incapable of so doing; services that do not match expectations; and products that while they satisfy needs also damage consumers and the environment. And, despite the advent of customer services in many organisations, these - at times - seem purposely designed to keep customers away from influencing businesses and/or their marketing processes in any way as evidenced by the rising popularity of consumer watchdog programs' (cited in Kitchen and Sheth, 2016; also cited in Kitchen and Taylor, 2020).

Two case vignettes:

EpiPen

- In the USA, Mylan, amid a basketful purchase of medicines from Merck KgaA, acquired EpiPen - an auto-injector for food allergy and bee-sting emergencies. Marketing was used to boost sales to concerned parents of children with allergies. *Since acquisition (2007), EpiPen has been transformed from an ageing device to a brand blockbuster.* In the process, somehow wholesale prices have risen 700%. In the USA, a package of two EpiPens costs approximately $600, compared to France where the same product sold by another company is a mere $85.
- Naturally, the *marketing process* was accompanied by extensive government and departmental lobbying resulting in legislation favourable to Mylan, marketing public relations, sponsorship and arrangements with schools and theme parks such as Disney to stock the products.

- Prices accelerated in line with advertising expenditure which mushroomed from $4.8 in 2011 to $35.2m in 2014. In 2007, when Mylan bought the product, it had around $200m in annual sales. In 2016 exceeded $1billion, in 2018 $3.6billion (Koons and Langreth, in Bloomberg (2016). Notably, there are mutterings and murmurings of discontent around *high prices and profiteering. Media attention remains high.* (Business Insider, 2019).

Meanwhile, Mylan depicts itself as a product champion of health care and corporate social responsibility via its corporate communications:

- At Mylan, we are committed to setting new standards in healthcare. Working together around the world to provide 7 billion people access to high quality medicine, we innovate to satisfy unmet needs; make reliability and service excellence a habit; do what's right, not what's easy; and impact the future through passionate global leadership.
- Mylan's vision for global social responsibility intrinsically woven within Mylan's commitment to achieve our mission and deliver better health for a better world. It is what drives our enduring passion to improve access and serve unmet needs across all geographies, while respecting the environment and positively impacting our stakeholders (Head of Global Sustainability, December 2018). (Source: Mylan. Com report, 2018). Many more examples are writ large in every major news media: internet, press, radio, television etc.

A UK example of marketing gone wrong and corporate communications unsullied character are presented by UK company BT's You View/Internet.

'In the UK BT (British Telecom) UK went to significant lengths to promote YouView which delivers television on demand to homes. BT introduced a new set top box which, according to the marketing, was one of the easiest ways to watch [loved] programs. BT's initial marketing outlay was in the order of £70million (Bulkley, 2012). Every on- and off-line media was deployed to persuade consumers to subscribe. But, having subscribed, there were significant technological problems. Often, the system simply did not work, or worked badly, leaving consumers to access online help facilities (often useless) or to communicate directly with BT or its affiliates via telecom personnel who seemed poorly qualified or simply not trained to deal with specific technical issues or associated complaints. (Kitchen, 2015, 127). BT problems escalate in terms of poor internet connectivity.

- Put simply, BT spent more time and money on corporate and marketing communications (i.e. £738m in terms of premier league football TV rights), and far less time and money in having sufficient engineers and qualified after sales personnel to support their customers and consumers in their legitimate requests for help, explanation, assistance or for problems to be put right expeditiously.

Yet, the corporate communication confidently proclaims in BT's Digital and Sustainability Report:

- Building better digital lives: our new strategy of digital impact and sustainability
- We are preparing our customers for the challenges and opportunities of tomorrow
- We're investing in digital skills to create the workforce of tomorrow

- Whilst protecting people's privacy…
- At the same time, we're reducing our emissions and helping our customers do the same.
- And, making sure we all play our part. (Source: BT Sustainability Report 2018)

Yet Mylan and BT are by no means unique or strange outliers in the domain of business and marketing. One could multiply examples exponentially. Instead, let us draw the strands together.

Admittedly Marketing is chequered by change and adaptation. As environmental conditions changed, so marketing underwent a series of orientations - or managerial ways of looking at and responding to market circumstances where earlier orientations were - apparently - replaced by newer more 'user friendly versions (see Table 1 below).

Tab. 1: Managerial/Marketing Orientations

1900s: discovery or elucidation of basic concepts and their exploration
1910s: conceptualisation, classification and definition of terms
1920s: integration on the basis of principles
1930s: development of specialisation and variation in theory
1940s: reappraisal in the light of new demands and a more scientific approach
1950s: reconceptualisation in the light of managerialism, social development and quantitative approaches
1960s: differentiation on bases such as managerialism, holism, environmentalism, systems, and internationalism
1970s: socialisation; the adaptation of marketing to social change
1980's: globalisation of markets, not apropos Levitt (1983)
1990's: IMC gains academic status, CRM and IMC (in various guises and names) gain dominance in promotions and marketing planning, relationship orientation. ICC gains momentum
1995-2001: the Dot-com bubble temporarily re-defined the future of marketing
1996: identification of viral marketing
2000s: Integrated marketing gains acceptance
2010>: B2B, B2C, C2C, social mobile marketing orientation
2015>: Organisationalism?
2019/2020>: Rising nationalism, protectionism, internet purchases nationalized
Placed in more standard chronology (see Bartels, 1974; Dawson, 1969; Keith, 1960; Kotler and Keller, 2006; Kitchen and Sheth, 2016; Kitchen, 2019) marketing history can be characterized as follows:
- Production orientation era
- Product orientation era
- Sales orientation era
- Market orientation era
- Customer orientation
- Relationship orientation
- Social/mobile marketing
orientation
- Organisationalism
- Discombobulation?

Sources: Kitchen, P.J. 2013; 2016, 2019.

Some businesses stayed with the older versions. Irrespective of these changes, they do not result in sustainability, satisfied customers or safe environments. It has moved from what American women did when shopping for food and other household goods to an essential philosophy and management practice for businesses to succeed in the medium to long term. It seems to be essential in underpinning and creating market exchanges and Kotler and Keller (2015) agree it has progressed through various stages or orientations (Kotler and Keller, 2015), and has now been proclaimed both a science and an art … i.e. 'Marketing is the science and art of exploring, creating, and delivering value to satisfy the needs of a target market at a profit', But does satisfying a target market's needs also protect and enhance the environment? For example, how does eating McDonalds' hamburgers or fries, or gulping Coca-Cola or Pepsi Cola satisfy real needs? How do these companies and their marketing contribute to environmental pollution? Please note this not about marketing or corporate communications rhetoric perse.

Marketing is now firmly entrenched in many countries and societies. It is contemporaneous and roughly in line with economic and social (but not) environmental development. It seems to be relevant to literally millions of businesses and 7.4 billion potential customers and is, in fact, a global phenomenon affecting global, multinational, international, and national firms, media, agencies and market research agencies that serve their needs. It is a powerful and dynamic force. It has some weaknesses and problems that are increasingly visible from an organisational and consumer perspective. It can even be seen as a nuisance, and in the communication domain as a form of leviathan. And, indeed there are many examples of failure. That said, there is no substitute for marketing at this time. Alternatives have been tried, tested, and failed. If we accept the need for democracy and its presumed value (even here there are misgivings), then to some degree, we accept the notion of markets. Marketers must have some degrees of freedom in which to market goods and services. But, the notion of a marketing orientation to seek to satisfy customers and their needs profitably is a very weak definition of marketing. Most marketing is today organisationally and competitively focused. That marketing is being done for 'us', for and in behalf of customers and consumers is more a form of rhetoric than some deep underlying business concept. The warts of marketing are plainly visible. Perhaps over time, these can be eradicated, removed, or ameliorated? Yet, for a short while now, marketing would appear to be the best approach underpinning transactions. However, there are some ridiculously poor examples. In the field of political marketing (a contradiction in terms), Barack Obama and Mitt Romney squandered almost 2 billion dollars to support their respective candidacies. Donald Trump and Hilary Clinton, the two most disliked front-runners of the democrats and republicans spent approximately the same. 4 billion dollars to re-elect or elect the president of one country, in itself a major polluter of the global environment Was it worth this expense? Could the dollars have been better spent elsewhere?

It is *sine qua non* that the environment, the global population of all living things including sentient homo sapiens, and the only habitable planet we know of are too important to be managed by business and politicians. There are simply too many examples of business pollution, marketing inappropriateness and political failures and ineptitude. These unsafe hands are insufficient for the sustainability of our planet, the only known source of sentient life, and for managing processes that may indeed satisfy some needs, yet simultaneously damage our people and our world.

Just a few months ago, several major branded companies, all tub-thumping socially responsible businesses and supporters of a sustainable society came under the harsh spotlight of their own poor performance. Businesses such as General Motors, Huawei, Facebook, Air-France KLM, RWE, Deutsche Bank, NatWest, GlaxoSmithKline, TATA, Jaguar/Landrover, Ford, Debenhams, EDF, Goldman Sachs, Bayer, Sears, BT, Tesco, and Sainsbury were all performing poorly. Business 'leaders' seem less and less equipped for the business world of 2020 and beyond. Politicians almost everywhere are mistrusted, disliked and their clutching at the grasping hands of business do them no favours. It is at best, a fearful and unappreciated alliance. In all of this, the voice of customers, consumers, and citizens are scarcely heard, so long as the ringing of electronic cash registers continues. Does this matter? Is it important? What can be done?

Conclusion

This paper hopefully acts as a clarion call for more research and critical comment from others. Business folks and marketeers cannot continually applaud a discipline that stands in need of necessary correction and significant amendments to entire productive processes, from conception to disposal of waste.

Marketing needs to be rethought, remolded, and renewed so its outputs do not further damage the environment. Current marketing orientation could easily be recast as organisationalism, that is an orientation that works more in favour of satisfying organisation rather than consumer needs. There is too much talk of corporate 'good news' of CSR, sustainability, and materialism, but these surely cannot be operationalized myopically in the current fragile environment. Given that marketing itself is a synthetic discipline which adopts, begs, steals, borrows from elsewhere. Can it not borrow and apply tools from environmental science? Certainly, marketing can be seen as schizophrenic or Janus-faced. But, it cannot face both ways simultaneously. And finally, are marketing or business or politics the 'sustainable hands' to protect the future of our planet, people, and environment? Table 2 is an unusual way to end a short article, but hopefully summarises the points made.

So much of marketers thoughts and attention are focussed upon marketing itself, branding, and business/organisations/corporations, the latter often standing hand-in-hand with politics and governments. I am not arguing that these be left aside. But surely, it is high time to consider the consequences of decisions made at these lower levels, upon the planet and its people. In Greenland, scientists have warned that extreme ice melt this summer threatens coastal communities across the world (CNBC, August 2019).

Fig. 2: Marketing and Sustainability

Source: Author

In some of China's smog-ridden industrialised cities, the major item for sale these days is fresh air (Daily Mail August 2019). And amid one of the hottest days in UK records, scores of people struggled for breath on an Essex beach (Independent Minds, August 2019). No cause had been identified at the time of writing. Global sustainability, human sustainability, life sustainability, these all need to be taken into consideration by marketers of today and tomorrow. It's not enough to prate of 'responsibility' or 'sustainability', but for all parties to work together and take determined urgent action.

References

AMAZON RAINFOREST, August 2019, https://www.cnet.com/how-to/the-amazon-rainforest-fires-are-still-burning-whats-happening-and-how-you-can-help/, accessed August 26th 2019.

BT PLC.com Report 2018, https://www.btplc.com/Digitalimpactandsustainability/Ourreport/Downloads/2019/BT_Digital_Impact_Sustainability_Report_2018_19.pdf, accessed/downloaded June 2019

BUSINESS INSIDER (2016), https://www.businessinsider.com/epipen-price-increases-about-500-percent-2016-8?r=US&IR=T; accessed June 11 2019.

CARRIG D. USA Today (22 June 2018), 'The US used to ship 4,000 recyclable containers a day to China. Where will the banned trash go now?', https://eu.usatoday.com/story/news/nation-now/2018/06/21/china-ban-plastic-waste-recycling/721879002/ accessed 26/08/2019

CNBC, August 2019, CNBC, https://www.cnbc.com/2019/08/01/extreme-ice-melt-in-greenland-threatens-coastal-communities-scientists-warn.html, accessed August 26th 2019.

DAILY MAIL August 2019.. 'Fresh Air for Sale', https://www.dailymail.co.uk/news/article-2592762/Chinas-latest-fad-breath-fresh-air-Oxygen-stations-set-country-city-dwellers-escape-smog.html, accessed August 26th 2019.

ETZION P., FERRARO J. (2010), "The Role of Analogy in the Institutionalization of Sustainability Reporting", *Organization Science*, vol. 21, n. 5, pp. 1092-1107.

INDEPENDENT MINDS, August 2019, https://www.independent.co.uk/news/uk/home-news/frinton-essex-beach-breathe-coghing-ambulance-police-a9078701.html, accessed August 2019.

KITCHEN P.J. (2003), "Managing Reputation on a Global Basis", *Competition Forum*, vol. 1, n. 1, pp. 573-587.

KITCHEN P.J,.SHETH J.G. (2016), "Brickbats or Bouquets for Marketing?", *European Journal of Marketing*, vol. 50, n. 11, pp. 1906-1923.

KITCHEN P.J. (2019), *From keynote addresses given at the Italian Institute of Management,* Sapienza University, Rome and University of Salford, July.

KITCHEN P.J., TAYLOR R. (2020), "The Janus Face of Customer Service", *European Journal of Marketing*, forthcoming.

KOTLER, P., KELLER, K.L. (2015), *Marketing Management*, 15th edition. London: Pearson.

MOTOROLA, Corporate Responsibility Report, 2018; https://www.businesswire.com/news/home/20190718005586/en/Innovation-Sustainability-Commitment-Service-Highlight-Motorola-Solutions, accessed June 10th 2020.

MYLAN.COM report (2018), https://www.mylan.com/-/media/mylancom/files/gsr-pdfs/social-responsibility-pdf/2018-global-social-responsibility-report.pdf?la=en, accessed 18th June 2019.

NISHANT R., GOH M., KITCHEN P.J. (2016), "Sustainability and Differentiation: Understanding Materiality from the Context of Indian Firms", *Journal of Business Research,* vol. 69, n. 15, pp. 1892-1897.

WORLD COMMISSION ON ENVIRONMENT & DEVELOPMENT (1987) Agenda for Sustainable Development, https://www.are.admin.ch/are/en/home/sustainable-development/international-cooperation/2030agenda.html accessed August 26th 2019. Note: this report is often quoted and usually alone, it is, however, 30+ years old.

EDIE NEWSROOM, https://www.edie.net/ accessed August 26th 2019.

EDIE CLIMATE EMERGENCY WEBINAR, https://www.edie.net/news/11/AVAILABLE-ON-DEMAND-edies-climate-emergency-QA-webinar/38602/ accessed June 2019.

Academic or professional position and contacts

Philip J. Kitchen
Professor of Marketing
ICN School of Business, Nancy - France
e-mail: philip.kitchen@icn-artem.com

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.03
pp. 21-30

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Best papers

Last AND least: when hotel guests do not care about environmental policies[1]

Received
18th February 2019

Revised
2nd April 2019

Accepted
21st June 2019

Graziano Abrate - Rebecca Pera - Sarah Quinton

Abstract

Purpose of the paper: *The study tests whether guests' perceptions of the environmental policies put in place by the hotel influences guests' evaluation of their overall experience.*

Methodology*: The empirical analysis uses a dataset of 52,764 reviews from a hotel chain's internal platform, which specifically requests for a guest evaluation of the environmental policies. The sample includes data from 105 European hotels in 2017-2018. A semantic content analysis of almost 100,000 observations from the chain's internal platform and from open peer-to-peer platforms complements the quantitative study.*

Findings*: Findings suggest that hotel guests, when evaluating the overall experience, do not take their own evaluation on the environmental policy into account.*

Research limits: *The study adopts a single case-study approach, which does not allow for the generalizability of its findings. The study cannot disentangle the motivation of the results (e.g. limited care about the environment or inability to make the assessment). Moreover, the research does not consider the eventual impact on consumers' purchase intention or willingness to pay.*

Practical implications: *Hotel managers can improve their environmental communication strategies to enhance their perceived relevance. Open peer-to-peer platforms could promote environmental discussion by adding a specific review item. More generally, environmental regulation remains crucial, since results suggest caution in relying on consumer-driven greening strategies.*

Originality of the paper: *To our knowledge, this is the first study providing a specific assessment of the effect of environmental policies on hotel guests' overall satisfaction. Previous studies largely suggest that "greening" a hotel appears to be inevitable to meet hospitality consumers' increasing green needs, but the analysis of consumers' evaluations contradicts this view.*

Key words: Environmental policies; consumer experience; mixed-method analysis; hospitality industry

1. Introduction

Companies are facing increasing pressure to both maintain profitability and behave in a sustainable way. Growing awareness and concern regarding

[1] The authors thank the NH Hotel Group for sharing the data at the base of this study.

sustainability has, undeniably, fully reached the tourism sector (Dwyer *et al.*, 2010; Font and McCabe, 2017; Gossling and Peeters, 2015). Tourism is primarily conceived as an economic activity, the sustainability of which is contingent upon the reduction of associated social and environmental costs. The goal is to balance the well-being of host communities, the satisfaction of guests, and the profits of the industry, while ensuring that the recreational services upon which the industry depends are maintained (Liu, 2003).

With increasing awareness of environmental sustainability, a strong pressure from externally imposed government regulations encourages practices that keep up with ecological standards (Abrate *et al.*, 2015). Beyond legislative and regulatory efforts, key triggers to engage in environmental practices come from stakeholder demands, and more specifically those of consumers. Consumers and companies alike are looking for alternatives to mitigate pressing environmental demands resulting from continuous population and economic growth. As detailed by Ambec and Lenoie (2008), possible theoretical reasons configuring a win-win situation for environmental and economic performances may regard both the revenue side and the cost side. As to the revenue side, this happens when consumers (or some specific consumer segments) tend to employ a company's sustainable image in purchase and consumption decision-making. Understanding the public's specific attitude towards the environment was already prominent in the 1970s (Dunlap *et al.*, 2000) and is now becoming prominent in the travel and tourism literature (Formica and Uysal, 2002).

A major question for hoteliers has been whether managers' decisions should involve environmental sustainability issues. Despite hotel managers' spending substantial time and money on environmental initiatives, they are not sure whether their guests perceive their green efforts appropriately. A new type of tourist is indeed replacing the traditional one, and these people have different values and lifestyles, higher degrees of independence (Brunetti *et al.,* 2011), so understanding these new needs and values has become a key issue in the tourism industry. As a result, having not only effective green practices, but also coherent communication of environmental practices to stakeholders (Siano, 2012; Testa *et al.*, 2018) is of paramount importance. Hotels have recently received much attention, due to the awareness of the negative impact that they may have on the environment (Kasim, 2004). Accordingly, environmentally sensitive tourist choices have gained importance in recent years and more and more eco-conscious customers look for hotels following practices to protect the environment (Han *et al.*, 2018; Han and Yoon, 2015; Manaktola and Jauhari, 2007). Thus, the positive marketing of environmentally friendly practices can be an effective strategy for a hotel looking to promote its public image by positioning them effectively and competitively (Erdem and Tetik, 2013), while achieving a potential reduction in operating costs, especially in the case of building and utility costs (Lee *et al.*, 2010).

However, research into green marketing is still incipient (Chan, 2014). Overall, despite the plethora of studies about hotel attributes in general, those examining the importance of green attributes have been relatively limited (Dolnicar and Otter, 2003; Watkins, 1994; Kasim, 2004). In a rather dated study, Watkins (1994) found that frequent travellers would stay in hotels with environmental strategies but would not be willing to pay a price premium for those rooms. His study also indicated that the environmentally friendly hotel attributes that travellers consider when selecting a green hotel included recycling bins, energy-efficient lighting, recycled paper for promotional materials, changing sheets only when requested, and turning off lights in unoccupied guestrooms (Watkins, 1994).

Despite the passing of 25 years since that study, researchers have provided little information on how environmental hotel efforts are evaluated by consumers. This is even more surprising considering the growth of digital platforms and the diffusion of consumers' evaluations in the format of both online textual reviews and ratings. A large body of the literature has proven that online ratings have significant business value positively affecting both purchase intentions and willingness to pay (e.g. Mauri and Minazzi, 2013; Abrate and Viglia, 2014). Another stream of literature focuses on measuring the antecedents of overall customer rating (e.g. Zhao *et al.*, 2019). In both cases, the eventual role of environmental aspects is largely ignored. One recent exception is D'Acunto *et al.* (2018), who investigated how consumers assess the environmental dimension of corporate social responsibility from textual reviews on TripAdvisor.

This paper attempts to contribute to the identified gap related to guests' perceptions of the environmental policies put in place by hotels. In particular, the study tests whether the guests' evaluation of a hotel's environmental performance is a foundation for the hotel's overall evaluation. The case study refers to a large hotel chain that consists of 105 European hotels and presents two main peculiar features. First, while the hotel group declares its commitment in promoting eco-friendly projects, it does not position itself as a "green" hotel and targets a broad category of consumers who are not specifically green. Thus, as opposed to the literature focusing on specific niches of environmentally-conscious market segments, the goal of the paper is to understand if the 'average' consumer cares about environmental policy. Second, the empirical analysis considers customers' reviews from a hotel chain's internal platform. Among the various hotel review items (such as location, service, and so on), this internal survey specifically requests a guest evaluation of the hotel's environmental policies. This is a key distinction compared to all popular open online review platforms, which lack a specific review item dedicated to sustainability. Thanks to this feature, it is possible to develop a quantitative approach to measure the way each partial assessment of specific aspects of the guest experience - including the assessment of the environmental policy - contributes to the overall rating.

Few issues in tourism research are as practically relevant to the industry as the investigation of the role that hotel attributes play in consumers' minds. Knowing the attributes that determine accommodation choice and the features that are perceived as important in a hotel and the hotel characteristics that lead to higher customer retention enables hotel managers to make optimal hotel development decisions. By focusing attention on the role of environmental policy, seen as an attribute of the overall experience, the paper discusses the practical implications of the promotion of sustainable development in the hotel industry.

2. The drivers in environmental policies adoption by hotels

Companies are increasingly implementing corporate social responsibility and sustainability practices, either as 'stand-alone' commitments or integrated in an environmental management system (Segarra-Oña *et al.*, 2012). However, for a long time managers have associated environmental protection with additional costs imposed by government, which in turn erode a firm's global competitiveness. This view relies on a basic paradigm according to which markets work well to make optimal use of scarce resources, so that government intervention is useful only for redistributing revenues, or when markets are no longer fulfilling their role effectively (Ambec and Lanoie, 2008). This is precisely what occurs in the case of environmental problems. However, in the course of the last two decades, a new paradigm called "triple-bottom-line" or "triple-P" (Planet, Profit, People) has emerged (Elkington, 1998), stemming from a threefold notion of corporate responsibility involving environmental and social - besides strictly economic - factors. This paradigm has been supported by a number of studies (e.g. Porter and van der Linde, 1995) that propose a number of ways thanks to which improving a company's environmental performance can entail better economic performance. Ambec and Lanoie (2008) show that the expenses that are incurred to reduce pollution can be offset by gains made elsewhere. This more recent approach has produced, systems, and processes in recent studies to measure the level of sustainability of an enterprise, thus allowing for the establishment of corporate reporting based on environmental, social and economic parameters (Siano, 2012).

Research into the reasons for, and effects of, such environmental commitments has mainly focused on manufacturing industries (Johnstone and Labonne, 2009). However, the role of environmental concerns is increasingly investigated in the service industry (Cainelli *et al.*, 2011), and particularly in the tourism and hospitality industry (Erdogan and Tosun, 2009; McNamaraa and Gibson, 2008; Segarra-Oña *et al.*, 2012; Tzschentke *et al.*, 2004, 2008). Hotels are progressively implementing environmental policies and practices, and pursue official certifications for their initiatives.

A green hotel is an environmental-friendly lodging property that initiates and follows ecologically sound programs/practices (e.g., water and energy saving, reduction of solid waste, and cost saving) to help protect our planet. When green management was first introduced, the major reasons for a hotel to "go green" centred on complying with government regulations and saving money by reducing waste and energy usage (Lee *et al.*, 2010). A plethora of drivers led hotels to pursue environmental sustainability beyond government regulations. These include factors such as a manager's disposition (Park *et al.*, 2014) and response to public scrutiny to enhance employees' job satisfaction and commitment and improve investor relations, or for moral reasons (Rahman *et al.*, 2012).

In sum, several environment-focused green initiatives have been executed. Gilg *et al.*, (2005) emphasized the three Rs - reduce, reuse, and recycle - and two Es - energy and efficiency - as the core definitional elements for distinguishing green from non-green initiatives. Drawing upon related literature (Dutta *et al.*, 2008; Cordano and Frieze, 2000), we identified five categories of environment-focused green initiatives revolving around the notions of the three Rs and two Es: (1) recycling and composting (First, 2008), (2) renewable power (Fahmy *et al.*, 2012), (3) pollution prevention and reduction (Cordano and Frieze, 2000), (4) energy efficiency and conservation (Lee *et al.*, 2010), and (5) water efficiency and conservation (First, 2008). The financial benefits and increased competitiveness are often predominantly pointed out as primary reasons for hotels to implement sustainability activities (Claver-Cortés and Pereira-Moline, 2007; Kang *et al.*, 2010; Kim and Han, 2010; Molina-Azorin *et al.*, 2009; Rahman *et al.*, 2012; Segarra-Oña *et al.*, 2012; Tarí *et al.*, 2010). Potential reduction in operating costs, especially in the case of building and utility costs, are also strong reasons to engage in environmental policies (Rahman *et al.*, 2012). By making minor changes in the construction, building management and use of technology, energy usage can be reduced by 20% in existing buildings and 50% in new buildings (ibid), water usage can be reduced by 40%, and better management of waste disposal can result in a cost saving of 25% (Hawkins, 2006).

With a growing number of customers seeking green operations, being a green hotel can provide a basis for good marketing strategies, in that its environmental-friendly practices may help position it more favorably in the competitive arena (Manaktola and Jauhari, 2007). In addition to gaining a competitive edge, differentiating themselves from similar, albeit non-green operations, and fulfilling customers' needs for environmentally friendly hotels, appear to be strong drivers. A green hotel's overall image can contribute to more favorable behavioral intentions (Han *et al.*, 2010).

However, whether being committed to environmental-friendly initiatives can be useful only to target specific and limited niches of the market or enable sustainable initiatives to be recognized by the "average" consumer as a significant attribute of its overall experience, remains unclear. Despite ongoing efforts, the tourism industry is still known as one of the least developed industries in regards to the implementation of sustainability policies (Smith and Feldman, 2003), and leading European hotel chains are accused of lagging behind comparably sized corporations from other industries (Lane and Hill, 2006).

3. Guests' perceptions of environmental hotel practices

Today, society judges firms based on their business ethics, social accountability and socio-economic awareness, as well as their financial outcomes. As public understanding about global warming and climate change grows, stakeholders, including employees and customers, expect hotels to act on their understanding (Trang *et al.,* 2019). This global trend guides hotels to move in a green direction. As this study suggests, a green hotel image may become a powerful operational tool in attracting and retaining more guests. Incorporating (functional and emotional) green positioning into hotel operations is a prerequisite for the creation of a green hotel image (Lee *et al.*, 2010). Such authors suggest that a green hotel's overall image favorably enhances behavioral intentions. Greening a hotel appears to be inevitable in order to meet hospitality customers' increasing green needs and boost their positive intention and behavior towards the firm (Han *et al.*, 2011; Han and Hyun, 2018). The main reason why guests choose to stay at a green hotel is to achieve the sense that their purchase decision contributes to saving the planet and leaving a green environment for their children. These emotional benefits can be classified as follows: (1) a feeling of well-being inspired by altruistic behavior (Ritov and Kahnemann, 1997), (2) auto-expression benefits associated with socially conscious consumption of green products/services (Belz and Dyllik, 1996) and (3) a feeling associated with nature, such as loving nature and having an emotional fondness for nature (Kals *et al.*, 1999).

Prior studies confirm the relevant role of environmental consciousness as a moderator in the relationship between a company's green image and consumer behavior. Martínez *et al.*, (2018) demonstrate that customer perceptions of green practices act as a major driver when choosing a certified hotel (Han *et al.*, 2009). Oliver (1996) defined "green satisfaction" as "a pleasurable level of consumption-related fulfilment to satisfy a customer's environmental desires, sustainable expectations, and green needs". The measurement of green satisfaction includes four items: (1) You are happy about the decision to choose this brand because of its environmental commitments; (2) You believe that it is a right thing to purchase this brand because of its environmental performance; (3) Overall, you are glad to buy this brand because it is environmental friendly; and (4) Overall, you are satisfied with this brand because of its environmental concern. Many further steps aimed at engaging consumers in hotel environmental policies could still be put in place. Sustainability practices are, indeed, mainly implemented in back-of-house areas (i.e. areas where hotel guests have no access), which neglects the opportunity to involve and encourage guests to reduce their environmental impact. There are some exceptions, with hotels increasingly encouraging guests to reduce their electricity and water consumption through information stickers in bed- and bathrooms. The most commonly used sustainability practice involving guests is the towel and linen reuse programme (El Dief and Font, 2010; Goldstein *et al.*, 2008; Shang *et al.*, 2010). This can also save the hotel considerable costs on electricity, water and cleaning products. Overall, previous research is consistent in suggesting this green turn (Han *et al.*, 2011).

On the other hand, a few studies in consumer behavior seem to produce controversial findings related to the importance that consumers give to marketing social responsibility issues. Belk, Devinney and Eckhardt (2005) show how there is a general lack of consumer concern for ethical issues across cultures in general. Carrigan and Attalla (2001) point out that despite consumers' becoming more aware and sophisticated, this does not necessarily translate into behavior that favors ethical companies and punishes unethical firms.

4. Methodology

4.1 Overview of the study

The unit of analysis is the consumer level in this study, and more specifically the professional and leisure guests of an international hotel group who provided an evaluation of their overall experience.

A case-study strategy was chosen because it offers new insights into a phenomenon of which little is known (Eisenhardt, 1989). The case study aims at theory building (Eisenhardt, 1989) and is particularly useful in forming a holistic view of context-specific and complicated situations and topics (Yin, 2003). The study adopted a sequential transformative mixed-method approach (Creswell *et al.*, 2003, p. 182), consisting of:

- A quantitative analysis on a dataset of 52,764 observations coming from the group's internal platform, which specifically requests for a guest evaluation of the environmental policies.
- A subsequent qualitative semantic analysis on the open-ended textual reviews coming from both internal data (the company's internal survey) and public, external data (Booking.com, Google, Expedia, and TripAdvisor).

A mixed-method research approach enhanced the overall validity of results by permitting a triangulation of the findings. In this specific study, the qualitative results are meant to complement and confirm the main quantitative analysis, thus making the study of greater use.

The empirical analysis has selected an international context benefiting from the collaboration of the NH Hotel Group. NH is an international hotel group with a portfolio of 350 hotels across multiple urban destinations in Europe that caters to both business and leisure users, and is positioned within the top 50 ranking worldwide as a mid- and upscale range hotel group.

Empirical data were verified and triangulated with interviews with the company's management and secondary sources (internal reports, confidential material, digital data from the website) to obtain a fuller and more precise perception of the context and to enhance the reliability of the research (Eisenhardt, 1989; Yin, 2013). This study administrated an internal questionnaire survey to verify the research question.

The hotel group's sustainable commitment is communicated through different channels. The digital platform, where the company communicates its strategic environmental plan and results through its website, is undoubtedly a powerful one. The company engages in various ecologically sound practices (including, for example, the Carbon Disclosure Project (CDP); Spanish Green Growth Group; #PorElClima Community; One million Commitments for Climate Change promoted by the United Nations) that aim to reduce the emissions generated by hotels and their related activities.

On the website, sustainability is claimed to be a strategic value for the hotel group acting as a cross value enabler to build the future of the company, which keeps on investing in innovation in order to develop eco-efficient solutions. In accordance with Directive 2009/28 / EC, 61%

of European hotels have some type of renewable energy supply in place to promote the use of renewable energies in the European Union.

Since 2007, the company has reduced energy consumption by 34% per room. This reduction has been possible thanks to several measures that have been implemented by the company. The energy efficiency concept is centered around the constant consideration of opportunities aimed at improving the building's energy performance (e.g. replacement of equipment to achieve greater efficiency, explore new technologies, improve insulation, select the right light bulbs, best minibars, washing systems, heating and air/conditioning equipment).

In the same timeframe, the company has reduced water consumption by 31%. This reduction has been possible thanks to the sustainable measures that have been implemented by the company (selection of best equipment, water saving systems of faucets, showers and toilets, recycling of greywater, reuse of water for irrigation and reduction systems in swimming pools).

From a marketing point of view, the company's commitment has also been highlighted through different new proposals. Among such new services the website promotes "eco-friendly meetings" for company events that enable clients to organize carbon neutral meetings, and make up for any impact by supporting sustainable development and climate change projects. A compensation for emissions is also offered, thus making a more limited impact on the environment.

In sum, despite the fact that environmental practices are not part of the company's core services or core competencies, and that the company does not position itself strictly as a "green" hotel that bases its competitive advantage on its stance in environmental issues, the company enforces rigoros environmental policies that are strongly communicated through digital means. Consequently, the company markets itself to a broad range of consumers who are not specifically green.

4.2 Quantitative method

The hotel chain that was analyzed in the case study monitors reviews from different platforms: open online platforms, such as TripAdvisor, Booking.com, Google, Expedia, and an internal platform designed to gather feedback on specific aspects of the consumer experience. In comparison to the public platforms, the peculiarity of the internal platform is its request for a specific guest evaluation of the environmental policies. This unique source of data is therefore perfectly suitable for the main purpose of our study, that is investigating the way the guest perception of the hotel's environmental commitment influences the overall guest evaluation of his/her experience.

The dataset includes all consumers' reviews in relation to a sample of 105 hotels in 8 European cities: Amsterdam, Barcelona, Berlin, Brussels, Frankfurt, Madrid, Milan, Rome. The data are the result of a survey that is regularly carried out by the hotel chain and is administered by e-mail a week after a guest's check-out while offering him/her a 15% discount on his/her next stay (see Appendix 1).

The analysis covers the period from January 2017 to October 2018, with a total amount of 84,470 consumers' reviews on the internal platform. Each review assesses quality regarding 11 different dimensions, namely: overall evaluation (*OVERALL*), cleanliness (*CLEAN*), value for money (*VALUE*), staff friendliness and service (*SERV*), quickness and efficiency in check-in and check-out (*CHECK*), location (*LOC*), room and bathroom (*ROOM*), food and beverages (*FB*), installations (*INST*), sleep quality (*SLEEP*) and environmental strategy (*ENV*). For each dimension, the consumer has to provide a distinct quantitative score on a scale from 1 to 5 (the overall score is also a distinct score, thus, not the average of the other dimensions).

Table 1 provides a summary of the available data. Some reviews only contained partial information, because the consumer did not evaluate every single item. However, the vast majority of quality dimensions displayed a frequency of missing values that is lower than 1 percent. The number of cases that do not provide an assessment of the value for money was a bit higher (2.5 percent), while the incidence is much more evident for two specific assessments: *FB* and *ENV*. While, in the case of *FB*, it is natural to associate these missing values to guests who did not consume any food and beverage (or breakfast) at the hotel, the number of missing evaluations associated to the environmental policy is significant in itself. About one out of every four consumers did not provide any evaluation on environmental policies, and this could reflect indifference, or perhaps the inability, to assess this dimension. The total number of reviews presenting complete information on all the specific items is equal to 52,764.

Tab. 1: Descriptive statistics

Quality dimension	N. of observations	(% missing)	Average score	(Standard deviation)
OVERALL	84,470	(0.00%)	4.28	(0.86)
CLEAN	84,113	(0.42%)	4.36	(0.85)
VALUE	82,386	(2.47%)	3.98	(0.89)
SERV	84,007	(0.55%)	4.48	(0.78)
CHECK	83,964	(0.60%)	4.41	(0.83)
LOC	84,166	(0.36%)	4.32	(0.79)
ROOM	84,233	(0.28%)	4.18	(0.92)
FB	70,126	(16.98%)	4.16	(0.85)
INST	83,853	(0.73%)	4.16	(0.92)
SLEEP	83,963	(0.60%)	4.31	(0.87)
ENV	63,333	(25.02%)	4.18	(0.76)

Source: our elaboration

As to the score levels, the overall experience is rated rather positively (4.28 over 5), which is in line with the scores one can find on booking.com (provided they are rescaled in scale 1 to 10) for 4-star rated hotels. Guests tend to be more critical when assessing value for money, which received the lowest average score (3.98), while service earned the highest score (4.48). The scores over the different dimensions clearly exhibit a high degree of correlation, as shown in Table 2, although the value of correlation never exceeded 0.7. Moreover, a regression of the *OVERALL* score on all the other dimensions signals an average Variance Inflation Factor (*VIF*) equal to 2, with a maximum *VIF* of 2.54, excluding major problems due to multi-collinearity (Hair *et al.*, 2010).

Tab. 2: Correlation Matrix

	OVERALL	CLEAN	VALUE	SERV	CHECK	LOC	ROOM	FB	INST	SLEEP	ENV
OVERALL	**1**										
CLEAN	0.62	**1**									
VALUE	0.69	0.53	**1**								
SERV	0.61	0.49	0.49	**1**							
CHECK	0.57	0.46	0.47	0.66	**1**						
LOC	0.42	0.35	0.38	0.36	0.34	**1**					
ROOM	0.69	0.68	0.60	0.46	0.44	0.36	**1**				
FB	0.53	0.42	0.48	0.47	0.41	0.37	0.43	**1**			
INST	0.59	0.56	0.50	0.43	0.42	0.33	0.60	0.43	**1**		
SLEEP	0.61	0.51	0.51	0.50	0.48	0.34	0.56	0.41	0.54	**1**	
ENV	0.58	0.53	0.55	0.52	0.52	0.42	0.53	**0.51**	**0.52**	**0.52**	**1**

Source: our elaboration

The quantitative analysis aimed at assessing the relative components of the overall score given by the guest. In other words, the assumption is that the overall evaluation can be seen as a weighted average of the partial assessments that were attributed to the specific aspects of the guest experience. To disentangle these relative weights, the empirical analysis employed the following constrained linear regression model:

$$OVERALL = \beta_0 + \Sigma_i \beta_i + \varepsilon \qquad [1]$$
$$i \in \{CLEAN, VALUE, SERV, CHECK, LOC, ROOM, FB, INST, SLEEP, ENV\}$$
$$\sum_i \beta_i = 1$$

The sum of the parameters β_i is constrained to 1, so that each parameter associated to a specific quality dimension can be interpreted as the relative impact of the specific quality item on the overall experience. The usual white noise assumptions hold true regarding the error term ε.

4.3 Qualitative method

The qualitative phase of the research aimed to complement the first quantitative phase of the study by investigating whether and in which terms consumers assess hotels' environmental practices when they write a review about their accommodation experience. A semantic content analysis was performed on the open-ended textual reviews coming from both internal data (the company's internal survey) and public data from peer-to-peer platforms (Booking.com, Google, Expedia, and TripAdvisor). As regards reviews (both internal and public), text is important because it includes affective words conveying positive and negative emotions and strengthening the intent of a review. Content and narrative analyses of consumer reviews have attracted considerable attention in recent studies in order to gain insight about consumption experiences. Service features that consumers care about can be highlighted, and more detailed interpretations of their perceptions can be provided (e.g. Zhao *et al.*, 2019).

5. Results and discussion

5.1 Quantitative Results

Table 3 presents the results of the constrained linear regression on the full sample. The most important factor appears to be value for money (with a weight approaching 25%), followed by the quality of the room (19.5%) and service (16%). The most striking result is that all partial evaluations except the environmental policy had a weight that was significantly different from 0. This suggests that guests, when evaluating the overall experience, did not seem to take their own evaluation on the environmental policy into account. One useful measure of the accuracy of the model consists in the Median Absolute Percentage Error (MdAPE) between the forecast obtained by substituting the estimated parameters in equation [1] and the real values of the dependent variable. This value is equal to 5.1 percent, with a significant improvement compared to a naïve model weighting all factors equally (in which case the MdAPE would be equal to 5.6 percent).

Tab. 3: Results

Explanatory variables (i)	Estimated β	(t-statistics)
CLEAN	0.068**	(17.75)
VALUE	0.247**	(74.09)
SERV	0.158**	(40.05)
CHECK	0.067**	(18.41)
LOC	0.028**	(9.48)
ROOM	0.195**	(53.67)
FB	0.073**	(23.00)
INST	0.069**	(21.59)
SLEEP	0.095**	(28.30)
ENV	0.000	(-0.13)
Constant (β_0)	0.074**	(29.34)
Root Mean Square Error	0.9417	
MdAPE	5.12%	
Number of observations	52,764	

** p-value <0.01; * p-value<0.05

Source: our elaboration

One limit of the model above is the assumption that all guests give the same weight to the different factors. One possible option to refine the analysis is to resort to clustering. Cluster analysis is a method for multivariate data that allows grouped observations based on a set of selected characteristics. The resulting groups are more homogeneous and can be interpreted as different segments of consumers. Specifically, the k-means algorithm (MacQueen, 1967) is an iterative algorithm that assigns each observation to a predefined number of cluster, so as to minimize the sum of the squared Euclidean distances between the observations and their cluster centroid (the arithmetic mean of all the data points belonging to that cluster). The input variables for the k-means algorithm include all the quality dimensions of the review and the number of clusters has been set to three, in consideration of pursuing both accuracy and parsimony objectives.

Table 4 show the results of the constrained regression model applied to the three identified clusters, which define three distinct consumer profiles. The first group (around 50 percent of the sample) might be defined as the "service-oriented" consumer and gives the most importance to the service dimension, as well as to cleanliness and check-in/check-out. This type of guest pays particular attention to human interaction with employees, that is, the social servicescape. Instead, the second group of consumer (around 9 percent of the sample) is more practical and "value-oriented". In fact, almost 40 percent of the overall evaluation depends on his/her rating in terms of value for money. The dimensions reflecting human interactions take on the least weight, while great importance is attributed to physical tangible attributes, such as room facilities, installations and sleep quality. Finally, the third group of consumers (the remaining 40 percent of the sample) tends to average across all types of evaluations.

The predictive power of the model reduces the MdAPE to 4.3 percent. By focusing on the main goal of the analysis, the results confirm that environmental policy is the least important factor in consumers' overall evaluation of the accommodation experience. This also holds in the third cluster of consumers, which however pay at least a certain amount of attention to environmental policies (4 percent).

Tab. 4: Results after clustering

	Cluster 1	"Service-oriented"	Cluster 2	"Value-oriented"	Cluster 3	"Neutral"
Explanatory variables (i)	β	(t-statistics)	β	(t-statistics)	β	(t-statistics)
CLEAN	0.109**	(17.90)	0.037**	(3.51)	0.058**	(9.92)
VALUE	0.132**	(33.52)	0.403**	(34.09)	0.256**	(45.40)
SERV	0.239**	(35.64)	0.150**	(14.00)	0.128**	(21.18)
CHECK	0.105**	(18.29)	0.057**	(5.55)	0.053**	(9.67)
LOC	0.061**	(15.45)	0.034**	(3.46)	0.071**	(14.86)
ROOM	0.139**	(27.18)	0.152**	(13.29)	0.164**	(28.36)
FB	0.077**	(18.87)	0.026*	(2.44)	0.095**	(19.08)
INST	0.048**	(11.03)	0.069**	(6.90)	0.060**	(11.82)
SLEEP	0.081**	(15.81)	0.097**	(10.04)	0.074**	(14.44)
ENV	0.009*	(2.15)	-0.026	(-1.92)	0.040**	(6.31)
Constant (β0)	0.170**	(30.92)	-0.289**	(-11.33)	0.165**	(18.12)
Root Mean Square Error	0.7074		1.3055		1.0320	
Number of observations	26,998		4,545		21,221	
MdAPE	4.33%					

** p-value <0.01; * p-value<0.05

Source: our elaboration

5.2 Qualitative findings

The analysis searched for specific keywords (i.d. *sustainability, green, environmental* in English and Italian), which produced extremely limited results. Out of 25,117 Italian and 68,389 English reviews, only 28 mentioned environmental issues (20 from the internal survey and 8 from public data coming from Booking.com, Google, Expedia, and TripAdvisor). This result is inverted compared to the overall number of textual reviews (28% originated from the internal survey and 72% from the public platforms). In any case, environmental discourse is undeniably scant in the textual reviews of the accommodation experience. As such, the qualitative semantic analysis complemented the quantitative study without producing the rich insights that qualitative research is potentially able to provide. Despite the scarcity paucity and quality (very few words when present) of the reviews, the data can be categorized in the following themes. First of all, the study revealed that the environmental elements are mainly (over 2/3) associated with negative emotions and regard negative hotel behaviors about waste and energy management. Indeed, the few positive comments (3 out of a total of 28) are quite generic and simply mention "*Environmental policy*" (Booking.com). One comment refers, instead, to CSR activities: "*I loved … promoting local artists through custom art pieces in each room and art that funds environmental causes like the protection of Chinese elephants*" (Expedia).

The main negative comments regarding *energy consumption* that emerged from the reviews often mention the towel re-use policy during the stay (13 out of 28 reviews). The following excerpt reflects the customers' views on this issue: "*As regards the environmental profile - it is frustrating, with signs stating 'hang up towels if you want to re-use' when towels are changed anyway*" (Internal survey) or "*Like all the hotels we stayed at in Spain, they claimed to be eco friendly by not washing towels*" (TripAdvisor). A second negative issue refers to the hotel's waste management practices, as the following review suggests: "*The waste of food on such a large scale was absolutely horrendous and, as an environmentally conscious group, quite shocking*" (TripAdvisor). Or: "*The environment is very important to me. The high level of service sometimes did not align with the important and worthy environmental strategy of the NH Hotel Group. For example … the bar of soap was changed very often, despite being only very lightly used. One bar in the sink and one in the shower were more than enough for the duration of the 4-day stay*" (Internal Survey). Along the same lines: "*The hotel shows no environmental awareness. No possibility to recycle garbage in the rooms. No environmental-friendly products (soap, shampoo, etc). No organic food. Sugar and butter were supplied in small packages producing unnecessary garbage*" (Internal Survey).

Additionally, a suggestion to market the company's environmental commitment more powerfully is put forward by the following neutral review: "*Market all the environmental-friendly work that is carried out in the hotel. I learnt about it from one of the managers of the hotel chain. There is only a certificate in the reception, no info in the room or elsewhere for the guests to see*" (Internal Survey).

The negative reviews reflected a general perception of misalignment and scant correspondence between the company's actual practices (e.g. towel changing) and its environmental commitment. Consumers that write negative reviews on this issue are, indeed, aware of the company's general commitment and of the great gap with current behaviors. The scarcity of the guests' content mentioning environmental issue through both the internal and external platforms, is to be considered a finding in itself that confirms the limited relevance of environmental policies in guests' mental model of an overall accommodation experience.

6. Discussion and conclusions

Environmental policies have been widely recognized as a prominent strategy for hotel businesses and thus received substantial attention from hospitality and tourism scholars (Geerts, 2014; Han *et al.*, 2011). While previous research has examined guest participation intention in relation to green hotel practices, willingness to pay, and loyalty intention (e.g. Han *et al.*, 2018;), the way consumers evaluate environmental policies has been overlooked by researchers, also due to the absence of a specific review item dedicated to sustainability in popular open online review platforms. Thanks to a unique source of data from a hotel chain's internal platform, this study investigated how consumers assess hotels' environmental policies and whether such an evaluation influences their overall satisfaction. Overall satisfaction is a multi-dimensional construct. The quantitative model allowed the assessment of the way each partial evaluation of a specific aspect of the guest experience, contributes to the multi-dimensional overall evaluation. In a hotel context, both the social servicescape (i.e., interactions with employees) and physical servicescape (i.e. building, landscape and interior facilities) drive consumer satisfaction.

Our main contribution to the marketing and tourism literature lies in its unveiling that green practices are "nonessential attributes" that seem to have very limited relevance in consumers' mental models of an accommodation experience. Despite the increasing concern for and awareness of environmental issues of governments, companies, and other stakeholders, consumers do not seem to perceive these issues as relevant. Our findings indicate that high values in environmental policies are not reflected in high values of the overall evaluation. Simply put, a good evaluation of the company's environmental policies does not enhance an overall consumer satisfaction.

The results of this study may be explained in a number of ways. An initial straightforward explanation either suggests that hotel guests are simply indifferent to hotel environmental policies or that they are unable to assess this dimension due to a lack of information on the hotel's activity in this sense. The overarching nature of an 'environmental strategy' may be too complex for the guests to evaluate on their own. The ability of a hotel to clearly signpost what actions and environmental policies it is enacting to guests may also impact on guests' ability to comment on policies, as they may remain unseen if not explicitly signaled during a stay. An alternative explanation could be that guests may expect certain environmental policies like the towel re-use policy as 'normal' hotel behavior and therefore not consider it worth commenting on.

As far as the open peer-o-peer platforms are concerned, the fact that environmental policies are not an item that consumers are asked to rate may lead to a lack of perceived relevance when filling out the review. When completing the review in fact, consumers may not think of mentioning any environmental content because there is no previous reference to it in the rating section. However, we cannot avoid suggesting that these poor results could reflect the fact that environmental issues are not key pillars in consumers' mental models of an overall satisfaction of an accommodation experience.

From a managerial standpoint, this study has three implications. The first regards the need to raise consumer relevance and awareness regarding environmental issues. This study recommends that hotels invest more in communicating environmental practices that can be directly "experienced" by consumers (e.g. water management during room cleaning) and involve them (e.g. towel re-use activity) by moving beyond the practices that are implemented in back-of-house areas (i.e. areas hotel guests have no access to) that are not noticed by consumers. Second, in addition to raising the relevance of environmental issues, hotel management should make their environmental commitment known beyond the content on the hotel's website and the few communication artefacts within the hotel. The company's positive achievements in environmental policies that are described at present on the website could raise awareness and relevance in consumers' mental models if communicated more broadly. As suggested by the qualitative results, to deal with this, frontline employees (e.g. receptionists and service staff) should be properly trained in explaining environmental initiatives programs. By proceeding in this direction, not only are consumers stimulated to become involved in environmental initiatives, but an increase in the relevancy of environmental issues may also be facilitated. Third, the company's practices should always be in line with the environmental commitment it lays claim to. The company must consistently implement the environmental policy that it communicates to consumers, especially ones that invite consumers' participation (e.g. towel re-use activity). If not, mere communication can backfire because it raises consumers' expectations without "walking the talk".

This study also has implications for open peer-to-peer platforms. The inclusion of a specific review item on environmental strategy could promote environmental discussion contributing to an increase in consumers' awareness and perception of the relevance of such an issue. Moreover, the study's results recommend caution in relying on the development of environmental-friendly strategies as part of a market-orientation approach. Thus, regulation continues to play a crucial role in promoting the sustainability of the hotel industry.

This study presents a few limitations that further research should mitigate. First, despite the uniqueness and richness of the dataset (more than 50,000 reviews for the quantitative study and almost 100,000 observations for the semantic content analysis), the information is limited to a single hotel chain. Whilst important aspects of this study can be transferred to, and have relevance for practice, a case study research design limits the generalizability of its findings. Second, both quantitative and qualitative data analyses could be deepened through other kinds of research methods; a further in-depth face-to-face analysis with consumers could help to unveil and unpack what environmental policies mean to them. The data collection methods that were used in this study to evaluate environmental factors were effective in capturing a general picture but a more delicate qualitative tool would unlock a more nuanced set of responses. Future research could disentangle the previously mentioned reasons for the results (e.g. lack of care about the environment or inability to make assessments on environmental policies), also by means of experimental settings. Third, the study is limited to the analysis of consumers' post-consumption reviews without investigating consumers' purchase intention and willingness to pay ex-ante. Finally, in light of the qualitative semantic analysis focused on a limited number of keywords, future research should include a broader dictionary, as done in D'Acunto *et al.*, (2018) on a TripAdvisor reviews database.

References

ABRATE G., BRUNO C., ERBETTA F., FRAQUELLI G. (2015), "Business innovation and waste management sustainability: the case of door-to-door collection", *Sinergie Italian Journal of Management*, vol. 33, n. 98, pp. 377-393.

ABRATE G., VIGLIA G. (2014), "Reputazione e monitoraggio della competizione in tempo reale: le sfide innovative del pricing online", *Sinergie Italian Journal of Management*, n. 93, pp. 35-53.

AMBEC S., LANOIE P. (2008), "Does it pay to be green? A systematic overview", *The Academy of Management Perspectives,* vol. 22, n. 4, pp. 45-62.

AUGER P., DEVINNEY T.M. (2007), "Do what consumers say matter? The misalignment of preferences with unconstrained ethical intentions", *Journal of Business Ethics*, vol. 76, n. 1, pp. 361-383.

BELK R., DEVINNEY T., ECKHARDT G. (2005), "Consumer ethics across cultures", *Consumption Markets and Culture*, vol. 8, n. 3, pp. 275-289.

BELZ F., DYLLIK T. (1996), "Okologische positionierungsstrategien", in Tomczak T.R., Roosdorp A. (Eds.), *Positionierung - Kernentscheidung des marketing* (pp. 170-179). St Gallen, Switzerland: Thexis Verlag.

BRUNETTI F., TESTA F., UGOLINI M. (2011), "Il cliente nell'agenzia viaggi", *Sinergie Italian Journal of Management,* n. 66, pp. 181-211.

CAINELLI G., MAZZANTI M., ZOBOLI R. (2011). "Environmentally oriented innovative strategies and firm performance in services: micro-evidence from Italy", *International Review of Applied Economics*, vol. 25 , n. 1, pp. 61-85.

CARRIGAN M., ATTALLA A. (2001). "The myth of the ethical consumer-do ethics matter in purchase behaviour?", *Journal of Consumer Marketing*, vol. 18, n. 7, pp. 560-578.

CHAN E.S.W. (2014), "Green marketing: hotel customers' perspective", *Journal of Travel and Tourism Marketing,* vol. 31, n. 8, pp. 915-936.

CHEN A., PENG N. (2012), "Green hotel knowledge and tourists' staying behaviour", *Annals of Tourism Research*, vol. 39, n. 4, pp. 2211-2219.

CLAVER-CORTÉS E., PEREIRA-MOLINE J. (2007), "Competitiveness in mass tourism", *Annals of Tourism Research*, vol. 34, n. 3, pp. 727-745.

CORDANO M., FRIEZE I.H. (2000), "Pollution reduction preferences of U.S. environmental managers: applying Ajzen's theory of planned behaviour", *Academy of Management Journal,* vol. 43, n. 4, pp. 627-641.

CRESWELL J.W., PLANO CLARK V.L., GUTMANN M.L., HANSON W.E. (2003), *Advanced mixed methods research designs*, Handbook of Mixed Methods in Social and Behavioural Research, pp. 209-240.

D'ACUNTO D., TUAN A., DALLI D., VIGLIA G. (2018), "Do consumers care about CSR? Analyzing online hotel review content through a big data approach", *presented at CHME 2018*, Bornemouth, UK.

DOLNICAR S., OTTER T. (2003), "Which Hotel Attributes Matter? A Review of Previous and a Framework for Future Research", in Griffin T., Harris R. (eds.) *Proceedings of the 9th Annual Conference of the Asia Pacific Tourism Association (APTA),* University of Technology Sydney, 2003, n. 1, pp. 176-188.

DUNLAP R., VAN LIERE K., MERTIG A., JONES R. (2000), "Measuring endorsement of the new ecological paradigm: A revised NEP scale", *Journal of Social Issues,* vol. 56, n. 3, pp. 425-442.

DWYER L., FORSYTH P., SPURR R., HOQUE S. (2010), "Estimating the carbon footprint of Australian tourism", *Journal of Sustainable Tourism*, vol. 18, n. 3, pp. 355-376.

DUTTA K., UMASHANKAR V., CHOI G., PARSA H.G. (2008), "A comparative study of consumers' green practice orientation in India and the United States: a study from the restaurant industry", *Journal of Food service Business Research,* vol. 3, n. 11, pp. 269-285.

EL DIEF M., FONT X. (2010), "The determinants of hotels' marketing managers' green marketing behaviour", *Journal of Sustainable Tourism,* vol. 18, n. 2, pp. 157-174.

ELKINGTON J. (1998), *Cannibals with forks: the triple bottom line of 21st century business*, Capston Publishing, Oxford.

ERDEM B., TETIK N. (2013), "An environmentally-sensitive approach in the hotel industry: ecolodges", *International Journal for Responsible Tourism*, vol. 2, n. 2, p. 22.

ERDOGAN N., TOSUN C. (2009), "Environmental performance of tourism accommodations in the protected areas: case of Goreme Historical National Park", *International Journal of Hospitality Management,* vol. 28, n. 3, pp. 406-414.

EISENHARDT K.M. (1989), "Building theories from case study research", *Academy of Management Review,* vol. 14, n. 4, pp. 532-550.

FAHMY F.H., AHMED N., FARGHALLY H. (2012), "Optimization of renewable energy power system for small scale brackish reverse osmosis desalination unit and a tourism motel in Egypt", *Smart Grid Renewable Energy,* vol. 3, n. 1, pp. 43-50.

FONT X., MCCABE S. (2017), "Sustainability and marketing in tourism: its contexts, paradoxes, approaches, challenges and potential", *Journal of Sustainable Tourism*, vol. 25, n. 7, pp. 869-883.

FORMICA S., UYSAL M. (2002), "Segmentation of travelers based on environmental attitudes", *Journal of Hospitality and Leisure Marketing,* vol. 9, n. 3/4, pp. 35-49.

GEERTS, W. (2014), "Environmental certification schemes: Hotel managers' views and perceptions", *International Journal of Hospitality Management*, vol. 39, pp. 87-96.

GILG A., BARR S., FORD N. (2005), "Green consumption or sustainable lifestyles? Identifying the sustainable consumer", *Futures*, vol. 37, n. 6, pp. 481-504.

GOLDSTEIN N.J., CIALDINI R.B., GRISKEVICIUS V. (2008), "A room with a viewpoint: using social norms to motivate environmental conservation in hotels", *Journal of Consumer Research,* vol. 35, n. 3, pp. 472-482.

GOSSLING S., PEETERS P. (2015), "Assessing tourism's global environmental impact 1900-2050", *Journal of Sustainable Tourism*, vol. 23, n. 5, pp. 639-659.

HAIR J.F., BLACK W.C., BABIN B.J., ANDERSON R.E., TATHAM R.L. (2010), *Multivariate Data Analysis*, 7th edition, Pearson, New York.

HAN H., HYUN S.S. (2018), "What influences water conservation and towel reuse practices of hotel guests?", *Tourism Management,* vol. 64, pp. 87-97.

HAN H., HSU L.T., LEE. J.S. (2009), "Empirical investigation of the roles of attitudes toward green behaviours, overall image, gender and age in customers' eco-friendly decision-making process", *International Journal of Hospitality Management*, vol. 28, n. 4, pp. 519-528.

HAN H., HSU L.T.J., SHEU C. (2010), "Application of the theory of planned behaviour to green hotel choice: Testing the effect of environmental friendly activities", *Tourism Management,* vol. 31, n. 3, pp. 325-334.

HAN H., LEE J., TRANG H., KIM W. (2018), "Water conservation and waste reduction management for increasing guest loyalty and green hotel practices", *International Journal of Hospitality Management*, vol. 75, pp. 58-66.

HAN H., YOON H. (2015), "Customer retention in the eco-friendly hotel sector: examining the diverse processes of post-purchase decision-making", *Journal of Sustainable Tourism,* vol. 23, n. 7, pp. 1095-1113.

HAWKINS R. (2006), "Accounting for the environment: reflecting environmental information in accounting systems", in Harris P., Mongiello M. (Eds.), *Accounting and Financial Management - Developments in the International Hospitality Industry,* Butterworth-Heinemann, Oxford, pp. 262-281.

JOHNSTONE N., LABONNE J. (2009), "Why do manufacturing facilities introduce environmental management systems? Improving and/or signalling performance?", *Ecological Economics*, vol. 68, n. 3, pp. 719-730.

KALS E., SCHUMACHER D., MONTADA L. (1999), "Emotional affinity toward nature as a motivational basis to protect nature", *Environment and Behaviour*, vol. 31, n. 2, pp. 178-202.

KANG K.H., LEE S., HUH C. (2010), "Impacts of positive and negative corporate social responsibility activities on company performance in the hospitality industry", *International Journal of Hospitality Management,* vol. 29, n. 1, pp. 72-82.

KASIM A. (2004), "Socio-environmentally responsible hotel business: Do tourists to Penang Island, Malaysia care?", *Journal of Hospitality and Leisure Marketing,* vol. 1, n. 4, pp. 5-28.

KIM Y., HAN H. (2010), "Intention to pay conventional-hotel prices at a green hotel - a modification of the theory of planned behaviour", *Journal of Sustainable Tourism,* vol. 18, n. 8, pp. 997-1014.

LANE G., HILL C. (2006), "Corporate responsibility in the hospitality sector: pain or gain?", *Hospitality Directions-Europe Edition*, vol. 13, pp. 1-12.

LEE J.S., HSU L.T., HAN H., KIM Y. (2010), "Understanding how consumers view green hotels: how a hotel's green image can influence behavioural intentions", *Journal of Sustainable Tourism*, vol. 18, n. 7, pp. 901-914.

LIU Z. (2003), "Sustainable tourism development: A critique", *Journal of Sustainable Tourism*, vol. 11, n. 6, pp. 459-475.

MACQUEEN J. (1967). "Some methods for classification and analysis of multivariate observations", in *Proceedings of the fifth Berkeley symposium on mathematical statistics and probability,* vol. 1, n. 14, pp. 281-297.

MANAKTOLA K., JAUHARI V. (2007), "Exploring consumer attitude and behaviour towards green practices in the lodging industry in India", *International Journal of Contemporary Hospitality Management,* vol. 19, n. 5, pp. 364-377.

MAURI A.G., MINAZZI R. (2013), "Web reviews influence on expectations and purchasing intentions of hotel potential customers", *International Journal of Hospitality Management*, vol. 34, pp. 99-107.

MARTÍNEZ GARCÍA DE LEANIZ P., HERRERO CRESPO Á., GÓMEZ LÓPEZ R. (2018), "Customer responses to environmentally certified hotels: The moderating effect of environmental consciousness on the formation of behavioural intentions", *Journal of Sustainable Tourism,* vol. 26, n. 7, pp. 1160-1177.

MCNAMARAA E.K., GIBSON C. (2008), "Environmental sustainability in practice? A macro-scale profile of tourist accommodation facilities in Australia's coastal zone", *Journal of Sustainable Tourism,* vol. 16, n. 1, pp. 85-100.

MOLINA-AZORIN J.F., CLAVER-CORTÉS E., PEREIRA-MOLINE J., TARÍ J.J. (2009), "Environmental practices and firm performance: an empirical analysis in the Spanish hotel industry", *Journal of Cleaner Production,* vol. 17, n. 5, pp. 516-524.

OLIVER R.L. (1996), *Satisfaction: A Behavioural Perspective on the Consumer,* McGraw-Hill, NY, USA.

PARK J., KIM H.J., MCCLEARY K.W. (2014), "The impact of top management's environmental attitudes on hotel companies' environmental management", *Journal of Hospitality and Tourism Research,* vol. 38, n. 1, pp. 95-115.

PORTER M., VAN DER LINDE C. (1995), "Toward a new conception of the environment-competitiveness relationship", *Journal of Economic Perspective*, vol. 9, n. 4, pp. 97-118.

RAHMAN I., REYNOLDS D., SVAREN S. (2012). "How "green" are North American hotels? An exploration of low-cost adoption practices", *International Journal of Hospitality Management,* vol. 31, n. 3, pp. 720-727.

RITOV I., KAHNEMANN D. (1997), "How people value the environment: Attitudes versus economic values", in Bazermann M.H., Messick D.M., Tenbrunsel A.E., Wade-Benzoni K.A. (Eds.), *Environment, ethics, and behaviour* (pp. 33-51), San Francisco, CA: The New Lexington Press.

SEGARRA-OÑA M., PEIRÓ-SIGNES Á., VERMA R., MIRET-PASTOR L. (2012), "Does environmental certification help the economic performance of hotels? Evidence from the Spanish hotel industry", *Cornell Hospitality Quarterly,* vol. 53, n. 3, pp. 242-256.

SHANG J., BASIL D.Z., WYMER W. (2010), "Using social marketing to enhance hotel reuse programs", *Journal of Business Research,* vol. 63, n. 2, pp. 166-172.

SIANO A. (2012), "La comunicazione per la sostenibilità nel management delle imprese", *Sinergie Italian Journal of Management,* n. 89, pp. 3-23.

SMITH G., FELDMAN D. (2003), "Company Codes of Conduct and International Standards: An Analytical Comparison", *Part I of II: Apparel, Footwear and Light Manufacturing, Agribusiness, Tourism,* The World Bank Group and International Finance Corporation, Washington, DC.

TARÍ J.J., CLAVER-CORTÉS E., PEREIRA-MOLINE J., MOLINA-AZORIN J.F. (2010), "Levels of quality and environmental management in the hotel industry: their joint influence on firm performance", *International Journal of Hospitality Management*, vol. 29, n. 3, pp. 500-510.

TESTA F., MIROSHNYCHENKO I., BARONTINI R., FREY M. (2018), "Does it pay to be a greenwasher or a brownwasher?", *Business Strategy and the Environment,* vol. 27, n. 7, pp. 1104-1116.

TRANG H.L.T., LEE J.S., HAN H. (2019), "How do green attributes elicit pro-environmental behaviors in guests? The case of green hotels in Vietnam", *Journal of Travel and Tourism Marketing*, vol. 36, n. 1, pp. 14-28.

TZSCHENTKE N., KIRK D., LYNCH P.A. (2004), "Reasons for going green in serviced accommodation establishments", *International Journal of Contemporary Hospitality Management,* vol. 16, n. 2, pp. 116-124.

TZSCHENTKE N., KIRK D., LYNCH P. (2008), "Going green: decisional factors in small hospitality operations", *International Journal of Hospitality Management,* vol. 27, n. 1, pp. 126-133.

YIN R.K. (2013), *Case study research: Design and methods*, Sage publications, Thousand Oaks, CA.

WATKINS, E. (1994), "Do guests want green hotels?", *Lodging Hospitality,* vol. 50, n. 4, pp. 70-72.

ZHAO Y., XU X., WANG M. (2019), "Predicting overall customer satisfaction: Big data evidence from hotel online textual reviews", *International Journal of Hospitality Management*, vol. 76, pp. 111-121

Academic or professional position and contacts

Graziano Abrate
Associate Professor in Business Management - UPO
University of Piemonte Orientale - Italy
e-mail: graziano.abrate@uniupo.it

Rebecca Pera
Associate Professor in Marketing
University of Turin - Italy
e-mail: rebecca.pera@unito.it

Sarah Quinton
Reader in Marketing
Oxford Brookes University - UK
e-mail: sequinton@brookes.ac.uk

Appendix 1: Excerpt of survey questionnaire

NH SATISFACTION SURVEY
We would like to know what you think of staying at the hotel. Your comments will help us improve our service and will be treated anonymously. Please, value your satisfaction regarding the following concepts:

Are you travelling on:	Meeting at the hotel		Leisure		Business	
	Very unsatisfied	Unsatisfied	Quite satisfied	Satisfied	Very satisfied	Don't apply
OVERALL HOTEL SATISFACTION	☆	☆	☆	☆	☆	?
How likely are you to recommend this hotel to a friend or collegue?	☆	☆	☆	☆	☆	?
Value for money	☆	☆	☆	☆	☆	?
Hotel Location	☆	☆	☆	☆	☆	?
Room and Bathroom	☆	☆	☆	☆	☆	?
Cleanliness	☆	☆	☆	☆	☆	?
Hotel systems (air conditioning, heating, water, …)	☆	☆	☆	☆	☆	?
Breakfast buffet quality and variety	☆	☆	☆	☆	☆	?
Other Food & Beverages services (quality and variety)	☆	☆	☆	☆	☆	?
Staff friendliness	☆	☆	☆	☆	☆	?
Sleep quality /Pleasant rest	☆	☆	☆	☆	☆	?
Check in / Check out process (efficiency and quickness)	☆	☆	☆	☆	☆	?
Environmental strategy of the hotel	☆	☆	☆	☆	☆	?

What did you like in this hotel? (max. 400 characters)	Answer here…
What can we do to improve our service? (max. 400 characters)	Answer here…

	YES	NO
Regarding your suggestions, would you like to be contacted by NH Hotel Group?	V	X
Do you want to help other travelers? If you click "Yes", we will publish your comments and your first name on our web, so that other travelers can read the opinion of real customers.	V	X

SEND

Industry 4.0 technologies and the servitization strategy: a good match?[1]

Received
18th February 2019
Revised
2nd April 2019
Accepted
21st June 2019

Guido Bortoluzzi - Maria Chiarvesio - Rubina Romanello - Raffaella Tabacco - Valerio Veglio

Abstract

Purpose of the paper: *The paper aims at investigating whether a relationship exists between the servitization strategy and the adoption of Industry 4.0 (I4.0) technologies in small and medium sized enterprises (SMEs) operating in a B2B context.*

Methodology: *Case study method based on in-depth interviews with the entrepreneurs and managers of 7 SMEs operating in the mechanical sector in Italy*

Findings: *The article provides some preliminary evidence on the interplay between some I4.0 technologies (Internet of Things, cloud computing, simulation, big data and analytics) and the servitization strategies of B2B SMEs, and highlights its performance implications. The authors propose three research propositions to be tested in future studies.*

Research limits: *Although the goal of the research is exploratory, it is worth mentioning that it considers a small sample of B2B SMEs operating in the metals and machinery sector. Future studies could investigate these relationships among larger samples of cross-sectional companies.*

Practical implications: *This work identifies a selection of technologies belonging to I4.0, that could be compatible with one another and functional to the implementation of a servitization strategy of SMEs.*

Originality of the paper: *This work contributes to servitization literature by investigating the role of I4.0 technologies. Also, it contributes to management literature by offering initial empirical evidence of Italian manufacturing SMEs that have adopted I4.0 technologies.*

Key words: Industry 4.0; digital technologies; servitization; performance; B2B; SME.

1. Introduction

Digitization connects people, companies, systems, products and services (Coreynen, Matthyssens and Van Bockhaven, 2017), thus creating opportunities for new ways of doing business with potential strong

[1] This paper received funding from the Friuli Venezia Giulia region in relation to the "Smart and connected products and the competitiveness of companies" project, which was granted in pursuance of ex art. 5, c. 29-33, LR 34/2015. We also thank COMET, the cluster representing the entire mechanical sector of the Friuli Venezia Giulia region for its assistance during the case selection process.

impact especially in the manufacturing sector (Rymaszewska *et al.*, 2017). Indeed, digital technologies can provide critical support to innovation and marketing strategies, but can also enable firms to organize and manage their business in a completely different way. In particular, in the digital era, scholars and practitioners have attributed a disruptive power to Industry 4.0 (I4.0) technologies that could dramatically impact on industries and competition on the one hand (Porter and Heppelmann, 2014; Vendrell-Herrero *et al.*, 2017), and on organizations themselves on the other hand (Porter and Heppelmann, 2015). Indeed, from this second point of view, I4.0 technologies may be implemented in different activities of the value chain, with potential impacts at different levels ranging from inbound logistics to post-sale assistance (Porter and Heppelmann, 2015).

I4.0 technologies are also expected to enable and/or support the servitization of manufacturers (Kamp and Parry, 2017). Such a relationship is drawing attention in the literature but remains largely under-explored from an empirical point of view (Kowalkowski *et al.*, 2017; Paiola, 2017a; Paiola 2017b). An exception, in relation to the manufacturing context, consists in the study by Coreynen, Matthyssens and Van Bockhaven, (2017) that shows that specific digital technologies can lead companies along different servitization pathways but require a dynamic configuration of the firm's resources. Despite such an attempt, to the best of our knowledge, no empirical studies have tried to investigate whether - and how - I4.0 technologies enable or support servitization strategies in manufacturing firms. Moreover, assuming that this relationship exists, it becomes crucial to understand to what extent firms really benefit from the synergies it can deploy in terms of performance (Paschou *et al.*, 2017; Rymaszewska *et al.*, 2017).

This paper aims to contribute to fill this gap and deepen the relationship among I4.0 technologies, servitization strategies and the performance of firms operating in the business-to-business (B2B) market context. In fact, I4.0 technologies are expected to pave the way for profound innovations in the way B2B firms organize their business (Paschou *et al.*, 2017). In particular, a transition from product-based to service-centric business models - or an acceleration of ongoing transitions - is expected (Vendrell-Herrero *et al.*, 2017; Kamp and Parry, 2017; Coreynen *et al.*, 2017).

Furthermore, considering just the issue of servitization, a multifaceted framework is emerging, in which the intensity of and the role played by services among sectors, and between firms belonging to the same sector, can vary greatly (Cusumano *et al.*, 2015; Rymaszewska *et al.*, 2017; Vendrell-Herrero *et al.*, 2017). Moreover, recent surveys have shown that the transition from product- to service-based business models can be more difficult than expected for the companies undertaking it (Baines *et al.*, 2017; Paiola, 2017a; Paiola, 2017b). In this respect, some studies have shown that servitization can be a profitable competitive strategy in particular conditions (Lee *et al.*, 2016), whereas other works have highlighted a negative relationship between servitization and performance (Saccani *et al.*, 2014), and other works have underlined that this relationship is moderated by other factors (Zhen, 2012). In this articulated framework, it becomes even more important to understand which role I4.0 technologies could have in the servitization of manufacturing (Paschou *et al.*, 2017).

Through qualitative methodology, the present study contributes to this discussion by analyzing a sample of SMEs operating in a B2B context. The purpose of the study is to answer the following research questions: Are I4.0 technologies enabling or accelerating the (ongoing) transition from product- to service-based business models in B2B firms? If so, could this have an impact on firm performance?

To this purpose, we adopt a case study method (Eisenhardt, 1989) based on in-depth interviews with the managers and entrepreneurs of 7 SMEs operating in the mechanical sector. In particular, this study seeks to understand whether I4.0 technologies - and which ones specifically - can boost the servitization strategies of SMEs, how such an interplay takes place and, finally, what the performance implications of this interaction are.

This work contributes to the literature on servitization strategy by clarifying the role played by I4.0 technologies in the deployment of servitization strategies and by discussing the outcomes of such a joint effect in terms of firm performance.

The article is structured as follows: the second section provides an overview of the literature, and the third one outlines the used methodology. Then, in the fourth, we present the cross-case analysis and, in the fifth section, we discuss its results. Research and managerial implications, as well as the limitations of the study, conclude this paper.

2. Literature overview

2.1 The evolution of services in B2B contexts

If we look at the evolution of managerial literature on buyer-supplier relationships, we will notice that such a debate has mostly assumed the perspective of client firms (e.g. Dwyer, Schurr and Oh, 1987; Zhao and Cavusgil, 2006). Such a vast literature had the merit of highlighting the many advantages stemming from the collaboration between clients and supplying firms operating in B2B, including speeding-up the clients' time-to-market, reducing errors and related costs, and increasing product quality (e.g. Sako and Helper, 1995; Dyer and Singh, 1998; Kotabe, Martin and Domoto, 2003). However, B2B companies have not been passive - or just reactive - throughout this process. On the contrary, a parallel but minority literature has highlighted the active role played by suppliers and subcontractors in supporting the many achievements - in terms of innovation, quality improvement, cost reduction, etc. - that have been obtained by client firms (e.g. Nassimbeni *et al.*, 1993; Kindström and Kowalkowski, 2014; Carbonell and Rodriguez-Escudero, 2014; Gremyr *et al.*, 2014; Von Koskull and Strandvik, 2014; Mustak, 2014). As Furlan *et al.* (2007) observe, firms operating in B2B have assumed more and more design responsibilities over time and have been substantially helping their clients in designing better and/or more efficient products and processes. More in general, over time, suppliers and subcontractors operating in

B2B have gradually abandoned a mere productive (and reactive) role and started being increasingly proactive in providing their customers with a wide array of extra services - including *just-in-time delivery,* total quality assurance, co-design, etc. - that complement the supply of components, semi-finished products or machinery (Grandinetti and Bortoluzzi, 2004; Chiarvesio and Di Maria, 2009). As a result, the distinction between products and services has progressively blurred in the B2B context.

Vandermerwe and Rada (1988) first described this phenomenon and coined it as the "servitization" of business. Since then, the literature on servitization has significantly grown, intersecting the literature on buyer-supplier dynamics (Lightfoot *et al.*, 2013; Baines et al, 2017; Bustinza *et al.* 2017). Servitization has been introduced into firms in different manners. Oliva and Kallenberg (2003) talk about a product-service continuum that ranges from traditional manufacturing companies that only offer services as add-ons to their products, to companies that are also service providers and offer services as the main part of their value creation process. Cusumano *et al.* (2015) highlight three service categories for a product firm: those that "smooth out" the product sale or usage without significantly altering the product's functionality, those that enable the product to adapt to specific conditions by expanding its functions; services that replace and are therefore sold instead of the product. In the same vein, Kowalkowski *et al.* (2017: 9) recently distinguish between a "service infusion" strategy - defined as the "process whereby the relative importance of service offerings to a company or business unit increases, amplifying its service portfolio and augmenting its service business orientation" - and a strategy of pure servitization, corresponding to "transformational processes whereby a company shifts from a product-centric to a service-centric business model and logic".

The recent interest of academia towards services and servitization strategies in B2B is mainly due to the belief that through services firms can defend themselves from competing companies based in lower cost economies because services are more difficult to imitate and have increasingly become the source of competitive advantage for companies (Kamp and Parry, 2017). Indeed, service-based strategies are "distinctive, long-lived, and easier to defend" (Baines *et al.*, 2009, p. 547). Therefore, services can be used to strengthen business relationships with main clients by creating lock-in effects, hence laying the grounds for (greater) sustainable competitive advantage in the long run.

The advantages and drawbacks of service-based strategies have also been discussed in the literature (Baines *et al.*, 2009; Neely, 2008) and include financial benefits (such as more stable revenue streams and higher profits), strategic benefits (the provided services are tailored around the specific needs of business clients and hence difficult to imitate), marketing benefits (higher client retention is achieved) as well as environmental benefits (less waste is produced since production activities are streamlined along the supply chain). Of course, there are also costs and drawbacks , particularly for SMEs (Coreynen *et al.*, 2017) and mainly include the difficulties in managing the transition from products to services and in exploiting their full potential (Mathieu, 2001; Neely, 2008; Baines *et* *al.*, 2009; Paiola *et al.*, 2013; Zhang and Banerji, 2017). In this regard, Gebauer *et al.* (2005) present a potential "service paradox" that happens when firms invest heavily in extending the service business according to which increasing services creates additional costs without generating the (expected) corresponding higher returns.

2.2 Industry 4.0 technologies, digitization and servitization

Since digital transformation has recently become a hot topic in relation to manufacturing activities and B2B firms, academics have shed light on new potential connections between service-based strategies and the digital transformation of businesses (Porter and Heppelmann, 2014; 2015; Rymaszewska *et al.*, 2017). As Neil Gershenfeld said in 2012, "A new digital revolution is coming, this time in fabrication". A revolution that is headed by specific technologies, like additive manufacturing, big data and analytics, collaborative robots, advanced simulation, augmented reality, the Internet of Things (IoT), cybersecurity, and cloud computing (Rüßmann *et al.*, 2015) are all grouped under the definition of "Industry 4.0". We use this term to refer to a series of heterogeneous technologies that are associated with the ability to enable and accelerate the digital connection between products, processes, activities, and firms and that should lead manufacturing towards the so-called Fourth Industrial Revolution.

In Europe, Germany has been the leading country in supporting investments by private firms in such technologies. Since then, the term "Industrie 4.0" (in German) - or "Industry 4.0" (in English) - has become commonly used to identify a wide array of enabling technologies that are expected to radically change the processes of value creation in intermediate markets (Kagermann, 2015) and, as a consequence, the business model of firms (Burmeister *et al.*, 2016; Westerlund *et al.* 2014), not to mention the entire competitive environment and economic rules (Weller *et al.*, 2015).

Recent studies have started to address the managerial side of the adoption of these new digital technologies (Liao *et al.*, 2017; Lu, 2017). In particular, Bauer *et al.* (2016) identified several possible impacts including the increase in productivity, the rise in product quality and process efficiency, superior flexibility, the reduction in time-to-market, environmental sustainability, the new role of the consumer and, last but not least, a profound impact at the business model level (Lacy and Rutqvist, 2015; de Sousa *et al.*, 2018). Another expected impact of I4.0 is the increase of servitization strategies that are implemented by firms (Rymaszewska *et al.*, 2017). In fact, suppliers can leverage certain I4.0 technologies to improve their existing service offering, while other technologies may be used to deliver new services (Rüßmann *et al.*, 2015). This might be the case of big data analytics, for instance, which could represent a new tool in support of decision making (Rüßmann *et al.*, 2015). Another example regards the inclusion of advanced sensors in products - the Internet of Things (IoT): it can allow suppliers to manufacture smart and connected products that are expected to have a strong impact not only at the product level, but also in terms of the system of services (e.g. remote assistance, predictive maintenance, data production and storage, etc.) (Porter and

Heppelmann, 2014; 2015). Moreover, the combination of specific I4.0 technologies, such as IoT and cloud computing, can allow manufacturers to draw on real-time data deriving from the use of products and to provide new value-added services for their customers, with strong impacts on after-sales services (Bauer *et al.*, 2016).

However, I4.0 technologies are diverse and can be implemented in different business functions with different impacts. In particular, an incremental and synergic use of these technologies can empower the achieved outcomes because the factor that really lays the foundations for the Fourth Industrial Revolution following the third one driven by ICT and the internet, is connectivity among actors, objects, companies, systems, products and services (Coreynen *et al.*, 2017; Porter and Heppelmann, 2014). This, however, could become more difficult for established manufacturers than for start-ups and niche players because digital skills and smart value propositions have become more important in obtaining profits through an increase of offered services (Bechtold *et al.*, 2014). Indeed, most studies and reports suggest that the actual disruptive effect of I4.0 may be obtained through the simultaneous use of several technologies that could allow companies to deliver smart, complex services and, later, move towards a pay-per-use servitization strategy with a clear value-proposition that captures the offered value by providing additional and smart services (Bechtold *et al.*, 2014). In some cases, the use of I4.0 technologies may entail the possibility of generating new business models where users have no need to buy a product but can simply access and use it - for instance, through access to digital platforms (Bauer *et al.*, 2016). At the same time, each I4.0 technology does not necessarily lead to an increase in the service offering or enable a servitization strategy. For this reason, it becomes important to explore and understand which I4.0 technologies could be adopted to this purpose.

3. Research method

The purpose of this study is to investigate the existing interplay among I4.0 technologies, the servitization strategy and the performance of B2B firms. To this purpose, we developed a multiple case study method (Eisenhardt, 1989). The nature of this study is exploratory. We obtained qualitative data through in-depth interviews with the entrepreneurs and managers of 7 SMEs. Data were collected between September 2017 and June 2018. We adopted a purposive sampling approach to select B2B SMEs in the North-East of Italy operating in the mechanical sector. The selection process benefited from the assistance of experts working in local technology transfers and the mechanical cluster, who helped investigators in the identification of SMEs that had adopted at least one I4.0 technology. The selected companies were in line with the European definition of SME (European Commission Recommendation 96/280/EC: <250 employees and turnover <50 million Euro).

We collected in-depth interviews with entrepreneurs and managers based on a semi-structured questionnaire, with questions regarding the adopted I4.0 technologies, firm and servitization strategies, products, and sectors. Each interview lasted between 1 and 2.5 hours and involved at least two investigators. We decided to involve multiple investigators because the reliability of findings generally increases when the observations of multiple investigators converge, (Eisenhardt, 1989). We collected the transcription of follow-up telephonic interviews, as well as press and archival documents for triangulation purposes. The interviews were taped and transcribed, producing a total of 12.5 hours of tape recordings and 30 pages of transcripts. The archival data were used for triangulation purposes. Table 1 illustrates the number and type of interviews per company, whereas Table 2 provides information about the selected cases.

Tab 1: Data collection process

Case	C1	C2	C3	C4	C5	C6	C7
Respondents	Founder-entrepreneur	Founder-entrepreneur & Operations Manager	Founder-entrepreneur	Founder-entrepreneur	Entrepreneur & Board Member	CEO	Founder-entrepreneur
Data collection process	Interview lasted 2.5 hours + production site visit	Interview lasted 1.5 hour + production site visit	Interviews (2) lasted 2 hours and 1.5 hours + client's production site visit	Interview lasted 1.5 hour + production site visit	Interview lasted 1.5 hour + production site visit	Interview lasted 2 hours + production site visit	Interview lasted 1.5 hour

Source: Our elaboration

Tab. 2: Case description

Case	C1	C2	C3	C4	C5	C6	C7
Age	40	22	32	22	58	8	10
Turnover in 2016 (M Euro)	18	17	10	7	20	6	2.5
Employees	80	45	30	32	50	30	10
Foreign sales on total sales (%)	80	90	40	50	90	75	85
Product	Saws	Wire Rolling Technology	Beverage machines / plants	Mechanical machinery	Coating equipment	Programmable ovens	Machines

Source: Our elaboration

4. Cross-case analysis

As illustrated in Table 3, the manufacturing companies in our sample have selected specific I4.0 technologies in accordance with their overall strategy, their resources, and product and process attributes. The firms generally adopted such I4.0 technologies to be more competitive within an environment that they perceived as dynamic and challenging. I4.0 technologies led them to obtain different outcomes (e.g. automation in processes led to an increase of efficiency and productivity; IoT and cloud technologies led to product innovations).

The adoption of some I4.0 technologies is associated with service growth, as companies have started to offer new or additional services (e.g. simulation in pre- and post-sales; IoT for specific remote post-sales assistance). However, in most cases, these technologies have further boosted a pre-existing trend of service growth. The established manufacturers of the sample started to increase their service components in the Nineties, long before adopting recent I4.0 technologies. In contrast, the business idea of younger companies (C6, C7) was based on selling innovative products that - through the use of specific technologies such as IoT and the cloud computing - could offer additional, complex, smart services.

All manufacturing firms considered service growth as a key element of their competitive strategy in response to growing competition from - among others - low-cost countries. Indeed, additional services were the key attributes of their differentiation strategy.

In recent years, service growth related to I4.0 technologies have generally helped firms increase their overall value on the market because they started to offer new value-added services. This led to different outcomes: for instance, C1 noted that the additional services that could be offered thanks to these technologies have strengthened their relationship with some customers.

"Simulation services have helped us increase customer loyalty. Some clients (e.g. machine manufacturers) started to involve us in the design of their new products following a co-design logic". - the founder of C1.

The level of service growth is heterogeneous (stronger or weaker) among the sampled companies. Whereas most companies have translated service growth in service infusion, two companies (C3, C7) have been experimenting a complex evolution of their business model towards a servitization logic. As one entrepreneur noted, C3 enacted a shift towards a service-centric business model about 10 years ago, but the change is still not concluded:

"Over the years, the company has evolved by adding more and more types of machines to its offering. We have always invested in technology. About ten years ago, we started including sensors in our products and - thanks to this - offering remote assistance services. Now, we commercialize turnkey plants that are vertically and horizontally integrated. In this case, the plant consists of interconnected machines that are connected to the manufacturer's cloud and the customer. Now, thanks to IoT, cloud computing and big data collection, we now perform a real-time remote monitoring and management of plants. For a selection of customers, we have implemented/introduced servitization: they buy service packages while we maintain the ownership of plants. At this stage, our business model is moving towards a servitization logic, but it has not been a linear process so far". - The founder of C3.

In all cases, the manufacturing companies have certainly used some I4.0 technologies-namely IoT, simulation technologies, cloud computing and big data collection and analytics, to offer new or additional services.

For instance, simulation has been used to offer pre-sales services (e.g. more accurate cost estimates, waste reduction, problem solving in prototyping…) (C1, C2, C4, C5) and even for post-sales assistance (e.g. to monitor machinery performance, to simulate use in different conditions or with different tools, etc.) (C2). IoT built the foundations for creating smart products that could potentially and later be connected to the manufacturer (C2, C3, C4), the cloud (C3, C5, C6, C7), or to customers via app (C6, C7) or to platforms (C7). Cloud computing was widely adopted to share a virtual storage space with customers in order to offer new post-sales services (e.g. remote monitoring, storage of certifications and information about finished products, direct download of clients' orders through Electronic Data Interchange (EDI) systems, etc.). Cloud computing was often associated with the adoption of IoT in the case of manufacturers of machinery or smart connected products. The companies encountered more problems in implementing big data collection and analytics technology, which is often aimed at analyzing data on products' usage or features in order to respond to product innovation purposes (C1) or enrich the company's service portfolio (C3, C6, C7). An exception is represented by the young company C7, because at the beginning the founder identified a group of technologies that could jointly enable new, smart services. In this case, along with IoT and cloud technology, the founder already had a clear idea on how to develop big data and analytics. Since the beginning, C7 conceived a smart product that was supposed to be connected to the manufacturer's cloud and customers via app in order to let them collect and monitor data on energy consumption and related costs. Now, the company is developing a pay-per-use strategy, where customers can share the product with other people according to a sharing economy logic.

More interestingly, among the companies that have already developed a servitization strategy, the adoption of I4.0 technologies was finalized towards a planned increase of services for customers. In most cases, the adoption process reflected an incremental approach following a rapid evolution. As a result, after implementing one form of technology to offer a specific service, most companies rapidly understood the potentialities of other related I4.0 technologies that could enhance or enrich the service offering. From this perspective, through a simultaneous and combined adoption of I4.0 technologies that were aligned with the firm's strategy, the companies were able to obtain positive returns from the servitization strategy, like in the case of C3 and C7.

Overall, firms generally underlined their difficulties in exploiting the full potential of service growth. Customers frequently do not recognize the value of additional innovative services connected with smart products, incapable of exploiting the advantages of remote assistance, or are simply unwilling to pay more for these services.

As C6 noted:

"The company is developing a smart oven that can be remotely monitored and managed by us and connected to our cloud. The connection to the cloud was planned in order to increase the service offering embedded in the product. However, service growth entails many challenges, such as critical

aspects on how to manage data, privacy issues and cybersecurity. Once these issues will be solved, we expect that the creation of smart, connected products will give us the opportunity to offer a wide range of after-sales services that will be added to the product itself. For instance, this technology will allow the company to understand the users' habits through the collection and analysis of usage data". - The founder of C6

Remaining in the context of machinery, C4 underlined other difficulties in exploiting the full potential of innovative services:

"Customers frequently do not recognize the value of additional services such as remote assistance, or are unable to exploit the potentialities of smart products. In other cases, customers are not ready to share sensitive data such as those related to their production processes, but this is absolutely necessary to exploit the advantages of remote assistance". - The founder of C4.

Another challenge relates to customers' unwillingness to buy innovative services integrating I4.0 technologies as a separate offering or simply by paying additional costs for them. Some firms have tested commercial solutions to help customers understand the value of services, thus reducing customer's reluctance to use and pay for them. For instance, C5 is evaluating the possibility of selling remote assistance as an independent service that the customer could decide to buy (or not) when purchasing the coating equipment. C2 is also defining a solution to sell its simulation software:

"After purchasing our machinery, our customers can use our simulation software for free for one year. Then, the customer can decide to buy the license to keep on using the software". - The founder of C2.

Instead, C3, which has adopted I4.0 technologies in accordance with its servitization strategy, is the only company that has defined an explicit pricing strategy to sell its services.

"To some MNEs and large clients, we give machines on a gratuitous loan, but require a fee to use them. In these cases, we maintain the ownership of the plant and remotely manage it from our headquarters, while the customer only has the right to use it based on a usage fee. This represents a complete shift in business model compared to the past. Now, we offer useful, innovative services, and profitability largely depends on them". - The founder of C3.

The exploitation of innovative services seems to entail a need of learning and experimentation that should involve not only the manufacturing firm but also its customers. In contrast, C7 is developing a digital platform on which the firm could base the development of a servitization strategy responding to a sharing economy logic. This young company was set on the idea of selling products that could offer complex services on which the competitive advantage of the firm is based, through a combination of I4.0 technologies. Although this combination of I4.0 and servitization allowed the firm's growth, the implementation of a comprehensive servitization strategy still requires an entire reconception of the firm's positioning and an accurate identification of the segments that could be served.

Tab. 3: Cross-case analysis in terms of I4.0 technologies and service processes

Case	Service path	Adopted I4.0 technologies	I4.0 technologies enabling firms to offer new or additional services
C1	Over the last decades, the firm has developed a service infusion strategy that has strengthened the firm's competitive advantage.	Advanced robotics, cobots, and interconnected machines aimed at achieving vertical integration to increase the plant's efficiency, reduce costs, improve lead times and increase production flexibility; simulation used in prototyping to improve the production process and offered as a service in pre/post-sales; big data collection and analytics in progress - related to the utilization of the tool - with the purpose of further improving product performance.	Simulation, Cloud, Big data collection and analytics: the adoption of simulation has reinforced the pre-existing trend to service growth. Simulation service has been particularly appreciated by some customers that have started to collaborate more intensely with the firm. The firm aims to further exploit the potentialities of this service; this service is now offered as an add-on to physical products, rather than a separate expense.
C2	Since the establishment of the company, services have represented key components of its offering.	Simulation used at the design stage and offered to customers as a post-sales service; IoT applied to smart products.	IoT, Simulation: I4.0 technologies were adopted to introduce product innovations. A simulation software is offered to customers. The firm is exploring commercial solutions to exploit the commercial value of the simulation service.
C3	Since the beginning, service infusion has characterized the evolution of the firm's offering. About 10 years ago, the firm began to shift its business model towards a servitization strategy.	Robots in production to reduce production costs. Fully implemented IoT to create smart and connected plants that are vertically and horizontally integrated. The former one entails that the whole production process is made up of interconnected machines that are connected to the various value chain activities of the company (from orders to post-sales). Also, plants are horizontally integrated as the manufacturer remotely controls, monitors and manages the plants for its customers.	IoT, Cloud, Big data collection and analytics: the adoption of I4.0 technologies is associated with service growth not only through "service infusion" but also an explicit "servitization" strategy. In this case, I4.0 technologies have enabled new services (e.g. remote control), thus driving the firm to experiment a business model evolution towards "servitization".
C4	Since the company's foundation, service infusion has characterized the evolution of firm's offering. Over the last years, the firm has increased the service component in response to growing competition.	Simulation used at the design stage to improve the subsequent production process; IoT applied to the product; smart and connected products, where connectivity is mainly offered as a service of remote diagnostics to international customers.	IoT, Simulation: I4.0 technologies (e.g. simulation, smart products) are boosting the process of "service infusion". The adoption of I4.0 technologies represented a means to improve products and increase sales Customers very frequently underestimated and underused the potentialities of smart products. The firm considers the production and adoption of I4.0 technologies as a "learning process" that involves both the firm and the clients.
C5	Service infusion has gradually increased over last 20 years. The firm has been gradually developing new, complex services that could be the base on which to transform their business model according to a servitization logic.	Simulation used in the designing phase to improve both the product and the production process; smart and connected products that make remote diagnostics available; cloud computing used to offer remote software management to customers.	IoT, Simulation: some smart products' potentialities are not fully exploited. For example, remote assistance is available in smart equipment, but is not requested by customers. The firm is looking for a "commercial formula" to obtain higher returns from smart products. It is evaluating the possibility to sell remote assistance as an independent service that the customer can decide to buy (or not) when buying the coating equipment.

C6	Since the company's establishment, complex services have been key components of the firm's differentiation strategy.	IoT related to the creation of smart and connected products that are sold globally. Products include sensors and are connected to the manufacturer, the app (international costumers) and cloud technology/ computing.	IoT, Cloud, BD collection (WIP): Smart products could increase the service offering embedded in the product. However, service growth entails challenges that the firm is trying to overcome.
C7	Since the company's establishment, products have been developed to exploit and offer complex services, which are key the components of the firm's offering. The firm has shifted towards a servitization strategy that should let most of its profits be obtained through post-sale services.	Product embedding sensors and cyber physical systems (IoT) that are connected to the cloud and allow big data collection and analytics. A further connection will be developed to connect products with a digital platform.	IoT, Cloud, BD collection and analytics: Smart connected products embed a key service component into the offering. The firm has developed a product that already embedded high technological components and targeted selected technologies since the beginning in order to increase the offered service component. The adoption of IoT, Cloud, Big data collection and analytics was rapid and in line with the company's servitization strategy. Further potentialities in terms of increasing the technological boost of service offering were discovered later.

Source: Our elaboration

5. Discussion

The cross-case analysis has provided some preliminary evidence on the interplay between I4.0 technologies and the servitization strategies of B2B SMEs and highlighted some performance implications. We see three main results that can be translated in research propositions to be further tested empirically after enlarging the sample of involved firms.

First, our results suggest that the adoption of I4.0 technologies - namely those concerning the Internet of Things, simulation, cloud computing and big data collection (and analytics) - specifically aimed to increase the service offering of the firms. In particular, as regards the interviewed companies (that were already offering their clients a combination between products and services), we noticed that I4.0 technologies allowed many of them to provide new or additional services (e.g. remote maintenance, big data analytics on usage performance). Based on this, we propose the following research proposition:

Research proposition 1: Investments in I4.0 technologies - namely the Internet of Things, simulation, cloud computing, big data and analytics - enable the further infusion of services in B2B SMEs.

Based on our evidence, we cannot conclude that the adoption of these technologies could automatically and unavoidably lead to radical servitization. This can be related to a number of reasons and challenges that are connected with the implementation of a servitization strategy. Indeed, translating a product-based into a service-centered business model is not an obstacle-free process, as has already been discussed in the literature (e.g. Gebauer *et al.*, 2005). Moreover, all the interviewed companies had already implemented a service-centered growth strategy well before the adoption of I4.0 technologies. However, the cross-case analysis showed that through the adoption of specific I4.0 technologies (e.g. simulation offered in pre- and post-sales; IoT in remote post-sales assistance), several companies were able to shift their service-infusion strategy towards a more radical servitization by enhancing the existing one. Thus, I4.0 technologies acted as "enablers". In other cases, I4.0 technologies empowered an established servitization strategy. Hence our second research proposition:

Research proposition 2: Investments in I4.0 technologies - namely the Internet of Things, simulation, cloud computing, big data and analytics - can enable B2B SMEs to move from a service infusion towards a servitization strategy, or to empower the pre-existing servitization strategy.

Since the beginning, Investments in I4.0 technologies were coupled with specific business opportunities related to new or additional services that could be offered in the market. Investing in I4.0 could sometimes be functional to reduce costs and survive competition, but it is not enough to generate new streams of revenues related to these new services.

Companies that have simultaneously adopted a combination of I4.0 technologies in line with their servitization strategy were better able to exploit the value of the investment. Hence, I4.0 technologies can boost the effect that servitization strategies have on the performance of the firm, but they are not sufficient *per se* to generate better performance. They can bring positive returns in terms of customer loyalty and product positioning upgrading, among others.

Based on this, we advance our last research proposition:

Research proposition 3: The combined adoption of I4.0 technologies - namely the Internet of Things, simulation, cloud computing, big data and analytics - leads to positive performance outcomes when coupled with a clear servitization strategy.

6. Conclusions

This study contributes to servitization literature, by providing initial empirical evidence of the interactions between I4.0 digital technologies and servitization, and their impact on firm performance in a B2B manufacturing context. Also, it contributes to management literature by offering preliminary empirical evidence of Italian manufacturing SMEs that have adopted I4.0 technologies.

Investments in new technologies are sometimes needed to remain competitive, but technologies per se do not automatically provide additional revenue streams or higher profitability. The cases we analyzed in this paper well highlight the fact that the competitiveness of B2B firms in particularly challenging sectors (such as the mechanical sector) requires strategic proactiveness, technological evolution, and customer orientation. In this sense, investments in I4.0 technologies can boost the current evolutionary process and ongoing strategies, and even pave the way to new business strategies, but do not offer sufficient conditions to increase the competitiveness of firms.

Servitization strategies, in turn, are resource-demanding and imply specific strategic, marketing and financial challenges: the organization must be prepared for such a change; revenue models must be revised and may not be easy to define; customers should be "educated" in relation to new services to understand the concrete benefits and be willing to pay a premium or extra fee for them. Last but not least, most services require new data and privacy management policies. All these phases require financial resources. Hence, it is more likely for firms operating in B2Bs to adopt a step-by-step process in the transition from product-based to service-based business models, rather than radical moves. Such a transition may be boosted by the adoption of certain I4.0 technologies that act as accelerators, rather than enablers, of the transition. We refer, in particular, to IoT, simulation, cloud computing and big data collection (and analytics).

As regards the impact of servitization strategies and I4.0 technologies on firm performance, our results are not conclusive but offer interesting insights for further studies. Overall, the key to success seems to lie in the coherence between technology and strategy. However, there might be different nuances in this landscape. Some companies can invest in a few selected technologies to infuse services in their offering, while other firms adopt a group of technologies in accordance with a radical servitization strategy. Both situations can lead to positive impacts, but we might expect a greater effect in the case of higher levels of digital technologies and higher levels of servitization, as underlined by Frank *et al.* (2019), as long as there is coherence between them. In this sense, more in-depth studies will be needed.

The managerial implications of our study are straightforward: investments in (selected) I4.0 technologies should be carried out with the aim of empowering existing (or adopting new, but specific) servitization strategies. Otherwise, the firm's returns will be unclear.

Our study comes with several limitations, mainly due to the limited number of analyzed cases. Further studies involving larger samples will be needed to empirically test the strength of our research propositions.

References

BAINES T.S., LIGHTFOOT H.W., BENEDETTINI O., KAY J.M. (2009), "The servitization of manufacturing: A review of literature and reflection on the future challenges", *Journal of Manufacturing Technology Management*, vol. 20, n. 5, pp. 547-567.

BAINES T., ZIAEE BIGDELI A., BUSTINZA O.F., SHI V.G., BALDWIN J., RIDGWAY K. (2017), "Servitization: revisiting the state-of-the-art and research priorities", *International Journal of Operations and Production Management,* vol. 37, n. 2, pp. 256-278.

BAUER H., BAUR C., MOHR D., TSCHIESNER A., WESKAMP T., ALICKE K., WEE D. (2016), "Industry 4.0 after the initial hype-Where manufacturers are finding value and how they can best capture it", McKinsey Digital, Available: https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/getting%20the%20most%20out%20of%20industry%204%200/mckinsey_industry_40_2016.ashx.

BECHTOLD J., LAUENSTEIN C., KERN A., BERNHOFER L. (2014), "Industry 4.0-The Capgemini Consulting View. Sharpening the picture beyond the hype"., *Capgemnini Consulting,* vol. 31, pp. 1-36. Available: https://www.capgemini.com/consulting/wp-content/uploads/sites/30/2017/07/capgemini-consulting-industrie-4.0_0_0.pdf.

BORTOLUZZI G., CHIARVESIO M., ROMANELLO R., TABACCO R. (2018), "Industry 4.0 adopters and servitization: evidence from the mechanical sector", *XV Società Italiana Marketing (SIM) conference proceedings,* Università di Bari.

BURMEISTER C., LÜTTGENS D., PILLER F.T. (2016), "Business Model Innovation for Industrie 4.0: Why the Industrial Internet Mandates a New Perspective on Innovation", *Die Unternehmung,* vol. 70, n. 2, pp. 124-152.

BUSTINZA O.F., GOMES E., VENDRELL-HERRERO F., BAINES T. (2017), "Product-service innovation and performance: the role of collaborative partnerships and R&D intensity", *R&D Management,* vol. 49, n.1, pp. 33-45.

CARBONELL P., RODRIGUEZ-ESCUDERO A.I. (2014), "Antecedents and consequences of using information from customers involved in new service development", *Journal of Business and Industrial Marketing,* vol. 29, n. 2, pp. 112-122.

CHIARVESIO M., DI MARIA E. (2009), "Internationalization of supply networks inside and outside clusters", *International Journal of Operations and Production Management*, vol. 29, n. 11, pp. 1186-1207.

COREYNEN W., MATTHYSSENS P., VAN BOCKHAVEN W. (2017), "Boosting servitization through digitization: Pathways and dynamic resource configurations for manufacturers", *Industrial Marketing Management,* vol. 60, January 2017, pp. 42-53.

CUSUMANO M.A., KAHL S.J., SUAREZ F.F. (2015), "Services, industry evolution, and the competitive strategies of product firms", *Strategic Management Journal*, vol. 36, n. 4, pp. 559-575.

DE SOUSA JABBOUR A.B.L., JABBOUR C.J.C., GODINHO FILHO M., ROUBAUD D. (2018), "Industry 4.0 and the circular economy: a proposed research agenda and original roadmap for sustainable operations", *Annals of Operations Research,* vol. 270, n. 1-2, pp. 1-14.

DWYER F., ROBERT PAUL H., SCHURR SEJO OH. (1987), "Developing Buyer-Seller Relationships", *Journal of Marketing,* vol. 51, n. 2, pp. 11-27.

DYER J.H., SINGH H. (1998), "The relational view: Cooperative strategy and sources of interorganizational competitive advantage", *Academy of Management Review,* vol. 23, n. 4, pp. 660-679.

EISENHARDT K.M. (1989), "Building theories from case study research", *Academy of Management Review,* vol. 14, n. 4, pp. 532-550.

FRANK A.G., MENDES G.H., AYALA N.F., GHEZZI A. (2019), "Servitization and Industry 4.0 convergence in the digital transformation of product firms: A business model innovation perspective", *Technological Forecasting and Social Change,* vol. 141, April 2019, pp. 341-351.

FURLAN A., GRANDINETTI R. CAMUFFO A. (2007), "How do subcontractors evolve?", *International Journal of Production Management*, vol. 27, n. 1, pp. 69-89.

GEBAUER H., FLEISCH E., FRIEDLI T. (2005), "Overcoming the service paradox in manufacturing companies", *European Management Journal,* vol. 23, n. 1, pp. 14-26.

GRANDINETTI R., BORTOLUZZI G. (2004), *L'evoluzione delle imprese e dei sistemi di subfornitura. Il caso Friuli Venezia Giulia,* Franco Angeli, Milano.

GREMYR I., WITELL L., LÖFBERG N., EDVARDSSON B., FUNDIN A. (2014), "Understanding new service development and service innovation through innovation modes", *Journal of Business and Industrial Marketing,* vol. 29, n. 2, pp. 123-131.

KAGERMANN H. (2015), "Change through digitization-Value creation in the age of Industry 4.0", *Management of Permanent Change,* pp. 23-45.

KAMP B., PARRY G. (2017), "Servitization and advanced business services as levers for competitiveness", *Industrial Marketing Management,* vol. 60, pp. 11-16.

KINDSTRÖM D., KOWALKOWSKI C. (2014), "Service innovation in product-centric firms: A multidimensional business model perspective", *Journal of Business and Industrial Marketing,* vol. 29, n. 2, pp. 96-111.

KOTABE M., MARTIN X., DOMOTO H. (2003), "Gaining from vertical partnerships: knowledge transfer, relationship duration, and supplier performance improvement in the US and Japanese automotive industries", *Strategic Management Journal,* vol. 24, n. 4, pp. 293-316.

KOWALKOWSKI C., GEBAUER H., KAMP B., PARRY G. (2017), "Servitization and deservitization: Overview, concepts, and definitions", *Industrial Marketing Management*, vol. 60, January 2017, pp. 4-10.

LACY P., RUTQVIST J. (2015) "The Product as a Service Business Model: Performance over Ownership", *Waste to Wealth*, pp. 99-114. In: Waste to Wealth. Palgrave Macmillan, London.

LEE S., YOO S., KIM D. (2016) "When is servitization a profitable competitive strategy?", *International Journal of Production Economics,* vol. 173, pp. 43-53.

LIAO Y., DESCHAMPS F., LOURES E.D.F.R., RAMOS L.F.P. (2017) "Past, present and future of Industry 4.0-a systematic literature review and research agenda proposal", *International Journal of Production Research,* vol. 55, n. 12, pp. 3609-3629.

LIGHTFOOT H., BAINES T., SMART P. (2013), "The servitization of manufacturing: A systematic literature review of interdependent trends", *International Journal of Operations and Production Management*, vol. 33, n. 11/12, pp. 1408-1434.

LU Y. (2017), "Industry 4.0: A survey on technologies, applications and open research issues", *Journal of Industrial Information Integration,* vol. 6, June 2017, pp. 1-10.

MATHIEU V. (2001), "Service strategies within the manufacturing sector: benefits, costs and partnership", *International Journal of Service Industry Management*, vol. 12, n. 5, pp. 451-475.

MUSTAK M. (2014), "Service innovation in networks: a systematic review and implications for business-to-business service innovation research", *Journal of Business and Industrial Marketing,* vol. 29, n. 2, pp. 151-163.

NASSIMBENI G., DE TONI A., TONCHIA S. (1993), "L'evoluzione dei rapporti di subfornitura", *Sviluppo and Organizzazione,* vol. 137, Maggio/Giugno, pp. 96-107.

NEELY A. (2008), "Exploring the financial consequences of the servitization of manufacturing", *Operations Management Research,* vol. 1, n. 2, 103-118.

OLIVA R., KALLENBERG R. (2003), "Managing the transition from products to services", *International Journal of service Industry Management*, vol. 14, n. 2, pp. 1-10.

PAIOLA M. (2017a), "Digitalization and servitization: Opportunities and challenges for Italian SMES", T*oulon-Verona Conference "Excellence in Services"*.

PAIOLA M. (2017b), "Digitalization and servitization: Opportunities and challenges for Italian SMES", *Sinergie* n.107.

PAIOLA M., SACCANI N., PERONA M., GEBAUER H. (2013), "Moving from products to solutions: Strategic approaches for developing capabilities", *European Management Journal*, vol. 31, n. 4, 390-409.

PASCHOU T., ADRODEGAR, F., PERONA M., SACCANI N. (2017), "The digital servitization of manufacturing-a literature review and research agenda", 27th RESER Conference Bilbao [Online]. Available: https://www.researchgate. net/publication/319628925_The_digital_servitization_of_manufacturing_a_literature_review_and_research_agenda.

PORTER M.E., HEPPELMANN J.E. (2014), "How smart, connected products are transforming competition", *Harvard Business Review,* vol. 92, n. 11, pp. 64-88.

PORTER M.E., HEPPELMANN J.E. (2015), "How smart, connected products are transforming companies", *Harvard Business Review,* vol. 93, n. 10, pp. 96-114.

RÜßMANN M., LORENZ M., GERBERT P., WALDNER M., JUSTUS J., ENGEL P., HARNISCH M. (2015), "Industry 4.0: The future of productivity and growth in manufacturing industries", *Boston Consulting Group,* vol. 9. Retrieved from http://www.inovasyon.org/pdf/bcg.perspectives_Industry.4.0_2015.pdf.

RYMASZEWSKA A., HELO P., GUNASEKARAN A. (2017), "IoT powered servitization of manufacturing-an exploratory case study", *International Journal of Production Economics,* vol. 192, October 2017, pp. 92-105.

SACCANI N., VISINTIN F., RAPACCINI M. (2014), "Investigating the linkages between service types and supplier relationships in servitized environments", *International Journal of Production Economics,* vol. 149, March 2014, pp. 226-238.

SAKO M., HELPER S. (1995), *Supplier relations and performance in the auto industry: European-Japanese-US comparisons of the voice/exit choice*. Cambridge, MA: International Motor Vehicle Program, Massachusetts Institute of Technology.

SAUTER R., BODE M., KITTELBERG D. (2015), "How Industry 4.0 is changing how we manage value creation" *Horvàth and Partners, Management Consultants*, White Paper, pp. 1 - 12. Retrieved from https://vdocuments.net/how-industry-40-is-changing-how-we-manage-value-creation-industry-40-together.html.

VANDERMERWE S., RADA J. (1988), "Servitization of business: adding value by adding services", *European Management Journal*, vol. 6, n. 4, pp. 314-324.

VENDRELL-HERRERO F., BUSTINZA O.F., PARRY G., GEORGANTZIS N. (2017), "Servitization, digitization and supply chain interdependency", *Industrial Marketing Management,* vol. 60, pp. 69-81.

VON KOSKULL C., STRANDVIK T. (2014), "Discovering the unfolding of service innovations", *Journal of Business and Industrial Marketing,* vol. 29, n. 2, pp. 143-150.

WELLER C., KLEER R., PILLER F.T. (2015), "Economic implications of 3D printing: Market structure models in light of additive manufacturing revisited", *International Journal of Production Economics,* vol. 164, pp. 43-56.

WESTERLUND M., LEMINEN S., RAJAHONKA M. (2014), "Designing Business Models for the Internet of Things", *Technology Innovation Management Review,* vol. 4, n. 7, pp. 5-14.

ZHANG W., BANERJI S. (2017), "Challenges of servitization: A systematic literature review", *Industrial Marketing Management,* vol. 65, August 2017, pp. 217-227.

ZHAO Y., CAVUSGIL S.T. (2006), "The effect of supplier's market orientation on manufacturer's trust", *Industrial Marketing Management,* vol. 35, n. 4, pp. 405-414.

ZHEN L. (2012), "An analytical study on service-oriented manufacturing strategies", *International Journal of Production Economics,* vol. 139, n. 1, pp. 220-228.

Academic or professional position and contacts

Guido Bortoluzzi
Associate Professor of Innovation Management
University of Trieste, DEAMS - Italy
e-mail: guido.bortoluzzi@deams.units.it

Maria Chiarvesio
Associate Professor of Marketing and International Management
University of Udine, DIES - Italy
e-mail: maria.chiarvesio@uniud.it

Rubina Romanello
Post Doc Research Fellow of International Business
University of Udine, DIES - Italy
e-mail: rubina.romanello@uniud.it

Raffaella Tabacco
Assistant Professor of Marketing and Innovation Management
University of Udine, DIES - Italy
e-mail: raffaella.tabacco@uniud.it

Valerio Veglio
Assistant Professor of International Management
Free University of Bozen - Italy
e-mail: valerio.veglio@unibz.it

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.05
pp. 55-72

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Innovation in managing sustainability: a tentative integration of accounting for employee health and safety

Received
18th February 2019
Revised
2nd April 2019
Accepted
21st June 2019

Massimo Battaglia - Emilio Passetti - Lara Bianchi
Marco Frey

Abstract

Purpose of the paper: *This study analyses the implementation and integration of an accounting instrument for employee health and safety. It discusses whether and how the device and related financial information support employee health and safety decision making.*

Methodology*: The framework focuses on the technical, organisational and cognitive factors that may operate as enabling or hindering factors during the implementation and integration process of an accounting instrument. A multiple case analysis of two medium-sized Italian waste management companies was carried out following an interventionist research approach lasted two years.*

Findings*: The analysis reveals that none of the two companies integrated the instrument despite the positive outputs revealed during the implementation phase. A set of interrelated technical, organisational and cognitive barriers emerged. In particular, the difficulty of generating corporate interest in the instrument prevented its integration. Cognitive factors, such as empathy towards workers and fear of potential new injuries, operated in an unstable way, enabling the implementation but preventing the integration. The device, however, was able to support specific health and safety decisions during the test phase, even though the link between financial information and employee safety was fragile.*

Research limits: *The limitations of the study concern the potential biases of scholars related to the engagement within the organisations.*

Practical implications*: The results may support the development process of accounting instruments dedicated to employee health and safety. The results suggest that the integration of a new accounting instrument requires the simultaneous presence of technical, organisational and cognitive enablers to support the change from the company's routinised ways of acting and thinking.*

Originality of the paper: *The research offers an in-depth analysis of the development process of an accounting instrument. The study presents novel insights into the relationship between employee health and safety and accounting, which represents an unexplored and fertile area of investigation for social accounting studies.*

Key words: accident cost analysis; accounting process development; social accounting; hindering factors

1. Introduction

Occupational health and safety management aims to ensure adequate conditions for the hygiene, safety and well-being of people in the workplace. It seeks to facilitate the identification and reduction of risks, accidents and work-related diseases. The topic has become increasingly important for companies that have developed policies, programmes and actions to respond to internal and external stakeholders' pressures and increase performance (Swuste *et al.*, 2016).

Literature has discussed accident cost classification schemes (Brody *et al.*, 1990; Veltri, 1990), developed specific methods of analysis (Aaltonen *et al.*, 1996; Rikhardsson and Impgaard, 2004) and reviewed existing methods (Rikhardsson, 2004; Tappura *et al.*, 2015). At the institutional level, the topic has been promoted in business through a win-win logic, with the argument that preventive approaches to safety can generate a financial pay-off for companies, as well as a health and safety pay-off for employees (EU-OSHA, 2010; ISSA 2013). In contrast, critical studies have underlined that imposing financial reasoning on health and safety does not address the complexity of the topic or the promotion of its ethical value (Caicedo and Mårtensson, 2010; Caicedo *et al.*, 2010; Dillard and Roslender, 2011). O'Neill *et al.* (2015), for example, criticised the logic of using gravity and frequency indicators, arguing that they are too simplistic and aggregated to guide company decisions or to inform public policy. Cooper *et al.* (2011) proposed that comprehensive reporting of the employee health and safety investment is needed to enhance the transparency on the topic.

On the other hand, studies on instrument development process have revealed the importance of organisational, technical and cultural factors in driving the dynamics of implementation and integration (Anderson, 1995; Ax and Greve, 2017; Lodhia and Jacobs, 2013; McLaren *et al.*, 2016; Domingues *et al.*, 2017). However, despite the numerous studies that have investigated the topic (Giovannoni and Maraghini, 2013; Modell, 2009; Toutounchain *et al.*, 2018; Wouters and Roijmans, 2011), an understanding of whether and how the implementation of a new device influences organisational actions and decisions is still underinvestigated, especially in the context of health and safety.

Starting by these premises, the study aims to link the analysis of the development process of a new accounting instrument with the analysis of employee health and safety prevention. In particular, the study analyses how enabling and hindering factors influenced the implementation and integration of an accounting instrument for employee health and safety analysis within two organisations. The paper adopts a framework based on technical, organisational and cognitive factors to investigate the topic (Gond *et al.*, 2012). These factors allow for an articulated understanding of the process surrounding the development of the accident cost analysis tool, enabling to discuss whether and how the instrument was able to promote employee health and safety decision making (Passetti *et al.*, 2014).

The device was named in the project *the accident cost analysis.* It provides financial information concerning accidents in the workplace to support preventive safety actions (Jallon *et al.*, 2011). It was designed by scholars, in accordance with sample companies, to collect, measure and analyse financial information concerning the absence of safety such as the number, typology and frequency of accidents in the workplace. The device aims to consider financial data as a projection for employee health and safety-related failures, underling the prevention of accidents as a value activity (Rikhardsson, 2004). The measurement of accidents may be of critical importance because it may facilitate continuous improvement by inducing further accident investigations and appropriate actions (Ibarrondo-Dávila *et al.*, 2015). The idea underlying the tool recognises the importance to assure and enhance safe employee work conditions.

According to Cooper *et al.* (2011), to promote the right to safety in the workplace, new forms of health and safety accounting that consider both financial and health and safety aspects may be developed. The aim is providing a piece of transparent and complete information on the nature of the health and safety expenditures undertaken by the companies and on the costs for safety improvements. In such context, it is essential to underline that financial information does not undermine the ethical dimension of employee safety, which must be accepted, adopted and propagated in support of safety improvements (Cooper *et al.*, 2011). The analysis carried out in this paper contributes to the above points discussing the potential of an accident cost analysis tool to offer useful financial information intended to promote employee safety. In doing so, it provides an in-depth understanding of the implementation and integration process characteristics of such instrument, enhances, in turn, our understanding of the role that the technical, organisational and cognitive factors play in facilitating or hindering the development process of a new (accounting) instrument.

The empirical analysis refers to an interventionist study (Jönsson and Lukka, 2006) of two Italian waste management companies lasted almost two years, and aimed at experimenting the adoption of a new instrument for accidents costs measurement. The direct engagement with the organisations offered interesting theoretical and practical insights concerning the analysis of how accounting unfolded (Malmi, 2016; Jönsson and Lukka, 2006). The interventionist research approach enables to investigate employee health and safety issues as it encourages the participation of workers who are potentially exposed to the risks and thus can better perceive the lack of safety. The research focuses on waste management companies because employees are subject to several threats in the workplace (Frey *et al.*, 2013; Lopez-Arquillos *et al.*, 2019). The Italian context in particular is relevant because of the increased emphasis on health and safety management given by the waste management sector (Battaglia *et al.*, 2015).

The study adds to the previous literature on the accounting development process that illustrated the critical role of cognitive aspects in the processes of integration of new instruments within businesses (Englund *et al.*, 2013; Hall, 2016). The present analysis highlights the importance of three dimensions (technical, organizational and cognitive ones) in the processes of integration, deepening how their inter-play provides an in-depth understanding of the implementation and integration process dynamics.

In particular, the role of emotions related to the employees' cognitive health and safety issues was central in (initially) mobilising and (later) stopping the development process of the instrument. The implementation occurred in one of the companies because of the emotions related to the possibility of improving the health and safety analysis, and the employees' conditions. In contrast, the other company encountered organisational barriers. Cognitive factors played a crucial role in connecting, experimenting and maintaining the relationship between the instrument, financial information and employee health and safety decisions. However, the integration of the device was hindered in both companies by the negative interplay between various factors. In particular, employee health and safety was perceived by the case organisations as meta-value (Bouten and Hoozée, 2016), while the instrument and the related financial information, even if able to inform decision making and some preventive actions, were considered of minor importance (Smallman and John, 2001; Miller and Haslam, 2009).

The remainder of the paper is structured as follows. Section two explains the theoretical framework and part three the research method. Section four presents the findings which are discussed with conclusions and future research directions in section five.

2. The analytical framework

According to Englund and Gerdin (2008; 2015), further studies concerning the accounting development process are needed to understand how internal process dynamics occur, which dimensions and factors influence them and how they are intertwined. The development process of an instrument is articulated in the main phases of *initiation, implementation and integration* (Al-Sayed and Dugdale, 2016; Damanpour, 2014). The *initiation* phase begins when internal and external pressures to change emerge, and the internal constituents of an organisation become aware of their needs, starting with the investigation of and search for possible innovative solutions.

The *implementation* phase represents the transition period during which an organisation becomes skillful, consistent and committed to the adoption of the innovative instrument (Klein and Sorra, 1996). In the implementation phase, the scope, objectives, data collection and possible changes in the adopted technique and the organisational structure are discussed. The trial adoption and the initial acceptance of the innovative instrument take place during this phase. Implementation, therefore, is the gateway between the decision to adopt the innovation and its routinised adoption, which is typical of the integration phase.

In the *integration* phase, there is a gradual acceptance of and search for multiple applications of the instrument. Accordingly, a common understanding of the device may emerge in the organisation, and the innovation loses its novelty. Full integration is achieved when the tool becomes entrenched and embedded, and its information is used regularly. In such a case, the instrument shows its potential - thereby improving work effectiveness.

Multiple dimensions and factors may influence the implementation and integration phases (Anderson, 1995; Ax and Greve, 2017; Busco *et al.*, 2015). Gond *et al.* (2012) identify technical, organisational and cognitive factors as the most important. The three dimensions are linked and may interact. They can foster the development process operating through enabling factors (Gond *et al.*, 2012). On the other hand, they may trigger the implementation and integration phases due to the presence of hindering factors (Barki and Pinsonneault, 2005; Battaglia *et al.*, 2016).

The *technical dimension* (Anderson, 1995) considers the availability of information and whether and how it is diffused within the organisation. In the health and safety context, technical aspects refer to tracing and observing injury cost data and information, and also to the implementation and integration of the new instrument into the pre-existing health and safety management procedures and health and safety performance reports (Ibarrondo-Davila *et al.*, 2015). The technical dimension allows for the acquisition and sharing of information, supporting the internal legitimacy of the instrument. On the contrary, when data is scarce, the decision-makers may become risk-adverse, and consequently, the implementation and integration of the device become more complex (Ansari *et al.*, 2010). For example, Gosselin's (2006) review of activity based on costing adoption and implementation illustrated that the technical complexity of the instrument led to its abandonment.

The second dimension is the *organisational dimension,* which refers to how structures, processes and actors are organised around a particular topic (Hoque and Halam, 1999). Organisational mechanisms can be specific tasks and activities or cross-unit teams that combine different perspectives, knowledge and experiences and thus permit a fruitful internal debate. Liu and Pan's (2007) activity-based costing implementation review identified the training of employees as a critical organisational enabler, while Contrafatto (2014) indicated the constituency of an internal unit specifically dedicated to social and environmental issues as an essential organisational factor. For what concerns health and safety, Battaglia *et al.* (2014) revealed that developing a collective meaning between the different corporate actors increases the importance of costs accidents measurement. The organisational dimension may increase or decrease the visibility and influence of a specific instrument (Ansari *et al.*, 2010), and also reduce technical and cognitive barriers (Gond *et al.*, 2012).

The *cognitive dimension* analyses the cognitive factors (Hall, 2016), i.e., the 'mental template that individuals impose on an information environment to give it form and meaning' (Walsh, 1995, p. 281). Cognitive factors include the knowledge that is assimilated by individuals, and that becomes part of their competencies. Cognitive frames serve to reduce the complexity of the internal and external environment and drive individual and collective decisions and actions (Englund *et al.*, 2013). Cognitive factors influence how employees decide to adopt a new instrument, how they perceive the expectations and give support to a specific device and how it will foster (or inhibit) the fulfilment of their values (Major and Hooper, 2005; Klein and Sorra, 1996).

If a financial perspective is taken to measure employee health and safety issues, cognitive barriers may arise, inhibiting the implementation and integration of the instrument due to the unusual way to assess health and safety. Despite that, accounting may support preventive analysis, providing additional information on the financial impact of the accident occurred, promoting knowledge and decision making (Testa *et al.*, 2018; Kamar *et al.*, 2019; Meikandaan and Hemapriya, 2018).

3. Research method and data collection

The main characteristics of the interventionist research method

The present study implements multiple case analyses (Yin, 2003) following the logic of interventionist research. Jönsson and Lukka (2006, p. 374) define it as 'a kind of field experimentation where the researcher [...] seeks to determine the experimental situation through observation, acts on that situation in concert with the host organisation, observes process and outcome, and analyses findings in view of the relevant literature'. The interventionist approach is considered particularly interesting for extending both scientific and managerial debate. The interventionist study should offer practical (i.e., *techne*), theoretical (i.e., *episteme*) and societal (i.e., *phronesis*) knowledge to be valid (Lukka and Soumala, 2014).

Interventionist research also involves the analysis of two linked perspectives. The *emic* aspect reflects the active role of the researcher during the research phase. The researcher becomes a 'member' of the host organisation, observing and participating directly. It allows the researcher to acquire an insider's view of what is going on in the case-organisation, with the potential to obtain critical information and deep insights that would otherwise be unavailable. The *etic* perspective refers to studying the case-organisation from the outside, allowing the empirical findings to be linked to a theoretical framework and relevant literature to make a theoretical contribution (Lukka and Soumala, 2014; Suomala *et al.*, 2014). Both perspectives are essential and need to be balanced to justify the interventionist research (Jönsson and Lukka, 2006).

The type of interventionist research differs according to the degree of intervention, i.e. modest or substantial. The latter is when 'the researcher -jointly with members of the target organisation- develops a new construction, tests its usability and draws theoretical conclusions based on this process' (Jönsson and Lukka, 2006, p. 377). The aim is to change the work processes or instruments, or influence the decision making of the host organisation through the design or redesign of specific aspects.

In the current research, a substantial approach was largely followed. The research team developed the instrument in collaboration with the host companies, then supported the companies during the implementation phase to foster the changes in the work processes and decision making. Finally, through a step-back process of analysis, the theoretical aspects of the research project are explored in this paper. The construction of a 'close contact zone' (Ahrens and Champan, 2006) and cooperation between the researchers and the two companies served two purposes. For the companies, it helped to develop a practical application for their internal health and safety analysis. For the research team, the project provided an opportunity to test the scientific literature, discuss topics concerning employee health and safety analysis and exploiting research skills on the ground to gather in-depth materials and information for academic purposes. The project was also endorsed and sponsored by the Fondazione Rubes Triva (hereafter, the Foundation) which is the official Italian entity devoted to the promotion of a safety culture within the waste management sector.

The data collection process

The interventionist research was developed within two medium-sized public waste management companies operating in Italy, here referred to as Marche and Latium (Table 1). The study began in September 2014 and finished on in November 2016, with the aim to develop an instrument for measuring the costs of the accidents. The companies had not yet analysed such issue. The monitoring and measurement technology designed for this study was the accident cost analysis tool, given the noteworthy interest that accident cost analysis has attracted in the specialised health and safety literature (Jallon *et al.*, 2011). The device was designed to provide financial information concerning the activities related to the management of accidents occurring in the workplace, to support both ex-ante and ex-post-accident analyses and decisions.

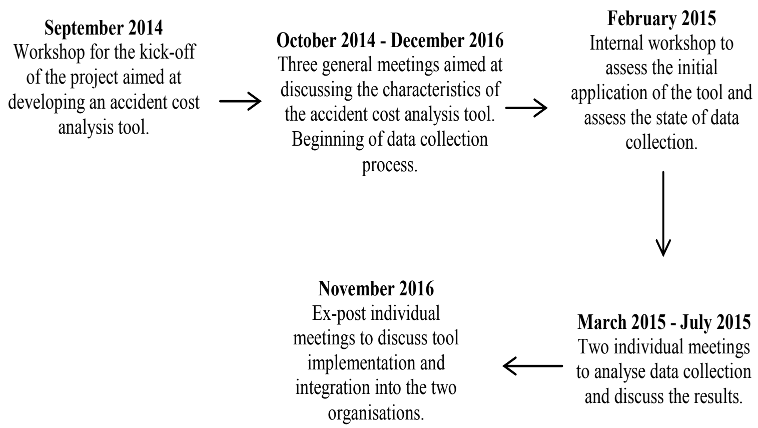
Tab. 1: Main characteristics of the case organisations

Characteristics	Latium	Marche
Municipalities served	29 municipalities and 138,000 citizens	Five municipalities and 170,000 citizens
Waste management activities characteristics	Urban waste collection by a mix of mechanised and door-to-door collections; landfill and incineration plant management	Urban waste collection by a mix of mechanised and door-to-door collections
Number of employees (2014)	414	325
Number of accidents (2014)	28	63
Safety indexes (2014)	Frequency Index: 54.97 Gravity Index: 1.28	Frequency Index: 120.15 Gravity Index: 2.36

Source: internal companies' data

Site visits, internal workshops and interviews mobilised the *etic* perspective, permitting the research team to observe and collect a considerable amount of data and information. The timeline of the project is shown in Figure 1. In most cases, to create an open and participative research environment, the meetings were not recorded, allowing for greater confidentiality and fluency between the researchers and the staff. During the meetings and interviews, extensive notes were taken and reviewed immediately after. The companies provided internal documents, which facilitated interactions that were perpetuated through e-mail and phone calls. The materials provided described the health and safety management and prevention activities of the companies. It was the case of internal reports about accidents, planned meetings amongst employees and managers, reports of employees training initiatives, safety managerial reviews, communications to Authorities on occurred accidents, as well as documents from internal accounting divisions aimed at supporting the process of quantification of costs. The material collected was organised into a table listing the interactions with the companies and used to support the analysis. The following data were usually recorded: date of the meeting, participants, topics discussed, critical aspects, time length and link to the meeting notes.

Fig. 1: The timeline of the research project



Source: own elaboration

One of the main risks of the interventionist research is the possibility that the researchers, through their involvement with the organisation, lose their independence and autonomy concerning the evaluation of results (Arnaboldi, 2013). In this regard, the role of the research team evolved and changed during the project. Initially, the group operated as a technical translator (Arnaboldi, 2013) to offer the necessary knowledge to the participants and to favour the implementation process. This phase involved the design of the instrument, testing of its applicability and discussion of the potential usefulness of the information for decision making. Then, during the pivotal implementation phase, the research team became a sidelined mediator (Arnaboldi, 2013), operating to guarantee convergence of interests between the researchers and the companies. As indicated by Arnaboldi (2013), if the convergence of interests fails, the value of the project may decrease. In particular, the research team produced two interim reports on the technical aspects and delivered two formal presentations on the academic literature between September 2014 and February 2015. Such analysis laid the foundations for both the theoretical analysis and the practical implications. From July 2015 to November 2016, the role of the research team changed again to one of an assembling explorer (Arnaboldi, 2013). In this phase, the findings were openly and extensively discussed with the companies and compared with the initial aims of the project. This dialogue with the companies helped to create a balance between the *emic* and the *etic* perspectives (Soumala *et al.*, 2014), to refine the initial ideas and concepts and to produce the second intermediate step related to the theoretical analysis. A book was written and presented at a public conference as one of the outputs of the project (Frey *et al.*, 2013). The book discussed the importance of managing and measuring employee health and safety performance, the tools available in the literature for measuring accidents and the social impacts of injuries in the workplace. It also presented the financial data concerning the accidents collected and analysed during the project.

Once the project was completed in November 2016, the research team concentrated its efforts on developing the theoretical analysis through an ex-post reverse analysis (Eisenhardt, 1989; Jönsson and Lukka, 2006). In this phase, the materials and experiences collected during the project were triangulated, interpreted and analysed through extensive reading of the accounting development process and the occupational health and safety literature. An in-depth analysis of the notes, materials and experiences was also developed around eight key themes: health and safety performance measurement, accident analysis, health and safety reporting, technical factors, organisational factors, cognitive factors, interaction mechanisms and decision making. The research team discussed the different elements, attitudes, motivations and meanings underpinning the observed actions and behaviour. Discussions were held on whether and how the dimensions and factors were bundled together, how they influenced the development process and the link between financial information and employee safety issues. As there was an interactive movement between the two perspectives throughout the entire project, the ex-post reverse analysis of reflection and interpretation allowed for the analytical unbundling of the emic and the etic views (Soumala *et al.*, 2014).

The final phase of the research coincided with the writing of the present academic output and was also characterised by a knowledge exchange and transfer activities (Parker and Northcott, 2016). The complex narrative of this paper evidences that the process of qualitative data positioning accurately corroborated the authenticity, plausibility and critical aspects of the two cases (Golden-Biddle and Locke, 1993). The narration of both the strength and weakness aspects of the research project avoided a second potential drawback of interventionist research, i.e. the biased representation of a successful story. The latter occurs when the researchers unduly guide the empirical research process toward the expected positive findings (in the case of this research, the full integration of the instrument within the two organisations), and selectively look for empirical evidence to confirm a positive story (Rautiainen *et al.*, 2016).

4. Comparative analysis

This section details the analysis of each company's data, starting with a discussion of the initial situation, followed by the implementation and integration phases.

4.1 Initial situation

Marche

Marche began to focus on employee health and safety management during the first decade of the new century with the creation of a small internal unit dedicated to health and safety. The OHSAS 18001 was officially acquired in 2011 and was considered an important instrument to communicate, both internally and externally, the increased importance of health and safety management. Investments in technical and training aspects were made to improve employee safety at an operational level. The general director, however, was not completely satisfied with the way health and safety performance was measured. He did not consider the indicators (gravity, frequency, near misses, etc.) sufficient to explain how the organisation was managing the issue adequately. For example, the company still did not know the exact expenditure on health and safety management over the years. Also, the analysis of health and safety performance was too localised within the health and safety unit and not fully shared within the organisation.

Latium

Latium first began to invest significantly in a more proactive management of health and safety issues in 2007, as a consequence of a large number of accidents that had occurred in the previous years. In 2008, an internal unit for the management of health and safety issues was created. It promoted a series of new health and safety-related initiatives over the years: new training courses for employees, replacement of old waste collection vehicles with more technologically advanced ones and the creation of a health and safety management system (without certification). The implementation of the health and safety management system allowed regular measurement of the frequency and gravity indicators and near accidents. In 2010, the number of accidents was reduced by a half, and in 2014 by a two-thirds based on 2008 data.

4.2 Preliminary acts

Marche and Latium

In April 2014, the Foundation promoted a public conference dedicated to the promotion of a safety culture within the waste management sector. Several themes were discussed, including the importance of developing health and safety management systems amongst environmental hygiene companies, the role of training at the operational level and the importance of measuring and analysing accidents in the workplace with new instruments. The Foundation's director considered the measurement and analysis of work accidents a pivotal topic for improving a preventive health and safety management approach.

Accordingly, a project articulated in two phases was launched during the conference. The first phase consisted of a desk study about the level of diffusion of health and safety management systems in the sector, and the level of diffusion of sustaibability amongst companies belonging to the waste management industry. The second phase aimed to develop a project for the design of a new instrument dedicated to the analysis of the costs of the accidents. Such proposal captured the initial interest of four companies, and in particular of Marche and Latium.

After a series of preliminary contacts to validate the initial interest in the project, in September 2014 an initial meeting was held between the Foundation, the research team and the two companies, represented by the general director of Marche, the human resources manager of Latium and their health and safety managers. The meeting defined the main aim of the project and its timeline. The research team explained that in medium-sized enterprises with a relatively low number of accidents per year, the absence of a measurement process and the lack of dedicated instruments might lead to a misperception of the accident risk and of the costs associated with it.

4.3 Implementation phase

Marche and Latium - The initial implementation phase

The design of the instrument was discussed during three meetings held between October and December 2014. In the case of Marche, two employees of the health and safety management unit and the accounting manager participated. Two Latium employees of the health and safety unit, and the operational services middle-manager were present. In the first meeting, both companies presented their profiles, explaining their functional characteristics and how they managed employee health and safety, as well as how they measured accidents. The research team presented the potential costs associated with accidents, including the cost of replacing an injured worker, the cost of the staff-employee involved in the accident, the cost of investigations, the cost of sanctions against the company, insurance costs, the costs associated with the plant shutdown, the cost of training new employees and so on. The differences in costs between severe and non-severe accidents were discussed. The first meeting helped the companies to familiarize with the project's aims. It also revealed the health and safety units' high commitment to enhancing the work safety of employees in everyday life.

During the second and third meetings, three methods for measuring the costs of accidents were discussed: insurance-based, activity-based and labour capacity-based methods (Battaglia *et al.*, 2014). The strengths, weaknesses and potentials for the implementation and integration within the two organisations were discussed. The health and safety units were particularly interested in the activity-based method due to the possibility of mapping all activities associated with an injury. An activity-based method documents all the activities (consequences) generated by an accident and evaluate the costs of it (Battaglia *et al.*, 2014). The accounting manager of Marche also sponsored this method, indicating that an exact identification of the activities would facilitate data acquisition and representation. Accordingly, the research team and the companies' representatives decided to focus on this method.

Three specific instruments were discussed to identify the most suitable. The first was the accident consequence tree method (Aaltonen *et al.*, 1996). The second was the systematic accident costs analysis (Rikhardsson and Impgaard, 2004). Finally, the accident cost calculator developed by the Workplace Safety and Health Council of Singapore was analysed[1]. The three instruments showed very similar characteristics. However, none of them completely satisfied the requirements of the research project for a flexible and comprehensive device. Individually, the accident consequence tree was considered to be too complex with too many categories and items, also considering the time needed to collect data and information. The systematic accident costs analysis lacked some details concerning the consequences of accidents, and thus it was deemed to be unsuitable. The meanings of some of the things in the accident cost calculator were unclear, and some information was considered difficult to find. An internal report was produced by the research team highlighting the pros and cons of each of the approaches.

Given the limitations of the available methods, the participants decided to develop an ad-hoc instrument based mainly on the existing ones, but without their disadvantages. The new device was named the *accident cost analysis tool.* It was composed of thirty-one specific items related to the management of an accident, grouped into five main categories of potential costs. Category A focused on those activities associated with the initial consequences of the accident, category B on the administrative results, category C on the possible effects on the equipment, category D on the costs of resuming business activities and category E on compensation and penalties. The table 2 shows the tool developed.

During the meetings, the company's representatives presented two main types of observation. Technical observations concerned the possibility of obtaining specific data and information that were not usually traced. It was also underlined a lack of knowledge and experience in applying the instrument and in discussing the related information. In this regard, to facilitate the data collection process and analysis, a set of 'rules of thumb' were collectively defined as follows. First, not all the items had to be analysed for each accident because their applicability depended on the gravity of the accident, i.e. the higher the gravity level, the higher the number of items to be included. Second, the value of each item had to be calculated as a total amount or as a unit amount of time depending on the nature of the item. Third, the owner of the data collection process should have been the health and safety unit, due to its knowledge of practices and procedures related to accidents. Fourth, the companies would have conducted the experiment in a flexible way according to the time they could dedicate to data collection and analysis. The discussion also underlined that the data acquisition did not strictly depend on the accounting information system because some information had to be collected specifically.

[1] The Accident Cost Calculator (ICC) is an interactive electronic tool. Please see the official website of the Workplace Safety and Health Council of Singapore (https://www.wshc.sg/) for further details.

Tab. 2: The structure of the accident cost analysis tool

A - Cost of the accident management	B - Cost of the accident root cause analysis	C - Cost of damages caused to and replacement of equipment	D - Cost for resuming business	E - Compensation and penalties
First aid of the injured worker by colleagues	Accident's cause analysis using field investigations	Evaluation of damages to equipment	The reorganisation of production post-accident	Compensation for damages caused (increased insurance)
Cost of materials/ equipment used to manage the accident	Completion of accident reports for accident management	Cost of damaged structure (impairment)	Overtime to recover production losses	Contractual penalties
Transport of the injured person to the healthcare structures	Completion of the documentation needed for A) accident management (e.g. report model by the Prevention and Protection Service Manager); B) completion of documentation for public authorities (INAIL report models); C) other types of documentation	Cost for repairs/ replacement/hire of means/equipment/ plants	Training of internal staff replacing injured persons to perform new duties	Orders cancelled or lost
Period of absence by the injured worker on the day of the accident		Cost for starting up new equipment, including cleaning and disposal	Staff training for resuming business after an accident	Legal expenses for lawsuits
Interruption of activities by other company workers due to the accident (e.g. production downtime)	Meetings with public authorities to analyse the events (specifying whether or not the sessions involve the Supervisory Body)		Time for selecting new staff	Fines/ administrative sanctions
Making the area of the accident safe	Time dedicated by the team involved for internal meetings related to the analysis of the cause of the accident		Cost of staff hired for the period in which the injured person is absent from work	Increased social security insurance premiums
Social security fees: - first three days of absence - between 20 and 90 days of absence - beyond 90 days of absence	Cost of any external consulting for analysing the accident			Other (specify)
Loss of productivity due to internal strikes				
Total A	Total B	Total C	Total D	Total E

Source: own elaboration

The map of activities was considered necessary for discussing the complexity of accidents, especially the most severe ones. It was used as a checklist that could help to coordinate the different organisational areas involved in the management of an accident. The participation of the accounting manager of Marche helped to clarify how to measure the various activities related to an accident. The operational services middle management of Latium underlined some potential difficulties with the day to day activities because he considered the adoption of the instrument a significant change to the employees' routines. A discussion of data availability was followed by a plan for setting up the data collection process. In this regard, it was decided that each company would operate separately.

Marche - The specific implementation phase

For Marche, the data collection process was divided into a pilot phase and the primary phase. The pilot phase focused on the analysis of four accidents with the aim to clarify the items that composed the tool, the time required to acquire the data and to increase the health and safety unit's confidence in the data collection process. Despite some difficulties related to data acquisition, the general director of Marche decided to extend the analysis to a broader set of 20 accidents which included almost half of all accidents that occurred from mid-2014 to mid-2015. The main phase included a selection of different accidents to ensure a complete representation of all of the accidents which were divided into 'not severe', 'severe' and 'acute', depending on the number of days lost.

The main phase, however, was more demanding than expected, as clarified in the subsequent meetings that occurred between February and July 2015. An employee had to manually collect almost all the information on each of the 20 accidents. As expected, neither the accounting information system nor the specific health and safety instruments already in force, such as the OHSAS 18001 and the accident report analysis, contained enough information to complete most of the items in the tool. For half of the accidents, the costs were calculated following ex-post logic (i.e. after the accident occurred), while for the other half the costs were calculated concurrently with the accident. In this second case, the data collection process was more fluid and manageable compared to the ex-post reconstruction because the data were collected in real-time. The research team and the internal health unit screened all 20 of the tables that were compiled to check the data validity and reliability. Technically, for each accident, an average of 10 out of the 31 available items was collected, most of which was in categories A and B, with acute accidents being particularly relevant from a financial point of view.

From an organisational perspective, the data collection process was characterised by the partial participation of the human resources office and the technical service (i.e. the area that directly manages the waste collection activities). The human resources office supplied some information concerning the items in categories B and C. However, the need for a series of reminders from the health and safety unit highlighted the difficulty of modifying the accounting information system to collect the information automatically. The technical service had a minor role in the data collection for category A, increasing the difficulty of collecting complete information. The technical service units normally compiled a short accident report for the health and safety unit containing necessary information on the accident. Instead, the tool required a more active approach by the technical service towards the health and safety unit, requesting a higher level of cooperation concerning the ex-post activities related to the accident. The technical service contested the trade-off between managing the accident and the completion of the shift, and the difficulty of supplying the information requested.

The technical service manager explained that in the case of a minor and non-severe accident, the work-shift team was oriented to finish the shift anyway as the accident would not generate physical consequences on the employees. Conversely, in the case of a severe accident, attention was directed towards the injured person with no time to collect and analyse the different activities listed in the tool. Further, the request to participate in data collection was perceived as 'politically' driven, as a way to further control employees' behaviour rather than to increase the accountability process. The technical service did not understand the purpose of collecting information concerning the activities in category A (i.e. the cost of the accident management) of the instrument. The new analysis was perceived to be in contrast to the traditional organisational routines concerning the supervision of an accident because the aim of the analysis was not properly communicated. The health and safety unit reported these two criticisms during the March meeting. In the meeting, Marche's representatives underlined the difficulty of engaging the technical service in a more in-depth discussion about the implementation of the instrument because it was considered an inappropriate tool for managing accidents.

As a consequence, the development of the instrument was in grave danger of being stopped due to the joint effects of a lack of time, organisational obstacles and a lack of clarity on data use. Managing this latter cognitive aspect was critical during the implementation phase. The research team noted that the health and safety manager had some difficulties concerning how to exploit the data collected for decision making. The manager wanted to avoid wasting time in a pure data collection exercise but instead wanted to use the information collected. The research team explained that merely visualising the costs of accidents could be considered a positive effort because it would have permitted a deeper analysis of employee health and safety performance. The results were subsequently presented to the general director in an official meeting during which the new information was widely discussed.

The analysis of the accidents showed which types were more costly. For example, the information on the door to door waste collection accidents indicated that these types of injuries were the most expensive and consequently needed specific interventions, such as a more accurate training. From an organisational perspective, the information enabled the identification of some micro-organisational efforts that the health and safety unit had not previously been fully aware of. An example was the time taken by staff for managing administrative duties and the time to carry out extra activities to comply with ad hoc external audits by public authorities. All this information were hidden before the application of the instrument. The cost information on the injuries occurred in climbing and descending the lorries highlighted the possibility for a comparison between new preventive investments in employee health and safety and the potential incoming costs of the accidents associated with the status quo. A financial simulation was also performed on the data, to calculate the total costs of accidents in 2012. The analysis showed a total cost of just over €55,000 for the sample of accidents analysed (with a unit cost for injuries slightly lower than €2,000 for an accident of medium gravity), corresponding to an estimated annual value of about €120,000 for all of the accidents.

The general director expressed the desire to integrate the tool to support planning and control activities related to employee health and safety. His endorsement was essential to support the health and safety unit employees' efforts due to the significant commitment that they made to collect the data. Accordingly, despite the presence of technical and organisational barriers, the assessment of the implementation phase was considered prospective. Progressively, the internal unit appeared to be much more cognitively confident about how and when to use the instrument. The role of the device in supporting operational and performance analysis and decisions on investments was thus relevant. The experimental use of the tool clarified when and how to use it during decision making, escaping from the potential trap of considering the financial information as the leading information. To integrate the instrument, Marche decided to follow an incremental implementation path. It meant that a series of small initiatives needed to be taken. It was also established that the integration phase should be conducted autonomously by the company with the research team as 'external observers'.

Latium - The specific implementation phase

After the design of the tool, in February 2015 Latium decided to collect information on all the 28 accidents occurred in 2014. The data collection process was similar to the one of Marche. The cost of accidents was manually calculated because a large portion of the data and information was not available. The health and safety unit made a painstaking analysis of the internal documents with the aim of obtaining as much information as possible. The other information was collected in collaboration with the human resources office, while the operational unit was not involved. According to the health and safety unit, the operational unit required specific training concerning the aim and purpose of the tool. Otherwise, the analysis could be interpreted as an attempt to diminish, rather than to increase, safety management.

The research team actively supported the internal staff during data collection, progressively checking each accident report produced and helping it to clarify the meaning of some items. The health and safety unit highlighted that despite an initial problem with the data collection, and especially the information related to the time the operational unit dedicated to the management of the accident, the analysis of the accidents gradually became more standardised and reproducible. The health and safety unit noted that similar accidents required similar management time. The same observation was made by the human resources office, which pointed out that the administrative time dedicated to the management of the activities listed in the tool was very similar among the various accidents. Both offices thus gave a positive evaluation of the data collection process. They underlined that with some tweaks in the accident report -usually compiled by operational units-, the cost analysis process could become faster. The health and safety manager was also confident that the upcoming OHSAS 18001 certification would favour a more organic collection of health and safety information.

From a financial point of view, the calculation showed a total cost of approximately €50,000 and an average cost per medium-gravity accident of €1,900 (very similar to Marche). As noted during a meeting in April 2015, the vast majority of the costs (more than 90%) were related to category A, then to category B, and, in the case of severe accidents (lasting more than 35 days), to category C of the tool. When compared with previous studies, the average cost of a common accident was minor. The benOSH research (European Commission, 2011) reported a value of €1,651 for a low severity accident, of €4,985 for a medium severity and €11,760 for cases with high seriousness. The results of the benOSH study indicated that the most critical consequences of accidents were linked to the human-related aspects, which accounted for 80% of the total cost.

The reaction to the new information was different from that in Marche. Whereas in Marche the health and safety office was initially more interested in the quantitative value, in Latium the attention progressively moved to the analysis of the organisational aspects. The two Latium offices recognised the value related to the financial information. Still, they underlined that the majority of the cost was caused by the employees' absence from work after the accidents. They highlighted that most of the expenses in category B were related to the administrative time that could also be considered too much time. In their view, the new information was interesting not only because it explained the financial value of an accident, but also because it indicated the riskier and operational activities. The analysis of the accident cost reports revealed the importance of focusing on equipment, procedures and machines as the core aspects for improving employee health and safety. The analysis, therefore, indicated the importance of enhancing organisational processes and the relevance of continuing to invest in equipment and machines to reduce the number of accidents. In sum, the experimental adoption of the accident cost analysis tool was regarded as satisfactory because it showed an alternative and complementary view of health and safety performance and related managerial aspects. Latium, however, also questioned whether the financial measurement of accidents might be conceptually too risky because its aim could easily be misinterpreted as a way to reduce, rather than to improve, safety aspects.

The data were then presented to the head of the operational unit in a meeting in July 2015. The discussion that took place concerned the possibility of showing the organisational complexity of an accident and the cost of accidents during the training course for the operational staff. The head of the operational unit agreed on the added value of the information, thanks to the possibility to increase safety awareness. However, the proposal was only partially implemented because the health and safety unit, in conjunction with the operational unit manager, subsequently decided to show only the list of activities related to the accident, without any reference to the financial information. This precautionary approach was taken because the operational units were not confident enough on the usefulness of financial information when referring to safety aspects. In Latium, the implementation was regarded as satisfactory by the human resources manager, although the project was not openly endorsed by the head of the company. The idea of integrating the instrument was therefore considered, as discussed in the following section.

4.4 Integration phase

Marche - The (non)-integration phase

In 2015, more than a year after the end of the implementation phase, a one-day meeting was organised to understand whether and how the integration of the tool had occurred. The meeting revealed that the health and safety unit operated to promote organisational integration at the operational level. The activities' map was used during the workforce training to inform all employees on the organisational consequences associated with accidents, underlining the added value of an active collaboration in the ex-post analysis of the accident. As reported by the safety manager, the operational workers were astonished by the organisational consequences related to an accident. The financial information was also presented to promote a more rigorous conduct among the employees. It was stressed that such information could be considered as a waste of company resources that could otherwise be used for preventive interventions and actions. According to the health and safety unit, the visualisation of financial information could encourage the operational staff to pay greater attention to certain safety procedures. The internal union representatives also appreciated the ability of the activities' map to raise awareness on accident-related effects.

In terms of decision making, the health and safety unit adopted the accident cost information to forecast the potential costs of accidents for 2015. The determination and visualisation of the incoming costs underlined the importance of searching for new and effective safety operative solutions. The health and safety unit also adopted the information to support small investment decisions. It compared the data on manual handling of loads and door-to-door waste collection accidents with the potential benefits (measured in terms of cost reductions as a consequence of fewer accidents) derived from increasing the level of safety and technology of the employees' equipment. The data were analysed following a cost-benefit logic, in which the measurement of benefits also took into consideration the financial advantage related to the reduction of accidents. Nevertheless, the health and safety manager reiterated that the financial information was complementary, and not the main criterion on which to make decisions. This point resonates with Hall's (2010) view that accounting information can be used not only in terms of well-defined decision scenarios but also for improving knowledge regarding work environments.

However, the initial positive reception of the instrument and its use were not sufficient conditions to eventually integrate the tool. The health and safety unit recognised the difficulty in regularly updating the instrument when an accident occurred. They revealed that an official attempt aimed at sharing some aspects of the data collection process was made in collaboration with the accounting unit. Still, neither the technical unit nor the human resources office reacted positively. The technical unit indicated that the tool was not entirely appropriate for analysing safety aspects, while the human resources office was only willing to act in a supportive role because they did not want to take any direct responsibility.

A further barrier to the integration was the change of the general director, which occurred twice in a year, creating a sense of uncertainty in the company. As underlined by the internal unit: 'the absence of the past general director was detrimental to positively conclude the final development phase of the instrument'. The former director had known and sponsored the entire process. It was clear that the health and safety unit was somewhat isolated in pushing for the integration of the tool due to a lack of support and endorsement within the organisation. A sense of demotivation was evident during the meeting, as expressed by the health and safety manager. The research team made some attempts to re-open the discussion, stressing how dropping the use of the tool in its final stage could have been counterproductive. Nonetheless, the health and safety unit did not change its decision to stop the integration process.

The presence of intertwined technical and organisational barriers prevented the integration of the instrument. On the one hand, the financial information was not powerful enough to improve organisational interaction and discussions concerning employee safety improvement. On the other hand, the interactions between technical and organisational barriers hindered the integration. The technical factors (e.g., the availability of health and safety information within information systems, and the possibility of collecting accident information from established company reports) contributed less than the organisational barriers. The cognitive barriers were very important in opening the discussion concerning the potential improvement of employee health and safety, and to ensure that financial information did not prevail on the ethical aspects related to employees. The empathy towards workers and the fear of potential new injuries expressed by the health and safety unit staff enabled the implementation but not the integration. The same attitude towards the promotion of employee safety through a new instrument was not diffused within the organisation, representing a significant challenge. The health and safety unit appeared fragile and, due to a lack of organisational charisma and power, unable to design and promote the definitive steps necessary for integration (see also Hasle and Jensen, 2006).

Latium - The (non)-integration phase

A one-day meeting was organised at Latium more than a year after the end of the implementation phase to understand whether and how the integration had occurred. The company took some steps to share the instrument at an organisational level. The activities' map related to the accidents was the object of specific training initiatives for the operational level employees, with the aim of illustrating the organisational effects of an accident. Although the financial information was not presented, the map was considered an improvement in the process of measuring health and safety performance. During the year, a cost centre was also created within the accounting information system to collect financial information related to health and safety aspects. However, the health and safety unit at Latium made fewer efforts to adopt and integrate the instrument than the unit at Marche. The first organisational barrier that emerged was the non-prioritisation of the project despite the positive results achieved during the implementation phase. In the last year, the health and safety office concentrated its analysis on waste management services, which changed progressively from a mixed system of collection (automatic and door to door collection) to a complete door to door collection system. This change implied a re-organisation of employees' jobs and an analysis of related implications on employees' safety due to the advanced average

age of the workforce. The buyer process concerning safety equipment was also changed to reduce the costs of equipment and to improve the delivery aspects. These additional activities hinder the implementation phase and the promotion of the integration phase. Also, it underlined the difficulty of maintaining the focus on the new instrument within the company.

Other obstacles were also present. The general director did not consider the idea of promoting financial literacy on employee safety to be relevant. The experimentation and results of the project were presented to the general director in a closed meeting run by the health and safety manager with the presence of the health and safety unit. Despite recognizing the usefulness of the tool, the general director considered not appropriate to promote its diffusion. He considered the low number of accidents reported over the years to be a proxy of the good health and safety performance, and a confirmation of the effectiveness of the existing activities, without the need to commit further resources to develop additional tools. On safety, Latium perfomed indeed better than the national average.

As a consequence, the health and safety unit reported that the human resources manager stopped the full implementation of the tool. A further obstacle was the company's general approach to health and a safety issue, which was normatively oriented despite the incoming OHSAS 18001. The instruments adopted over time to manage and measure good health and safety performance were coherent with the legal requirements, with a low predisposition towards the adoption and integration of new and voluntary tools, despite their proven effectiveness. The organizational unit was not open to the adoption of a new device, hindering the beneficial value of the instrument. The health and safety office also missed the opportunity to collect financial information on accidents usable within the on-going OHSAS 18001 system. The OHSAS 18001 implementation might have represented a trigger for changing procedures, involving different units in the data collection process. However, the health and safety unit did not consider this as a possibility, despite having discussed it in previous meeting. The unit missed the opportunity to reduce the technical difficulties concerning data collection with the operational and human resources units. At an organisational level, the administrative unit responsible for book keeping and financial accounting analysis did not give any attention to safety aspects. The absence of an organisational awareness-raising process was also detrimental. The project was officially managed by the human resources office, developed by the health and safety unit, but not shared with the general director from the beginning, and based on a sporadic involvement of the technical-operational unit.

During the last meeting, the health and safety team revealed that its conservative approach toward the new tool and the related exploitation of the accident cost analysis had stopped the project. The presence and mix of technical, organisational and cognitive factors inhibited the integration of the instrument, which after an initial enthusiasm was eventually considered not too relevant and scarcely sponsored within the organisation. Latium appeared to be 'paralysed' by the health and safety unit and the role of the Director, unwilling to foster the instrument integration due to the efforts involved in abandoning a routinised and well-known approach.

5. Discussion and conclusions

The aim of the study was to analyse the implementation and integration of an accounting instrument related to employee health and safety, providing evidence on whether and how the instrument was able to support employee health and safety decision making. The analytical framework revealed different technical, organisational and cognitive barriers related to the implementation and integration of the instrument that was implemented, yet weakly integrated and eventually abandoned by the two companies. The instrument, when adopted, supported employee health and safety decisions, even though the link between financial information and employee safety was uncertain, and the learning aspects related to the use of the information were fragile. The failure of the integration was not due to the inadequacy of the instrument per se but to the ineffective management of the integration phase. While the study provided evidence of the instrument's conceptual relevance (Mättö and Sippola, 2016), the integration phase was not managed with the consistency, skill and care required to achieve its expected benefits by the various organisational members, indicating a common pitfall (Klein and Knight, 2005). In the following table, a synthesis of the main barriers emerged in both companies is provided.

Tab. 3: Main barriers emerged during the project

Integration phase analysis	LATIUM	MARCHE
Technical barriers	- Almost all of the information on accidents were manually collected	- The OHSAS18001 management system and accident reporting and analysis did not support data collection process - Almost all of the information on accidents were manually collected
Organisational barriers	- The project was not considered a priority within the company - The new analysis was perceived to be in contrast with the traditional organisational procedures - Different perspectives between the health and safety unit and the operational unit concerning the scope and use of the tool	- The data collection process was carried out by the health and safety management unit - Partial support of the internal accounting unit during the data collection process - Lack of support from the human resources office - Change of the general director, which occurred twice in a year, creating a sense of uncertainty in the company
Cognitive barriers	- The instrument was perceived as a way to control employee behaviour rather than to increase the reporting and decision making process - Scarse interest by the general director to integrate the instrument into organizational processes	Lack of a shared understanding on concerning how the data would be used

Source: own elaboration

The failure to move from implementation to integration underlined the importance of the organisational climate as a core factor in fostering integration, despite the perception that employee health and safety provides meta-value for organisations (Bouten and Hoozée, 2016). In Marche there was a more significant participation in and discussion of the project, evidencing a more positive organisational attitude. In contrast, in Latium the status quo dominated, as indicated by the health and safety manager, stopping the instrument's implementation when he perceived the necessity of involving other areas in the data collection process to ensure complete and reliable information. The findings reveal that even though technical barriers were present, they were less problematic than the organisational barriers, which differs from previous findings in which the role of data collection was emphasised (Gosselin, 2006; Ibarrondo-Davila *et al.*, 2015). The interplay between the technical and organisational dimensions also hindered the integration phase, suggesting a problematic relationship between the two.

Cognitive factors played a fundamental role in shaping the development process. The moral stance of the health and safety units favoured the project playing a critical role. The idea of further improving employee safety conditions through the experimentation and application of the new instrument was a strong cognitive enabler. This condition was particularly evident in Marche, while in Latium the weak efforts towards the integration of the instrument inhibited the activation of colonising mechanisms at an organisational level. In Marche, the passionate commitment of the health and safety unit and their cognitive openness on connecting health and safety with financial analyses helped to start the integration phase but was eventually insufficient to overcome the organisational barriers. In the case of Latium, the interplay between a low cognitive propensity to fully use the tool and the organisational inertia stopped the process at the implementation phase. The evidence from Latium adds empirical weight to the theoretical argument of Hahn *et al.* (2014), according to whom individual managers or employees may prefer to continue with traditional forms of analysis and decision making in cases of high uncertainty related to social (and environmental) issues.

In revealing these findings, this study informs the accounting development process literature by providing the first empirical explanation of the impact that cognitive aspects have on the use of accounting to improve employee safety decision making. The analysis of cognitive factors indicates the critical fit between the mind-set of the organisational actors and decisions at work. The accident cost analysis tool was adopted, even if only temporarily, because of a shared and enhanced the importance of employee health and safety. This analysis suggests that the instrument acted as a mediating instrument: it created a space for considering cost-saving issues while addressing the broader topic on employee health and safety improvements.

The cases analysis suggests that integrating an accounting instrument within an organisation may require the simultaneous presence of technical, organisational and cognitive enablers. The simultaneous activation of different facilitators is critical when the new instrument represents a steady, even radical, change from the routinized way of thinking and acting on a specific topic (Fraser, 2012). The activation of organisational mechanisms concerning the new instrument (organisational dimension) requires the device to be understood by different areas of the organisation, the activation of individual and organisational learning mechanisms (cognitive dimension) and the modification of technical aspects (technical dimension). The three dimensions are interdependent and may constitute a unified whole. This argumentation is different from that of Gond *et al.* (2012), according to whom integration can also occur when one of the dimensions is more developed than the others, as it drives and leverages on the other dimensions.

The findings promote the idea of importance prioritization among the enabling factors, which represents the epistemic contribution of this interventionist research (Lukka and Soumala, 2014). The order of importance reflects a level of proximity, in figurative terms, of the three dimensions as enablers of employee safety. The cognitive aspects were the most critical enablers, followed by the organisational and the technical factors. Such order of importance indicates that each dimension may stimulate employee health and safety-related decisions in different ways. In the two case companies, the idea of further reducing accidents using a new instrument primarily influenced the cognitive dimension, and was then translated, despite several difficulties, into organisational and technical managerial aspects. Accordingly, while the integration of a particular instrument may be achieved when the three dimensions are concurrently activated, the study revealed that the cognitive dimension is the most important in the case of employee health and safety. It means that the presence of cognitive enablers represents the initial condition upon which the other dimensions could be developed. The idea of an order of importance between facilitators represents a venue to discuss further how the implementation and integration of a specific instrument can take place (Ditillo and Lisi, 2016) in the presence of multiple and interrelated factors.

Similarly, an order of importance may also exist between the hindering factors, as indicated by the central role played by the organisational dimension in the cases analysed. The barriers were related to a small change in the management processes (i.e. data collection process, coordination and shared responsibility) and management techniques (accident report analysis and safety certifications) related to the new accounting instrument (see also Hoque and Halam, 1999). The order of importance may also depend on the type of device analysed. McLaren *et al.* (2016), for example, indicated the critical importance of technical factors in studying the development and abandonment of the EVA™.

From a societal (phronesis) perspective (Lukka and Soumala, 2014), the research provides evidence of the fragility of evaluating employee health and safety using financial information. As revealed, even if accounting instruments can contribute to the creation of a healthier workplace, the ethical dimension should always prevail when employee health and safety aspects are evaluated. While financial analyses represent a shared language within organisations, in the case of health and safety matters, they should be accurately defined to avoid misleading effects. Accordingly, the promotion of a win-win safety logic at the institutional and policy level (EU-OSHA, 2010; ISSA 2013) may risk producing counter effects if there is a failure in recognising the importance of the ethical dimension of employee safety. This point may support the debate among institutions and regulators concerning ways to enhance and stimulate employee health and safety issues at an organisational level.

The research is subject to some limitations. The findings are tied to the social and organisational context in which they emerged. Also, despite the strategies employed to promote a neutral perspective during the case analyses, some potential biases, such as the selective interpretation of information, may be present due to the subjectivity of the analyses. While the findings of the study move forward the debate on accounting for employee health and safety, there remains a worrying lack of knowledge of what it means to practise accounting in this context.

Future research avenues can continue to analyse the interplay between the three dimensions of factors and how they impact, singularly or collectively, on the implementation and integration of specific accounting instruments. In particular, the analysis of compatibility between organisational culture and the values and beliefs embedded in accounting instruments related to employee health and safety could be an exciting avenue to study safety accounting innovation. The level of adoption, the difficulties of implementation and integration, as well as the organisational and social meanings of different safety accounting instruments such as safety performance indicators, accident cost analysis tools, budget and investment criteria for health and safety management could also be investigated.

References

AALTONEN M.V., UUSI-RAUVA E., SAARI J., ANTTI-POIKA M., RÄSÄNEN T., VINNI K. (1996), "The accident consequence tree method and its application by real-time data collection in the Finnish furniture industry", *Safety Science*, vol. 23, n. 1, pp. 11-26.

AHRENS T., CHAPMAN C.S. (2006), "Doing qualitative field research in management accounting: Positioning data to contribute to theory", *Accounting, Organizations and Society,* vol. 31, n. 8, pp. 819-841.

AL-SAYED M., DUGDALE D. (2016), "Activity-based innovations in the UK manufacturing sector: Extent, adoption process patterns and contingency factors", *The British Accounting Review*, vol. 48, n. 1, pp. 38-58.

ANDERSON S.W. (1995), "A framework for assessing cost management system changes: the case of activity based costing implementation at General Motors, 1986-1993", *Journal of Management Accounting Research*, vol. 7, n. 1, pp. 1-51.

ANSARI S.M., FISS P.C., ZAJAC E.J. (2010), "Made to fit: How practices vary as they diffuse", *Academy of Management Review*, vol. 35, n. 1, pp. 67-92.

ARNABOLDI M. (2013), "Consultant-researchers in public sector transformation: An evolving role", *Financial Accountability and Management*, vol. 29, n. 2, pp. 140-160.

AX C., GREVE J. (2017), "Adoption of management accounting innovations: Organizational culture compatibility and perceived outcomes", *Management Accounting Research*, vol. 34, March, pp. 59-74.

BARKI H., PINSONNEAULT A. (2005), "A model of organizational integration, implementation effort, and performance", *Organization Science*, vol. 16, n. 2, pp. 165-179.

BATTAGLIA M., FREY M., PASSETTI E. (2014), "Accidents at work and costs analysis: a field study in a large Italian company", *Industrial Health*, vol. 52, n. 4, pp. 354-366.

BATTAGLIA M., PASSETTI E., FREY M. (2015), "Occupational health and safety management in municipal waste companies: A note on the Italian sector", *Safety Science*, vol. 72, February, pp. 55-65.

BATTAGLIA M., PASSETTI E., BIANCHI L., FREY M. (2016), "Managing for integration: a longitudinal analysis of management control for sustainability", *Journal of Cleaner Production*, vol. 136 part A 10 November, pp. 213-225.

BOUTEN L., HOOZÉE S. (2016), "Let's do it safely: how Altrad Balliauw configured a package of control systems", *Journal of Cleaner Production*, vol. 136 part A 10 November, pp. 172-180.

BUSCO C., CAGLIO A., SCAPENS R.W. (2015), "Management and accounting innovations: reflecting on what they are and why they are adopted", *Journal of Management and Governance*, vol. 19, n. 3, pp. 495-524.

BRODY B., LÉTOURNEAU Y., POIRIER A. (1990), "An indirect cost theory of work accident prevention", *Journal of Occupational Accidents,* vol. 13, n. 4, pp. 255-270.

CAICEDO M., MÅRTENSSON M., ROSLENDER R. (2010), "Managing and measuring employee health and wellbeing: a review and critique", *Journal of Accounting and Organizational Change*, vol. 6, n. 4, pp. 436-459.

CAICEDO M.H., MÅRTENSSON M. (2010), "Extensions and intensions of management control-The inclusion of health", *Critical Perspectives on Accounting*, vol. 21, n. 8, pp. 655-668.

CONTRAFATTO M. (2014), "The institutionalization of social and environmental reporting: An Italian narrative", *Accounting, Organizations and Society,* vol. 39, n. 6, pp. 414-432.

COOPER C., COULSON A., TAYLOR P. (2011), "Accounting for human rights: Doxic health and safety practices-The accounting lesson from ICL", *Critical Perspectives on Accounting*, vol. 22, n. 8, pp. 738-758.

DAMANPOUR F. (2014), "Footnotes to research on management innovation", *Organization Studies,* vol. 35, n. 9, pp. 1265-1285.

DILLARD J., ROSLENDER R. (2011), "Taking pluralism seriously: embedded moralities in management accounting and control systems", *Critical Perspectives on Accounting,* vol. 22, n. 2, pp. 135-147.

DITILLO A., LISI I.E. (2016), "Exploring sustainability control systems' integration: The relevance of sustainability orientation", *Journal of Management Accounting Research*, vol. 28, n. 2, pp. 125-148

DOMINGUES J.P.T., SAMPAIO P, AREZES P.M. (2017), "Analysis of certified occupational health and safety management systems in Portugal", *International Journal of Occupational and Environmental Safety,* vol. 1, n. 1, pp. 11-2

EISENHARDT K. M. (1989), "Building theories from case study research", *Academy of Management Review*, vol. 14, n. 4, pp. 532-550.

ENGLUND H., GERDIN J. (2008), "Transferring knowledge across sub-genres of the ABC implementation literature", *Management Accounting Research*, vol. 19, n. 2, pp. 149-162.

ENGLUND H., GERDIN J. (2015), "Developing enabling performance measurement systems: on the interplay between numbers and operational knowledge", *European Accounting Review*, vol. 24, n. 2, pp. 277-303.

ENGLUND H., GERDIN J., ABRAHAMSSON G. (2013), "Accounting ambiguity and structural change", *Accounting, Auditing and Accountability Journal*, vol. 26, n. 3, pp. 423-448.

EU-OHSA (2010), "Mainstreaming OSH into business management", *European Agency for Safety and Health at Work*, Bilbao, Spain, available at: https://osha.europa.eu/en/tools-and-publications/publications/reports/mainstreaming_osh_business (accessed 20 January 2015).

FRASER M. (2012), "Fleshing out" an engagement with a social accounting technology", *Accounting, Auditing and Accountability Journal,* vol. 25, n. 3, pp. 508-534.

FREY M., BATTAGLIA M., PASSETTI E. (2013), *Investire in sicurezza nel settore dell'igiene ambientale* (Investing in safety in the environmental hygiene sector), Franco Angeli, Milan, Italy.

GIOVANNONI E., MARAGHINI P. (2013), "The challenges of integrated performance measurement systems: Integrating mechanisms for integrated measures", *Accounting, Auditing and Accountability Journal,* vol. 26, n. 6, pp. 978-1008.

GOLDEN-BIDDLE K., LOCKE K. (1993), "Appealing work: An investigation of how ethnographic texts convince", *Organization Science*, vol. 4, n. 4, pp. 595-616.

GOND J.P., GRUBNIC S., HERZIG C., MOON J. (2012), "Configuring management control systems: Theorizing the integration of strategy and sustainability", *Management Accounting Research*, vol. 23, n. 3, pp. 205-223.

GOSSELIN M. (2006), "A review of activity-based costing: technique, implementation, and consequences", in Chapman S.C., Hopwood, A.G., Shields M.D (Ed.), *Handbooks of Management Accounting Research,* (Vol. 2, pp. 641–671), Elsevier, December.

HALL M. (2010), "Accounting information and managerial work", *Accounting, Organizations and Society*, vol. 35, n. 3, pp. 301-315.

HALL M. (2016), "Realising the richness of psychology theory in contingency-based management accounting research", *Management Accounting Research,* vol. 31 June, pp. 63-74.

HAHN T., PREUSS L., PINKSE J., FIGGE F. (2014), "Cognitive frames in corporate sustainability: Managerial sensemaking with paradoxical and business case frames", *Academy of Management Review*, vol. 39, n. 4, pp. 463-487.

HOQUE Z., ALAM M. (1999), "TQM adoption, institutionalism and changes in management accounting systems: a case study", *Accounting and Business Research*, vol. 29, n. 3, pp. 199-210.

HASLE P., JENSEN P.L. (2006), "Changing the internal health and safety organization through organizational learning and change management", *Human Factors and Ergonomics in Manufacturing and Service Industries,* vol. 16, n. 3, pp. 269-284.

IBARRONDO-DÁVILA M.P., LÓPEZ-ALONSO M., RUBIO-GÁMEZ M.C. (2015), "Managerial accounting for safety management. The case of a Spanish construction company", *Safety Science,* vol. 79 November, pp. 116-125.

KAMAR I.F.M., AHMAD A.C., DERUS M.M., KASIRON M.Y., ABU BAKAR M.A. (2019), "Exploring the Relationship between Safety and Health Cost Dimensions and Accident Costs to the Employer of Urban Rail Infrastructure", *Projects MATEC Web of Conferences.* DOI: https://doi.org/10.1051/matecconf/2019 I 2018 266 26603014

ISSA (2013), "Calculating the international return on prevention for companies: Costs and benefits of investments in occupational safety and health", *Final report, Geneva, ISSA,* available at: http://publikationen.dguv.de/dguv/pdf/10002/23_05_report_2013-en--web-doppelseite.pdf (accessed 06 July 2016).

JALLON R., IMBEAU D., DE MARCELLIS-WARIN N. (2011), "Development of an indirect-cost calculation model suitable for workplace use", *Journal of Safety Research*, vol. 42, n. 3, pp. 149-164.

JÖNSSON S., LUKKA K. (2006), "There and back again: doing interventionist research in management accounting", in Chapman S.C., Hopwood A.G., Shields M.D (Ed.), *Handbooks of Management Accounting Research,* Elsevier, vol. 1, pp. 373-397.

KLEIN K.J., SORRA J.S. (1996), "The challenge of innovation implementation", *Academy of Management Review*, vol. 21, n. 4, pp. 1055-1080.

KLEIN K.J., KNIGHT A.P. (2005), "Innovation implementation overcoming the challenge", *Current Directions in Psychological Science*, vol. 14, n. 5, pp. 243-246.

LIU L.Y., PAN F. (2007), "The implementation of activity-based costing in China: An innovation action research approach", *The British Accounting Review,* vol. 39, n. 3, pp. 249-264.

LODHIA S., JACOBS K. (2013), "The practice turn in environmental reporting: a study into current practices in two Australian commonwealth departments", *Accounting, Auditing and Accountability Journal*, vol. 26, n. 4, pp. 595-615.

LOPEZ-ARQUILLOS A., RUBIO-ROMERO J.C., CARRILLO-CASTRILLO J., SUAREZ C.M., GALINDO R.F. (2019) "Occupational accidents in municipal solid waste management (MSWM) companies", *Environmental Engineering and Management Journal (EEMJ),* vol. 18, n. 5, pp. 1029-1038

LUKKA K., SUOMALA P. (2014), "Relevant interventionist research: balancing three intellectual virtues", *Accounting and Business Research,* vol. 44, n. 2, pp. 204-220.

MALMI T. (2016), "Managerialist studies in management accounting: 1990-2014", *Management Accounting Research*, vol. 31, n. 1, pp. 31-44.

MAJOR M., HOPPER T. (2005), "Managers divided: Implementing ABC in a Portuguese telecommunications company", *Management Accounting Research,* vol. 16, n. 2, pp. 205-229.

MÄTTÖ T., SIPPOLA K. (2016), "Cost management in the public sector: Legitimation behaviour and relevant decision making", *Financial Accountability and Management,* vol. 32, n. 2, pp. 179-201.

MCLAREN J., APPLEYARD T., MITCHELL F. (2016), "The rise and fall of management accounting systems: A case study investigation of EVA™", *The British Accounting Review,* vol. 48, n. 3, pp. 341-358.

MEIKANDAAN T.P., HEMAPRIYA M. (2018), "Cost benefit analysis of accident prevention in construction industry", *International Journal of Pure and Applied Mathematics*, vol. 119, n. 12, pp. 8831-8842

MILLER P., HASLAM C. (2009), "Why employers spend money on employee health: Interviews with occupational health and safety professionals from British Industry", *Safety Science,* vol. 47, n. 2, pp. 163-169.

MODELL S. (2009), "Bundling management control innovations: A field study of organisational experimenting with total quality management and the balanced scorecard", *Accounting, Auditing and Accountability Journal*, vol. 22, n. 1, pp. 59-90.

O'NEILL S., MCDONALD G., DEEGAN C.M. (2015), "Lost in translation: Institutionalised logic and the problematisation of accounting for injury", *Accounting, Auditing and Accountability Journal,* vol. 28, n. 2, pp. 180-209.

O'NEILL S., MARTINOV-BENNIE N., CHEUNG A., WOLFE K. (2013), "Issues in the measurement and reporting of work health and safety performance: a review", available at: http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/834/Issues-Measurement-Reporting-WHS-Performance.pdf (accessed 10 September 2015).

PARKER L.D., NORTHCOTT D. (2016), "Qualitative generalising in accounting research: concepts and strategies", *Accounting, Auditing and Accountability Journal,* vol. 29, n. 6, pp. 1100-1131.

PASSETTI E., CINQUINI L., MARELLI A., TENUCCI A. (2014), "Sustainability accounting in action: Lights and shadows in the Italian context", *The British Accounting Review*, vol. 46, n. 3, pp. 295-308.

RAUTIAINEN A., SIPPOLA K., MÄTTÖ T. (2016), "Perspectives on relevance: The relevance test in the constructive research approach", *Management Accounting Research,* http://dx.doi.org/10.1016/j.mar.2016.07.001.

RIKHARDSSON P.M. (2004), "Accounting for the cost of occupational accidents", *Corporate Social Responsibility and Environmental Management,* vol. 11, n. 2, pp. 63-70.

RIKHARDSSON P.M., IMPGAARD M. (2004), "Corporate cost of occupational accidents: an activity-based analysis", *Accident Analysis and Prevention*, vol. 36, n. 2, pp. 173-182.

SMALLMAN C., JOHN G. (2001), "British directors perspectives on the impact of health and safety on corporate performance", *Safety Science*, vol. 38, n. 3, pp. 227-239.

SUOMALA P., LYLY-YRJÄNÄINEN J., LUKKA K. (2014), "Battlefield around interventions: A reflective analysis of conducting interventionist research in management accounting", *Management Accounting Research*, vol. 25, n. 4, pp. 304-314.

SWUSTE P., VAN GULIJK C., ZWAARD W., LEMKOWITZ S., OOSTENDORP Y., GROENEWEG J. (2016), "Developments in the safety science domain, in the fields of general and safety management between 1970 and 1979, the year of the near disaster on Three Mile Island, a literature review", *Safety Science*, vol. 86 July, pp. 10-26.

TAPPURA S., SIEVÄNEN M., HEIKKILÄ J., JUSSILA A., NENONEN N. (2015), "A management accounting perspective on safety", *Safety Science*, vol. 71 part B January, pp. 151-159.

TESTA F., CORSINI F., GUSMEROTTI N.M., IRALDO F. (2018), "Predictors of organizational citizenship behavior in relation to environmental and health & safety issues", *The International Journal of Human Resource Management*, in press, Doi: 10.1080/09585192.2017.1423099

TOUTOUNCHAIN S., ABBASPOUR M., DANA T., ABEDI Z. (2018), "Design of a safety cost estimation parametric model in oil and gas engineering, procurement and construction contracts", *Safety Science*, vol. 106, pp. 35-46.

VELTRI A. (1990), "An accident cost impact model: The direct cost component", *Journal of Safety Research,* vol. 21, n. 2, pp. 67-73.

WALSH J.P. (1995), "Managerial and organizational cognition: Notes from a trip down memory lane", *Organization Science*, vol. 6, n. 3, pp. 280-321.

WOUTERS M., ROIJMANS D. (2011), "Using prototypes to induce experimentation and knowledge integration in the development of enabling accounting information", *Contemporary Accounting Research,* vol. 28, n. 2, pp. 708-736.

YIN R.K. (2003), "Case study research. Design and Methods - Third edition" *Applied Social Research Methods*, Vol. 5 SAGE Publications, London, UK.

Academic position and contacts

Massimo Battaglia
Assistant Professor of Management
Sapienza University of Roma - Italy
e-mail: massimo.battaglia@uniroma1.it

Emilio Passetti
Associate Professor of Accounting
University of Padova - Italy
e-mail: emilio.passetti@unipd.it

Lara Bianchi
Assistant Professor of Business and Society
Nottingham University Business School
University of Nottingham (UK)
e-mail: lara.bianchi@nottingham.ac.uk

Marco Frey
Full Professor of Management
Sant'Anna School of Advanced Studies – Pisa - Italy
e-mail: frey@sssup.it

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.06
pp. 73-101

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Selected papers

Collaboration with whom?
SMEs at a Crossroad between R&D partnership exploration and exploitation

Received
18th February 2019
Revised
2nd April 2019
Accepted
21st June 2019

Alfredo D'Angelo - Alessandro Baroncelli

Abstract

Purpose of the paper: *Collaboration with external partners is essential for small- and medium-sized enterprises (SMEs) that want to innovate. The purpose of this paper is to examine the impact of three different types of R&D collaborations, namely with universities, research centres and other companies, on SMEs' product innovation and innovation performance.*

Methodology*: Hypotheses are tested using a Probit/Tobit regression on an Italian sample of manufacturing SMEs.*

Findings*: Our analysis shows that collaborating with universities has a positive impact on product innovation, but not on innovation performance. Whereas, collaboration with research centres and other companies has a positive impact on both product innovation and innovation performance.*

Research limits: *Our results refer to a specific area, Italy, and to a specific period, so that the usual problem of generalisability across time and space arises. Moreover, we focussed on R&D partners considering only three groups, universities, research centres and other companies. For the latter, data at our disposal allowed us to differentiate neither between rival/not rival companies nor on the basis of their industry, size or geographic location.*

Practical implications: *Our findings provide implications for SMEs managers and entrepreneurs who have to decide between R&D partners for their explorative vs exploitative outside-in innovation strategy. Our findings reveal the need to align different R&D partners with different expectations and final outcomes.*

Originality of the paper: *Previous studies shed minimal light on open innovation practices in the SMEs context. Just a few looked at the effect of different R&D partners on product or process innovation and innovation performance (this latter often measured with product or patent number) but separately. We looked at the effects of different R&D collaborations on both product innovation as well as the monetization side of the SMEs innovation process.*

Key words: inbound open innovation; product innovation; innovation performance; R&D collaboration; manufacturing SMEs.

1. Introduction

The size-innovation relationship has often been ambiguous in academic research. Indeed, it has long been assumed that large firms were the only businesses able to carry out innovative activities (Damanpour and Evan, 1984). Nevertheless, several studies revealed that bigger firms can often be locked in their organizational routines and bureaucratic constraints producing inertia towards innovation (Acs and Audretsch, 1990; Link and Bozeman, 1991; Rothwell and Dodgson, 1994). In the last three decades, many scholars (e.g. Bougrain and Haudeville, 2002; Freel, 2005, Freel and Robson, 2004; Hanna and Walsh, 2008; Nieto and Santamaria, 2010; Rothwell and Dodgson, 1991) have shown that also small and medium-sized enterprises (SMEs) - thanks to their flexibility and ability to efficiently leverage resources or missing knowledge from external partners - were able to more than compensate their size limits (Edwards *et al.*, 2005; Hewitt-Dundas, 2006) and to consequently develop novel and disruptive innovations (Tether, 1998; Vossen, 1998). Lee *et al.* (2010) noted that the external focus could put SMEs at the forefront of the innovation process.

The external focus of including ideas, knowledge and technologies originated in external sources is one of the key points behind the Open Innovation (OI) framework (Chesbrough, 2003; Gassmann, 2006; Huizingh, 2011). The OI paradigm assumes that valuable ideas, knowledge and technologies can come from both inside and outside the firm and can equally reach the market from inside or outside the company (Chesbrough, 2003; Chesbrough *et al.*, 2006). It thus comprises both inbound and outbound movements of ideas, knowledge and technologies (Lichtenthaler, 2008). Lee *et al.* (2010) observed that inbound open innovation practices are more common in larger companies, whereas smaller companies were more involved in outbound open innovation. Other researchers, instead, showed that SMEs do operate open inbound R&D management practices (Huizingh, 2011; Inauen and Schenker-Wicki, 2011; van de Vrande *et al.*, 2009) as "these firms are in a position to use external generated knowledge rather than create it" (West *et al.*, 2014, p. 806).

How SMEs organize and manage inbound open innovation practices and whether the adoption of those practices increases different dimensions of SMEs' performance (Gassmann *et al.*, 2010; van de Vrande *et al.*, 2010; Wynarczyk *et al.*, 2013) remains still controversial. According to a recent study conducted by the Digital Transformation Academy in collaboration with PoliMI (2020), only 28% of SMEs in Italy have embraced OI. However, 20% of SMEs have R&D collaborations with partners like universities and research centers and only 4% with other horizontal companies. The purpose of this paper is to examine the influence that R&D collaborations with partners like universities and research centers (Fontana *et al.*, 2006; Spencer, 2001) as well as with other horizontal companies (e.g. Shin *et al.*, 2016) have on SMEs' product innovation and innovation performance. However, different from previous studies that looked at their effects on product or process innovation and innovation performance (this latter often measured with product or patent number) separately[1], we looked at the effects of different R&D collaborations on both product innovation as well as the monetization side of the SMEs' innovation process (Freel, 2005; Stone *et al.*, 2008).

[1] See Kang and Kang (2010, p. 948 Table 1), Medda (2018, p. 8 Table 1) and Pippel and Seefeld (2016, p. 458 Table 1) for a review.

2. Theoretical framework and hypothesis development

2.1 Open innovation paradigm

'The use of purposive inflows and outflows of knowledge to accelerate innovation..' is the most used definition of OI (Chesbrough *et al.*, 2006, p. 1). As Lichtenthaler (2008) noted, it comprises both outside-in and inside-out movements of ideas, knowledge and technologies. According to Gassmann (2006), OI encompasses three core processes namely inbound, outbound and coupled activities.

Inbound open innovation, also called outside-in process, refers to the internal use of external generated knowledge and includes all activities for external technology sourcing such as customer involvement, external networking, external participation, outsourcing R&D and IP in-licensing (van de Vrande *et al.*, 2009). As previously mentioned, this inbound open innovation process focuses on technology exploration which enables enterprises to acquire new knowledge and technologies from sourcing and networking with external knowledge providers and innovative upstream companies (Chesbrough *et al.*, 2006).

Outbound open innovation, also known as inside-out process, refers to the external use of internal generated knowledge and it includes all activities related to technology commercialisation such as sales of projects, spinoffs, provision of services and IP out-licensing (van de Vrande *et al.*, 2009). This outbound open innovation process relates to technology exploitation which enables enterprises to transfer new knowledge and technologies to external downstream companies in order to exploit the commercial value of innovation (Enkel *et al.*, 2009; Litchtenthaler, 2005).

Coupled open innovation combines outside-in and inside-out processes resulting in alliances and joint ventures, where the focus lies on network usage and/or the participation of other firms (Chesbrough, 2003; Gassmann, 2006).

At the beginning, the realm of OI studies was mainly focused on large multinational enterprises (e.g., Chesbrough and Crowther, 2006; West and Gallagher, 2006). Subsequently, many studies on OI in SMEs have followed (e.g. Brunswicker and Vanhaverbeke, 2014; Parida *et al.*, 2012; Spithoven *et al.*, 2013; Usman and Vanhaverbeke, 2017; van de Vrande *et al.*, 2009; Vanhaverbeke, 2012). Podmetina *et al.* (2011) presented evidence on how companies of different size, rather than having different degrees of openness, adopt different open business models and remarked inbound OI practices which are being prevalently used in SMEs. Albors-Garrigós *et al.* (2011) highlighted the inbound OI practices in SMEs as an alternative method for outsourcing R&D services following a more strategically focused approach.

In the next paragraph, while revising the OI literature in the context of small firms, we report the main empirical studies examining the effect of some key horizontal R&D collaborations on the SMEs' innovation outcomes in order to develop working hypotheses.

2.2 Inbound open innovation in SMEs

The potential advantages from innovation partnerships are well documented in literature (e.g., Ahuja, 2000a; Bayona *et al.*, 2000; Faems *et al.*, 2005). They include benefits such as flexibility, reducing or sharing risk and access to complementary assets and resources (e.g., Ahuja, 2000b; Ireland *et al.*, 2002; Lorenzoni and Lipparini, 1999). Chesbrough and Schwartz (2007, p. 55) defined collaboration as "a mutual working relationship between two or more parties aimed at creating and delivering a new product, technology, or service". Through collaborative development projects with external partners SMEs can acquire necessary complementary assets, useful to facilitate the commercialization of their innovation outputs (Spithoven *et al.*, 2013). Collaboration activities facilitating the transfer of codified and tacit knowledge may also support the SMEs' development of new and valuable resources (Ahuja, 2000b; Laursen and Salter, 2006; Massa and Testa, 2008). Finally, SMEs' R&D risks and costs can be spread through inter-organizational collaboration projects with external partners (Bougrain and Haudeville, 2002; Freel, 2005; Nieto and Santamaría, 2010). SMEs tend to collaborate horizontally with external partners such as universities, research institutes, other companies, and vertically with customers and suppliers (e.g., Aquilani *et al.*, 2016; Dowling and Helm, 1996;Hanna and Walsh 2008; Massa and Testa, 2008; Nieto and Santamaria, 2010; Shin *et al.*, 2016; Veugelers and Cassiman 2005).

With reference to these horizontal inbound practices, we referred to the theoretical concepts of exploration and exploitation (March, 1991) in order to derive working hypotheses on their influence on the SMEs' product innovation and innovation performance.

Lee *et al.* (2010) found that SMEs tend to prefer universities and research centers for technology sourcing to other R&D strategic alliances. Roper and Hewitt-Dundas (2013) also reported similar results, but with universities and research centers having a bias towards larger firms (medium-sized, 51-250 employees). Brunswicker and Vanhaverbeke (2014), drawing on a large sample of SMEs labeled those recurring to external knowledge sourcing from universities and research centers as technology-oriented searchers. Acknowledging that there are barriers to external knowledge sourcing from universities and research centers because of cultural differences, differences in the strategic orientation and different contractual rules and rewards systems (Harryson *et al.*, 2008), Brunswicker and Vanhaverbeke (2014) underlined their trustworthy role being important not only for the access to complementary resources (Veugelers and Cassiman 2005), but also to anticipate inventive trends.

Many studies reported that explorative R&D collaboration with universities has a positive effect on product innovation (Aschhoff and Schmidt, 2008; Belderbos *et al.*, 2015; Kang and Kang, 2010; Medda, 2018; Un *et al.*, 2010), enhancing the SME's innovation performance (Belderbos *et al.*, 2004; Laursen and Salther, 2006; Parida *et al.*, 2012; Zeng *et al.* 2010). Therefore, following these positive outcomes, we hypothesize that:

HP1 - R&D collaborations with universities and research institutes positively influence the SMEs' product innovation as well as their innovation performance.

OI inbound practices by SMEs also include other horizontal technology collaborations with other companies (Parida *et al.*, 2012). Santoro *et al.* (2016) in a recent survey on smaller firms engaged in OI reported that 31% comes from other companies. R&D collaborations with other companies allow the focal firm to share the risk and combine resources and skills inherent to the innovation process (Veugelers andCassiman , 2005). However, appropriability issues may emerge around the benefits of the research investment (Hewitt-Dundas, 2006) given the exploitative nature of the collaboration and the opportunistic nature of firms, particularly when they are rivals. Hakanson and Lorange (1991), however, asserted that whether the R&D partner is a rival or not, they improve a firm's knowledge base enhancing innovation. The impact on the innovation performance of the collaborations with other firms remains quite controversial in literature (Medda, 2018). Belderbos *et al.*, (2004) show that an R&D collaboration with competitors has a positive effect on product innovation, whereas Aschhoff and Schmidt (2008) find no positive effect. Un *et al.* (2010) reported a negative effect on product innovation when external R&D was carried out by competitors. Belderbos *et al.* (2015) found again a positive correlations with product innovation when cooperation with competitors is carried out for two consecutive years. Kang and Kang (2010) reported an inverted u-shape effect on product innovation when external R&D is carried out by competitors.

Given this contested terrain made of confusing and chaotic results, we prefer to remain neutral and wait for empirical validation. Therefore, we hypothesize that:

HP2 - There is a relationship between external R&D carried out with other companies and the SMEs' product innovation as well as their innovation performance.

3. Data and methodology

3.1 The dataset

To test the hypotheses we used data from the IX wave of the "Survey on Manufacturing Firms" conducted by the research department of Capitalia (now Unicredit, a large Italian bank). We relied on a secondary data source based on both questionnaire data and balance sheet information on a representative sample of manufacturing firms operating in Italy. The joint use of both sources of information (i.e. balance sheets and surveys) makes this dataset a very reliable source of information allowing us to overcome the methodological limitations occurring when using only one source of information (Canibano *et al.*, 2000). Moving from the original dataset accounting 3,452 observations, we defined SMEs according to the EU Commission definition (2003) which considers two thresholds, the number of employees (>10 and <250) and the total turnover (<50 million euro). The decision to concentrate on SMEs resides in the fact that they represent almost 99% of all enterprises in the EU, providing around 100 million jobs or 67% of the total employment in Europe (European Commission, 2003). Italy is the European country with the greatest number of SMEs per inhabitants (65 SMEs per 1,000 inhabitants). Thus, the relative importance of SMEs for the Italian economy exceeds by far the EU average (Eurostat, 2008). Having defined our unit of analysis, the standard data cleansing operations lead us to a reduced working sample of 2,591 Italian manufacturing SMEs on which to test the relationship between our predictors and innovation measures.

3.2 The variables and measures

Innovation has been measured in different ways due to its multidimentional nature (Cefis and Marsili, 2006). We measured the firms' innovativeness using product innovation as a proxy of the capacity of firms to produce tangible innovative results (De Jong and Vermeulen, 2006; Kang and Kang, 2010). The variable assigns the value of 1 to the firms that introduced a new product innovation, and the value of 0 to the firms that did not introduce product innovation (*Inn Prod*). However, product innovation, as tangible result of the firm's innovation activity, represents only a pre-market result of such activity (Barlet *et al.*, 2000). In other words, firms that generate product innovations are not guaranteed to have their products welcomed by the marketplace. The higher level of sales which derived from introducing a new innovation into the marketplace, represents the ex-post result of this process (Brouwer and Kleinknecht, 1996; Freel, 2005; Hewitt-Dundas, 2006). This is in line with the definition of innovation provided by the entrepreneurs themselves: "innovation is anything that makes money" (Massa and Testa, 2008, p. 396). Following Brouwer and Kleinknecht (1996) and Aschhoff and Schmidt (2008), we used the percentage of turnover derived from introducing innovation into the marketplace to measure the firm's innovation performance (*Turn Inn*). This variable gauges the monetization side of the firm's innovation process (Freel, 2005; Stone *et al.*, 2008).

Our independent variables consist in a series of measures evaluating the innovation process that is undertaken in collaboration with outside R&D partners, diversifying a set of external R&D collaborations as percentage of sales. Following previous studies (Inauen and Schenker-Wicki, 2011) we defined OI as a model for innovation based on cooperation with different stakeholders during the R&D process. Here, we used measures that consider three groups of R&D partners, Ext R&D done by universities; *Ext R&D done by research centres; Ext R&D done by other companies.*

Innovation outputs can also strongly depend on other endogenous and exogenous factors such as R&D investments, firm size, business age, economic sectors and home location industrial environment. Therefore, we considered the R&D employees to total employees (*R&D EMP*) as a control variable for a small firm's R&D investments. As previous studies

(Santoro *et al.*, 2019) showed, internal R&D helps firms in improving the effects of a higher level of openness. We also controlled for firm size measured as number of employees (*Size*) so as to see whether they can be held constant as they can affect both product innovation and innovation performance (Lin and Chen, 2007). We also controlled the effect of the firm's maturity, i.e. years in business (*Age*). Furthermore, we controlled the home country location effect by introducing four dummy variables (*North-East, Centre, South and Islands*). Finally, we considered the industry effect including control variables for the 4 economic industry sectors defined by Pavitt's (1984), *Traditional, Scale, Specialised and High-tech sectors*.

3.3 The method

We applied different statistical techniques according to the different nature of our dependent variables. Two models are developed to examine the influence of an open outside-in R&D model on (i) the probability of producing product innovation and (ii) innovation performance. We relied on the hierarchical Probit and Tobit regression models. The reason for the Tobit regression rather than the OLS estimates is that the dependent variable is a doubly truncated random variable and its values vary between 0 and 100 by definition. The Tobit model is a generally used approach for dealing with the problem of censored samples (Greene, 2000). The same method was applied by previous scholars in similar cases (Aschhoff and Schmidt, 2008; Brouwer and Kleinknecht, 1996; Hewitt-Dundas, 2006). Due to the possible mutual causation relationship between the dependent and the independent variables, a lag structure approach was adopted. The data collected through the Capitalia Survey allowed us to measure the independent variables with a lag time period of three years compared to our target variables. This is in line with the OECD (2005) recommendation of taking into account a three-year period when measuring innovation since it is a path dependent process which may take some time to manifest its effects. In order to deal with the problems of causality due to the possible endogenous nature of the variables, the use of lagged rather than contemporaneous variables represent a strategy that allows alleviating the possibility that independent variables and the dependent variable are jointly determined (Spanos *et al.*, 2004).

4. Empirical analysis and results

Table 1 shows the results of the Probit and Tobit analysis. After the inclusion of the control variables, we tested our hypotheses predicting a positive effect of an inbound outside-in R&D model on the firms' product innovation and innovation performance. Our results show that all the three groups of R&D partners considered, universities, research centres, and other companies, have a positive influence on product innovation, but only the R&D collaboration with research centres and other companies has a positive influence on generating higher level of innovation performance. In the next section, we discuss these main results in the light of the theory to highlight our contribution, limitation and avenues for future research.

Tab. 1: Estimated Probit and Tobit models
(Dependent variables: product innovation; % of turnover derived from innovations)

	Model 1	
	Inn Prod	Turn Inn
Ext. R&D done by universities	+*	+
Ext. R&D done by research centres	+**	+**
Ext. R&D done by other companies	+***	+***

NOTE 1: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.
NOTE 2: Positive coefficients denote a greater probability of product innovation or percentage of turnover

Source: Authors'elaboration

5. Discussion and conclusions

SMEs represent the backbone of most economies in the world (95% of all firms in OECD countries are SMEs providing around two-thirds of the total employment). The increasing competition and the critical current economic scenario force them to engage in innovation in order to survive (OECD, 2017). Despite their flexibility and little routines, the liability of smallness and resource constraints put SMEs in a relatively weak position when tackling the complexity of any innovative process (Narula, 2004). One viable solution for SMEs to successfully engage in innovation is to collaborate embracing OI practices (Spithoven *et al.*, 2013; van de Vrande *et al.*, 2009).

By building on the OI framework as an integrated part of the companies' innovation strategies (Enkel *et al.*, 2009), this paper has focused on the inbound R&D model, also called outside-in process, which refers to the internal use of knowledge from external horizontal R&D partners such as universities, research institutes, and other companies. Despite the factors hindering the adoption of OI in SMEs (Bigliardi and Galati 2016), these firms do not lag behind large firms (Capone *et al.*, 2018). The inbound R&D model is the OI practice mostly used by SMEs and the main aim of this paper has been to understand what type of R&D partners have an impact on the SMEs' product innovation as well as innovation performance.

Despite the increased interest of practitioners and researchers in collaborative innovation, we know surprisingly little about the micro-foundations of collaborative innovation (Bogers *et al.*, 2017). Our research setting made of SMEs is ideal for micro-foundations studies given the tight connection between the entrepreneur and the OI strategy of the company (van de Vrande *et al.*, 2009; Vanhaverbeke, 2012).

The main findings revealed that the innovation process of SMEs, characterised by inbound R&D collaborations (Inauen and Schenker-Wicki, 2011; Lee *et al.* 2010) with universities, research centres and other companies, has a positive influence on the firm's product innovation (Dowling and Helm, 2006; Pippel and Seefeld, 2016; Un *et al.*, 2010). However, our results show a weak role played by universities as R&D partners for not generating a higher level of turnover from innovation. Our findings are in contrast to Balderbos *et al.* (2004) who find a significant positive effect of university cooperation on the growth of new-to-the-market sales. Although universities are increasingly becoming commercially-oriented institutions, they play their role as the enabler of novelties (i.e. product innovation), but not for generating innovation performance. The possible spill-over effects related to the R&D collaboration with universities are therefore limited to the production of new product innovations (Medda, 2018). Generally, public research institutions such as universities have a scientific incentive towards research results. On the contrary, private firms have an economic incentive towards monetary results. This pecuniary incentive aligning interests of both sides (focal and partner companies) may counterbalance potential opportunistic behavior justifying the second main finding that shows that R&D collaborations with research centres and other companies has a positive influence not only on the SMEs' product innovation but also on their innovation performance (Freel and Robson 2004; Hewitt-Dundas, 2006; Lee *et al.* 2010; Lichtenthaler 2005; Zeng *et al.*, 2010).

5.1 Managerial implications

In the last decades, collaborative innovation has been considered essential for SMEs. They collaborate with several partners but they may have a preference for universities because of the fear of giving away technology to potential competitors. This is because collaborations with universities, although characterised by high uncertainty, high information asymmetries between partners and high transaction costs, they are not seen as direct competitors of the focal firm. However, the SMEs' managers and business owners have to keep in mind that, while collaborations with universities may help them in exploring and developing new innovative products, it is by collaborating with research centers and other horizontal companies that they can reach the output markets exploiting their innovation efforts and generating economic returns.

For organizations which collaborate it is important to align their expectations. Indeed, many collaborations face unrealistic expectations, do not create satisfactory value and often collapse (Hyll and Pippel, 2016). Different characteristics apply to different R&D cooperation partners. For example, an R&D cooperation with universities has a different nature from an R&D cooperation with research institutes and other companies. Our results confirm that R&D collaborations with universities determine a higher propensity to generate product innovation given their broad knowledge base (Hall *et al.*, 2000). However, while the research activities of universities is long-term oriented and does not traditionally focus on the monetization needs of firms, R&D collaborations with research centers and other horizontal companies, which are more careful to market value than on scientific value (Harryson *et al.*, 2008), seem to favor a higher marginal return in terms of turnover derived from introducing innovation into the marketplace.

Our research is in line with the study conducted by the Digital Transformation Academy in collaboration with PoliMI (2020) that shows that Italian SMEs are going to increase their use of OI practices in the next three years; specifically, through their collaboration with universities and research centers (+15%) and horizontal companies (+106%). This article provides valid indications not only to the SMEs' managers and business owners on the expected outcomes these R&D collaborations may bring, but also to policy makers who have been considered not particularly aware of the importance of various networks for SMEs (Hemert *et al.*, 2013). They should develop stronger measures to encourage the right participation in useful networks (McAdam *et al.*, 2014) in order to significantly accelerate open innovation in SMEs (Vega *et al.*, 2012). According to Roper and Hewitt-Dundas (2013), in many countries public funding is provided to universities and R&D centers to act as a catalyst for open innovation, whereas public funding should focus towards the needs of SMEs. Our research outcome may significantly help policy makers to design policies along with the SMEs' needs and guide them towards the right expectations of an R&D collaboration.

5.2 Limitations and avenues for future research

This study would not be completed without reference to its limitations. The first of these is that our results refer to a specific area, Italy, and to a specific period, so that the usual problem of generalisability across time and space arises. Secondly, our data do not allow us to distinguish between the different organisational modes characterising the inbound open innovation practices in SMEs (van de Vrande *et al.*, 2009). We only focussed on R&D partners considering three groups, *universities, research centres and other companies.* For the latter, data at our disposal allowed us to differentiate neither between rival/not rival companies nor on the basis of their industry, size or geographic location (Dowling and Helm, 2006; Freel, 2005; Hanna and Walsh, 2008; Nieto and Santamaria, 2010; Shin *et al.*, 2016; Un and Asakawa, 2015). Despite these limitations, we consider that our study, compared to existing empirical evidence, provides further strong empirical evidence with key differences in R&D collaborations (Rosenbusch *et al.*, 2011). Using a cross-sectional dataset of 2,591 Italian manufacturing SMEs, we highlight the importance of inbound R&D open innovation management (Inauen and Schenker-Wicki, 2011) for traditional manufacturing SMEs and not just for high-technology or multi-national corporations (e.g. Chesbrough and Crowther, 2006; Parida *et al.*, 2012; Spithoven *et al.*, 2013).

Moreover, our results have practical implications for the SMEs' managers and entrepreneurs who have to decide between *explorative vs exploitative* outside-in R&D partners.

Future investigations may extend the focus and scope of this study by investigating the impact of different in and outbound OI practices comparing different industries or sectors (Freel, 2005). Moreover, with the use of longitudinal data it would be interesting to assess the process of maintenance or persistence of collaboration (Belderbos *et al.*, 2015; Fayard and Metiu, 2014) and the (long-term) effect of collaborative outcomes.

References

ACS Z.J., AUDRETSCH D.B. (1990), *Innovation and Small Firms*, MIT Press., Cambridge, MA.

AHUJA G. (2000a), "Collaboration networks, structural holes, and innovation: A longitudinal study", *Administrative Science Quarterly,* vol. 45, n. 3, pp.425-455.

AHUJA G. (2000b), "The duality of collaboration: Inducements and opportunities in the formation of interfirm linkages", *Strategic Management Journal*, vol. 21, n. 3, pp. 317-343.

ALBORS-GARRIGOS J, ETXEBARRIA N.Z., HERVAS-OLIVER J.L., EPELDE J.G. (2011), "Outsourced innovation in SMEs: a field study of R&D units in Spain", *International Journal of Technology Management*, vol. 55, n. 1, pp. 138-155.

AQUILANI B., ABBATE T., D'AMICO A., GATTI C. (2016), "Co-creare prodotti e processi con i clienti: I servizi degli Open Innovation Intermediaries (OII)", *Sinergie Italian Journal of Management*, vol. 33, n. 98, pp. 311-329.

ASCHHOFF B. SCHMIDT T. (2008), "Empirical evidence on the success of R&D cooperation: Happy together?", *Review of Industrial Organization*, vol. 33, n. 1, pp. 41-62.

BARLET C., DUGUET E., ENCAOUA D., PRADEL J. (2000), "The commercial success of innovations: An econometric analysis at the firm level in French manufacturing", in *The economics and econometrics of innovation*, ed. Encaoua D. *et al.*, Kluwer Academic Publishers, Boston, MA.

BAYONA C., GARCIA-MARCO T., HUERTA E. (2000), "Firms' motivations for cooperative R&D: An empirical analysis of Spanish firms", *Research Policy*, vol. 30, n. 8, pp. 1289-1307.

BELDERBOS R., CARREE M., LOKSHIN B. (2004), "Cooperative R&D and firm performance", *Research Policy*, vol. 33, n. 10, pp. 1477-1492.

BELDERBOS R., CARREE M., LOKSHIN B., FERNÁNDEZ SASTRE J. (2015), "Inter-temporal patterns of R&D collaboration and innovative performance", *The Journal of Technology Transfer*, vol. 40, n. 1, pp. 123-137.

BIGLIARDI B., GALATI F. (2016), "Which factors hinder the adoption of open innovation in SMEs?", *Technology Analysis and Strategic Management*, vol. 28, n. 8, pp. 869-885.

BOGERS M., ZOBEL A.K., AFUAH A., ALMIRALL E., BRUNSWICKER S., DAHLANDER L., HAGEDOORN J. (2017), "The open innovation research landscape: Established perspectives and emerging themes across different levels of analysis", *Industry and Innovation*, vol. 24, n. 1, pp. 8-40.

BOUGRAIN F., HAUDEVILLE B. (2002), "Innovation, collaboration and SMEs internal research capacities", *Research Policy,* vol. 31, n. 5, pp. 735-747.

BROUWER E., KLEINKNECHT A. (1996), "Firm size, small business presence and sales of innovative products: A micro-econometric analysis", *Small Business Economics,* vol. 8, n. 3, pp. 189-201.

BRUNSWICKER S., VANHAVERBEKE W. (2014), "Open Innovation in small and medium-sized enterprises (SMEs): External knowledge sourcing strategies and internal organizational facilitators", *Journal of Small Business Management*, vol. 53, n. 4, pp. 1241-1263.

CANIBANO L., GARCIA-AYOUSO M., SANCHEZ M.P. (2000), "Shortcomings in the measurement of innovation: Implications for accounting standard setting", *Journal of Management and Governance*, vol. 4, n. 4, pp. 319-342.

CAPITALIA SURVEY (2003), "XI Survey of Manufacturing Enterprises", http://www.unicredit-capitalia. eu/DOC/jsp/navigationDayOne/index.jsp.

CAPONE F., ZAMPI V., INNOCENTI N. (2018), "How do R&D project networks support theadoption of open innovation practice?", *Sinergie Italian Journal of Management*, vol. 36, n. 106, pp. 23-40.

CEFIS E., MARSILI O. (2006), "Survivor: The role of innovation in firm's survival", *Research Policy*, vol. 35, n. 5, pp. 626-641.

CHESBROUGH H.W. (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press., Boston, MA.

CHESBROUGH H.W., CROWTHER A.K. (2006), "Beyond high tech: Early adopters of open innovation in other industries", *R&D Management*, vol. 36, n. 3, pp. 229-236.

CHESBROUGH H., SCHWARTZ, K. (2007), "Innovating business models with co-development partnerships", *Research-Technology Management*, vol. 50, n. 1, pp. 55-59.

CHESBROUGH H.W., VANHANVERBEKE W., WEST J. (2006), *Open Innovation: Researching a New Paradigm*, Oxford University Press, Oxford, UK.

DAMANPOUR F., EVAN W.M. (1984), "Organizational innovation and performance: The problem of organizational lag", *Administrative Science Quarterly*, vol. 29, pp. 392-409.

DE JONG J., VERMEULEN P. (2006), "Determinants of product innovation in small firms", *International Small Business Journal*, vol. 24, n. 6, pp. 587-609.

DIGITAL TRANSFORMATION ACADEMY (2020) "Innovazione Digitale 2020: imprese e startup verso l'open company", Available at: www.osservatori.net

DOWLING M., HELM R. (1996), "Product development success through cooperation: A study of entrepreneurial firms", *Technovation*, vol. 26, n. 4, pp. 483-488.

EDWARDS T., DELBRIDGE R., MUNDAY M. (2005), "Understanding innovation in small and medium-sized enterprises: A process manifest", *Technovation*, vol. 25, n. 10, pp. 1119-1127.

ENKEL E., GASSMAN O., CHESBROUGH H. (2009), "Open R&D and open innovation: Exploring the phenomenon", *R&D Management,* vol. 39, n. 4, pp. 311-16.

EUROPEAN COMMISSION (2003), "Recommendation (2003)/361/EC. Bruxeles: European Communities", http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/decision_me_en.pdf.

EUROSTA (2008), "European Commission. Entreprise and Industry. Facts Sheet: Italy 2008". http://ec.europa.eu/enterprise/entrepreneurship/spr08_fact_sheet_it.pdf.

FAEMS D., VAN LOOY B., DEBACKERE K. (2005), "Interorganizational collaboration and innovation: Toward a portfolio approach", *Journal of Product Innovation Management*, vol. 22, n. 3, pp. 238-250.

FAYARD A.L., METIU A. (2014), "The role of writing in distributed collaboration", *Organization Science*, vol. 25, n. 5, pp. 1391-1413.

FONTANA R., GEUNA A., MATT M. (2006), "Factors affecting university-industry R&D projects: The importance of searching, screening and signalling", *Research Policy,* vol. 35, n. 2, pp. 309-323.

FREEL M. S. (2005), "Patterns of innovation and skills in small firms", *Technovation*, vol. 25, n. 2, pp. 123-134.

FREEL M., ROBSON P. (2004), "Small firm innovation growth and performance", *International Small Business Journal*, vol. 22, n. 6, pp. 561-575.

GASSMANN O. (2006), "Opening up the innovation process: Towards an agenda", *R&D Management*, vol. 36, n. 3, pp. 223-228.

GASSMANN O., ENKEL E., CHESBROUGH, H. (2010), "The future of open innovation", *R&D Management*, vol. 40, n. 3, pp. 213-221.

GREENE W.H. (2000), *Econometric Analysis*, 5th ed. Prentice Hall, New Jersey.

HAKANSON L., LORANGE P. (1991), "R&D based co-operative ventures", in *Corporate and Industry Strategies for Europe*, ed. Matsson L.G., Styme B., North-Holland, Amsterdam.

HALL B.H., LINK A.N., SCOTT J.T. (2000), "Universities as research partners", *National Bureau of Economic Research* Working Paper Series No. 7643.

HANNA V., WALSH K. (2008), "Interfirm cooperation among small manufacturing firms", *International Small Business Journal*, vol. 26, n. 3, pp. 299-321.

HARRYSON S., KLIKNAITE S., DUDKOWSKI R. (2008), "Flexibility in innovation through external learning: Exploring two models for enhanced industry-university collaboration", *International Journal Technology Managemen*t, vol. 41, n. 1/2, pp. 109-137.

HEMERT P., NIJKAMP P., MASUREL E. (2013), "From innovation to commercialization through networks and agglomerations: analysis of sources of innovation, innovation capabilities and performance of Dutch SMEs", *The Annals of Regional Science*, vol. 50, n. 2, pp. 425-452.

HEWITT-DUNDAS N. (2006), "Resource and capability constraints to innovation in small and large plants", *Small Business Economics*, vol. 26, n. 3, pp. 257-277.

HUIZING E. (2011), "Open Innovation: State of the art and future perspectives", *Technovation*, vol. 31, n. 1, pp. 2-9.

HYLL W., PIPPEL G. (2016), "Types of cooperation partners as determinants of innovation failures", *Technology Analysis & Strategic Management*, vol. 28, n. 4, pp. 462-476.

INAUEN M., SCHENKER-WICKI A. (2011), "The impact of outside-in open innovation on innovation performance", *European Journal of Innovation Management,* vol. 14, n. 4, pp. 496-520.

IRELAND R.D., HITT M.A., VAIDYANATH D. (2002), "Alliance management as a source of competitive advantage", *Journal of Management,* vol. 28, n. 3, pp. 413-446.

KANG K.H., KANG J. (2010), "Does partner type matter in R&D collaboration for product innovation?", *Technology Analysis & Strategic Management,* vol. 22, n. 8, pp. 945-959.

LAURSEN K., SALTER A. (2006), "Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms", *Strategic Management Journal*, vol. 27, n. 2, pp. 131-150.

LEE S., PARK G., YOON B., PARK J. (2010), "Open innovation in SMEs: An intermediated network model", *Research Policy* , vol. 39, n. 2, pp. 290-300.

LIN C.Y.Y., CHEN M.Y.C. (2007), "Does innovation lead to performance? An empirical study of SMEs in Taiwan", *Management Research News*, vol. 30, n. 2, pp. 115-132.

LICHTENTHALER U. (2005), "External commercialization of knowledge: Review and research agenda", *International Journal of Management Reviews*, vol. 7, n. 4, pp. 231-55.

LICHTENTHALER U. (2008), "Open innovation in practice: An analysis of strategic approaches to technology transactions", *IEEE Transactions on Engineering Managem*ent, vol. 55, n. 1, pp. 148-157.

LINK A.N., BOZEMAN B. (1991), "Innovative behaviour in small-sized firms", *Small Business Economics,* vol. 3, n. 3, pp. 179-184.

LORENZONI G., LIPPARINI A. (1999), "The leveraging of interfirm relationships as a distinctive organizational capability: A longitudinal study", *Strategic Management Journal,* vol. 20, n. 4, pp. 317-338.

MCADAM M., MCADAM R., DUNN A., MCCALL C. (2014), "Development of small and medium-sized enterprise horizontal innovation networks: UK agri-food sector study", *International Small Business Journal*, vol. 32, n. 7, pp. 830-853.

MARCH J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, vol. 2, n. 1, pp. 71-87.

MASSA S., TESTA S. (2008), "Innovation and SMEs: Misaligned perspectives and goals among entrepreneurs, academics, policy makers", *Technovation*, vol. 28, n. 7, pp. 393-407.

MEDDA G. (2018), "External R&D, product and process innovation in European manufacturing companies", *The Journal of Technology Transfer* (forthcoming) doi.org/10.1007/s10961-018-9682-4.

NARULA R. (2004), "R&D collaboration by SMEs: New opportunities and limitations in the face of globalization", *Technovation*, vol. 24, n. 2, pp. 153-161.

NIETO M.J., SANTAMARÍA L. (2010), "Technological collaboration: Bridging the innovation gap between small and large firms", *Journal of Small Business Management*, vol. 48, n. 1, pp. 44-69.

OECD (2005), *The Measurement of Scientific Activities. Proposed Guideline for Collecting and Interpreting Technological Innovation Data*, Oslo Manual, (2005), Paris: OECD Publishing. http://www.oecd.org/dataoecd/35/61/23675 80.pdf.

OECD (2017), *Small, Medium, Strong. Trends in SME Performance and Business Conditions,* Paris: OECD Publishing. https://doi.org/10.1787/9789264275683-en.

PARIDA V., WESTERBERG M., FRISHAMMAR J. (2012), "Inbound open innovation activities in high-tech SMEs: The impact on innovation performance", *Journal of Small Business Management,* vol. 50, n. 2, pp. 283-309.

PIPPEL G., SEEFELD V. (2016), "R&D cooperation with scientific institutions: A difference-in-difference approach", *Economics of Innovation and New Technology,* vol. 25, n. 5, pp. 455-469.

PODMETINA D., VAATANEN J.M., TORKKELI T., SMIRNOVA M.M. (2011), "Open innovation in Russian firms: An empirical investigation of technology commercialisation and acquisition", *International Journal of Business Innovation and Research,* vol. 5, n. 3, pp. 298-317.

ROPER S., HEWITT-DUNDAS N. (2013), "Catalysing open innovation through publicly-funded R&D: A comparison of university and company-based research centres", *International Small Business Journal,* vol. 31, n. 3, pp. 275-295.

ROSENBUSCH N., BRINCKMANN J., BAUSCH A. (2011), "Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs", *Journal of Business Venturing*, vol. 26, n. 4, pp. 441-457.

ROTHWELL R., DODGSON M. (1991), "External linkages and innovation in small and medium-sized enterprises", *R&D Management,* vol. 21, n. 2, pp. 125-137.

ROTHWELL R., DODGSON M. (1994), "Innovation and size of firm", in *Handbook of Industrial Innovation,* ed. Dodgson, M.,. Edward Elgar, Aldershot, pp. 310-324.

SANTORO G., FERRARIS A., GIACOSA E., GIOVANDO G. (2016), "How SMEs engage in open innovation: A survey", *Journal of Knowledge Economy,* vol. 9, n. 2, pp. 651-574.

SANTORO G., FERRARIS A., BRESCIANI, A. (2019), "Assessing the breadth of open innovation practices: The impact on innovation performance", *Sinergie Italian Journal of Management*, vol. 37, n. 1, pp. 63-83.

SHIN K., KIM S.J., PARK G. (2016), "How does the partner type in R&D alliances impact technological innovation performance? A study on the Korean biotechnology industry", *Asia Pacific Journal of Management,* vol. 33, n. 1, pp. 141-164.

SPANOS Y.E., ZARALIS G., LIOUKAS S. (2004), "Strategy and industry effects on profitability: Evidence from Greece", *Strategic Management Journal,* vol. 25, n. 2, pp. 139-165.

SPENCER J.W. (2001), "How relevant is university-based scientific research to private high-technology firms? A United States-Japan comparison", *Academy of Management Journal,* vol. 44, n. 2, pp. 432-440.

SPITHOVEN A., VANHAVERBEKE W., ROIJAKKERS N. (2013)", Open innovation practices in SMEs and large enterprises", *Small Business Economics*, vol. 41, n. 3, pp. 537-562.

STONE A., ROSE S., LAL B., SHIPP S. (2008), *Measuring innovation and intangibles: A business perspective*, US Government, Science and Technology Policy Institute. IDA Document D-3704.

TETHER B.S. (1998), "Small and large firms: Sources of unequal innovations?" *Research Policy,* vol. 27, n. 7, pp. 829-841.

UN C.A., CUERVO-CAZURRA A., ASAKAWA K. (2010), "R&D collaborations and product innovation", *Journal of Product Innovation Management*, vol. 27, n. 5, pp. 673-689.

UN C.A., ASAKAWA K. (2015), "Types of R&D collaborations and process innovation: The benefit of collaborating upstream in the knowledge chain", *Journal of Product Innovation Management,* vol. 32, n. 1, pp. 138-153.

USMAN M., VANHAVERBEKE, W. (2017), "How start-ups successfully organize and manage open innovation with large companies", *European Journal of Innovation Management,* vol. 20, n. 1, pp. 171-186.

VAN DE VRANDE V., DE JONG J.P.J., VANHAVERBEKE W., DE ROCHEMONT M. (2009), "Open innovation in SMEs: Trends, motives and management challenges", *Technovation*, vol. 29, n. 6/7, pp. 423-437.

VAN DE VRANDE V., VANHAVERBEKE W., GASSMANN O. (2010), "Broadening the scope of open innovation: Past research, current state and future directions", *International Journal of Technology Management,* vol. 52, n. 3, pp. 221-235.

VANHAVERBEKE W. (2012). *Open Innovation in SMEs: How can small companies and start-ups benefit from open innovation strategies?,* Leuven, Belgium: Flanders District of Creativity.

VEGA A., BROWN D., CHIASSON M. (2012), "Open innovation and SMEs Exploring policy and the scope for improvements in university-based public programmes through a multidisciplinary lens", *International Journal of Entrepreneurial Behaviour and Research*, vol. 18, n. 4, pp. 457-476.

VEUGELERS, R., CASSIMAN B. (2005), "R&D cooperation between firms and universities. Some empirical evidence from Belgian manufacturing", *International Journal of Industrial Organization*, vol. 23, n. 5/6, pp. 355-379.

VOSSEN R.W. (1998), "Relative strengths and weaknesses of small firms in innovation", *International Small Business Journal,* vol. 16, n. 3, pp. 88-94.

WEST J., GALLAGHER S. (2006), "Challenges of open innovation: The paradox of firm investment in open-source software", *R&D Management,* vol. 36, n. 3, pp. 319-31.

WEST J., SALTER A., VANHAVERBEKE W., CHESBROUGH H. (2014), "Open Innovation: The next decade", *Research Policy,* vol. 43, n. 5, pp. 805-811.

WYNARCZYK, P., PIPEROPOULOS, P., MCADAM, M. (2013), "Open innovation in small and medium sized enterprises: An overview", *International Small Business Journal*, vol. 31, n. 3, pp. 240-255.

ZENG S.X., XIE X.M., TAM C.M. (2010), "Relationship between cooperation networks and innovation performance of SME", *Technovation*, vol. 30, n. 3, pp. 181-194.

Academic or professional position and contacts

Alfredo D'Angelo
Associate Professor of Business Strategy
University Cattolica del Sacro Cuore Milano - Italy
e-mail: alfredo.dangelo@unicatt.it

Alessandro Baroncelli
Full Professor of Business Strategy
University Cattolica del Sacro Cuore Milano - Italy
e-mail: alessandro.baroncelli@unicatt.it

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.07
pp. 105-120

FONDAZIONE CUEIM

S I M A
Italian Society of MANAGEMENT

Consumers' attitude and purchase intention towards organic personal care products. An application of the S-O-R model[1]

Received
18th February 2019
Revised
2nd April 2019
Accepted
21st June 2019

Donata Tania Vergura - Cristina Zerbini - Beatrice Luceri

Abstract

Purpose of the paper: *Guided by the Stimulus-Organism-Response (S-O-R) model, the study investigated whether and how six environmental stimuli related to the consumers' experience with organic personal care products influenced their attitudinal responses (hedonic and utilitarian) which, in turn, affected their buying behaviour.*

Methodology*: The empirical research builds on an online survey with a sample of 209 consumers. A structural equation model was performed to analyse the data.*

Findings*: Results showed that knowledge about organic PCP and sensory appeal significantly improved the utilitarian and hedonic attitude towards these products. Contextually, natural content attributes and quality perception positively influence utilitarian attitude. Finally, both the affective and functional attitudinal dimensions significantly increased the purchase intention.*

Research limits: *Further research is recommended in order to measure the actual purchase behaviour and to extend the investigation to a larger sample that is representative of the general population. Moreover, longitudinal studies are required to examine whether changes in consumer attitude, perception and buying with regard to organic PCP happen in time.*

Practical implications: *Highlighting the determinants of consumers' attitude and purchase intention, the paper provides valuable insight to manufacturers and retailers for the increase in organic PCP market share.*

Originality of the paper: *The study showed that the S-O-R model is an adequate theoretical framework to investigate the decision-making process in the context of organic PCP. Furthermore, the proposed theoretical model sheds light on the role of new relevant variables which affect the consumers' evaluation towards these products and that have been neglected in past research.*

Key words: organic cosmetic product; utilitarian attitude; hedonic attitude; purchase intention; Stimulus-Organism-Response model; structural equation modelling

[1] Authors' contributions: Beatrice Luceri wrote the introduction and limitations. Donata Tania Vergura is responsible for the theoretical framework, results and discussion and conclusion. Cristina Zerbini contributed to the hypotheses development and method.

1. Introduction

In recent years, the rising consumer interest in health issues has fuelled the attention for healthier habits and lifestyles that benefit the physical, mental and emotional well-being. In particular, the awareness of the hazards of synthetic chemicals has increased the demand for organic personal care products (Ghazali *et al.*, 2017). Different studies, in fact, indicate that using types of toxic and dangerous chemicals in cosmetics production is closely related to cancers, proliferation deficiencies, abortion and respiratory and skin sensitivities (e.g., Borowska and Brzóska, 2015; Darbre, 2001; Darbre, 2003; Harvey and Darbre, 2004; Kaličanin and Velimirović, 2016; Mellowship, 2009; Si and Praveena, 2015). As a consequence, the market for natural and organic cosmetics is expanding globally and it is projected to reach USD 25 billion by 2025 (Grand View Research Inc., 2016).

Organic personal care products (PCP) comprise skin care, hair care, oral care, colour cosmetics, deodorants, toiletries and hygiene products which originate from organic farming without direct contact with synthetic fertilizers and pesticides. Moreover, in the production it is not possible to use derivatives from petroleum (paraffin, formaldehyde and colorants of synthetic origin) sewage sludge, genetically modified organisms or ionizing radiation (CCPB.it, 2019; Organic.org, 2019). Those ingredients are substituted by vegetal derivatives, safer for the human health and with more attention to the safeguard of the environment. This makes the organic PCP desirable among both health and environmentally conscious consumers.

As a consequence of both public debate and consumer demand for organic PCP, many cosmetic companies are gradually switching to organic ingredients and ecological standards. Similarly, some retailers have started to remove non-organic cosmetics/hygiene products from their shelves (Hansen *et al.*, 2012). To address this challenge, understanding the consumer decision-making process is paramount as it allows to determine the variables that influence the interest in organic PCP and the willingness to buy them.

Consumers' attitude and behaviour towards organic foods have been deeply explored in literature (e.g., Al-Swidi *et al.*, 2014; Cabuk *et al.*, 2014; Chen, 2007; de Magistris and Gracia, 2008; Lee and Goudeau, 2014; Lee and Yun, 2015; Paul and Rana, 2012; Teng and Wang, 2015). On the contrary, although the personal care market is one of the most growing consumer markets, only few research studies emerge that have investigated the consumer behaviour towards organic PCP (Ghazali *et al.*, 2017; Hansen *et al.*, 2012; Matić and Puh, 2016; Mombeini *et al.*, 2015; Yeon and Chung, 2011). Among these, most focused on the effect of personal values (like health consciousness, environmental consciousness and social consciousness) on behavioural intention, neglecting to consider other relevant variables that could affect the decision-making process.

That being stated, the present study provides a more grounded exploration of consumer attitude and purchase intention towards organic PCP, using recent theoretical advances related to the Stimulus-Organism-Response (S-O-R) framework (Mehrabian and Russell, 1974). The first objective is to investigate the relationships between the environmental stimuli related to the consumers' experience with organic PCP (i.e., knowledge, natural content, ecological welfare, sensory appeal, quality and price) and the utilitarian and hedonic attitudes towards these products. The second aim is to examine whether and how such cognitive and affective responses influence buying intention.

As a result, the paper contributes both theoretically and empirically to the understanding of organic PCP. At the theoretical level, it demonstrates that the S-O-R model is an adequate theoretical framework to investigate the decision-making process in the context of organic PCP. At the empirical level, the understanding of the determinants of the consumers' purchase intention is valuable to manufacturers and retailers for the increase in organic PCP market share.

2. Theoretical framework

The conceptual foundations of the proposed model and the related hypotheses are drawn from the Stimulus-Organism-Response (S-O-R) model. The S-O-R framework was first developed by Mehrabian and Russell (1974) in the context of environmental psychology and later extended in other contexts, including the retail setting and many other areas of consumer behaviour to explain the consumer decision - making process (e.g., Baker *et al.*, 1992; Chang *et al.*, 2011; Chebat and Michon, 2003; Eroglu *et al.*, 2001; 2003; Islam and Rahman, 2017; Kang and Sohaib, 2015; Kim and Lennon, 2013; Mollen and Wilson, 2010; Rose *et al.*, 2012). The paradigm postulates that Stimuli from the environment influence an individual's cognitive and affective reactions (Organism), which in turn lead to some behavioural Responses (Donovan and Rositer, 1982). More specifically, the stimuli are defined as those factors that arouse the individual, affecting his/her internal states. With reference to consumers' behaviour, Bagozzi (1986) conceptualized stimuli as both marketing mix variables and other environmental inputs that affect the emotional responses of the consumer (e.g., atmosphere, visual appeal, accessibility, social cues, customer service, information). The organism element of the S-O-R framework is the internal state of the individual that intercedes between the stimuli and behavioural responses. In the Mehrabian and Russell's initial S-O-R model, the organism was represented by three emotional states: pleasure, arousal, and dominance (PAD). Subsequently, the PAD approach was criticized and several authors conceptualized organism as a cognitive and affective internal state (e.g., Bitner, 1992; Eroglu *et al.*, 2001; Holbrook and Hirschman, 1982; Lee *et al.*, 2011). The affective state reflects the arousal and pleasure displayed in response to the environmental stimuli. The cognitive state comprises the individuals' mental processes concerning the acquisition, processing, retention, and retrieval of information (Eroglu *et al.*, 2001). These two psychological constructs have been consistently identified as influential components of customer behaviour and experience (e.g., Bagozzi *et al.*, 1999; Frow and Payne 2007; Tynan and McKechnie, 2009) and have often been operationalized through attitudinal measures (e.g., Eroglu *et al.*, 2001; Fiore, 2002; Fiore and Kim, 2007; Lee and Yun, 2015). The final outcome in the S-O-R paradigm is the behavioural response affected by the internal state, which can be classified as either approach or avoidance (Mehrabian and Russell, 1974). Approach behaviours include all positive actions that might be directed towards a particular setting (e.g., positive communications, intention to purchase/to act, etc.), whereas avoidance behaviours reflect the opposite responses such as negative communications and no intention to purchase.

According to the S-O-R framework, the theoretical model in the present study views consumer engagement with organic PCP as consisting of three components (see Figure 1). The first comprises the individual's knowledge and experience with these products, which act as external stimuli that affect the experiential response. The second component is represented by the internal state that arouses the individual, expressed as attitude towards organic PCP. Most prior research on organic PCP, starting from the Theory of Planned Behaviour (Ajzen's, 1991), has been concentrated on attitude as a single evaluative dimension (Ghazali *et al.*, 2017; Hansen *et al.*, 2012; Kim and Chung, 2011; Mombeini *et al.*, 2015). Following the approach adopted by Lee and Yun (2015) in the context of organic foods, this study employed a bi-dimensional conceptualization of attitude. Attitude towards behaviour refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of that behaviour (Ajzen and Fishbein, 2005). Literature on consumption behaviours highlighted that there exist two dimensions of consumer evaluation: (a) an utilitarian dimension (instrumental or functional) which concerns with how useful or beneficial an object is; and (b) an hedonic (affective gratification) dimension measuring the experiential affect associated with the object (e.g., how pleasant and agreeable the feelings to the product are) (Batra and Ahtola, 1990; Holbrook and Hirschman, 1982; Millar and Tesser, 1986; Triandis, 1977). In the context of organic food purchases, for example, utilitarian attitude reflects the consumers' assessment of how useful or beneficial buying organic food is, while hedonic attitude refers to whether buying organic food is pleasant or delightful (Lee and Yun, 2015). Sharing with this view, both utilitarian and hedonic attitudes towards organic PCP were measured to adequately represent cognitive and affective internal states. Finally, the third component of the model is the behavioural response of consumers, which is represented by the intention to purchase organic PCP.

3. Hypotheses development

Five antecedent variables are proposed as external stimuli which can influence the cognitive and affective state towards organic personal care products. The selection was made according to the relevant literature and to their expected relevance in the context under investigation.

The first set of variables is related to the consciousness about organic PCP, measured in terms of product knowledge (i.e., information, familiarity and purchasing experience), awareness of their natural content and awareness of the ecological benefits. Product knowledge is an important factor in the consumer decision-making process (Alba and Hutchinson, 1987; Brucks, 1985). In literature two conceptually different constructs are distinguished: objective knowledge, i.e. the accurate information stored in the consumer's long-term memory; and subjective knowledge, i.e. the consumer's self-perception of how much he knows about a product or service (Brucks, 1985; Park *et al.*, 1994; Selnes and Gronhaug, 1986). Among the two dimensions, subjective knowledge was found to be a stronger determinant of attitude and behaviour than objective knowledge (e.g., Feick *et al.*, 1992; Pieniak *et al.*, 2006). Several authors highlight the importance of this construct in the analysis of pro-environmental behaviour and purchase of organic food (Aertsens *et al.*, 2011; Chryssochoidis, 2000; Ellen, 1994; de Magistris and Gracia, 2008; Padel and Foster, 2005; Stobbelaar *et al.*, 2007; Teng and Wang, 2015; Thøgersen *et al.*, 2010). On the contrary, in the context of organic PCP only one study emerges which explored the impact of subjective knowledge on the attitude towards re-purchasing, founding a positive relationship (Ghazali *et al.*, 2017). The present study intends to enrich the literature investigating the dual relationship between subjective knowledge of organic PCP and the two dimensions of attitude. It is expected that better product knowledge would lead to more positive hedonic and utilitarian attitudes towards organic PCP. Hence, the following hypothesis is formulated:

H1: Knowledge about organic PCP significantly increases (a)the utilitarian attitude and (b) the hedonic attitude towards these products.

Natural content and ecological welfare attributes pertain to the safety and environmental benefits associated to organic PCP production and use. Kim and Chung (2011) and Mombeini *et al.* (2015) showed that consumer values (including health consciousness and environmental consciousness) significantly increase the attitude towards buying organic skin/hair care products. However, they measured values in a general way (i.e., "attention to health" and "attention to environment") and not with specific reference to organic products. To the authors' knowledge, only Ghazali *et al.* (2017) measured environmental and safety values associated to organic PCP, demonstrating their positive effect on attitude towards re-purchasing. In a similar vein, Lee and Yun (2015) explored the impact of natural content and ecological welfare attributes of organic food on the consumers' utilitarian and hedonic attitude but did not find the natural content effect significant. This study aims to shed light on such relationships in the context of organic PCP and hypothesises that the awareness of natural content and ecological welfare attributes could positively influence the utilitarian dimension of the consumer's evaluation process. On the contrary, since hedonic motivation is associated with fun and playfulness rather than functionality (Holbrook and Hirschman, 1982), the affective gratification (excitement, arousal, delight) deriving from the use of organic products is not supposed to be influenced by functional attributes like natural content and ecological welfare. In light of this reasoning, the following hypothesis is stated:

H2: Consumers' perception of (a) natural content and (b) ecological welfare attributes of organic PCP significantly increases the utilitarian attitude towards these products.

The second set of variables concerns the product evaluation, measured as sensory appeal, perceived quality and price. Except for Rybowska (2014), who found that the most important reason for not buying eco cosmetics was too the extremely high price, there is a lack of literature exploring potential links between such variables and attitude/ behaviour towards organic PCP. Sensory aspects have been proven to be an important factor in organic food choice (e.g., Chen, 2007; Lee and Yun, 2015). Particularly, Lee and Yun (2015) found a positive impact of sensory appeal on hedonic attitude. Similar to food, sensory stimuli are relevant in the cosmetics/hygiene products evaluation and influence the associated emotions, perceived quality and satisfaction (Theofanides and Kerasidou, 2012). Therefore, in the fourth hypothesis it is supposed that sensory appeal of organic PCP could increase the utilitarian and hedonic benefits associated to such products.

H3: Sensory appeal of organic PCP significantly increases (a) the utilitarian attitude and (b) the hedonic attitude towards these products.

The marketing literature suggests that the quality expectation of the various product alternatives is an important factor in consumer choice behaviour (Narasimhan and Sen, 1992; Steenkamp, 1989; Steenkamp and Van Trijp, 1996). In the context of organic food products, Gracia and De Magistris (2008) highlighted that the importance consumers attach to the organic food quality positively influence the level of consumption. In a similar way, if consumers perceived that organic personal care products have higher quality than the conventional ones, their attitude towards such product should improve. Therefore, the following hypothesis is formulated:

H4: Perceived quality of organic PCP significantly increases (a) the utilitarian attitude and (b) the hedonic attitude towards these products.

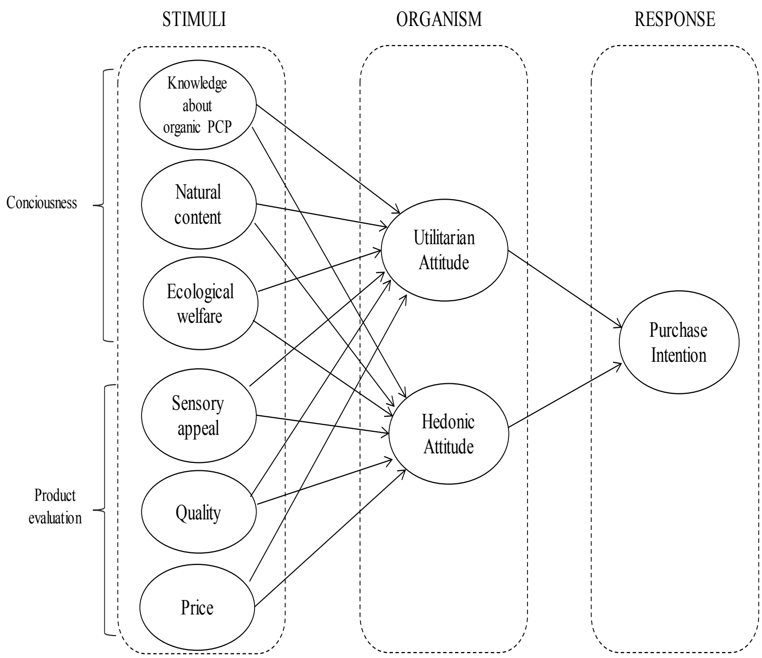
Except for the aforementioned study of Rybowska (2014) and that of Cervellon *et al.* (2011), which explored the consumers' willingness to pay for organic shampoo, to the authors' knowledge no studies exist that have investigated the impact of perceived price on attitude or purchase intention. Shifting the focus on the organic food sector, the vein of research analysing such relationship has provided contradictory results. If Lee and Yun (2015) suggested that perceived expensiveness decreases the hedonic and the utilitarian attitude, Chen (2007) did not find a significant relationship. Sharing with Lee and Yun's (2015) findings, this study intends to investigate if the price evaluation contributes to the perception of the hedonic and utilitarian benefits associated with organic PCP. More specifically, it is supposed that:

H5: Perceived expensiveness of organic PCP significantly decreases (a) the utilitarian attitude and (b) the hedonic attitude towards these products.

The last hypothesis concerns the relationship between the attitudinal reactions to the stimuli and the behavioural response (purchase intention) conceptualized in the S-O-R model. Following the TPB (Ajzen's, 1991) basic assumptions, several authors highlighted the positive influence of attitude towards (purchasing) organic PCP on purchase intention. The present study aims to enrich such findings investigating the separate effect of utilitarian attitude and hedonic attitude on the intention to buy.

H6: (a)The utilitarian attitude and (b) the hedonic attitude towards organic PCP have a significantly positive effect on the intention to purchase these products.

Fig. 1: Conceptual model



Source: our elaboration

4. Method

A self-administered questionnaire was sent in electronic form to a sample of Italian people between September and October 2018. Respondents immediately read the definition of organic PCP. Then, only those who have purchased such products at least once were able to proceed with the interview. The final sample size was equal to 161 valid questionnaires (72% females and 28% males; mean age = 31.8 ranging from 18 to 61).

The latent variables were measured using scales that have been well validated in the literature. Knowledge about organic PCP was measured through the five items developed by Park *et al.* (1992). The three-item scales proposed by Steptoe *et al.* (1995) were used to measure natural content and sensory appeal. Ecological welfare was assessed by the Lindeman and Vaananen (2000) four-item scale. Product quality was measured with one item developed by Gracia and De Magistris in the context of organic food (2007). Two items (Yoo *et al.*, 2000) collected the perceived expensiveness of organic PCP. The utilitarian and hedonic attitudes were assessed through three and five items respectively. The two scales, measured on a seven-point semantic differential, were developed by Voss *et al.* (2003). Finally, purchase intention was assessed using the three-item scale of Teng and Wang (2015). All statements, except for the two attitude scales, were on a seven-point anchored scale (from "completely disagree" to "completely agree"). The items used in the questionnaire are shown in Appendix A.

4.1 Analytical procedure

The collected data underwent two phases of analysis. First, Cronbach's alpha and the confirmatory factor analysis (CFA) were used to examine the construct validity and reliability of the scales. Second, the paths of relationships between the latent variables were explored. Structural equation modelling (SEM) with the maximum likelihood method was employed for the analysis of the measurement model (CFA) and of the conceptual model.

The fit of the models was interpreted based on a range of fit indices, namely the Chi-square (χ^2) value, the degree of freedom (df), the comparative fit index (CFI), the non-normed fit index (NNFI), the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR). Data analysis was performed using the IBM SPSS statistical software (SPSS Inc, Chicago, IL; release 25.0) and the LISREL software (release 8.80).

5. Results

5.1 Preliminary data analysis

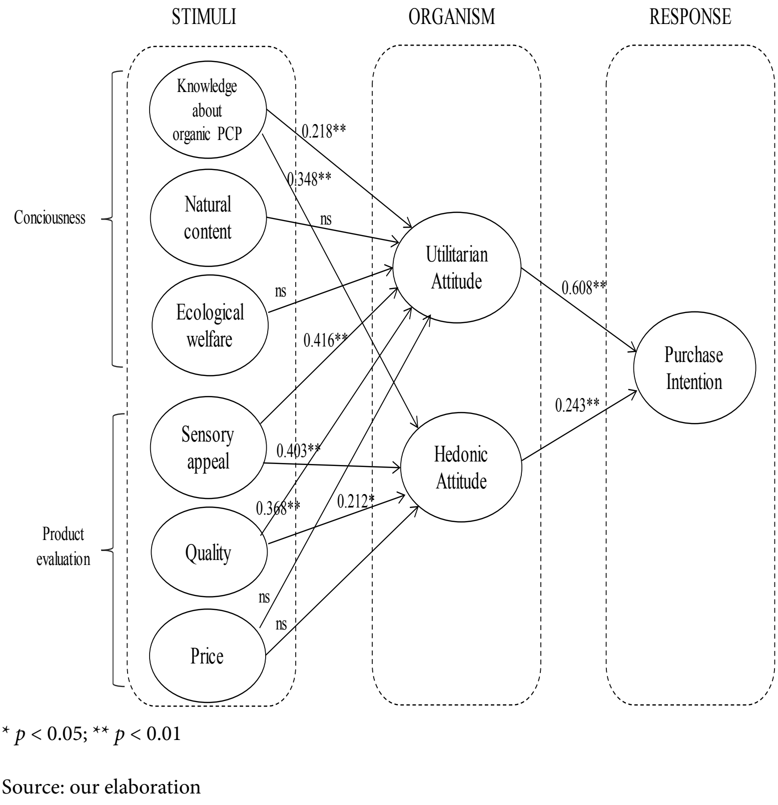
The internal consistency reliability (Cronbach's alpha) was very high for each construct, ranging from 0.77 to 0.94. All items had a high item-total correlation, and the alpha value did not increase when each item was removed. The analysis of the measurement model showed an acceptable overall fit. As the skew and kurtosis statistics showed that the normality assumption was violated, the models were estimated using the Satorra-Bentler method (Satorra and Bentler, 1994): χ^2 = 602.15, df = 342, p = 0.000, CFI = 0.98, RMSEA = 0.06, NNFI = 0.98, SRMR = 0.11.

All items loaded strongly and significantly on the hypothesised latent variables and all constructs exceeded the recommended cut-off points for the adequacy of 0.70 for the Composite Reliability (CR; Steenkamp and Van Trijp, 1991) and 0.50 for the Average Variance Extracted (AVE; Fornell and Larcker, 1981). Finally, the data met Fornell and Larcker's (1981) criterion: the average variance explained by each latent variable was greater than any of the squared correlations involving the variable, suggesting that discriminant validity was achieved.

5.2 Test of structural model

Results revealed that the structural model fits the data well ($\chi^2 = 634.04$, df = 351, $p = 0.000$, CFI = 0.98, RMSEA = 0.06, NNFI = 0.98, SRMR = 0.09) (Figure 1). Overall, the model explains 60% of the variance for purchase intention. The significant parameters estimates are shown in Figure 2.

Fig. 2: Structural model with standardized coefficients



* $p < 0.05$; ** $p < 0.01$

Source: our elaboration

The examination of the path coefficients and t-values indicated that knowledge about organic PCP significantly influenced the utilitarian ($\beta = 0.218$, $p < 0.01$) and hedonic attitude ($\beta = 0.348$, $p < 0.01$) towards these products, thus completely supporting H1. On the contrary, H2 was not supported by empirical data: natural content and ecological welfare did not have a significant effect on utilitarian attitude. According to H3, the higher the sensory appeal the better (a) the utilitarian attitude (β = 0.416, $p < 0.01$) and (b) the hedonic attitude (β = 0.403, $p < 0.01$) towards organic PCP, while a higher quality perception improved the functional dimension of attitude (H4a; β = 0.368, $p < 0.01$) and the affective one (H4b; β = 0.212, $p < 0.05$). Contrary to what hypothesised (H5), the price evaluation did not significantly impact on the attitudinal dimensions. Finally, the intention to buy organic PCP increased with the increase in the hedonic attitude (β = 0.243, $p < 0.01$) and, mostly, in the utilitarian attitude (β = 0.608, $p < 0.01$) towards these products, thus supporting H6a and H6b.

6. Discussion and conclusion

The present study proposed and tested a comprehensive buying behaviour model in order to identify the way of nudging consumers to choose organic personal care products. Based on the S-O-R framework (Mehrabian and Russell, 1974), it examined how attributes related to the consumers' experience with organic PCP (Stimulus) lead to the consumers' attitudes (Organism) and, consequently, to behavioural intentions (Response). Data collected from Italian consumers were used to pursue this research goal.

Results confirm that attitude is a strong predictor for purchase intention. In this manner, as the attitude towards organic PCP increases positively, so does the intention to buy. This result is in line with the classical attitude-behaviour theory (Azjen, 1991; Ajzen and Fishbein, 2005) and previous studies in the context of organic cosmetics (Ghazali *et al.*, 2017; Hansen *et al.*, 2012; Mombeini *et al.*, 2015; Yeon and Chung, 2011). However, differently from previous research, the current study enriched the literature knowledge employing a bi-dimensional approach to attitudes. To adequately reflect the consumers' cognitive and affective internal states based on the S-O-R model, both the utilitarian and hedonic attitude towards organic PCP are considered as predictors of purchase intention. Findings showed that the major driver of buying intentions is the utilitarian attitude, established by favourable perceptions of the effectiveness, helpfulness and functionality attributes of organic PCP. The effect of the hedonic attitude was also significant and positive.

According to Matić and Puh's (2015) findings, the environmental aspect did not contribute to the consumer's attitude towards organic PCP. This result is different from those of other studies, which assert that concern for one's health and for the environment are the two most commonly-stated motives for purchasing organic cosmetics (e.g. Ghazali *et al.*, 2017; Yeon and Chung, 2011).

Results also showed that subjective knowledge of organic PCP determines the consumer's positive utilitarian and hedonic attitude towards these products. This reflects that if consumers perceive themselves having good familiarity and understanding of the features and benefits of organic PCP, they are more likely to generate positive attitudes, which in turn lead to a greater purchase intention.

Finally, the proposed theoretical model sheds light on the role of other relevant variables which affect the organic PCP choice and that have been neglected in previous research. Specifically, quality perception and sensory appeal evaluation significantly increase both the utilitarian and hedonic attitudinal dimensions.

This study provides both theoretical and managerial contributions. Theoretically, it showed that the S-O-R model is a solid framework for the purpose of the study. Moreover, it advances the understanding of consumer buying behaviour in the context of organic PCP. Considering a broad system of relations, it fills the lack of knowledge regarding a more grounded exploration of the decision-making process towards these products.

Managerially, the study provides manufacturers and retailers several implications for the development of effective strategies to the organic PCP market. Regarding the determinants of the attitude towards these products, protection of the environment seems not a priority for the consumers. Therefore, practitioners wishing to gain more market share as regards the organic PCP must consider factors other than ecological welfare which can motivate the consumers to develop positive perceptions towards such products.

The findings suggest that creating a positive attitude towards organic PCP may be a significant consideration for companies to consequently increase consumers' purchase intentions. Specifically, the major driver of buying intention is the utilitarian attitude, established by favourable perceptions of the natural content, quality and sensory characteristics of organic personal care products. Contextually, previous experience and perceived knowledge of the benefits and features of organic PCP are important to influence both utilitarian and hedonic attitude. Therefore, when communicating the utilitarian (effectiveness and functionality) and the hedonic (fun, excitement, pleasure) dimensions of the organic personal care products consumption, companies should stress their intrinsic quality and the pleasantness of sensory aspects like texture and perfume. Moreover, retailers and manufacturers can help consumers develop more positive perceptions of organic PCP by increasing their familiarity with these products. To achieve this goal, they should use miniature samples as a marketing tool to induce trials. Similarly, the use of product testers in store should provide tactile cues for the sensory evaluation. According to McCabe and Nowlis (2003), consumers' direct experience with a product plays a fundamental role in making purchase decisions. If consumers evaluate the sensory attributes of organic PCP as pleasant and develop a high quality perception even before the purchase, they are more likely to improve their attitude towards such products, which in turn can positively influence the purchase intention. Clearly this lever cannot be exploited in the online retail channel, in which rich and elaborate descriptions are the best way to overcome the consumer's desire for direct sensory experience.

The proposed strategies can be useful to for both persuading the non-buyer and reinforcing the purchases of who is already a buyer of organic PCP. Greater knowledge and better perceptions about these products will not only induce new individuals to buy them but will also increase the level of consumption among existing consumers. For non-consumers, the marketing campaign should mainly point out the quality and the natural content benefits of organic PCP. For consumers, instead, campaigns should also stress the past experience and the experimented sensory benefits.

7. Limitations

Despite the literature contribution, the present study has some limitations. First, the recruitment method and the sample size prevent us from generalizing the results. Therefore, further research is recommended in order to extend the investigation to a larger sample that is going to be representative of the general population. The increase in sample size will also allow verifying the robustness of the model. Second, only purchase intention was measured, not actual behaviours. In addition to measuring purchase behaviour through self-report measures, it would be interesting to make an in-depth daily survey in order to investigate the actual consumers' purchase of organic personal care products. Third, although perceived expansiveness of organic PCP did not affect the attitude formation, it would be appropriate to investigate if it impacts on behavioural interventions. Therefore, the direct relationship between price and purchase intention should be included in the proposed model. Finally, longitudinal studies are required to examine whether changes in consumer attitude, perception and buying with regard to organic PCP happen in time.

References

AERTSENS J., MONDELAERS K., VERBEKE W., BUYSSE J., VAN HUYLENBROECK G. (2011), "The influence of subjective and objective knowledge on attitude, motivations and consumption of organic food", *British Food Journal,* vol. 113, n. 11, pp. 1353-1378.

AJZEN I. (1991), "The theory of planned behaviour", *Organizational Behavior and Human Decision Processes*, vol. 50, n. 2, pp. 179-211.

AJZEN I., FISHBEIN M. (2005), "The influence of attitudes on behaviour", in Albarracín D., Johnson B.T., Zanna M.P. (Eds.), *The handbook of attitudes* (pp. 173-221), Lawrence Erlbaum Associates Publishers, Mahwah, NJ, US.

ALBA J.W., HUTCHINSON J.W. (1987), "Dimensions of consumer expertise", *Journal of Consumer Research*, vol. 13, n. 4, pp. 411-454.

AL-SWIDI A., HUQUE S. M. R., HAFEEZ M. H., SHARIFF M. N. M. (2014), "The role of subjective norms in theory of planned behavior in the context of organic food consumption", *British Food Journal*, vol. 116, n. 10.

BAGOZZI R.P., GOPINATH M., NYER P.U. (1999), "The role of emotions in marketing", *Journal of the Academy of Marketing Science*, vol. 27, n. 2, pp. 184-206.

BAGOZZI R.P. (1986), *Principles of marketing management,* Science Research Associates, Chicago.

BAKER J., LEVY M., GREWAL D. (1992), "An experimental approach to making retail store environmental decisions", *Journal of Retailing,* vol. 68, n. 4, pp. 445-460.

BATRA R., AHTOLA O.T. (1991), "Measuring the hedonic and utilitarian sources of consumer attitudes", *Marketing Letters*, vol. 2, n. 2, pp. 159-170.

BITNER M.J. (1992), "Servicescapes: The impact of physical surroundings on customers and employees", *The Journal of Marketing,* vol. 56, n. 2, pp. 57-71.

BOROWSKA S., BRZÓSKA M.M. (2015), "Metals in cosmetics: implications for human health", *Journal of Applied Toxicology*, vol. 35, n. 6, pp. 551-572.

BRUCKS M. (1985), "The effects of product class knowledge on information search behaviour", *Journal of Consumer Research*, vol. 12, n. 1, pp. 1-16.

CCPB (2019), *Organic cosmetics?* Available at: http://www.ccpb.it/en/blog/certificazione/organic-cosmetics/ (Accessed 1 February 2019).

CERVELLON M.C., RINALDI M.J., WERNERFELT A.S. (2011, January), "How Green is Green? Consumers' understanding of green cosmetics and their certifications", in *Proceedings of 10th International Marketing Trends Conference* (pp. 20-21).

CHANG H.J., ECKMAN M., YAN R.N. (2011), "Application of the Stimulus-Organism-Response model to the retail environment: the role of hedonic motivation in impulse buying behaviour", *The International Review of Retail, Distribution and Consumer Research,* vol. 21, n. 3, pp. 233-249.

CHEBAT J., MICHON R. (2003), "Impact of ambient odors on mall shoppers' emotions, cognition and spending: a test of competitive causal theories", *Journal of Business Research,* vol. 56, n. 7, pp. 529-39.

CHEN M.F. (2007), "Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: Moderating effects of food-related personality traits", *Food Quality and Preference*, vol. 18, n. 7, pp. 1008-1021.

CHRYSSOCHOIDIS G. (2000), "Repercussions of consumer confusion for late introduced differentiated products", *European Journal of Marketing,* vol. 34, n. 5/6, pp. 705-22.

DARBRE P.D. (2001), "Underarm cosmetics are a cause of breast cancer", *European Journal of Cancer Prevention*, vol. 10, n. 5, pp. 389-394.

DARBRE P.D. (2003), "Underarm cosmetics and breast cancer", *Journal of Applied Toxicology: An International Journal,* vol. 23, n. 2, pp. 89-95.

DE MAGISTRIS T., GRACIA A. (2008), "The decision to buy organic food products in Southern Italy", *British Food Journal,* vol. 110, n. 9, pp. 929-947.

DONOVAN R.J., ROSITER J.R. (1982), "Store atmosphere: an environmental psychology approach", *Journal of Retailing,* vol. 58, n. 1, pp. 34-57.

ELLEN P.S. (1994), "Do we know what we need to know - Objective and subjective knowledge effects on pro-ecological behaviours", *Journal of Business Research,* vol. 30, n. 1, pp. 43-52.

EROGLU S.A., MACHLEIT K.A., DAVIS L.M. (2001), "Atmospheric qualities of online retailing: A conceptual model and implications", *Journal of Business Research*, vol. 54, n. 2, pp. 177-184.

EROGLU S.A., MACHLEIT K.A., DAVIS L.M. (2003), "Empirical testing of a model of online store atmospherics and shopper responses", *Psychology and Marketing,* vol. 20, n. 2, pp. 139-150.

FEICK L., PARK C.W., MOTHERSBAUGH D.L. (1992), "Knowledge and knowledge of knowledge - What we know, what we think we know, and why the difference makes a difference", *Advances in Consumer Research,* vol. 19, n. 1, pp. 190-192.

FIORE A.M. (2002), "Effects of experiential pleasure from a catalogue environment on approach responses toward fashion apparel", *Journal of Fashion Marketing and Management: An International Journal,* vol. 6, n. 2, pp. 122-133.

FIORE A.M., KIM J. (2007), "An integrative framework capturing experiential and utilitarian shopping experience", *International Journal of Retail & Distribution Management,* vol. 35, n. 6, pp. 421-442.

FORNELL C., LARCKER D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research,* vol. 18, n. 1, pp. 39-50.

FROW P., PAYNE A. (2007), "Towards the 'perfect'customer experience", *Journal of Brand Management,* vol. 15, n. 2, pp. 89-101.

GHAZALI E., SOON P.C., MUTUM D.S., NGUYEN B. (2017), "Health and cosmetics: Investigating consumers' values for buying organic personal care products", *Journal of Retailing and Consumer Services*, vol. 39, pp. 154-163.

GRACIA A., DE MAGISTRIS T. (2008), "The demand for organic foods in the South of Italy: A discrete choice model", *Food Policy*, vol. 33, n. 5, pp. 386-396.

GRAND VIEW RESEARCH INC. (2016), "Organic Skin Care Market Analysis By Product (Face Creams, Body Lotions) And Segment Forecasts To 2022", Available at: https://www.grandviewresearch.com/industry-analysis/organic-skin-care-market (Accessed 4 February 2019).

HANSEN T., RISBORG M.S., STEEN C.D. (2012), "Understanding consumer purchase of free-of cosmetics: A value-driven TRA approach", *Journal of Consumer Behaviour,* vol. 11, n. 6, pp. 477-486.

HARVEY P.W., DARBRE P. (2004), "Endocrine disrupters and human health: could oestrogenic chemicals in body care cosmetics adversely affect breast cancer incidence in women? A review of evidence and call for further research", *Journal of Applied Toxicology: An International Journal*, vol. 24, n. 3, pp. 167-176.

HOLBROOK M.B., HIRSCHMAN E.C., (1982), "The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun", *Journal of Consumer Research,* vol. 9, pp. 132-140.

ISLAM J.U., RAHMAN Z. (2017), "The impact of online brand community characteristics on customer engagement: An application of Stimulus-Organism-Response paradigm", *Telematics and Informatics*, vol. 34, n. 4, pp. 96-109.

ÇABUK S., TANRIKULU C., GELIBOLU L. (2014), "Understanding organic food consumption: attitude as a mediator", *International Journal of Consumer Studies*, vol. 38, n. 4, pp. 337-345.

KALIČANIN B., VELIMIROVIĆ D. (2016). "A study of the possible harmful effects of cosmetic beauty products on human health", *Biological Trace Element Research*, vol. 170, n. 2, pp. 476-484.

KANG K., SOHAIB O. (2015), "Individual level culture influence on online consumer iTrust aspects towards purchase intention across cultures: A SOR model", *International Journal of Electronic Business*, vol. 12, n. 2, pp. 141-161.

KIM J., LENNON S.J. (2013), "Effects of reputation and website quality on online consumers' emotion, perceived risk and purchase intention: Based on the stimulus-organism-response model", *Journal of Research in Interactive Marketing,* vol. 7, n. 1, pp. 33-56.

KIM Y.H., CHUNG J.E. (2011), "Consumer purchase intention for organic personal care products", *Journal of Consumer Marketing*, vol. 28, n. 1, pp. 40-47.

LEE H.J., GOUDEAU C. (2014), "Consumers' beliefs, attitudes, and loyalty in purchasing organic foods", *British Food Journal*, vol. 116, n. 6.

LEE S., HA S., WIDDOWS R. (2011), "Consumer responses to high-technology products: Product attributes, cognition, and emotions", *Journal of Business Research*, vol. 64, n. 11, pp. 1195-1200.

LEE H.J., YUN Z.S. (2015), "Consumers' perceptions of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions toward organic food", *Food quality and preference,* vol. 39, pp. 259-267.

LINDEMAN M., VÄÄNÄNEN M. (2000), "Measurement of ethical food choice motives", *Appetite*, vol. 34, n. 1, pp. 55-59.

MATIĆ M., PUH B. (2016), "Consumers' purchase intentions towards natural cosmetics", Ekonomski vjesnik/Econviews-Review of Contemporary Business, *Entrepreneurship and Economic Issues*, vol. 29, n. 1, pp. 53-64.

McCABE D.B., NOWLIS S.M. (2003), "The effect of examining actual products or product descriptions on consumer preference", *Journal of Consumer Psychology*, vol. 13, n. 4, pp. 431-439.

MEHRABIAN A., RUSSELL J.A. (1974), *An approach to environmental psychology*, Cambridge: M.I.T. Press.

MELLOWSHIP D. (2009), *Toxic Beauty: The hidden chemicals in cosmetics and how they can harm us,* Hachette UK.

MILLAR M.G., TESSER A. (1986), "Effects of Affective and Cognitive Focus on the Attitude-Behavior Relationship", *Journal of Personality and Social Psychology*, vol. 51, n. 2, pp. 270-276.

MOLLEN A., WILSON H. (2010), "Engagement, telepresence and interactivity in online consumer experience: Reconciling scholastic and managerial perspectives", *Journal of Business Research*, vol. 63, n. 9-10, pp. 919-925.

MOMBEINI H., SHAABANI R., GHORBANI R. (2015), "Survey the Effective Factor on Attitude & Purchase Intention of Organic Skin and Hair Care Products", *International Journal of Scientific Management & Development,* vol. 3, n. 1, pp. 819-826.

NARASIMHAN C., SEN S. (1992), "Measuring quality perceptions", *Marketing Letters,* vol. 3, n. 2, pp. 147-156.

ORGANIC.ORG (2019), *What is organic?,* Available at: https://organic.org/what-is-organic-food/ (Accessed 4 February 2019).

PADEL S., FOSTER C. (2005), "Exploring the gap between attitudes and behaviour - Understanding why consumers buy or do not buy organic food", *British Food Journal*, vol. 107, n. 8, pp. 606-625.

PARK C.W., FEICK L., MOTHERSBAUGH D.L. (1992), "Consumer knowledge assessment: How product experience and knowledge of brands, attributes, and features affects what we think we know", ACR North American Advances.

PARK C.W., MOTHERSBAUGH D.L., FEICK L. (1994), "Consumer knowledge assessment", *Journal of Consumer Research*, vol. 21, n. 1, pp. 71-82.

PAUL J., RANA J. (2012), "Consumer behavior and purchase intention for organic food", *Journal of consumer Marketing*, vol. 26, n. 6.

PIENIAK Z., VERBEKE W., BRUNSØ K., OLSEN S.O. (2006), "Consumer knowledge and interest in information about fish", in Luten J., Jacobsen C., Bekaert K., Sæøbo A., Oehlenschlager J. (Eds.), *Seafood research from fish to dish: Quality, safety and processing of wild and farmed fish* (pp. 229-241), Wageningen Academic Publisher, Wageningen.

ROSE S., CLARK M., SAMOUEL P., HAIR N. (2012), "Online customer experience in e-retailing: an empirical model of antecedents and outcomes", *Journal of Retailing,* vol. 88, n. 2, pp. 308-322.

RYBOWSKA, A. (2014), "Consumers attitudes with respect to ecological cosmetic products", *Zeszyty Naukowe Akademi Morskiej w Gdyni*, vol. 84, pp. 158-164.
SATORRA A., BENTLER P.M. (1994), "Corrections to test statistics and standard errors in covariance structural analysis", in Von Eye A., Clogg C.C., L*atent variables analysis: Applications for developmental research* (pp. 399-419), Thousand Oaks, CA: Sage.
SELNES F., GRONHAUG K. (1986), "Subjective and objective measures of product knowledge contrasted", *Advances in Consumer Research*, vol. 13, n. 1, pp. 67-71.
SI S.N., PRAVEENA S.M. (2015), "Hazardous ingredients in cosmetics and personal care products and health concern: a review", *Public Health Research*, vol. 5, n. 1, pp. 7-15.
STEENKAMP J.B.E. (1989), *Product quality: An investigation into the concept and how it is perceived by consumers*, Wageningen Academic Publisher, Wageningen.
STEENKAMP J.B.E., VAN TRIJP H.C. (1996), "Quality guidance: A consumer-based approach to food quality improvement using partial least squares", *European Review of Agricultural Economics,* vol. 23, n. 2, pp. 195-215.
STEENKAMP J.B., VAN TRIJP H. (1991), "The use of LISREL in validating marketing constructs", *International Journal of Research in Marketing,* vol. 8, n. 4, pp. 283-99.
STEPTOE A., POLLARD T.M., WARDLE J. (1995), "Development of a measure of the motives underlying the selection of food: the food choice questionnaire", *Appetite*, vol. 25, n. 3, pp. 267-284.
STOBBELAAR D.J., CASIMIR G., BORGHUIS J., MARKS I., MEIJER L., ZEBEDA S. (2007), "Adolescents' attitudes towards organic food: A survey of 15- to 16-year old school children", *International Journal of Consumer Studies*, vol. 31, n. 4, pp. 349-356.
TENG C.C., WANG Y.M. (2015), "Decisional factors driving organic food consumption: Generation of consumer purchase intentions", *British Food Journal,* vol. 117, n. 3, pp. 1066-1081.
THEOFANIDES F., KERASIDOU E. (2012), "The role of sensory stimuli on perceived quality of cosmetic products: An empirical examination of the buying process of face creams", *International Conference on Contemporary Marketing Issues (ICCMI), J*une 2012.
THØGERSEN J., HAUGAARD P., OLESEN A. (2010), "Consumer responses to ecolabels", *European Journal of Marketing,* vol. 44, n. 11/12, pp. 1787-1810.
TRIANDIS H.C. (1977), *Interpersonal Behavior,* CA: Brooks/Cole Publishing Co, Monterey.
TYNAN C., MCKECHNIE S. (2009), "Experience Marketing: A Review and Reassessment", *Journal of Marketing Management,* vol. 25, n. 5-6, pp. 501-17.
VOSS K.E., SPANGENBERG E.R., GROHMANN B. (2003), "Measuring the hedonic and utilitarian dimensions of consumer attitude", *Journal of Marketing Research,* vol. 40, n. 3, pp. 310-320.
YEON KIM H., CHUNG J.E. (2011), "Consumer purchase intention for organic personal care products", *Journal of Consumer Marketing,* vol. 28, n. 1, pp. 40-47.
YOO B., DONTHU N., LEE S. (2000), "An examination of selected marketing mix elements and brand equity", *Journal of the Academy of Marketing Science*, vol. 28, n. 2, pp. 195-211.

Appendix A: Items of the questionnaire

Construct	Items	Authors
Knowledge about organic PCP	I know a lot about organic personal care product I have great purchasing experience with organic personal care product I am familiar with organic personal care product I understand the features and benefits of organic personal care product My knowledge about organic personal care product is better relative to the people that I know	Park *et al.*,1992
Natural content	Organic personal care products contain no additives Organic personal care products contain natural ingredients Organic personal care products contain no GMOs and synthetic fragrances	Steptoe *et al.*, 1995
Ecological welfare	Organic food has been produced in a way which has not shaken the balance of nature Organic food is packaged in an environmentally friendly way Organic food has been produced in a way that animals have not experienced pain Organic food has been produced in a way that animals' rights have been respected	Lindeman and Vaananen, 2000
Sensory appeal	Organic personal care products look nice Organic personal care products have a pleasant texture Organic personal care products smell good	Steptoe *et al.*, 1995
Product quality	Organic personal care products products have higher quality than conventional	Gracia and De Magistris, 2007
Price	Organic personal care products are expensive The price of organic personal care products is high	Yoo *et al.*, 2000
Utilitarian attitude	Ineffective-effective Not helpful-helpful Not functional-functional	Voss *et al.*, 2003
Hedonic attitude	Unnecessary-necessary Not fun-fun Dull-exciting Not delightful-delightful Not thrilling-thrilling	Voss *et al.*, 2003
Purchase intention	If organic personal care products were available in the shops, I would buy them I am willing to buy organic personal care products despite their higher prices The probability I would buy organic personal care products is very high	Teng and Wang, 2015

Academic or professional position and contacts

Donata Tania Vergura
Researcher of Marketing
University of Parma - Italy
e-mail: donatatania.vergura@unipr.it

Cristina Zerbini
Research Fellow of Marketing
University of Parma - Italy
e-mail: cristina.zerbini@unipr.it

Beatrice Luceri
Full professor of Marketing
University of Parma - Italy
e-mail: beatrice.luceri@unipr.it

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.08
pp. 121-137

FONDAZIONE CUEIM
SIMA Italian Society of MANAGEMENT

Family businesses and generational involvement: evidence from cross-border M&As

Received
18th February 2019
Revised
2nd April 2019
Accepted
21st June 2019

Mario Ossorio

Abstract

Purpose of the paper: *Using the socioemotional wealth perspective, this work aims to investigate the family firms' propensity to join cross-border transactions as acquirers.*

Methodology: *This work uses the logit regression on a sample of 270 acquisitions whose acquiring firms are represented by family and non-family listed European firms.*

Findings: *This study finds 1) that family shareholders negatively influence the propensity to make a cross-border acquisition, 2) a positive relationship between later generations and family firms' likelihood of joining a cross-border transaction as an acquirer, 3) family CEO negatively moderates the relationship sub 2).*

Research limits: *The limitations are: 1) the period analysed (2015-2017), which restricts the possibility of seizing a greater number of transactions, and 2) the sample of only some European acquiring firms, that restricts the possibility of generalizing results to other countries.*

Practical implications: *This study suggests that the first generations at the helm of a family firms may need external managers and directors in order to implement strategies of international growth via M&A transactions.*

Originality of the paper: *This study extends previous literature by exploring the effect of the presence of a family acquirer on the likelihood of making a cross-border transaction and takes into account the roles of generational stage and family leadership.*

Key words: Mergers and acquisitions; Family business; Socioemotional wealth; Generational stage; Family CEO

1. Introduction

Although M&As represent a vastly explored theme in the management literature, scholars have paid scant attention to family firms involved in these transactions. Nevertheless, growth is crucial for continuity and transgenerational wealth creation (Stenholm *et al.*, 2016) and M&As represent one of the main strategies of external growth. In any case, over the last years, an emerging stream of literature has shed light on some aspects of family business M&As. More specifically, scholars have investigated the effects of family ownership on the likelihood of a family firm to make an M&A (Miller *et al.*, 2010), on the acquiring family firm's choice of means of payment (Caprio *et al.*, 2011), and on the reaction of the financial market at the announcement of a family business' M&A (Feito-

Ruiz and Menéndez-Requejo, 2010). Scholars have also explored the effect of family ownership on the industry-diversifying nature of acquisitions (Defrancq *et al.*, 2016), emphasizing that factors such as leverage (Aktas *et al.*, 2016) and historical performance (Gómez-Mejía *et al.*, 2015) might moderate the aforementioned effect. Family ownership also significantly affects the acquiring shareholder's returns (Ben-Amar and André, 2006). Nevertheless, cross-border M&As undertaken by family firms, which occur when a family firm acquires a firm located in a foreign country, represent an issue not yet investigated. This theme is very interesting because cross-border M&As represent an important strategy of growth for firms, especially when the domestic market is deteriorating or languishing.

To the best of our knowledge, this is the first time that a study has investigated the propensity of an acquiring family firm to make a cross-border acquisition, taking into account the family firm's generational stage.

This theme needs to be explored for several reasons. First, cross-border M&As represent relevant international growth opportunities - particularly valuable when the domestic market faces a decreasing demand - which may favour a family firm's longevity. Second, family firms may suffer from untalented staff that hinders their entry into foreign markets (Fernandez and Nieto, 2005), and cross-border M&As allow them to access complementary resources, essential to international growth, such as superior managerial and marketing skills (Chen, 2008; Nicholson and Salaber, 2013), distribution system, and potential clients (Chen and Findlay, 2003). Besides, in a time of fast changes, where the speed of growth is crucial to compete, M&As strategies permit family firms to expand more quickly than internal and organic growth (Belderbos, 2003; Gaughan, 2011).

The aim of this work is to analyze whether the presence of a family shareholder influences the acquiring firm's likelihood of making a cross-border transaction. Furthermore, the paper investigates whether the likelihood of a family acquirer to make a cross-border acquisition is influenced by the generation that controls the family firm. In fact, different generations of shareholders may show distinct interests, management approaches, and objectives (Okorafo, 1999). Lastly, the work explores the moderating effect of a family CEO on the relationship between generational stage and the acquiring family firms' propensity to make a cross-border acquisition.

The present study analyzes a sample of 270 acquisitions in the period 2015-2017 whose acquirers are constituted by family and non-family listed European firms. The main results indicate that the presence of a family block-holder negatively influences the propensity to make a cross-border acquisition, while later generations positively affect the propensity above mentioned. Lastly, the presence of a family member as CEO negatively influences the relationship between generational stage and propensity to make an acquisition.

The paper contributes to literature in several ways. First, it fills a gap by exploring the international-diversifying nature of the acquisition made by family firms, hence extending the literature on family business M&As, which mostly investigates the family ownership effect on the number or value of acquisitions made by the acquiring firm (Miller *et al.*, 2010), on the industry-diversifying nature of the transaction (Gómez-Mejía *et al.*, 2015), and on the shareholder wealth creation (Feito-Ruiz and Menéndez-Requejo, 2010). In addition, the study provides further evidence regarding the internationalization strategies of family firms, by examining a mode of entry into foreign countries differently from the export activity and foreign direct investment (FDI), thus widening literature on family business expansion strategies into foreign markets (Calabrò and Mussolino, 2013; Calabrò *et al.*, 2013; Graves and Thomas, 2008). Furthermore, the study integrates the family business literature with the socioemotional wealth (henceforth, SEW) view, and incorporates family members' risk preferences into the framework. Therefore, this work permits to explore the topic of family firms M&As using non-financial arguments, complementing the results found in the previous studies. Finally, the study suggests that, in order to fully understand the external strategies of family firms, the generational involvement should be considered, extending the studies on generational involvement effect.

The present work is structured as follows. The next section examines a literature review on family business M&As to point out gaps in extant research. The second section contains the development of the hypotheses about the influence of the presence of an acquiring family shareholder and of later generations on the propensity to make a cross-border acquisition. Furthermore, the moderating effect of a family CEO is investigated. The third section illustrates the sample and the treatment of the variables. The fourth section illustrates and discusses the results of the empirical analysis. The last section contains the study's concluding comments.

2. Literature review on M&As and family business

Over the years, studies have investigated several topics concerning family business M&As, such as family firms' acquisition behaviors, the industry-diversifying nature of these transactions, and acquiring firms' return announcements. In terms of the acquisition behavior issue, one of the most explored arguments is the likelihood of family firms to make an acquisition. This topic has generally been analyzed using the agency theory and the family business theory. In the seminal works (Amihud and Lev, 1981; Berger and Ofek, 1995), scholars used the agency view to interpret the family firms' strategic behaviour on the M&A decisions. More specifically, in the agency framework, M&As are considered a means through which self-interested managers of public companies obtain private benefits at the expense of shareholders (Berger and Ofek, 1995). M&As may also be undertaken to lower the risk associated to the managers' human and financial capital held in the firms (Wright *et al.*, 2002). Under these conditions, M&A transactions may represent the means to pursue managerial objectives, rather than those of the owners.

Family owners may reduce information asymmetry between themselves and their managers and minimize the free rider problem concerning the atomistic investors because of their strict connection between family's wealth and firm's welfare (Amihud and Lev, 1981; Anderson and Reeb, 2003). They represent large shareholders and, therefore, possess both the incentive and the power to limit M&As aimed to pursue managerial objectives (Morck *et al.*, 1990). The family business literature adds a more specific argument characterizing the family business M&As: it is not the ownership concentration itself that affects family firms' acquisition behaviors, but rather *who the owners and their priorities and preferences are* (Miller *et al.*, 2010). Family members are careful to perpetuate the family dynasty and, therefore, ensure that the business is transferred on to the future generations (Palmer *et al.* 1987; Casson, 1999). Accordingly, they adopt strategies of "continuity" that favor the development of capability or loyalty in a certain market and tend to rule out acquisitions with the potential to undermine (Miller and Le Breton-Miller, 2005; Miller *et al.*, 2009). Consistently with these arguments, scholars found a negative relationship between family ownership and both the volume and the value of the acquisitions (Miller *et al.*, 2010). In any case, when performance falls under aspiration level, the negative relationship between family ownership and the likelihood of acquisition is weakened, because the threat of financial deterioration stimulates family firms principals to undertake an acquisition in order to reverse a hazardous situation (Gómez-Mejía *et al.*, 2015).

These results are partly confirmed by Caprio *et al.* (2011) in a sample of acquisitions made by 777 large continental European companies in the period 1998-2008. In particular, the authors identify a negative relationship between family ownership and the number and value of acquisitions when family ownership is lower than 20%. When family ownership lies between 20% and 50%, it is negatively related only to the acquisition value and not to the acquisition volume.

The negative effect of family ownership on the likelihood of acquisition is also explained by the family firms' unique features, such as their risk-aversion (Graves and Thomas, 2006) and attention to stability and survival (Lee, 2006). As a consequence, family firms may avoid risky investments that could compromise their status quo and the family's welfare (Schulze *et al.*, 2001). M&As actually entail risky post-acquisition performance that may jeopardize the firm's viability (Wu *et al.*, 2005).

Another relevant stream of research investigated is represented by the studies on the industry-diversifying nature of family firms' M&A strategies (Miller *et al.*, 2010; Gómez-Mejía *et al.*, 2010; 2015; Defrancq *et al.*, 2016). Miller *et al.* (2010) find a negative effect of family ownership on the fraction of acquisitions made within the firm's core industry. The authors point out that this result is consistent with the portfolio theory literature: while single investors may reduce their portfolio risk through the diversification of their investment, family members invest their wealth on the family business in order not to dilute their control position (James, 2006; Landes, 2006; Ward, 2004). In order to reduce their investment portfolio risk, family members diversify the business itself (Miller *et al.*, 2010). Accordingly, if family firms decide to make an acquisition, they choose to direct the transaction outside their firm's core industry. This result is to some extent confirmed by the study of Defrancq *et al.* (2016).

By all means, the authors find that family firms are less inclined to make an unrelated acquisition than lone founders and other types of non-family firms. In any case, when family ownership rises up, family firms are more prone to make industry-diversifying M&As.

The attitude of family firms towards diversifying M&As is also investigated by the study of Aktas *et al.* (2016). Their work highlights that family firms are less prone to making diversifying acquisitions and that family firms with a high degree of leverage are more inclined to make cross-industry diversifying deals. This result is interpreted as the attempt of family owners to finance diversifying acquisitions through debt or cash in order to avoid the issue of new stock that increases the risk of them losing control in the future (Harris and Raviv, 1988; Stulz, 1988).

Gómez-Mejía *et al.* (2015) point out that family ownership positively affects the propensity to make related acquisitions and that family members are less prone to undertaking related diversification when family firm shows declining ROA. The authors interpret this behaviour as the family members' willingness to make unrelated acquisitions in order to take advantages of the benefits connected to this kind of transaction, such as a reduced portfolio risk, when the acquiring family firms' economic performance is declining.

However, to the best of our knowledge, scholars have not yet analysed the M&As strategies that family firms adopt to expand into foreign countries, such as cross-border M&As. This study attempts to fill this research gap.

3. Hypotheses development

The framework used in this work to shed light on the effect of family ownership and generational stage on the family firms' likelihood of undertaking a cross-border M&A is the socioemotional wealth. Socioemotional wealth refers to *the family owner's stock of affect vested in the firm* (Gómez-Mejía *et al.*, 2007) and represents a reference point that suggests to family firms if a managerial choice is good or bad. The family members' control over strategic decisions, their identification with the firm, their social ties within and beyond the firm, their emotional attachment to the firm, and their sense of dynasty, represent the five main dimensions of SEW (Berrone *et al.*, 2012). According to Gómez-Mejía (2007): "*for family firms a key criterion, or at least one that has greater priority, is whether their socioemotional endowment will be preserved*". The preservation of this wealth constitutes an end in itself and it is connected at a deep psychological level among family owners whose identity is inseparably linked to the organization.

When family businesses' M&As are analyzed under the SEW perspective, it is useful to consider the risks connected to an M&A transaction. More specifically, the post-M&A integration is the major challenge faced by most acquiring and target top managers (Shimizu *et al.*, 2004), overall in cross-border M&As because the high degree of cultural distance may jeopardize the success of the transaction (Brouthers and Brouthers, 2000).

Accordingly, the risk of unsuccessful integration is higher in cross-border acquisitions than domestic acquisitions because they entail double-layered acculturation (Barkema *et al.*, 1996), whereby the differences in national cultures add to the differences in organizational cultures.

It is even more relevant in the family firms' context because family business cultures incorporate both family values and the ethnic heritage of the family (Pistrui *et al.*, 2001), while regional cultures and historical experiences shape the family business culture (Davis *et al.*, 2000). In addition, national and regional traditions produce a unique influence on key family business processes (Sharma and Rao, 2000; Howorth and Ali, 2001; Zahra *et al.*, 2004).

The difference between the organizational cultures of the two firms joining an M&A may produce administrative conflicts following the transaction (Sales and Mirvis, 1984) and a sense of aversion in the post-acquisition phases (Buono *et al.*, 1985).

From a SEW perspective, when a family firm joins an M&A, conflicts between the two organizations participating in the transaction could jeopardize the family image and reputation (Sharma and Manikuti, 2005). Because of the strong identification between family and firm (Berrone *et al.*, 2010, 2012), conflicts between acquiring and target members may be emotionally ruining for family members. Family members actually pay more attention to the image they transfer to both external and internal stakeholders (Micelotta and Raynard, 2011). A high level of conflict in the post-M&A integration phase may undermine the sense of pride and "*the preservation of the family's good name for future generations*" (Ket de Vries, 1993), generating a loss of non-economic endowment.

The difficulties of post-M&A integration could be exacerbated by the strong sense of identity of family and non-family employees of the family business. Certainly, kinship ties generate a closed network (Cruz and Nordqvist, 2012), relational trust (Coleman, 1990), and feelings of closeness (Uzzi, 1997). The family firm's sense of belonging is also often perceived by non-family employees, generating a sense of stability (Miller and Le Breton-Miller, 2005; Berrone *et al.*, 2012). Moreover, applicants of family firms are selected depending on whether they are deemed to share the family's values and culture (Cruz *et al.*, 2010), which may be different from the other firm joining an M&A transaction, making the post-M&A integration even more difficult.

The potential risk of a failed transaction, which may jeopardize the family business' survival, can be considered a main disincentive for family firms that are inclined to expand into foreign markets through external growth strategies, such as M&As (Gomez-Mejia *et al.*, 2015). Family members strongly recognize themselves with their business (Dyer and Whetten, 2006), and derive a sense of self and identity from it (Kepner, 1983). For family owners, the firm constitutes an essential part of their lives, whereas for non-family shareholders the bind is more transitory, superficial and opportunistic (Lubatkin *et al.*, 2005). Accordingly, unsuccessful acquisition may generate a loss of socioemotional wealth, which the family wants to avoid.

Lastly, family members are deeply embedded in their communities and build enduring relationships with a wide set of constituencies (Miller *et al.*, 2009; Berrone *et al.*, 2010, 2012) in order to generate social capital and reserves of goodwill (Carney, 2005). In addition, these relationships represent a form of social insurance, which preserve the firm's assets in times of crisis (Godfrey, 2005), with the effect that if damage emerges, constituencies are more inclined to offer the firm the benefit of the doubt (Gómez-Mejía *et al.*, 2011). Cross-border acquisitions necessitate that pre-existing social ties become less relevant because new relationships with unfamiliar and foreign stakeholders, such as distributors and clients, have to be guaranteed (Hitt *et al.*, 2001; Gomez-Mejia *et al.*, 2015), producing, therefore, a loss in terms of socioemotional endowment.

According to the above discussion, the following hypothesis is proposed:

HP1: Acquiring family firms are less likely to make a cross-border acquisition than their acquiring non-family counterparts

Each generation of leadership may identify new strategic directions basing on underlying, long-held competencies developed for earlier strategies (Ward, 1998). In addition, members of different generations show differences concerning both the stage of development of their firms and their capabilities to affect the firm's strategic orientation (Greiner, 1972; Cruz and Nordqvist, 2012).

Within the literature regarding internationalization strategies, Fernandez and Nieto (2005) point out that the second generation affects positively the likelihood of exporting, while the first exerts a negative influence. Entrepreneurship studies emphasize that the generational stage influences the relationship between internal and external factors and entrepreneurial orientation (Cruz and Norqvist, 2012). More recently, Muñoz-Bullón *et al.* (2017) highlight that the later generations will diversify the business more than the first-generation ones.

From a SEW perspective, the emotional attachment to the business may depend on the generational stage. More specifically, as the firm moves beyond the first generation, emotional endowment becomes less relevant relative to financial objectives. Indeed, as later generations become more involved in the family firm, the degree of family identification, control and personal investment in the business varies (Gersick *et al.*, 1997; Aronoff and Ward, 1994). Particularly, the emerging family branches lead to the surfacing of goals and priorities intrinsic to the distinct branches, entailing diluted family bonds (Gersick *et al.*, 1997; Ensley and Pearson, 2005). This means that family principals feel themselves as family nurturers of their own branch, reducing the centrality of family identity as one of the main dimensions of socioemotional wealth (Sciascia *et al.*, 2014; Drago *et al.*, 2018).

The de-emphasis of SEW priorities across subsequent generations produces several implications on the acquiring family firms' likelihood of making a cross-border transaction. First, at the earlier stages, family members tend to have a strong emotional attachment to the firm and, therefore, pose much relevance to the control over strategic decisions (Berrone *et al.*, 2012; Bacci *et al.*, 2018). Accordingly, it is expected that first generation family members are less prone to recruit external managers and experts because of family fear to dilute its control over firm. The lower control over the firm's strategic decision would represent a socioemotional wealth loss. Nevertheless, the lack of managerial skills represents an obstacle to the adoption of external growth strategies, such as cross-border M&As, that require professional managers in order to handle effectively these complex transactions (Gómez-Mejía *et al.*, 2015). As the generational stage increases, SEW preservation becomes less central compared to financial priorities.

Therefore, later generations are expected to attribute less importance to the loss of control following the recruitment of non-family external managers and to prefer expanding the business they have inherited (Cruz and Nordqvist, 2012). In fact, growth strategies enable family members to preserve the long-term survival of the healthy business and to transfer it to the future generations (Handler, 1992; Gómez-Mejía *et al.*, 2011; Muñoz-Bullón *et al.*, 2017). Under these conditions, external human resources may confer new skills, capabilities and know-how needed to face complex transactions and allow the family to adopt M&As strategies, achieve the business growth and to move beyond the legacy of the past generation.

In addition, the identification between family and business (Dyer and Whetten, 2006) is very strong for earlier generations and becomes less strong for the later ones. From a SEW perspective, for the former, the potential failure of the M&A transaction would generate both a financial and an emotional loss, because the negative event would also jeopardize the reputation, the image and the identity of the family (Kepner, 1983), entailing a socioemotional wealth loss.

As the generational stage increases, the potential risk of a failed transaction continues to generate negative effects on financial wealth but would influence to a lesser extent the emotional endowment. The reduced emphasis on non-financial wealth - at the later generations - would stimulate family members to adopt risky transactions, such as M&A strategies. Furthermore, when the generational stage increases, ownership dispersion increases and family members have a diversified portfolio and therefore they are more inclined to bear risk (Schulze *et al.*, 2003).

The generational involvement influences the family firms' propensity to make an acquisition also for a further reason. Second and subsequent generations are considered to be more qualified, to possess more information and to be better prepared to face international context (Fernandez and Nieto, 2005; Sonfield and Lussier, 2004). They are more likely to adopt a professional style of management, that entails the inclusion, and sometimes the predominance, of non-family managers in the firm (McConaughy and Phillips, 1999). These factors favour the choice to undertake cross-border M&As.

According to the above discussion, the following hypothesis is proposed:

HP2: Later generations will be more likely to make a cross-border acquisition than earlier generations

The presence of a family member at the helm of the family firm Top Management Team (TMT) produces a strong family firm identity (Cirillo *et al.*, 2017; Gersick *et al.*, 1999; Zellweger *et al.*, 2010). The strong identification with organization in family firms is strengthened by kinship, a shared family name, common history, and familiarity (Sundaramurthy and Kreiner, 2008).

The family's personification with the business makes family members more aware of the fact that their actions produce relevant repercussions on the family's image and reputation (Binz *et al.*, 2013; Drago *et al.*, 2018).

Besides, family members tend to consider the family firm as an extension of themselves and, therefore, they make the effort to sustain a positive organizational identity (Dyer, 2006). The overlap between family and organization provides family members with a strong incentive to project a positive image to internal and external stakeholders (Craig *et al.*, 2008; Micelotta and Raynard, 2011), trying not to adopt actions that could harm the family's reputation (Dyer and Whetten, 2006).

These arguments entail that firms with a family member as a CEO would avoid risky strategies that may damage their image and reputation.

In addition, a family CEO is likely to pursue SEW objectives *by perpetuating the family dynasty, ensuring that the business is handed down to future generations* (Naldi *et al.*, 2013).

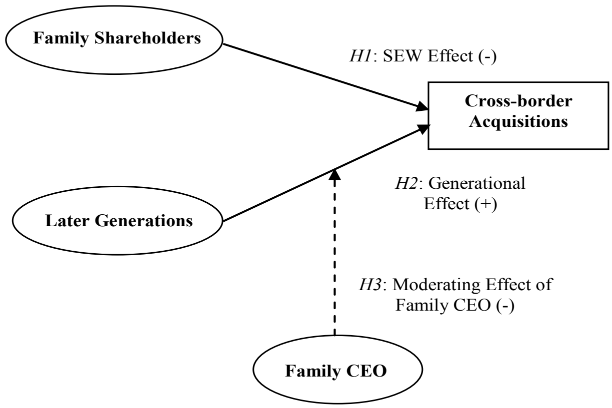
Family owners do not actually consider family businesses akin to any other financial investment, but rather as an asset that can be transferred to future generations (Casson, 1999; Berrone *et al.*, 2012). This objective may lead to nominate family members into managerial positions, instead of more qualified external candidates (Cruz and Nordqvist, 2012). As a result, family firms may suffer from their use of unqualified staff (Fernandez and Nieto, 2006), that does not possess international experience to effectively leverage firm-specific assets and to adopt successful strategies of international growth (Graves and Thomas, 2006; Chen *et al.*, 2014).

Therefore, the presence of a family member as a CEO will make relevant affective endowment and place more emphasis on the SEW preservation objective (Naldi *et al.*, 2013), discouraging strategies potentially undermining the family firm's image and survival, such as cross-border M&As.

HP3: The relationship between generational stage and the propensity to make a cross-border acquisition is negatively moderated by the family CEO

Figure 1 sums up the key hypotheses.

Fig. 1: Summary of hypotheses



Source: Questo schema è stato elaborato dall'autore

4. Method

4.1 Sample

The full sample for this study consisted of acquisitions made by family and non-family listed European companies in the period 2015-2017. The choice of these three years is dictated by the necessity to identify a period out of the financial crisis in which the market for corporate control was active. From the initial sample, firms operating in financial sectors and transactions, whose information was not available, were excluded. The final sample is composed of 270 acquisitions. Out of these transactions, 3 acquiring firms were domiciled (based) in Austria, 6 in Belgium, 8 in Denmark, 7 in Finland, 54 in France, 17 in Germany, 67 in Italy, 5 in Luxembourg, 11 in the Netherlands, 16 in Norway, 4 in Portugal, 31 in Spain, 22 in Sweden and 19 in Switzerland. Seventy-four acquisitions were undertaken in 2015, 102 in 2016 and 94 in 2017. The sample represents the universe of M&As made by European acquiring firms. The sample does not contain UK acquiring firms because the ownership structure and governance mechanisms in the Anglo-Saxon capitalism are different from the non-UK European capitalism.

This study also uses a sub-sample that is represented by the acquisitions whose acquiring firm is a family firm. Starting from the full sample and eliminating non-family firms, the sub-sample consisted of 98 acquisitions.

The accounting data (including leverage and size) and market-to-book asset ratio are extracted from the Datastream Thomson Reuters Database. Datastream is a global financial and macroeconomic data platform providing data on equities, stock market indices, currencies, company fundamentals, fixed income securities and key economic indicators for 175 countries and 60 markets. It provides current and historical financial information on firms representing over 99% of the global market capitalization

Data on acquisitions, firms' ownership and age, and boards of directors are drawn from the Eikon Thomson Reuters Database. Eikon Database provides information on deals, company events, ownership structure, private equity, corporate governance and board connections.

4.2 Variables and their treatment

The dependent variable of logit regressions is the *Cross-border acquisition,* a binary variable that takes the value one if a company acquires a target that is based in a foreign country, and zero if the acquiring target is based in the same country as the target firm.

The independent variable *Family firm* is a dummy variable that equals one if the firm is considered family, and 0 otherwise. In order to identify a family firm, two criteria were used: the family ownership and the presence of family members on the board of directors (Prencipe *et al.*, 2014). We identify a family firm when the two criteria are simultaneously satisfied. Following previous studies on the European listed firms (Caprio *et al.*, 2011; Andres, 2008; Sraer and Thesmar, 2007), the first criterion is satisfied when one or more members of the family hold at least 20% of the voting rights. The second one is satisfied when one or more members of the family are involved in the board of directors. The independent variable *Family ownership* represents the number of shares held by a family divided by the total shares outstanding. The numerator is obtained from the sum of family personal ownership and family listed and unlisted business shareholding. The independent variable *Generational stage* was measured as the generation owning and managing the business, namely, the first generation, the second generation, the third generation and so on.

The moderating variable *Family CEO* was a dummy variable that equals one if the CEO was a family member (linked through blood or marriage), and 0 otherwise.

A series of control variables has been included to control the effect of family ownership on the likelihood of making a cross-border M&A. *Leverage* is represented by the ratio of the book value of debt to total assets and has two alternative effects on the likelihood of acquiring. Leverage can increase the propensity to make an acquisition by encouraging firms to undertake risky investments, while, on the other hand, an excessive debt level may limit the propensity to be a bidder by exhausting new debt-issuing capacity (Caprio *et al.*, 2011). Size is measured by the natural logarithm of annual net sales and increases the potential acquisition magnitude. *Market-to-book asset ratio* represents the ratio of the company's closing price to its book value per share. Managers of acquirers with a high market-to-book asset ratio are more likely to be affected by hubris (Roll, 1986) and may be encouraged to expand into foreign markets. *Intangibles* is a variable calculated as the ratio of intangible assets - excluding goodwill - divided to total assets and is expected to capture the presence and size of intangible assets in the acquiring firm that may be combined with the assets of the target firm. The acquisition of firms operating in foreign markets allows the acquiring firms to distribute the fixed costs of innovation among an increasing number of outputs (Rogers, 2004). ROA is represented by

EBITDA over total assets. Firms with a high ROA are more profitable and produce more cash flows that may be employed to undertake acquisitions.

5. Results and discussion

Table 1 shows the descriptive statistics and Pearson correlations. On average, cross-border M&As represent 55% of the entire sample and 35% of family firms.

Table 2 contains the results of the logit regression analysis. Model 1 represents the regression model to test hypothesis 1, therefore, to test whether acquiring family firms are less likely to make a cross-border acquisition than acquiring non-family firms. The regression results demonstrate that the variable *Family firm* is negative and significant ($b = -0.63$; $p < 0.05$). Therefore, the result supports hypothesis 1, which proposes that acquiring family firms negatively influence the likelihood of making a cross-border acquisition. Model 1 also reports a statistically significant association between the propensity of cross-border acquisition and some control variables. As predicted Size ($b = 0.22$; $p < 0.01$) positively affects the dependent variable because it represents the acquisition potential that acquiring can undertake. *Market-to-book asset ratio* ($b = 0.04$; $p < 0.10$) positively affects the likelihood to of making a cross-border acquisition, because with a high ratio of the company's closing price to its book value per share, managers may be overconfident and particularly stimulated to expand into other countries through external growth strategy. The propensity to make a cross border acquisition is positively influenced by *Intangibles* ($b = 2.46$; $p < 0.10$), that may be widespread for a greater number of outputs after the transaction. Lastly, the coefficients relative to *Leverage* and *ROA* are positive but not significant.

Model 2 represents the regression model to test hypothesis 2 and, therefore, to test whether acquiring family firms at later generational stages are more likely to make a cross-border acquisition. The regression results demonstrate that the variable *Generational stage* is positive and significant ($b = 0.36$; $p < 0.05$). Therefore, the result supports hypothesis 2, which proposes that later generations positively influence the family firms' likelihood of making a cross-border acquisition. Model 2 also reports a statistically significant association between the propensity of cross-border acquisition and some control variables. ROA ($b = 0.17$; $p < 0.01$) positively affects the likelihood of making a cross-border acquisition because of the firm's greater profitability and the firm's greater financial endowment to make cross-border acquisitions. *Family ownership* is positive and significant ($b = 0.03$; $p < 0.10$) and shows that within the sub-sample of family firms, as family shareholding increases, the acquiring family firms' likelihood of making cross-border acquisitions rises up. As in Model 1, Model 2 reports statistically significant and positive relationships between the propensity to make a cross-border acquisition and *Intangibles* ($b = 5.38$; $p < 0.10$), that may be interpreted as the acquiring effort to distribute fixed costs on the output of the firms joining to the transaction, and *Market-to-book asset ratio* ($b = -0.09$; $p < 0.10$), that explains the acquisition acquiring behavior driven by managers that suffer from hubris.

The first two empirical results highlight that, although acquiring family businesses are reluctant to undertake cross-border acquisitions, later generations stimulate their own business to adopt strategies of external growth. From a SEW view, the effect of the generational stage may be generated by the fact that, as the firm moves beyond the first generation, a de-emphasis on non-financial wealth may occur.

Model 3 represents the regression model to test hypothesis 3 and, therefore, to test whether the presence of a family member as a CEO negatively moderates the relationship between the generational stage and the acquiring family firm's propensity to make a cross-border acquisition. The regression results demonstrate that the interaction of *Generational stage* and *Family CEO* is negative and significant ($b = -0.81$; $p < 0.10$). Therefore, the result supports hypothesis 3, which proposes that the family CEO negatively influences the later generations' likelihood of making a cross-border acquisition. In other words, the results point out that the positive relationship between the generational stage and the propensity to make a cross-border acquisition becomes weaker when the CEO is represented by a member of family.

Model 3 also reports a statistically significant association between the propensity of cross-border acquisition and the following control variables: *Intangibles* ($b = 6.71$; $p < 0.05$), *Generational stage* ($b = 0.83$; $p < 0.05$), *Market-to-book asset ratio* ($b = -0.13$; $p < 0.10$), *Family ownership* ($b = 0.34$; $p < 0.10$) and *ROA* ($b = 0.18$; $p < 0.01$).

The variable Family CEO is positive but not significant.

6. Concluding comments

Although the seminal contribution on M&As dates back to the first quarter of XX century (Dewing, 1921), and scholars have investigated several aspects of this kind of transaction, whether organizational (Shrivastava, 1986; Pablo, 1994), strategic (Trautwein, 1990; Walter and Barney, 1990), or financial (Manne, 1965; Jensen and Ruback, 1983), few studies have concentrated on M&As involving family firms (Astrachan, 2010). These transactions are relevant because they permit acquiring firms to pursue growth, representing a rapid mode of entry into a foreign country and simultaneously providing easy access to strategic resources such as brands and specific technologies (Buckley *et al.*, 2012). Crucially, when M&As are investigated in the context of family firms, several aspects must be taken into account. On one hand, it is important to acknowledge that family firms are oriented towards the long-term horizon (James, 2006; Miller *et al.*, 2010) and, as a consequence, M&As represent an interesting growth opportunity. On the other hand, M&A transactions represent risky strategies and may undermine the family firm's survival. Literature has investigated several aspect of family business M&As, such as the propensity of family firms to acquire a target firm, the diversifying nature of these transactions and the reaction of the financial markets at the announcement of a family firm's acquisition. However, previous literature has not yet investigated yet family firms involved in cross-border M&A.

This work makes several contributions. First, in order to fill the research gap, this study extends previous literature by exploring the effect of the presence of an acquiring family block-holder on the likelihood of making a cross-border acquisition. Furthermore, using the socioemotional wealth point of view, this work offers a wider analysis of the causes underlying the choices of family firms concerning M&As. More specifically, this work emphasizes that financial motives are not the only determinants of the propensity of acquiring family firms to make a cross-border transaction and that two socioemotional factors - the control over strategic decisions and family identification - may also influence cross-border M&A decisions. Lastly, the study highlights that the cross-border acquisitions of family firms are influenced by both the generational involvement and the presence of a family member at the helm of management. From this perspective, the work complements the results pointed out by the previous studies on family business M&As.

The results suggest some implications that can be beneficial for family business owners, managers and advisors in supporting cross-border M&As. On one hand, if family members consider M&A as the optimal mode of entry into a certain foreign market, family firms should take into account a broader pool from which managers are chosen in order to recruit more talented staff, who are able to face international M&As. On the other hand, non-family managers should consider emotional aspects of family business avoiding to be driven only by economic goals. Therefore, it is essential to identify processes and means in order to strengthen the communication between family and non-family managers and to build confidence of the latter. Besides, because of the possibility that an excessive proportion of non-family managers may challenge family values, family firms should balance family managers and non-family managers (Binacci *et al.*, 2016).

This work is not free from limitations. The first limitation is represented by the period analysed (2015-2017), which restricts the possibility of seizing a greater number of transactions. Second, the sample is constituted of European acquiring firms, thus generating a potential bias pertaining to the family ownership and generational stage effect on the acquisition behaviour of family firms, consequently restricting the possibility of generalizing results to other countries.

Tab. 1: Descriptive statistics and correlations

Variables	Mean	SD	1	2	3	4	5	6	7
1.Family firm	0.35	0.48							
2.Family CEO	0.19	0.39	-0.22*						
3.Generational stage	1.46	1.64	0.16	-0.19					
4.Leverage	0.26	0.17	-0.20*	-0.27**	0.10				
5.Market to book asset ratio	3.59	7.62	0.25*	0.15	0.22*	0.13			
6.ROA	2.86	1.52	0.37**	-0.23	0.27**	-0.90	0.38**		
7.Size	2.10	2.49	-0.23*	-0.11	0.23*	0.03	-0.02	0.13	
8.Intangibles	1.08	1.14	-0.10	-0.03	0.16	-0.05	-0.12	0.03	0.16

N=270; *, ** statistically significant at the 0.05 and 0.01 level.
Source: Self-elaboration on Thomson Reuters data

Tab. 2: Logit regression (Cross-border Acquisition = 1)

Variables	Model 1 (full sample)	Model 2 (family firms)	Model 3 (family firms)
Constant	-4.99*** (1.28)	-7.76** (3.28)	-7.14** (3.56)
Family firm	-0.63** (0.29)		
Family ownership	0.03* (0.02)	0.34* (0.18)	
Market-to-book asset ratio	0.04* (0.03)	-0.09* (0.11)	-0.13* (0.12)
Leverage	0.28 (0.86)	1.40 (1.75)	0.57 (1.84)
Size	0.22*** (0.06)	0.16 (0.14)	0.09 (0.14)
Intangibles	2.46* (1.33)	5.38* (3.64)	6.71** (3.86)
ROA	0.01 (0.01)	0.17*** (0.07)	0.18*** (0.07)
Generational stage		0.36** (0.21)	0.83** (0.34)
Family CEO			0.53 (1.03)
Generational stage x Family CEO			-0.81* (0.46)
Years dummy	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes
Chi-square	36.21	32.49	37.23
Nagelkerke R square	0.17	0.38	0.43

N=270; *, **, *** statistically significant at the 0.1, 0.05 and 0.01 level

Source: Self-elaboration on Thomson Reuters data

References

AKTAS N., CENTINEO S., CROCI E. (2016), "Value of control in family firms: Evidence from mergers and acquisitions", *Multinational Finance Journal*, vol. 20, n. 2, pp. 85-126.

AMIHUD Y., LEV B. (1981), "Risk reduction as a managerial motive for conglomerate mergers", *Bell Journal of Economics*, vol. 12, n. 2, pp. 605-617.

ANDERSON R.C., REEB D.M. (2003), "Founding-family ownership and firm performance: Evidence from the S&P 500", *Journal of Finance,* vol. 58, n. 3, pp. 1301-1328.

ANDRES C. (2008), "Large shareholders and firm performance: An empirical examination of founding-family ownership", *Journal of Corporate Finance,* vol. 14, n. 4, pp. 431-445.

ARONOFF C.E., WARD J.L. (1994), *Advisors: Getting the best professional family business advice*, Family Enterprise Publishers, Marietta, USA.

ASTRACHAN J.H. (2010), "Strategy in family business: Toward a multidimensional research agenda", *Journal of Family Business Strategy*, vol. 1, n. 1, pp. 6-14.

BACCI S., CIRILLO A., MUSSOLINO D., TERZANI S. (2018), "The influence of family ownership dispersion on debt level in privately held firms", *Small Business Economics*, https://doi.org/10.1007/s11187-017-9930-2

BARKEMA H.G., BELL J.H.J., PENNINGS J.M. (1996), "Foreign entry, cultural barriers and learning", *Strategic Management Journal*, vol. 17, n. 2, pp. 151-166.

BEN-AMAR W., ANDRÉ P. (2006), "Separation of ownership from control and acquiring firm performance: The case of family ownership in Canada", *Journal of Business Finance and Accounting*, vol. 33, n. 3/4, pp. 517-543.

BELDERBOS R. (2003), "Entry mode, organizational learning, and R&D in foreign affiliates: Evidence from Japanese firms", *Strategic Management Journal,* vol. 24, n. 3, pp. 235-259.

BERGER P., OFEK E. (1995), "Diversification's effect on firm value", *Journal of Financial Economics,* vol. 37, n. 1, pp. 39-65.

BERRONE P., CRUZ C., GÓMEZ-MEJÍA L.R., LARRAZA-KINTANA M. (2010), "Socioemotional wealth and corporate responses to institutional pressures: Do family-controlled firms pollute less?", *Administrative Science Quarterly,* vol. 55, n. 1, pp. 82-113.

BERRONE P., CRUZ C., GÓMEZ-MEJÍA L.R. (2012), "Socioemotional wealth in family firms: Theoretical dimensions, assessment approaches, and agenda for future research", *Family Business Review*, vol. 25, n. 3, pp. 258-279.

BINZ C., HAIR J.F., PIEPER T.M., BALDAUF A. (2013), "Exploring the effect of distinct family firm reputation on consumers' preferences", *Journal of Family Business Strategy*, vol. 4, n. 1, pp. 3-11.

BROUTHERS K.D., BROUTHERS L.E. (2000), "Acquisition or greenfield start-up? Institutional, cultural and transaction cost influences", *Strategic Management Journal,* vol. 21, n. 1, pp. 89-97.

BUCKLEY P.J., FORSANS N., MUNJAL S. (2012), "Host-home country linkages and host-home country specific advantages as determinants of foreign acquisitions by Indian firms", *International Business Review,* vol. 21, n. 5, pp. 878-890.

BUONO A.F., BOWDITCH J.L., LEWIS J.W. (1985), "When cultures collide: The anatomy of a merger", *Human Relations,* vol. 38, n. 5, pp. 477-500.

CALABRÒ A., MUSSOLINO D. (2013), "How do boards of directors contribute to family SME export intensity? The role of formal and informal governance mechanisms", *Journal of Management and Governance,* vol. 17, n. 2, pp. 363-403.

CALABRÒ A., TORCHIA M., PUKALL T., MUSSOLINO D. (2012), "The influence of ownership structure and board strategic involvement on international sales: The moderating effect of family involvement", *International Business Review*, vol. 22, pp. 509-523.

CALABRÒ A., TORCHIA M., PUKALL T., MUSSOLINO D. (2013), "The influence of ownership structure and board strategic involvement on international sales: the moderating effect of family involvement", *International Business Review,* vol. 22, n. 3, pp. 509-523.

CAPRIO L., CROCI E., DEL GIUDICE A. (2011), "Ownership structure, family control, and acquisition decisions", *Journal of Corporate Finance,* vol. 17, n. 5, pp. 1636-1657.

CARNEY M. (2005), "Corporate governance and competitive advantage in family-controlled firms", *Entrepreneurship Theory and Practice,* vol. 29, n. 3, pp. 249-265.

CASSON M. (1999), "The economics of the family firm", *Scandinavian Economic History Review*, vol. 47, n. 1, pp. 10-23.

CHEN S.F.S. (2008), "The motives for international acquisitions: Capability procurements, strategic considerations, and the role of ownership structures", *Journal of International Business Studies,* vol. 39, n. 3, pp. 454-471.

CHEN C., FINDLAY C. (2003), "A review of cross-border mergers and acquisitions in APEC", *Asian-Pacific Economic Literature,* vol. 17, n. 2, pp. 14-38.

CHEN H.L., HSU W.T., CHANG C.Y. (2014), "Family ownership, institutional ownership, and internationalization of SMEs", *Journal of Small Business Management,* vol. 52, n. 4, pp. 771-789.

CIRILLO A., MUSSOLINO D., ROMANO M., VIGANÒ R. (2017), "A complicated relationship: Family involvement in the top management team and post-IPO survival", *Journal of Family Business Strategy*, vol. 8, n. 1, pp. 42-56.

COLEMAN J.S. (1990), *Foundations of social theory*, Harvard University Press, Cambridge, MA.

CRAIG J., DIBBRELL C., DAVIS P.S. (2008), "Leveraging family-based brand identity to enhance firm competitiveness and performance in family businesses", *Journal of Small Business Management*, vol. 46, n. 3, pp. 351-371.

CRUZ C., GÓMEZ-MEJÍA L.R., BECERRA M. (2010), "Perceptions of benevolence and the design of agency contracts: CEO-TMT relationships in family firms", *Academy of Management Journal,* vol. 53, n. 1, pp. 69-89.

CRUZ C., NORDQVIST M. (2012), "Entrepreneurial orientation in family firms: a generational perspective", *Small Business Economy,* vol. 38, n. 1, pp. 33-49.

DAVIS J.A., PITTS E.L., CORMIER K. (2000), "Challenges facing family companies in the Gulf region", *Family Business Review,* vol. 13, n. 3, pp. 217-237.

DEFRANCQ C., HUYGHEBAERT N., LUYPAERT M. (2016), "Influence of family ownership on the industry-diversifying nature of a firm's M&A strategy: Empirical evidence from Continental Europe", *Journal of Family Business Strategy*, vol. 7, n. 4, pp. 210-226.

DEWING A.S. (1921), "A statistical test of the success of consolidations", *Quarterly Journal of Economic*s, vol. 36, n. 1, pp. 84-101.

DRAGO C., GINESTI G., PONGELLI C., SCIASCIA S. (2018), "Reporting strategies: What makes family firms beat around the bush?", *Family-related antecedents of annual report readability,* vol. 9, n. 2, pp. 142-150.

DYER W.G., WHETTEN D.A. (2006), "Family firms and social responsibility: Preliminary evidence from the S&P 500", *Entrepreneurship Theory and Practice*, vol. 30, n. 6, pp. 785-802.

DYER W.G. (2006), "Examining the family effect on firm performance", *Family Business Review,* vol. 19, n. 4, pp. 253-273.

ENSLEY M.D., PEARSON A.W. (2005), "A comparison of the behavioural processes of top management teams in family and non-family firms: Cohesion, conflict, potency, and consensus", *Entrepreneurship: Theory and Practice*, vol. 29, n. 3, pp. 267-284.

FEITO-RUIZ I., MENÉNDEZ-REQUEJO S. (2010), "Family firm mergers and acquisitions in different legal environments", *Family Business Review,* vol. 23, n. 1, pp. 60-75.

FERNANDEZ Z., NIETO M.J. (2005), "Internationalization strategy of small and medium-sized family businesses: Some influential factors", F*amily Business Review*, vol. 18, n. 1, pp. 77-90.

FERNANDEZ Z., NIETO M.J. (2006), "Impact of ownership on the international involvement of SMEs", *Journal of International Business Studies*, vol. 37, n. 3, pp. 340-351.

GAUGHAN P.A. (2011), *Mergers, acquisitions, and corporate restructurings,* Fifth Edition, John Wiley & Sons, New Jersey.

GERSICK K.E., DAVIS J.A., HAMPTON M.M., LANSBERG I. (1997), *Generation to generation: Life cycles of the family business*, Harvard Business School Press, Boston MA.

GODFREY P.C. (2005), "The relationship between corporate philanthropy and shareholder wealth: A risk management perspective", *Academy of Management Review,* vol. 30, n. 4, pp. 777-798.

GÓMEZ-MEJÍA L.R., HAYNES K.T., NUNEZ-NICKEL M., JACOBSON K.J.L., MOYANO-FUENTES J. (2007), "Socioemotional wealth and business risks in family controlled firms: Evidence from Spanish olive oil mills", *Administrative Science Quarterly,* vol. 52, n. 1, pp. 106-137.

GÓMEZ-MEJÍA L.R., MAKRI M., LARRAZA-KINTANA M. (2010). "Diversification decisions in family controlled firms", *Journal of Management Studies*, vol. 47, n. 2, pp. 223-252.

GÓMEZ-MEJÍA L.R., CRUZ C., BERRONE P., DE CASTRO J. (2011), "The bind that ties: Socioemotional wealth preservation in family firms", *The Academy of Management Annals*, vol. 5, n. 1, pp. 653-707.

GÓMEZ-MEJÍA L.R., PATEL P.C., ZELLWEGER T.M. (2015), "In the horns of the dilemma: Socioemotional wealth, financial wealth, and acquisitions in family firms", *Journal of Management,* vol. 20, n. 10, pp. 1-29.

GRAVES C., THOMAS J. (2006), "Internationalization of Australian family businesses: A managerial capabilities perspective", *Family Business Review*, vol. 19, n. 3, pp. 207-223.

GRAVES C., THOMAS J. (2008), "Determinants of the internationalization pathways of family firms: An examination of family influence", *Family Business Review*, vol. 21, n. 2, pp. 151-167.

GREINER L.E. (1972), "Evolution and revolution as organisations grow", *Harvard Business Review*, vol. 4, n. 4, pp. 37-46.

HANDLER W.C. (1992). "The succession experience of the next generation", *Family Business Review*, vol. 5, n. 3, pp. 283-307.

HARRIS M., RAVIV A. (1988), "Corporate control contests and capital structure", *Journal of Financial Economics*, vol. 20, n. 1-2, pp. 55-86.

HITT M.A., HARRISON J.S., IRELAND R.D. (2001), *Mergers and Acquisitions: A Guide to Creating Value for Stakeholders*, Oxford University Press, New York.

HOWORTH C.A, ALI Z. (2001), "Family business succession in Portugal", *Family Business Review*, vol. 14, n. 3, pp. 231-244.

JAMES H. (2006), *Family capitalism: Wendels, Haniels, Falcks, and the continental European model*, Harvard University Press (2006), Cambridge, MA.

JENSEN M.C., RUBACK R.S. (1983), "The market for corporate control: The scientific evidence", *Journal of Financial Economics,* vol. 11, n. 1/4, pp. 5-50.

JENSEN M.C. (1986), "Agency costs of free cash flow, corporate finance and takeovers", *American Economic Review,* vol. 76, n. 2, pp. 323-329.

KEPNER E. (1983), "The family and the firm: A co-evolutionary perspective", *Organizational Dynamics,* vol. 12, n. 1, pp. 57-70.

KETS DE VRIES M.F.R. (1993), "The dynamics of family controlled firms: The good and the bad news", *Organizational Dynamics,* vol. 21, n. 3, pp. 59-71.

LANDES D.S. (2006), "Why Europe and the West? Why Not China?", *Journal of Economic Perspectives,* vol. 20, n. 2, pp. 3-22.

LEE J. (2006), "Family firm performance: Further evidence", *Family Business Review,* vol. 19, n. 2, pp. 103-114.

LUBATKIN M.H., SCHULZE W.S., LING Y., DINO R.N. (2005), "The effects of parental altruism on the governance of family-managed firms", *Journal of Organizational Behavior,* vol. 26, n. 3, pp. 313-330.

MANNE H.G. (1965), "Mergers and the market for corporate control", *Journal of Political Economy*, vol. 73, n. 2, pp. 110-120.

MCCONAUGHY D., PHILLIPS G. (1999), "Founders versus Descendants: The Profitability, Efficiency, Growth Characteristics and Financing in Large, Public, Founding-Family-Controlled Firms", *Family Business Review,* vol. 12, pp. 123-132.

MICELOTTA E., RAYNARD M. (2011), "Concealing or revealing the family? Corporate brand identity strategies in family firms", *Family Business Review*, vol. 24, n. 3, pp. 197-216.

MILLER D., LE BRETON-MILLER I., LESTER R.H. (2010), "Family ownership and acquisition behavior in publicly-traded companies", S*trategic Management Journal*, vol. 31, n. 2, pp. 201-223.

MILLER D., LEBRETON-MILLER I. (2005), *Managing for the Long Run*, Harvard Business School Press: Boston, MA.

MILLER D., LEE J., CHANG S., LE BRETON-MILLER I. (2009), "Filling the institutional void: The social behavior and performance of family versus non-family technology firms in emerging markets", *Journal of International Business Studies,* vol. 40, n. 5, pp. 802-817.

MORCK R.K., SHLEIFER A., VISHNY R.W. (1990), "Do managerial objectives drive bad acquisitions?", *Journal of Finance*, vol. 45 n. 1, pp. 31-48.

MUÑOZ-BULLÓN F.,SANCHEZ-BUENO M., SUÁREZ-GONZÁLEZ I. (2017), "Diversification decisions among family firms: The role of family involvement and generational stage", *BRQ Business Research Quarterly,* vol. 21, n. 1, pp. 39-52.

NALDI L., CENNAMO C., CORBETTA G., GÓMEZ-MEJÍA L. (2013), "Preserving socioemotional wealth in family firms: Asset or liability? The moderating role of business context", *Entrepreneurship Theory and Practice*, vol. 37 n. 6, pp. 1341-1360.

NICHOLSON R.R., SALABER J. (2013), "The motives and performance of cross-border acquirers from emerging economies: Comparison between Chinese and Indian firms", *International Business Review*, vol. 22, n. 6, pp. 963-980.

OKORAFO S.C. (1999), "Internationalization of family businesses: Evidence from Northwest Ohio, USA", *Family Business Review*, vol. 12, n. 2, pp. 147-158.

PABLO A.L. (1994), "Determinants of acquisition integration level: A decision-making perspective", *Academy of Management Journal*, vol. 37, n. 4, pp. 803-836.

PALMER D., FRIEDLAND R., JENNINGS P.D., POWERS M..E. (1987), "The economics and politics of structure", *Administrative Science Quarterly,* vol. 32, n. 1, pp. 25-48.

PISTRUI D., HUANG W., OKSOY D., JING Z., WELSCH H. (2001), "Entrepreneurship in China: Characteristics, attributes, and family forces shaping the emerging private sector", *Family Business Review,* vol. 14, n. 2, pp. 141-152.

PRENCIPE A., BAR-YOSEF S., DEKKER H.C. (2014), "Accounting research in family firms: Theoretical and empirical challenges", *European Accounting Review*, vol. 23, n. 3, 361-385.

ROGERS M. (2004), "Networks, firm size and innovation", *Small Business Economics*, vol. 22, n. 2, pp. 141-53.

ROLL R. (1986), "The hubris hypothesis of corporate takeovers", *Journal of Business,* vol. 59, n. 2, pp. 197-216.

SALES A.L., MIRVIS P.H. (1984), When cultures collide: Issues in acquisition, in: Kimberly J.R., Quinn R.E. (Eds.), N*ew futures: The challenge of managing corporate transitions*, Dow-Jones - Irwin, Hamewood, IL, pp. 107.

SCHULZE W.S., LUBATKIN M.H., DINO R.N., BUCHHOLTZ A.K. (2001), "Agency relationships in family firms: Theory and evidence", *Organization Science*, vol. 12, n. 2, pp. 99-116.

SCHULZE W.S., LUBATKIN M.H., DINO R.N. (2003), "Toward a theory of agency and altruism in family firms", *Journal of Business Venturing*, vol. 18, n. 4, pp. 473-490.

SCIASCIA S., MAZZOLA P., KELLERMANNS F.W. (2014), "Family management and profitability in private family-owned firms: Introducing generational stage and the socioemotional wealth perspective?", *Journal of Family Business Strategy,* vol. 5, n. 2, pp. 131-137.

SHARMA P., MANIKUTTY S. (2005), "Strategic divestments in family firms: Role of family structure and community culture", *Entrepreneurship Theory and Practice*, vol. 29, n. 3, pp. 293-311.

SHARMA P., RAO S.A. (2000), "Successor attributes in Indian and Canadian family firms: A comparative study", *Family Business Review,* vol. 13, n. 4, pp. 313-330.

SHIMIZU K., HITT M.A., VAIDYANATH D., PISANO V. (2004), "Theoretical foundations of cross-border mergers and acquisitions: A review of current research and recommendations for the future", *Journal of International Management,* vol. 10, n. 3, pp. 307-353.

SHRIVASTAVA P. (1986), "Post-merger integration", *Journal of Business Strategy,* vol. 7, n. 1, pp. 65-76.

SONFIELD M.C., LUSSIER R.N. (2004), "First, second-, and third-generation family firms: a comparison", *Family Business Review,* vol. 17, pp. 189-201.

SRAER D., THESMAR D. (2007), "Performance and behavior of family firms: Evidence from the French stock market", *Journal of the European Economic Association,* vol. 5, n. 4, pp. 709-751.

STENHOLM P., PUKKINEN T., HEINONEN J. (2016), "Firm growth in family businesses. The role of entrepreneurial orientation and the entrepreneurial activity", *Journal of Small Business Management,* vol. 54, n. 2, pp. 697-713.

STULZ R.M. (1988), "Managerial control of voting rights", *Journal of Financial Economics*, vol. 20, n. 1/2, pp. 25-54.

SUNDARAMURTHY C., KREINER G.E. (2008), "Governing by managing identity boundaries: The case of family businesses", *Entrepreneurship Theory and Practic*e, vol. 32, n. 3, pp. 415-436.

TRAUTWEIN F. (1990), "Merger motives and merger prescriptions", *Strategic Management Journal,* vol. 11, n. 4, pp. 283-295.

UZZI B. (1997), "Social structure and competition in interfirm networks: the paradox of embeddedness", *Administrative Science Quarterly,* vol. 42, n. 1, pp. 35-67.

WALTER G.A., BARNEY J.B. (1990), "Management objectives in mergers and acquisitions", *Strategic Management Journal,* vol. 11, n. 1, pp. 79-86.
WARD J.L. (1998), "Growing the family business: Special challenges and best practices", F*amily Business Review*, vol. 10, pp. 323-337.
WARD J.L. (2004), *Perpetuating the Family Business: 50 Lessons Learned from Long-Lasting, Successful Families in Business*, Palgrave-Macmillan, New York.
WRIGHT P., KROLL M., ELENKOV D. (2002), "Acquisition returns, increase in firm size, and CEO compensation: The moderating role of monitoring", *Academy of Management Journal,* vol. 45, n. 3, pp. 599-608.
WU S., LEVITAS E., PRIEM R.L. (2005), "CEO tenure and company invention under differing levels of technological dynamism", *The Academy of Management Journal,* vol. 48, n. 5, pp. 859-873.
ZAHRA S.A., HAYTON J.C., SALVATO C. (2004), "Entrepreneurship in family vs. non-family firms: A resource-based analysis of the effect of organizational culture", *Entrepreneurship Theory and Practice,* vol. 28, n. 4, pp. 363-381.
ZELLWEGER T.M., EDDLESTONE K.A., KELLERMANNS F.W. (2010), "Exploring the concept of familiness: Introducing family firm identity", *Journal of Family Business Strategy,* vol. 1, n. 1, pp. 54-63.

Academic or professional position and contacts

Mario Ossorio
Assistant Professor of Management
University of Campania Luigi Vanvitelli - Capua - Italy
e-mail: mario.ossorio@unicampania.it

ISSN 0393-5108
DOI 10.7433/s111.2020.09
pp. 139-159

Women's participation on boards of directors: the effects on business growth and profitability

Received
18th February 2019
Revised
2nd April 2019
Accepted
21st June 2019

Mariasole Bannò - Viola Nicolardi

Abstract

Purpose of the paper: *This study investigates the relationship between female presence in the BoD (Board of Directors), business growth and profitability.*

Methodology*: Our sample includes 309 listed companies located in the north of Italy. The analysis uses two different measures to quantify the effects of female presence: growth and profitability. Independent variables are measured both in terms of the presence (or absence) of women in the BoD and in terms of female percentage in the composition of the BoD.*

Findings*: The sole presence of women reduces the companies' growth (i.e. token effect), while in terms of profitability the presence isn't statistically relevant. The percentage of female composition of the BoD has a positive impact both in terms of growth and profitability, suggesting the interpretation given by the theory of critical mass.*

Research limit: *The work assesses the contribution of gender diversity on business growth and profitability through variables that measure female presence and gender composition on BoD, but it doesn't consider underlying mechanisms or other factors characterizing the BoD.*

Practical implications: *Our findings suggest a greater awareness of gender differences in order to develop decision-making characteristics and processes that are useful in increasing business performance, and more generally in the company life.*

Originality of the paper: *This study deepens the gender role in a firm, highlighting the link between female presence in BoD, business growth and profitability, by analyzing token effect and critical mass.*

Key words: gender; critical mass; token; profitability; growth

1. Introduction

Gender equality within companies has not yet been achieved (OECD, 2018). The global economic forum measures the gender gap every year according to four dimensions: economic participation and opportunities, education, health and survival and political empowerment (World Economic Forum, 2017). All these factors are expressed through the Gender Gap Index. Globally, the gender gap is 68% and has in any case widened. There are several parameters that business organizations should consider when evaluating gender gap and each of them provides a measure of the current state of a company: retribution, recruitment, retention, advancement and representation. Among them an important factor contributing to gender equality is the free access to managerial positions, the top management team and the Board of Director (BoD), which women could be denied. Women must have higher education than their male counterparts to reach high-ranking positions (Pema and Mehay, 2010) and women face higher skill thresholds for promotion. Furthermore, Kato *et al.* (2016) argue that companies apply a different promotion policy to men and women, revealing the prospects of promotion only to high-capacity women, as they choose to work long hours to signal their commitment to work and receive managerial training.

The significant changes concerning the status of women in the social sphere, interpersonal relationships and the business world are topics addressed by several disciplines, including social sciences and managerial studies (Eriksson-Zetterquist and Styhre, 2008). Gender studies provide an interpretation of social reality based on the *way in which individuals are perceived, considered and treated, in each social sphere, precisely because of being male or female* (Donati, 1997; Vinci, 1999). The differences between women and men in the business environment are also linked to the wider issue of gender difference. The scarce presence of women at the business top, especially on the BoD and at the management of a company's activity, indicates not only the lack of quotas, but also the absence within organizations of their competence, attitudes, traits and behaviours that characterize women compared to the male counterpart. Gender parity is fundamental to whether and how economies and societies flourish. It is of great importance on the growth, competitiveness and future-readiness of economies and businesses worldwide.

For this reason, we examine the issue of gender role in decision-making, with the purpose to demonstrate the potential benefits of the female presence on business growth and profitability.

2. Women on boards of directors and the creation of value

2.1 More women on Boards of Directors help to increase performance

The question about how women in leader position can create value for the organization is a very debated topic among researchers. The contribution to value creation goes beyond the sole factor of financial performance. Researchers have in fact highlighted many kinds of benefits such as higher levels of innovation and corporate social responsibility, and a better linkage with stakeholders (see e.g. Zenou *et al.*, 2016).

In line with resource dependency view companies need to have access to critical resources to improve their performance (Pfeffer, 1972). The integration of more women on BoD can bring stakeholders with different contacts and can help organisation to acquire critical resources (Goodstein *et al.*, 1994). Strategic decisions may be promoted by different perspectives. Women's views can produce a different interpretation of the marketplace by increasing the organization's capability to penetrate markets and can improve the understanding of the complexities of the environment (Carter *et al.*, 2003).

Miller and del Carmen Triana (2009) argue that female contribution to business performance is brought by different cognitive frames, knowledge and perspectives and may help improve the firm's ability to generate profits from its assets and investments. This permits the boards to reach better decisions that can bring higher performance and business value.

In line with the agency theory prospective, the inclusion of women on BoD can improve the quality of control activity due to gender differences and in terms of female risk aversion (Post and Byron, 2015). Several recent studies demonstrate that women are more sensitive to risk when they make strategic decision (Sabatier, 2015). A possible factor that influences this choice is the *glass cliff,* a phenomenon through which women are more likely then man to serve in a precarious management position (Ryan and Haslam, 2007). Women seem more suited to direct companies in crisis situations, as they can help them to move from a *glass cliff* position to a safer status. Female managers have better preparation and higher knowhow for analysing risky situations in order to overcome the *glass cliff*. Female leaders have also different educational and professional paths than male directors, as they are often more skilled (Hillman and Cannella, 2007) and they are inclined to adopt long-term strategies (Eckel and Grossman,2008).

2.2 Factors influencing gender performance

Gender-based performance is explained mostly by: the critical mass, the existence of horizontal segregation, the influence of each business sector and the result of women's specific personal characteristics (Aldás-Manzano and Martinez-Fuentes, 2012).

Torchia and Calabrò (2015) find that a critical mass of women in BoD is required to have a contribution on organizational performance by leveraging their knowledge and know-how, so in this way the impact is more pronounced. In addition, Konard *et al.*, (2008) identify a critical mass in three or more women on BoD to have a positive contribution for a good governance.

Horizontal segregation is a term used to indicate women in the top-level operating in a narrower typology of industries, when compared to men. Coleman (2005) affirms that more than four over five companies led by female go to sectors that generally have lower growth rates than other industries, partly because they are labor-intensive and because they are characterised by high competition (Humphreys and McClung, 1981). Thus, the greater presence of female management and entrepreneurship in these low-growth industries may explain their underperformance compared to male-owned and male-managed companies (Losocco *et al.* 1991). Fasci and Valdez (1998) recommend, in order to conduct adequate research on gender performance, to make studies focusing on an industry rather than on business. For example, the smaller size and service sector of women-owned businesses can help to partly explain their underperformance compared to male counterparts. Coleman (2007) argues that low-growth companies come primarily from the service industry and are less likely to have loans. To complete the analysis, it's necessary to consider how female entrepreneurs start their businesses (Watson, 2002). Often, women at the top level start their business with less financial capital, typically one third invested by their male counterparts (Carter and Rosa, 1998) and the effects have repercussions on company performance.

Other causes could be sexual stereotyping and discrimination and/or women's lack of personal assets. Personal characteristics are often used to justify gender differences in management, considering that some female personality traits would explain their performance. For example, women are generally considered less secure and therefore less innovative. Regarding social capital, men have greater network advantages, more confidence in relationships and greater reciprocity. Male are in a better position to manage networking more effectively (Aldrich, 1989; Riding and Swift, 1990), even though women are more involved in networking in quantitative terms (Greve and Salaff, 2003). Men experience more development challenges related to the task, while women experience more development challenges arising from the obstacles they face in their work (Ohlott *et al.*, 1994; Winter-Ebmer and Zweimuller, 1997; Jones and Makepease, 1996).

2.3 The effects of women on BoD on business growth and profitability

Past studies provide mixing results in analysing the effect of female presence in BoD on the growth and profitability of a firm (Table 1).

Tab. 1: Summary of the main empirical findings of gender effects on firm performance

Author	Year	Country/Stock market	Gender effects on performance
Carter *et al.*	2003	Fortune 1000	+
Erhart	2003	Fortune 500	+
Bonn	2004	Japan and Australia	+
Farell and Hersh	2005	Fortune 500 and Service 500	+/-
Rose	2007	Denmark	/
Campbell and Minguez-Vera	2008	Spain	+
Adams and Ferreira	2009	United States	-
Galbreath	2011	Australia	+
Olsen	2013	Norway	/
Vu	2013	Vietnam	/
Liu *et al.*	2014	China	+
Low *et al.*	2015	Hong Kong, South Korea, Malaysia and Singapore	+
Garcia-Meca *et al.*	2015	Nine different Countries	+
Post and Byron	2015	International meta-analysis	+
Vafaei	2015	Australia	+
Amore and Garofalo	2016	United States	+
Pasaribus	2017	London Stock Exchange	/

Source: our elaboration

Literature presents many studies that demonstrate the positive correlation between female leadership and financial performance (e.g.

revenues growth, return on equity, return on investment) (Garcia-Meca *et al.*, 2015; Amore and Garofalo, 2016). Carter *et al.* (2003) argue that there is a significant positive correlation between the presence of women on the BoD and firm performance. Campbell and Minguez-Vera (2008) and, lately, Post and Byron (2015) show that having more women on BoD bring a higher return on assets and a higher return on equity, and sometimes also a stronger stock market performance. Erhart *et al.* (2003) analyse the gender diversity of the boards of more than one hundred listed Fortune 500 companies and identify a significant positive correlation between female presence in BoD and their performance using return on assets and return on investment. Same results are reported by Campbell and Minguez-Vera (2008) for a sample of non-financial Spanish listed enterprises in the period 1995-2000. These findings consent the authors to affirm that Spanish investors do not penalize companies that intensify their number of female directors, but also that greater female presence is likely to produce economic improvements. Furthermore Bonn (2004) and Galbreath (2011), when analysing other European companies, show that the proportion of women in the top management team is positively associated with firm performance, represented by return on equity and market-to-book value ratio. Based on a sample of corporations from non-European countries, and in particular from Hong Kong, South Korea, Malaysia and Singapore, Low *et al.* (2015) assert that the growth in the number of female directors has a positive effect on company performance. Liu *et al.* (2014) and Vafaei *et al.* (2015) addressing the methodological flaws of the previous studies, respectively find a positive correlation between gender diversity of the BoD of the listed companies in China and Australia.

Other studies don't find any significative correlation between gender and performance and others report mixed results. Farell and Hersch (2005) study three hundred of the Fortune 500 and Service 500 companies and reach that firms characterised by a high return on assets register a high number of women directors, but their appointment has no significant influence on the firms' performance. Olsen *et al.* (2010) and Rose (2007) respectively analyse the impact of gender diversity in Norway and Denmark, concluding that there is no significant link between companies' performance and the presence of women on the BoD. Vu *et al.* (2013) find similar results for a sample of Vietnamese listed firms: the number of female directors has no significant impact on both return on asset and equity. Pasaribu (2017), after having controlled for endogeneity, has provided analogue results on a sample of non-financial companies listed on the London Stock Exchange in the period 2004-2012, concluding that the presence of female on BoD is positively correlated with financial services for small businesses but not for large ones. The motivation would be the excessive monitoring found in large companies with strong governance after appointing female directors, but also the flexibility that small businesses have in appointing women directors.

There are researchers, like Adams and Ferreira (2009), that notice a negative connection between gender diversity and performance (i.e. market-to-book value and return on assets). Adams and Ferreira (2009) raise methodological issues that can account for the positive association between gender diversity of the BoD and financial performance reported in the literature, in particular the endogeneity of gender diversity variables. They conclude that, for well-governed companies, introducing mandatory gender quotas could be harmful, as additional monitoring could be counterproductive, resulting in a negative impact on shareholders' value.

3. Hypotheses

3.1 Women and business growth

Researchers emphasise the benefits given by gender diversity and by having a differentiated management team. The literature has widely argued that organizations with female executives have accelerated their growth almost threefold compared to those with only male executives. Diversity, due to the dissimilar background, leads to more ideas and more perspectives. All this will benefit in terms of performance, creativity and innovation, having available new perspectives and advice on problem solving (Kanadli and Pingying, 2017).

The female style is less hierarchical, more communicative and collaborative when compared to men. Women in power are more democratic, more sensitive to the needs of others. They can resolve interpersonal conflicts, engaging in a more participative style. This leads to an improvement in the self-esteem of others, to a sharing of power and to an enhancement of other individuals. (Eagly *et al.*, 2003). Collaboration and participation are supported by horizontal communication, which creates team collaboration, equality and stronger relationships. Women also motivate more subordinates who are driven to enthusiastically participate in the growth of the company (Palmu and Joronen; 2009).

An important consequence of the female style is a reduced information asymmetry: everyone feels part of the company and the firm's mission can be easily realized. The best monitoring could influence the nature and dynamics of the decisions of the company board, and it could have positive effects on the information environment (Gul *et al.*, 2011). Burgess and Borgida (1999) claims that female leadership can represent a real change in the company strategic direction. In fact, thanks to greater communication and therefore a lower information asymmetry, companies can access the entire range of the available intellectual capital supporting the participation of all hierarchical levels. Corporate growth is therefore characterized by stronger internal ties, but also by better relations between the company and different groups of external stakeholders (Hillman *et al.* 2002): introducing gender diversity in the BoD allows more open government processes that confirms the incorporation of stakeholder interests. The stakeholder theory asserts that gender diversity and the incorporation of women on BoD and in management positions is an important indicator of a corporate social responsibility and a sign of a stakeholder-oriented firm (Ibrahim and Angelidis 1994; Oakley 2000; Webb 2004). Female leadership can help the company grow, not only by creating a better business atmosphere, but also by increasing and exploiting its potential.

Women feel that they must demonstrate more than the male counterpart, as subject to gender bias. For this reason, they tend to make safer decisions for the company, they are very courageous and determined, but above all they have a strong know-how. Furthermore, it seems that the ability of women to make the best decisions emerges when approaching a deadline or after a very stressful event (Vermoesen *et al.*, 2013). The female way of perceiving resources and problems is wider, and it is typical for women to see the relationships between different things and therefore to have a clearer and wider vision. Intuition plays a role in this progress and the entity is discovered more rapidly (Adams and Ferreira, 2009).

For all these reasons, the business growth in presence of a female leader is motivated by what is called *feminine leadership advantage*: women emerge and excel in the creation of consensus, cooperation and charism in relationships when compared to board composed only by men. All these qualities are typically feminine and are believed to be more effective in contemporary organizations (Eagly and Carli, 2003). Consequently, BoD with women would reflect the capacity to growth more when compared to board only composed by men. Accordingly, we expect that:

HP1: The presence of a woman in the BoD increases the company's growth.

3.2 Women and business profitability

As previously stated, some studies associate gender diversity with positive economic performance (Campbell and Mínguez-Vera 2008), whereas other studies show a negative relation (Guest, 2009), but there are also researchers that find no relation between both variables (Rose, 2007).

Researchers who are part of the first current of thought, argue that women can provide better input strategies and different perspectives, generating more productive programs (Bilimora, 2000). The increased productivity and profitability are also because women, by not showing excessive safety by nature (Lundeberg *et al.*, 1994), apply higher standards in their decision-making process (Pan, Sparks, 2012). Women present a higher risk aversion, having a greater attention to supervision and control. Therefore, men are more motivated to take action, while women are more conservative. This apparent prudence underlies the fact that a woman wants to reduce the risk of labelling and the potential loss of reputation, so she is more reluctant to manipulate gains: she knows that the slightest error could cost her reputation (Gul *et al.*, 2011).

Given greater conservatism, risk aversion and high sensitivity to ethical issues, the company's commitment to gender diversity could also be perceived as an aspect of the quality of corporate governance practices and corporate disclosure (Brammer *et al.*, 2009), and women are more likely to be involved in improving the quality of financial reporting in order to maintain its reputation. Therefore, all this leads to improving the company's image with stakeholders, as the reputation of female directors is positively associated with all performance measures, given the better connection with stakeholders.

Despite the adoption of different risk strategies (Atkinson *et al.*, 2003), gender diversity of managers can be associated with the higher profitability of the company than the average (Erhardt *et al.*, 2003). Female leadership is process oriented, while men's leadership is goal oriented. Women tend to have better interpersonal skills and show greater reliability, having a more communicative and participatory style (Aaltio-Marjosola, 2001). This can improve decision-making processes by creating an atmosphere of greater communication and information, encouraging the team and the stakeholders to consider different perspectives (MacLeod and Heminway, 2007). This kind of style can contribute, above all in the long run, to the increase of the company's performance.

Based on the motivations, we can formulate the second hypothesis:

HP2: The presence of a woman in the BoD increases the company's profitability.

4. Empirical analysis

4.1 Data and sample

The empirical sample used to investigate the impact of women on BoD, on business growth and profitability, is made up of 309 Italian listed companies located in northern Italy and retrieved from the AIDA database.

The sample is mainly composed of small and medium businesses well distributed among all traditional sectors. Companies that open to the female figure are only 127 out of 309 and, among these the average presence is rather small. If we refer to the subgroup in which at least one woman takes part on the BoD, the class that counts the largest number of companies is 0-20%, which indicates that, as noted in literature, the presence of women in decision-making positions is still very low, if not zero. In this first segment, in fact, over 69% of the companies analysed are detected. A still too low number of companies (12,5%), count for a female participation between 20% and 40% and companies that belong to the percentage class between 40% and 60% are slightly less than 10%. Very few companies register levels of participation close to gender equality in the composition of the BoD and, even less, in those that count for a majority of female presence. Firms with a female composition of the BoD between 60% and 80% are only 1,7% and the companies with a board made up exclusively of women, are only 21 (7%). Finally, when considering the whole sample, the female presence in the role of CEO rises only to 7%, which growths to 24% if we refer to the subgroup in which at least one woman takes part on the BoD.

4.2 The models and the variables

The aim of the paper is to fill the gap found in the literature review regarding the relationship between the female presence in the BoD and the companies' growth and profitability. It is therefore a question of assessing whether women presence can make a significant contribution to these dynamics and, if so, to establish whether this is positive or negative. The following paragraphs describe the data source, as well as the dependent and independent variables, including control variables, used to develop an appropriate regression model with respect to the research objectives.

The linear regression models make it possible to determine the impact of gender variables, namely the female presence in BoD (Female_presence), the percentage of female composition of the BoD (Female_percentage) and the presence of a female CEO (Female_CEO), respectively on the business growth and profitability.

The two models can be summarized as follows:

MODEL 1:

Growth = f (Female_presence; Female_percentage; Female_CEO; Control variables)

MODEL 2:

Profitability = f (Female_presence; Female_percentage; Female_CEO; Control variables)

Dependent variables. The dependent variables are two, one for each of the two hypotheses: respectively (Growth) and (Profitability) that are expressed by sales growth and return on equity.

Independent variables. We measure the female presence in three ways. First, as a dummy variable indicating the female presence in BoD, second as a percentage of BOD composition and third as a dummy variable indicating the CEO gender. Female_presence assumes value 1 if at least one woman is on the BoD and 0 if the board is entirely made up of male figures. This variable has the purpose of ascertaining whether the sole female presence is enough to determine a positive or negative effect on corporate growth and/or profitability. A further variable (Female_percentage) verifies whether the increase of percentage of women in decision-making roles is decisive or not in terms of business growth and profitability. The last independent variable is the presence of a woman as CEO (Female_CEO), a dummy variable that assumes value 1 if CEO is woman, 0 otherwise.

Control variables. In accord with previous research, we controlled for basic firm-specific characteristics.

Firm size is a proxy for accumulated knowledge and managerial experience. Thus, we measured Dimension as the total sales. We controlled for Profitability, measured as the return on equity in Model 1 (Hanel and St-Pierre, 2002). Financial constraints can affect business growth and profitability, as they are interest expense related to short, medium or long-term debt. Finally, we included industry dummies as further controls because of the significant impact of the industry on the financial structure (Wallbott and Scherer, 1983; Villalonga and Amit, 2006) (Sector). Some authors do not agree with the statement that female-owned companies are less efficient due to the characteristics so far attributed to women. Some researchers argue, in fact, that the differences in the registration of growth and profitability is not a gender issue, but rather dependent on the type of sector and activity. Female businesses often operate in the services sector, in a less dynamic context, with lower revenues, limited growth prospects and lower employment rates (Singh *et al.*, 2001). The sectors in our analyses follow the Pavitt taxonomy.

Table 2 reports the definitions of both the dependent and independent variables that account for effects in the proposed empirical analyses.

Tab. 2: Definition and sources of the variables used in the empirical analysis

Variable	Definition	Source
Dependent variables		
Growth	Difference between sales in 2016 and 2017 (Euro)	AIDA
Profitability	Ratio between net income and equity capital, return on equity ROE (%)	AIDA
Female variables		
Female_presence	Dummy variable taking the value 1 if a company presents at least one woman in BoD, and 0 otherwise (.)	AIDA
Female_percentage	Percentage composition of female gender on the BoD (%)	AIDA
Female_CEO	Dummy variable taking the value 1 if there is a female CEO in the BoD, and 0 otherwise (.)	AIDA
Control variables		
Dimension	Total amount of revenues (Euro)	AIDA
Financial constraints	Interest expense related to short, medium or long-term debt (%)	AIDA
Profitability	Ratio between net income and equity capital, return on equity ROE (only in Model 1) (%)	AIDA
Sectors	Dummies variables taking value 1 when firms belong to a specific sector by Pavitt taxonomy, 0 otherwise (.)	AIDA

Source: our elaboration

4.3 Results of the empirical analysis

Data has been standardized in order to better interpret results. Table 3 shows the results on average, standard deviation, minimum and maximum relative to all the variables for the entire sample, subsequently divided according to whether women are present in BoD. A t-test is performed to evaluate the significance level of the variables for the two sub-samples. In the case of the first dependent variable (Growth), we register a higher average when there is no presence of women within the company. The opposite result is registered for the second dependent variable (Profitability), where the average is higher for companies that have the presence of women in BoD. It should be noted that these findings are not statistically significant. Although not significant, financial constraints present a higher average for companies in which there are no women. The only statistically significant difference in average is the dimension with a much higher average for companies with female presence.

Tab. 3: Descriptive statistics

	Whole sample [309]				Female presence [127]	Nonfemale presence [182]	
	Mean/%	Std. Dev.	Min.	Max.	Mean%	Mean/%	Sign.
Dependent variables							
Growth	0.01	0.11	-0.30	1.30	0.19	1.2	--
Profitability	0.01	0.93	-5.84	2.92	1.30	-0.56	--
Female presence variables							
Female_presence	0.41	0.49	0	1	--	--	--
Female_percentage	018	0.28	0	1	0.40	0	--
Female_CEO	0.12	0.33	0	1	--	--	--
Control variables							
Dimension	-0.04	1.01	-0.27	14.92	12.30	-15.73	***
Financial constraints	1.96	7.56	0.01	86.92	1.65	2.18	--
Sectors	Yes				Yes	Yes	

Source: our elaboration

The econometric results[1] are presented in Table 4 and show that only some of the female and traditional variables included as determinants for both models have an impact on business growth and profitability.

Tab. 4: Econometric results

	MODEL 1 Growth			MODEL 2 Profitability		
	Coeff.		Std err.	Coeff.		Std err.
Female presence variables						
Female_presence	-0.04	**	0.02	-0.19		0.16
Female_percentage	0.05	*	0.03	0.42	*	0.27
Female_CEO	-0.01		0.03	0.13		0.26
Control variables						
Dimension	0.05	***	0.01	0.03		0.05
Financial constraints	0.01		0.01	-0.02	**	0.01
Profitability	0.01		0.01	--		--
Sectors	Yes			yes		
Number of observations: 309						
	Prob>F = 0.00			Prob>F = 0.12		
	Pseudo R2 = 0.19			R-squared = 0.26		

*significant at the 10% level; **significant at the 5% level; ***significant at the 1% level

Source: our elaboration

The participation of women on the BoD impact negatively a firm's growth (Female_presence is negative and significant at $p<0.05$ in Model 1) while the increasing percentage of women at the top of the company impact positively (Female_percentage is positive and significant at $p<0.10$ in Model 1). The presence of women in the company as CEOs is negative,

[1] All the values of correlation between variables are lower than 0.9, the threshold indicated by Wooldridge (2003). Correlation matrix is available upon request.

albeit not significant in Model 1. These results suggest that the involvement of women in corporate governance can have a positive effect on growth, only when they reach a certain percentage. Therefore, the mere presence of a female in BoD is not enough to have positive effects on company growth. This result suggests a token effect and it is supported by the critical mass theory (Torchia and Calabrò, 2011), so that women must be at least three in order to make a strong and effective contribution. Analogue considerations come out from Model 2 on profitability. The effect on profitability is mainly determined by the percentage of women on the BoD (Female_percentage is positive and significant at $p<0.10$ in Model 2), despite the coefficient on the Female_presence variable being negative and not significant. Again, the presence of women in the company as CEOs is not significant. When women represent a very small minority on the BoD (i.e. one or two women), they are perceived as symbols, tokens and stereotypes. On the contrary, when women increase their presence in BoD, they become a consistent group capable of making their voices and ideas heard, and in a mediated way the companies can benefit from their presence in terms of profitability.

Having a critical mass of women in the BoD produces a winning factor in skills and experience with tangible benefits both for the functioning of the boards and then for growth and profitability.

The control variables also yield interesting results. The firm's size has a positive impact on growth (Dimension is positive and significant at $p<0.01$ in Model 1) while financial constrains limit the firm's profitability (Financial constraints is negative and significant at $p<0.05$ in Model 2). Sectors also have significant impact in both Model 1 and Model 2.

5. Concluding remarks

The paper tries to understand the role of the female presence in BoD and its impact in the company's growth and profitability. The need to investigate this topic arises as it is an important and extremely contemporary issue, and it has not yet reached a shared opinion. No evidence has been found to show that male leadership is better than female leadership, until now it has always been stereotypes linked to culture according to which men must occupy managerial positions (Judge and Piccolo, 2004). As shown in the previous chapters, the impact of female presence in the BoD is a very controversial topic among researchers, and it doesn't always lead to shared results. In the recent years, with the increase of the presence of women in business contexts, studying gender differences has become almost a necessity. Academics deal with understanding whether female presence could affect company growth and performance, highlighting the advantages, difficulties and characteristics of having women that own/manage a company.

The research carried out in the present paper highlights some important results. If on one hand the sole female presence does not have a positive impact on growth nor on performance as her opinions may not be relevant for the decision-making body, on the other hand the female percentage in BoD increase with company profitability and growth.

Heterogeneous BoD are better than homogeneous male dominated boards in terms of contribution. The size of the minority group of women directors requires attention: appointing only one woman as director would seem to be inexpedient since, as suggested by tokenism theories, they will be categorized, stereotyped and ignored by the majority group (of male directors). They must conform to the majority and are unable to make any contributions. Kanter (1977a, b) defined the members of most as dominant while labelled the rest minority members as tokens. In a group, token is perceived negatively, sometimes with real derision (Maass and Clark, 1984; Nemeth and Wachtler, 1983) and is often in doubt and not of trust. As a result, a woman can be considered as a token which creates discomfort, isolation and insecurity (Kanter,1977a, b), and then interferes with performance (Powell, 1993). Therefore, the influence of a minority in a group depends on strength, immediacy and the number of its members (Latane, 1981). This theory suggests that when the minority group reaches the critical mass, a qualitative change will take place in the group interaction.

The interpretation of our results can be supported by the critical mass theory. Studies have traditionally measured gender diversity simply through their presence on BoD (e.g. Campbell and Mínguez-Vera, 2008; Hillman and Cannella, 2007; Huse *et al.*, 2009). In this paper we argue that it is necessary to evaluate the number. Following Torchia and Calabrò (2011) we suggest that the contribution of women becomes evident when the critical mass is reached. In accordance, other studies suggest that three usually represents the point influencing the group setting (Bond, 2005; Nemeth, 1986; Tanford and Penrod, 1984). The core idea is that, with at least three women as directors, it is probable to rise the likelihood that women's voices and thoughts are caught and so boardroom dynamics can change substantially (Erkut *et al.*, 2008; Konrad *et al.*, 2008). However, it is important to note that Asch's (1951, 1955) demonstrates that the further increases in group size add little to the overall effect.

The present work suggests both managerial and policy implications. As far as the former are concerned, it would be opportune for the top management to become aware of the gender differences between male and female and that this should not be an obstacle, but a value added. An important step to put the female figure in a position to best express her potential, is the provision of measures to overcome the difficulties she faces in reconciling work and private life. A company policy can provide a valuable help and can reduce the obstacles that women encounter in undertaking a career, especially when this is within a decision-making body such as the BoD or even the company's leadership as CEO.

A fundamental contribution can be made also by public policies, in terms of support for real gender equality. A measure adopted in Italy is the law n. 120/2011, which provides the presence of at least one third of women within the BoD. This can be considered a first step to allow the female figure to express her own contribution within the strategic decision-making of companies although this should only be an incentive to change the corporate mentality and culture.

Finally, the study is not excepted from limitations. First, the contribution of women to the processes of growth is evaluated only through variables that measure the female presence and the percentage composition of gender on the BoD but does not contemplate other factors. For example, it might be important to consider the degree of education of the female component, since a director with a high educational qualification has a different influence on the actual possibilities of growth and profitability compared to the one with a lower qualification (Queiró, 2016). Moreover, other interesting aspects that can be considered are the level of experience and the age of the female figures, seeing these as factors capable of exerting impact on the firm's performance. Another limitation is that the sample is made up entirely of companies from northern Italy. The same study replicated on companies based in Countries characterised by different institutional and socio-cultural contexts could provide different results.

References

AALTIO-MARJOSOLA (2001), "Charismatic leadership, manipulation and the complexity of organizational life", *MIT Sloan School of Management*.

ADAMS R., FERREIRA D. (2009), "Women in the boardroom and their impact on governance and performance", *Journal of Financial Economics,* vol. 94, n. 2, pp. 291-309.

ALDÁS-MANZANO J., MARTINEZ-FUENTES C. (2012), "Women Entrepreneurship and Performance", *Women's Entrepreneurship and Economic Policies*, pp. 89-108. Springer, New York, NY.

ALDRICH H.E. (1989), "Networking among women entrepreneurs", *Women Owned Businesses*, New York, pp.103 -132.

AMORE M.D., GAROFALO O. (2016), "Executive Gender, Competitive Pressures, and Corporate Performance", *Journal of Economic Behavior and Organization*, vol. 131, n. 5, pp. 308-327.

ATKINSON S.M., BAIRD S.B., FRYE M.B. (2003), "Do Female Mutual Fund Managers Manage Differently?", *The Journal of Financial Research*, vol. 26, n. 1, pp. 1-18.

BILIMORA D. (2000), "Buildings the business case for women corporate directors", in *Women on corporate boards of directors: International challenges and opportunities* (pp. 25-40). Dordrecht. The Netherlands: Kluwer Academic Publisher.

BOND R (2005), "Group Size and Conformity", *Group Processes and Intergroup Relations,* vol. 8, n. 4, pp. 331-354.

BONN I., YOSHIKAWA T., PHAN P.H. (2004), "Effects of Board Structure on Firm Performance: A Comparison Between Japan and Australia", *Asian Business and Management,* vol. 3, n. 1, pp. 105-125.

BRAMMER S., MILLINGTON A., PAVELIN S. (2009), "Corporate Reputation and Women on the Board", *British Journal of Management*, vol. 20, n. 1, pp. 17-29.

BURGESS D., BORGIDA E. (1999), "Who women are, who women should be: Descriptive and prescriptive gender stereotyping in sex discrimination!", *Psychology, Public Policy and Law,* vol. 5, n. 3, pp. 665-692.

CAMPBELL K., MÍNGUEZ-VERA A. (2008), "Gender diversity in the boardroom and firm financial performance", *Journal of Business Ethics*, vol. 83, n. 3, pp. 435-451.

CARTER D.A., SIMKINS B.J., SIMPSON W.G. (2003), "Corporate governance, board diversity, and firm value", *The Financial Review,* vol. 38, n. 1, pp. 33-53.

CARTER S., ROSA P. (1998), "The financing of male- and female-owned businesses", *Entrepreneurship and Regional Development,* vol. 10, n. 3, pp. 225-241.

CATALYST C. (2004), *The Bottom Line: Connecting Corporate Performance and Gender Diversity*, Catalyst Publications

COLEMAN S. (2000), "Access to capital and terms of credit: a comparison of men- and women-owned small businesses", *Journal of Small Business Management,* vol. 38, n. 3, pp. 37-52.

COLEMAN S. (2005), "The impact of Human Capital Measures on the performance women - owned small firms", *Journal Bus Entrep*, vol. 17, n. 2, pp 39 - 55.

COLEMAN S. (2007), "Gender and educational leadership in England: a comparison of secondary headteachers' views over time", *Journal School Leadership and Management*, vol. 27, n.4, pp. 383-399.

CORMAN J. (2001), "Gender comparisons in strategic decision-making: an entrepreneurial analysis of the entrepreneurial strategy mix", *Journal of Small Business Management*, vol. 39, n. 2, pp. 165-173.

DONATI P. (1997), "Uomo e donna in famiglia: Quinto rapporto CISF", *Man and woman in the family: The Fifth CISF's report on family in Italy*, San Paolo Cinisello Balsamo, Italy.

EAGLY A.H., CARLI L.L. (2003a), "The female leadership advantage: An evaluation of the evidence", *Leadership Quarterly*, vol. 14, n. 6, pp. 807-834.

EAGLY A.H., CARLI L.L. (2003b), "Finding gender advantage and disadvantage: Systematic research integration is the solution", *Leadership Quarterly,* vol. 14, n. 6, pp. 851-859.

ECKEL C.C., GROSSMAN P.J. (2008), "Men, Women and Risk Aversion: Experimental Evidence", *Handbook of Experimental Economics Results,* vol. 1, part. 7, pp. 1061-1073.

ERHART N.L., WERBEL J.D., SHRADER B. (2003), "Board Director Diversity and Firm Financial Performance", *Corporate Governance An International Review,* vol. 11, n. 2, pp. 102-111.

ERIKSSON-ZETTERQUIST U., STYHRE A. (2008), "Overcoming the glass barriers: reflection and action in the 'Women to the Top' programme", *Gender, Work and Organization,* vol. 15, n. 2, pp. 133-160.

ERKUT S., KONRAD A.M., KRAMER V. (2008), "Critical Mass: The Impact of Three or More Women on Corporate Boards", *Organizational Dynamics,* vol. 37, n. 2, pp.145-164.

FARELL K.A., HERSCH P.L. (2005), "Additions to corporate boards: The effect of gender", *Journal of Corporate Finance,* vol. 11, n. 1, pp. 85-106.

FASCI M.A., VALDEZ J. (1998), "A Performance Contrast of Male- and Female-Owned Small Accounting Practices", *Journal of Small Business Management,* vol. 36, n. 3, pp. 1-7.

GALBREATH J. (2011), "Are there gender-related influences on corporate sustainability? A study of women on boards of directors", *Journal of Management and Organization,* vol. 17, n. 1, pp. 17-38.

GARCIA-MECA E., GARCIA-SANCHEZ I.M., MARTINEZ-FERRERO J. (2015), "Board diversity and its effects on bank performance: An international analysis", *Journal of Banking and Finance*, vol. 53, n. 1, pp. 202-214.

GLOBAL ENTREPRENEURSHIP MONITOR (2017), *Women's Entrepreneurship: 2017/2018 Report,* GEM

GOODSTEIN J., GUATAM K., BOEKER W. (1994), "The Effect of Board Size and Diversity on Strategic Change", *Strategic Management Journal*, vol. 15, n. 3, pp. 241 - 250.

GREVE A., SALAFF J.W. (2003), "Social Networks and Entrepreneurship", *The Norwegian School of Economics and Business Administration and Department of sociology,* vol. 28, n. 1, pp. 1-22.

GUEST P.M., (2009), "The Impact of Board Size on Firm Performance: Evidence from the UK", *The European Journal of Finance*, vol. 15, n. 4, pp. 385-404.

GUL S., IRSHAD F., ZAMAN K. (2011), "Factors Affecting Bank Profitability in Pakistan", *Romanian Journal of Economic Forecasting*, vol. 14, n. 39, pp. 61-87.

HANEL AND ST-PIERRE (2002), "Effects of R&D Spillovers on the Profitability of Firms", *Review of Industrial Organization*, vol. 20, n.4, pp. 305-322

HANEL AND ST-PIERRE (2002), "Effects of R&D Spillovers on the Profitability of Firms", *Review of Industrial Organization*, vol. 20, n.4, pp. 305-322

HEILMAN M.E. (2001), "Description and prescription: How gender stereotypes prevent women's ascent up the organizational ladder", *Journal of Social Issues*, vol. 57, n. 4, pp. 657-674.

HEMINWAY J.M.L. (2007), "Sex, Trust, and Corporate Boards", *Hastings Women's Law Journal,* vol. 18, n. 117, pp. 173-197.

HILLMAN A.J., CANNELLA A.A., (2007), "Organizational predictors of women on corporate boards", *Academy of Management Journal,* vol. 50, n. 4, pp. 941-952.

HILLMAN A.J., CANNELLA A.A., HARRIS I.C. (2002), "Women and racial minorities in boardroom: How do directors differ?", *Journal of Management,* vol. 28, n. 6, pp. 747-763.

HOWARD E., ALDRICH A. (1989), "Networking Among Women Entrepreneurs", *New York Women Owned Businesses,* pp. 103-132, ed. O Hagan, C Rivchun, D Sexton.

HUMPHREYS M.A., MCLUNG H. (1981), "Women entrepreneurs in Oklahoma", *Review of Regional Economics and Business,* vol. 6, n. 2, pp. 13-20.

HUSE *Et al.* COMPLETARE CON NOMI ALTRI AUTORI (2009), "Women and Employee-Elected Board Members, and Their Contributions to Board Control Tasks", *Journal of Business Ethics,* vol. 89, n. 4, pp. 581-597

IBRAHIM N.A., ANGELIDIS J.P. (1994), "Effect of Board Members Gender on Corporate Social Responsiveness Orientation", *Journal of Applied Business Research (JABR),* vol. 10, n. 1, pp. 35-40.

JACOBSON S.W., AALTIO I. (2001), "Strong Objectivity and the Use of Q-Methodology in Cross-Cultural", *Contextualizing the Experience of Women Managers and their Scripts of Career,* vol. 14, n. 3, pp. 575-599.

JONES AND MAKEPEACE (1996), "Equal Worth, Equal Opportunities: Pay and Promotion in an Internal Labour Market", *Economic Journal,* vol. 106, n. 435, pp. 401-09

JUDGE T.A., PICCOLO R.F. (2004), "Transformational and Transactional Leadership: A Meta-Analytic Test of Their Relative Validity", *Journal of Applied Psychology,* vol. 89, n. 5, pp. 755-768.

KANADLI, S.B., PINGYING Z. (2017), "Board Diversity's Effects on Network Tasks and Process Innovation: Role of a High-Power Individual", *Academy of Management Proceedings,* Vol. 1. Briarcliff Manor, NY 10510: Academy of Management.

KANTER R.M., (1977a, b), "Some Effects of Proportions on Group Life: Skewed Sex Ratios and Responses to Token Women", *American Journal of Sociology,* vol. 82, n. 5, pp. 965-990.

KONRAD A.M. (2008), "Critical Mass: The Impact of Three or More Women on Corporate Boards", *Organizational Dynamics,* vol. 37, n. 2, pp. 145-164.

LATANÉ B. (1981), "The Psychology of Social Impact", *American Psychologist,* vol. 36, n. 4, pp. 343-356.

LOSOCCO K.A., ROBINSON J., HALL R.H., ALLEN J.K. (1991), "Gender and Small Business Success: An Inquiry Into Women's Relative Disadvantage", *Social Forces,* vol. 70, n. 1, pp. 65-85.

LUNDEBERG M.A., FOX P.W., PUNĆCOHAŔ J. (1994), "Highly confident but wrong: Gender differences and similarities in confidence judgments", *Journal of Educational Psychology,* vol. 86, n. 1, pp. 114-121.

MAASS A., CLARK R.D. (1984), "Hidden Impact of Minorities: Fifteen Years of Minority Influence Research", *Psychological Bulletin,* vol. 95, n. 3, pp. 428-450.

MASTERCARD (2018), *Mastercard Index of Women Entrepreneurs*, Mastercard.

McKINSEY & COMPANY, (2018), *Women in the workplace 2018,* McKinsey & Company: Lean In.

MILLER T., DEL CARMEN TRIANA M. (2009), "Demographic Diversity in the Boardroom: Mediators of the Board Diversity - Firm Performance Relationship", *Journal of Management Studies*, vol. 46, n. 5, pp. 755-786.

NEMETH C.J. (1986), "Differential contributions of majority and minority influence", *Psychological Review,* vol. 93, n.1, pp. 23-32.

NEMETH C.J., WACHTLER J. (1983), "Creative problem solving as a result of majority vs minority influence", *European Journal of Social Psychology,* vol. 13, n. 1, pp. 45-55.

OECD (2018), *Meeting of the OECD Council at Ministerial Level Key issues pape*r, Paris, pp. 34-36 http://www.oecd.org/mcm-2018/documents/C-MIN-2018-2-EN.pdf)

OHLOTT P.J., RUDERMAN M.N., CYNTHIA D. (1994), "Gender Differences in Managers' Developmental Job Experiences", *The Academy of Management Journal*, vol. 37, n. 1, pp. 46-67.

OLSEN W., HEUVELMAN H., GASH V., VANDECASTEELE L (2010b), *Policy Related Factors Offsetting Women's Low Pay in the UK.* Research Report Number 2 from the project, "The Gender Pay Gap in The UK 1995- 2007".

PALMU-JORONEN, A.-L. (2009), "The Nokia-years", What can be learned from leadership, Jyväskylä. Atena Kustannus Oy.

PAN Y., SPARKS J.R. (2012), "Predictors, consequence, and measurement of ethical judgments: Review and meta-analysis", *Journal of Business Research,* vol. 65, n. 1, pp. 84-91.

PASARIBU P. (2017), "Female Directors and Firm Performance: Evidence from UK Listed Firms", *International Journal of Business,* vol. 19, n. 2, pp. 145-166.

PEMA E., MEHAY S. (2010), "The role of job assignment and human capital endowments in explaining gender differences in job performance and promotion", *Labour Economics,* vol. 17, n. 6, pp. 998-1009.

PFEFFER J. (1972), "Size and Composition of Corporate Boards of Directors: The Organization and Its Environment", *Administrative Science Quarterly*, vol. 17, pp. 218-228.

POST C., BYRON K. (2015), "Women on boards and firm financial performance: A meta-analysis", *The Academy of Management Journal*, vol. 58, n. 5, pp. 1546-1571.

POWELL T.C., (1993), "The Role of Ethics in Individual Decision-Making", *Canadian Journal of Administrative sciences,* vol. 10, n. 3, pp. 269-279.

QUEIRÓ F. (2016), "The effect of manager education on firm growth", *QJ Econ,* vol. 118, n. 4, pp. 1169-1208.

RIDING A., SWIFT C. (1990), "Women business owners and terms of credit: Some empirical findings of the Canadian experience", *Journal of Business Venturing*, vol. 5, n. 5, pp. 327-340.

ROSE C. (2004), *The Composition of Boards and Financial Performance in Danish Listed Firms -Are the Recommendations from the Nørby Report Beneficial for the Shareholders?,* WP 2, Institut for Finansiering, Handelshøjskolen i København.

ROSE C. (2007), "Does female board representation influence firm performance? The Danish evidence", *Corporate Governance An International Review,* vol. 15, n. 2, pp. 404-413

RYAN M.K., HASLAM S.A. (2007), "The Glass Cliff: Exploring the Dynamics Surrounding the Appointment of Women to Precarious Leadership Positions", *The Academy of Management Review*, vol. 32 n. 2, pp. 549-572.

SABATIER M. (2015), "A women's boom in the boardroom: effects on performance?", *Journal Applied Economics,* vol. 47, n. 26, pp. 2717-2727.

SINGH V., VINNICOMBE S. (2001), "Impression Management, Commitment and Gender: Managing Others' Good Opinions"', *European Management Journal*, vol. 19, n. 2, pp. 183-194

TANFORD S., PENROD S. (1984), "Social Influence Model: A formal integration of research on majority and minority influence processes", *Psychological Bulletin,* vol. 95, n. 2, pp. 189-225.

TORCHIA M.T., CALABRÓ A. (2011), "Women Directors on Corporate Boards: From Tokenism to Critical Mass", *Journal of Business Ethics*, vol. 102, n. 2, pp. 299-317.

VAFAEI A., AHMED K., MATHER P. (2015), "Board Diversity and Financial Performance in the Top 500 Australian Firms", *Australian Accounting Review*, vol. 25, n. 4, pp. 413-427.

VERMOESEN V., DELOOF M., LAVEREN E. (2013). "Long-term debt maturity and financing constraints of SMEs during the global financial crisis", *Small Business Economics,* vol. 41, n.2, pp. 433-448.

VILLALONGA B., AMIT R. (2006), "How do family ownership, control and management affect firm value?", *Journal of Financial Economics,* vol. 80, n. 2, pp. 385-417

VINCI M. (1999), "Il lavoro femminile nella prospettiva dei gender studies", S*tudi di Sociologia,* vol. 37, n. 2, pp. 255-270

WALLBOTT H.G., SCHERER K.R. (1991), "Stress specificities: Differential effects of coping style, gender, and type of stressor on autonomic arousal, facial expression, and subjective feeling", *Journal of Personality and Social Psychology,* vol. 61, n. 1, pp. 147-156.

WATSON J. (2002), "Comparing the Performance of Male- and Female-controlled Businesses: Relating Outputs to Inputs", *Entrepreneurship Theory and Practice*, vol. 26, n. 3, pp. 91-100.

WINTER-EBMER AND ZWEIMULLER (1997), "Unequal Assignment and Unequal Promotion in Job Ladders", *Journal of Labor Economics*, vol. 15, n. 1, pp. 43-71

WORLD ECONOMIC FORUM (2017), *The Global Gender Gap Report 2017,* WEM Publications.

ZENOU E., ALLEMAND I., BRULLEBAUT B. (2016). "Gender Diversity on French Boards: Example of a Success from a Hard Law", *Gender Diversity in the Boardroom,* pp. 103-124.

Academic or professional position and contacts

Mariasole Bannò
Associate professor of Management
University of Brescia - Italy
e-mail: mariasole.banno@unibs.it

Viola Nicolardi
Research fellow
CSMT Centro Servizi Multisettoriale e Tecnologico - Italy
e-mail: v.nicolardi@csmt.it

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.10
pp. 161-179

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Uncovering the sources of brand authenticity in the digital era: evidence from an Italian winery[1]

Received
18th February 2019
Revised
2nd April 2019
Accepted
21st June 2019

Michela Mingione - Mike Bendixen- Russell Abratt

Abstract

Purpose of the paper: *The purpose of this study is to explore the sources of brand authenticity of a well-known Italian vineyard through the digital age lens and an organizational perspective.*

Design/methodology/approach*. This study adopted a qualitative single case study design. Antonelli San Marco, an Italian brand with an estate located in Montefalco was selected. Eleven interviews with members of the family who own and manage the business, as well as their employees, were conducted. After transcribing and translating the interviews when needed, they were coded and their content analysed.*

Findings*. Findings confirmed the dimensions of brand authenticity of previous studies in the wine industry. This study also confirmed the objective, subjective, and existential sources of brand authenticity from previous research. Remarkably, the existential source, which was traditionally linked to integrity elements, emerged here as the result of Antonelli's care for the brand ecosystem, including people, the terroir and the entire location. In addition, a new category of brand authenticity was found, in relation to a brand's competitive side, to be fundamental in competing in the digital age and focused on the importance of narrating the real brand story while engaging in collaborative relationships and carefully managing eco-capabilities, technological skills, and digital capabilities.*

Originality/value*. The framework that is presented in this paper provides an original view on wine brand authenticity from a managerial standpoint, highlighting new challenges that must be faced to successfully compete in the digital era while maintaining brand authenticity over time and across diverse stakeholders.*

Key words: Brand authenticity; wine brand; digital era; brand ecosystem; sustainability; coopetition; Italy

1. Introduction

In the digital era, social networking sites like Facebook and Twitter boast many users and fans. In addition, there are review sites like Yelp and TripAdvisor that post reviews from thousands of consumers (Gandomi and Haider, 2015). These sites influence other consumers, and this can lead to altered consumption patterns. As there can be a mismatch between what a brand manager intended in their company's marketing strategy and

[1] The authors gratefully acknowledge Antonelli's owners, managers and employees for sharing their time and thoughts.

consumer expectations of product quality and performance, marketers need to constantly monitor their brands on social media, blogs and review sites (Shirdastian *et al.*, 2019).

Consumers demand authenticity and they generally seek authentic products and experiences, including from luxury wines (Beverland, 2006). It is therefore important to study brand authenticity as it influences consumer consumption patterns. There is still no universally accepted definition of brand authenticity, nor is there agreement about its dimensions, despite its role in branding research. This is because the construct is complex and, as a result, inconsistent in its conceptualization (Beverland, 2005a,b; Bruhn *et al.*, 2012; Pace, 2015). Throughout the literature, authenticity is repeatedly described as "genuine, real, and true" (Beverland and Farrelly, 2010; Grayson and Martinec, 2004; Reisinger and Steiner, 2006). Numerous authors have defined authenticity as an evaluation of the perceived extent of genuineness (Fine, 2003; Napoli *et al.*, 2014; Postrel, 2003; Reisinger and Steiner, 2006).

The very first article focusing on brand authenticity can be traced back to 2005, with Beverland (2005a) exploring the authenticity of luxury brand wines. He conceptualized brand authenticity as including heritage and pedigree, consistency, quality, relationship to place, method of production, and downplaying commercial motives (Beverland 2005a,b; 2006). After Beverland's seminal articles, various scholars continued to explore this domain and considered new markets, such as beer, skateboarding, sports, music, and high-tech (e.g., Alexander, 2009; Charmley *et al.*, 2013; Choi *et al.*, 2015; Corciolani, 2014; Gundlach and Neville, 2012; Mingione *et al.*, 2017), thus enriching the current understanding of brand authenticity dimensions.

The economic, cultural and social changes that are faced by organizations in this third millennium have had tremendous effects on consumers' behavior, brands and of course, their related markets. In particular, the wine sector, which has always been considered a traditional market, is facing new and difficult challenges. First, the wine industry must face the problem of climate change, which consequently highlights the need for product sustainability (Flores, 2018; Szolnoki, 2013). For instance, it is interesting to know that the decrease of the carbon footprint is considered to be a "*necessary contribution to be made by the wine industry. Approval for this is highest in Italy (81%) and lowest in Germany (65%)*" (ProWein Business Report 2019, p. 11). Second, social media assume a new key role in the wine sector, with a significant and positive influence on wine consumers' buying intentions, especially those who frequently use social media (Pucci *et al.*, 2017). Third, new generational cohorts increasingly impact on the wine sector. Recent research has inquired into millennials' preferences for wine attributes and their behavior related to fine wine (e.g., luxury wine) (Lategan *et al.*, 2017; Roe and Bruwer, 2017).

Given these ongoing changes and challenges faced by the wine sector, it was necessary to explore the concept of brand authenticity through a digital age lens and an organizational perspective. Accordingly, the purpose of our study is to explore brand authenticity in the context of a well-known Italian vineyard, Antonelli San Marco, by focusing on how management and employees deal with brand authenticity in the digital era. This study thus provides a unique perspective on brand authenticity by exploring what it means to be authentic in the digital era and what responsibilities and challenges a wine brand must face when attempting to create, manage and maintain its authenticity over time and across stakeholders. In particular, in addition to the objective, subjective and existential sources of brand authenticity (Beverland, 2006; Girardin *et al.*, 2013; Grayson and Martinec, 2004; Leigh *et al.*, 2006; Morhart *et al.*, 2015; Spielmann and Charters, 2013), this study found a new source related to a wine brand's competitive side by focusing on the importance of narrating the real brand story, engaging in collaborative relationships, enhancing eco-capabilities, carefully developing digital skills and cautiously managing digital capabilities. The brand's competitive capabilities represent a crucial strategic marketing view on brand authenticity, as they involve strategic marketing decisions that stem from and by virtue of their long-term performance implications (Varadarajan 2010).

2. Literature review

Fundamentals of brand authenticity

Consumers' quest for brand authenticity appears to be particularly evident if we consider the positive effects stemming from a brand strategy based on authentic dimensions. First, it increases brand and consumer trust, legitimization, reliability, and credibility (Ballantyne *et al.*, 2006; Beverland, 2006; Eggers *et al.*, 2013; Moulard *et al.*, 2016; Napoli *et al.*, 2014; Portal *et al.*, 2018). Second, the authenticity of a brand might help in achieving consumers' identity and experience-related benefits (Beverland and Farrelly, 2010; Chhabra and Kim, 2018; Gundlach and Neville, 2012; Lalicic and Weismayer, 2017; Leigh *et al.*, 2006; Thompson *et al.*, 2006; Thyne and Hede, 2016). Third, it increases consumers' willingness to purchase (Fritz *et al.*, 2017; Ilicic and Webster, 2014; 2016; Napoli *et al.*, 2014); their inclination to pay a price premium (Assiouras *et al.*, 2015; Beverland, 2005a,b; 2006; Hasselbach and Roosen, 2015; Moulard *et al.*, 2015a); and their brand loyalty (Choi *et al.*, 2015; Lalic and Weismayer, 2017; Mody and Hanks, 2017). Lastly, recent studies have highlighted its positive effects on brand love (Manthiou *et al.*, 2018; Mody and Hanks, 2017), brand engagement (Preece, 2015) emotional brand attachment (Choi *et al.*, 2015; Guèvremont and Grohmann, 2016; Kowalczyk and Pounders, 2016; Morhart *et al.*, 2015) and Word of Mouth (WOM) (Assiouras *et al.*, 2015; Morhart *et al.*, 2015).

In general, there is still no universally accepted agreement about the dimensions of brand authenticity. In recent studies, scholars have provided 40 brand authenticity-related dimensions, which substantiates the fragmented framework characterizing this domain of interest (Akbar and Wymer, 2016; Wymer and Akbar, 2017). However, throughout the literature, authenticity is repeatedly described as that which is sincere, genuine, real and true (Beverland and Farrelly, 2010; Grayson and Martinec, 2004; Pace, 2015; Reisinger and Steiner, 2006), and can take on three diverse forms, namely objective, subjective and existential (Beverland, 2006; Girardin *et al.*, 2013; Leigh *et al.*, 2006; Morhart *et al.*, 2015).

Objective lenses imply the inclusion of the following characteristics: heritage, tradition, stylistic consistency, quality, place, provenance, and the naturalness of raw materials and ingredients (Alexander, 2009; Assiouras *et al.*, 2015; Gundlach and Neville, 2012; Kadirov, 2015; Leigh *et al.*, 2006; Morhart *et al.*, 2015; Napoli *et al.*, 2014, 2016; Postrel, 2003). The objective form has been alternatively defined as indexical, which implies being original, "not a copy or an imitation" (Grayson and Martinec, 2004, p. 297).

Brand heritage and its preservation over time strongly emerge as two of the main sources determining the essence of an authentic brand (Brown *et al.*, 2003; Leigh *et al.*, 2006). Creating and maintaining the heritage of a brand requires the coherency and continuity of brand identity and brand values over time (Bruhn *et al.*, 2012; Chhabra and Kim, 2018; Pattuglia and Mingione, 2017). Brand heritage has significant connections with quality commitment because authentic brands that refuse to compromise are perceived as having been manufactured to a higher standard of quality, and having a long history (Assiouras *et al.*, 2015; Beverland, 2006; Napoli *et al.*, 2014, 2016).

Similarly, to be authentic, brands should not alter their traditional methods of production over time, which on the contrary should make use of handcrafted techniques and natural raw materials (Beverland, 2005b; Bruhn *et al.*, 2012; Groves, 2001). According to Bruhn *et al.* (2012), this dimension can be defined as "naturalness," as opposed to artificial and manipulative techniques. Moreover, authentic brands should deliver a stylistic consistency of their logos, reflecting the historical visual identity of the brand and telling the story of the company's roots (Beverland, 2005b, 2006; Van den Bosh *et al.*, 2005).

The source of localness and provenance is particularly crucial for some industries, such as the food and beverage and luxury industries (Assiouras *et al.*, 2015; Cheah *et al.*, 2016; Collins and Weiss, 2015; Gundlach and Neville, 2012). In order to strengthen their relationship with their location and to increase their authenticity, some businesses have resorted to co-branding with national brands, thus achieving a cultural-based brand identity (Alexander, 2009). Objective forms of brand authenticity, especially when referring to the heritage of long-established brands with stable characteristics, appear to be particularly important during uncertain times and are usually vital for brand outcomes such as brand trust, credibility, and reliability (Ballantyne *et al.*, 2006; Napoli *et al.*, 2014; Urde *et al.*, 2007).

Moreover, indexical cues seem to be crucial in emerging markets such as South Africa or, for instance, in the private label market (Carsana and Jolibert, 2018; Stiehler and Tinson, 2015).

Subjective lenses imply the inclusion of the following characteristics: sense of community, participation, originality, uniqueness and innovativeness (Bruhn *et al.*, 2012; Carsana and Jolibert, 2018; Chhabra and Kim, 2018; Choi *et al.*, 2015; Fritz *et al.*, 2017; Girardin *et al.*, 2013; Grayson and Martinec, 2004; Morhart *et al.*, 2015; Thyne and Hede, 2016). The subjective form of brand authenticity has been alternatively defined as iconic (Grayson and Martinec, 2004) and implies the social construction of brand meanings and values (Leigh *et al.*, 2006). In other words, authentic brand value is co-created with consumers (Charmley *et al.*, 2013; Corciolani, 2014; Leigh *et al.*, 2006; Thyne and Hede, 2016). Thus, it implies consumers' participation in communal experiences, (i.e. those who feel connected to a community), strongly emerges (Beverland and Farrelly, 2010). Brands establish an iconic relationship with the community and are "reflective of the wider community's view of lifestyle" (Beverland *et al.*, 2010, p. 706). The community can punish or reward (in)authentic brands, (de)legitimating them from the considered cultural context (Charmley *et al.*, 2013; Holt, 2002; Kates, 2004; Thompson *et al.*, 2006). Brands should offer genuine brand promises and, most importantly, there should be coherence between the brand promise and its delivery, especially in the service industry (Charmley *et al.*, 2013; Pattuglia and Mingione, 2017; Sirianni *et al.*, 2013). In reflecting the constructivist nature of subjective authenticity, research has suggested that brand authenticity is socially constructed (Aitken and Campelo, 2011; Brown *et al.*, 2003; Charmley *et al.*, 2013; Corciolani, 2014; Kates, 2004; Leigh *et al.*, 2006)

Existential lenses imply the inclusion of the following dimensions: morality, integrity, and ethicality (Beverland and Farrelly, 2010; Beverland *et al.*, 2008; Choi *et al.*, 2015; Girardin *et al.*, 2013; Hasselbach and Roosen, 2015; Leigh *et al.*, 2006; Morhart *et al.*, 2015). This form of authenticity derives from the self and embraces post-modernist thinking (Leigh *et al.*, 2006). Thus, it is also linked to the experiential value of the relationship in terms of stakeholders' identity. For instance, consumers call for brands that are genuine and may help them in achieving an authentic identity (Beverland *et al.*, 2008; Leigh *et al.*, 2006), by searching for identity benefits such as feeling virtuous and being true to a set of moral values (Beverland and Farrelly, 2010).

Brand authenticity in the wine industry

Beverland (2005a,b) was the first to explore brand authenticity in a study on branded luxury wines. He conceptualized brand authenticity as including heritage and pedigree, stylistic consistency, quality commitment, relationship to place, the method of production, and downplaying commercial motives (Beverland, 2006). It is important to note that commitment to terroir (i.e., the specific territory of the place) is particularly relevant in this industry (Beverland, 2006; Spielmann and Charters, 2013).

According to Spielmann and Charters (2013), three sources are necessary to achieve authenticity in the wine industry. First, an objective source that is linked to tradition and heritage and defines the essence of a brand that cannot be imitated. Second, symbolic and existential lenses drive brand authenticity because consumers experience and identify with authentic wine brands. Finally, commitment to terroir requires an analysis of its legal regulation and protection with a specific focus on processes, "including the rules relating to production, labeling and promotion" (Spielmann and Charters, 2013, p. 319). Additionally, Moulard *et al.* (2015a) explored the relationship between technical terroir (i.e., the use of technical information about the terroir) and country of origin. They found that while New World wines need an extensive description of the terroir in order to be perceived as authentic, Old World wines do not need any technical information about terroir because their provenance guarantees its quality (Moulard *et al.*, 2015a). In fact, consumers' perception of provenance is of key importance in the wine sector (Maizza *et al.*, 2017). With particular regard to the digital era, scholars have found that tasting and recommendations regarding taste are two key attributes of wine among millennials and that they are mostly communicated via social media for this generation (Lategan *et al.*, 2017; Pucci *et al.*, 2017).

Brand authenticity in the digital era

In general, brand authenticity seems to present itself as an essential attribute of Facebook pages, online communication campaigns, and celebrity endorsement because it helps create a genuine and real relationship with members of online brand communities, thus increasing consumers' participation and engagement (Kowalczyk and Pounders, 2016; Pronschinske *et al.*, 2012; Samuel *et al.*, 2018). Moreover, some authors have explored brand authenticity by adapting the lenses of the sharing economy and post-modern consumption behavior, especially in the tourism and hospitality marketplace (Lalicic and Weismayer, 2017; Mody and Hanks, 2017). Scholars found that the Airbnb digital platform is perceived as more authentic than traditional hotels because it enhances the culture of the place and increases interpersonal and networking relationships between consumers (Lalicic and Weismayer, 2017; Mody and Hanks, 2017). On the other hand, to be perceived as authentic, traditional hotels should rely more on indexical cues linked, for instance, to their legacy, than to iconic and existential ones (Mody and Hanks, 2017).

3. Methodology

To evaluate brand authenticity in the digital era, this study used a qualitative single case study (Siggelkow, 2007; Yin, 1994). Amongst luxury brand wines, we selected Antonelli San Marco, an Italian brand, with an estate situated in the Montefalco DOCG (Denominazione di Origine Controllatae Garantita) area. The estate, once called San Marco de Conticellis, belonged to the Bishop of Spoleto from the 13th to the 19th century, and is described in several medieval documents as a Longobard cohort and one of the most suited territories for the cultivation of vines and olives. In 1883, Francesco Antonelli purchased the estate and, after a radical transformation and modernization of its planting and farming, he became the founder of the Antonelli San Marco brand. The brand currently produces Grechetto and Trebbiano Spoletino for its white varieties and the red varietals Sangiovese and Sagrantino. Moreover, the estate offers wine-tourism hospitality in an antique farmhouse called Casale Satriano as well as "Cucina in Cantina", a service offering lunches, dinners, wine tasting and courses on Umbrian cuisine. Moreover, Antonelli offers guided tours of the Cantina Antonelli.

In July 2017, the two authors of this study spent four days at Casale Satriano and conducted 11 interviews with members of the family that currently owns and manages the business, as well as with employees. The data collection involved face-to-face interviews as a primary source and secondary sources such as observations, internal documents, the corporate website and the Vivino app (Table 1).

Tab. 1: Data sources

PRIMARY SOURCE (INTERVIEWS)			
Interviews			
Respondent	Role	Language	Timing (2017)
Respondent 1	50% shareholder and chief executive	English	20 July (58m05s)
Respondent 2	Public relations manager	English	22 July (52m08s)
Respondent 3	Marketing manager	English	20 July (1h37m37s)
Respondent 4	Manager of Cucina in Cantina	English	20 July (44m08s)
Respondent 5	Administrator, North America, Asia and Russia	English	21 July (27m41s)
Respondent 6	Administrator, Umbria and northern Europe	English	21 July (20m45s)
Respondent 7	Accountant	Italian	20 July (22m35s)
Respondent 8	Agronomist	Italian	21 July (37m33s)
Respondent 9	Wine production	Italian	21 July (31m44s)
Respondent 10	Field operations	Italian	21 July (15m46s)
Respondent 11	Wine shop assistant and field operations	Italian	21 July (20m46s)
SECONDARY SOURCES			
Observations			19-21 July
Internal Documents			19 September
Corporate Website			July-October
Vivino (digital app)			August-September

Source: Authors' elaboration

After their transcription and translation (when needed), the interviews were coded, and their content analyzed. In particular, the data were manually analysed, and such an analysis consisted of three main steps (Mayan, 2009; Spiggle, 1994): 1) coding, which included the reading and re-reading of the interviews to create a document highlighting retrieved codes stemming from the individual analysis of the two authors of the present study; 2) categorizing and thematising, which contributed to the creation of a document extracting categories and themes from the coding; 3) integrating, to understand the relationships among the different themes and create a whole picture.

It is necessary to point out that themes were created with Beverland's (2005a,b, 2006) framework, thus keeping the six attributes that contribute to creating, managing, and maintaining brand authenticity in mind. Finally, the primary sources' results were triangulated with secondary sources to strengthen the confidence in and validity of the case study findings (Gibbert *et al.*, 2008).

4. Findings

View through objective lens

Our first finding shows that Antonelli respects and cares for its brand heritage. Elements of heritage included 1) family ties to the business; some keywords, such as "family" and the company's year of foundation, strongly emerged. In particular, the latter is linked to the company's existential legacy and acts as the basis for the brand's innate and structural heritage; 2) its visual identity and stylistic consistency over time, including its logo (i.e., an arch, which represents the old entrance to the winery) and label (i.e., Antonelli). This element shows that history is key to the brand's visual identity, for. On the one side, stylistic consistency helps in increasing the brand's recognition, but also the brand's uniqueness and originality (i.e., competence). 3) Place indexical originality: this refers to the authenticity of the terroir, and, in particular, to the respect and care for the place and terroir that the Antonelli brand provides. Respondents highlighted the importance of respecting and preserving the original aspects of the territory from external contamination, which is critical in guaranteeing the brand's authenticity. Thus, in order to deliver an authentic brand, Antonelli preserves the indexical originality of the place and the terroir; 4) its traditional methods of production despite the presence of new methods of production for wine because they are considered the best way to produce high-quality wine, thus further increasing the brand's uniqueness.

The following quotes encapsulate these elements:

"Authentic... for me it is authentic because it is a company that was founded in 1881; it is like a family".

"Our label has been the same for 28 years or something like that… when consumers see a bottle of ours on a shelf or in a wine shop they don't have to look at anything else because that's Antonelli…. Moreover, tourists come back because they felt at ease and remember the logo with the arch".

"Authenticity means to respect the territory, the uniqueness of this territory…Antonelli is a brand that is respectful of the "genius loci"… the fact we have a personal identity that is respectful of the (original) characteristics of the area…in reference to origins, someone has mentioned Plinium, and not many places can boast this much history".

"Historically we have always used large barrels which are not common, but we have always done it this way".

View through subjective lens

Findings strongly highlight Antonelli's care for providing all stakeholders, especially its wine customers, with an iconic brand experience. This is achieved by offering consumers a holistic multisensory and participative experience, as well as a familiar atmosphere and a sense of community and belonging.

Firstly, Antonelli provides a holistic experience with its additional services, such as wine pairing, where consumers can taste the wine and pair it with Antonelli's food products. Moreover, the brand offers wine-tourism hospitality in the antique farmhouse Casale Satriano, where tourists can "experience nature" and walk to the Cantina Antonelli. The pleasure of living in this place and its natural environment is further enhanced by a service called "Nature Walks". Antonelli also started a cooking school, called "Cucina in Cantina," which offers courses on Umbrian cuisine, and provides lunches and dinners for groups on appointment. "Cucina in Cantina" offers a service called "Cook and Listen," where consumers can listen to employees' stories about the wine while they cook. Twice a year, the brand offers a service called "Cantine Aperte" where consumers can visit the old cellar and taste wine. Therefore, Antonelli offers an iconic experience based on multisensory and participative strategies. These findings underline the importance of co-creation when delivering an authentic brand experience, thus emphasizing the key role of both the brand and its consumers.

Secondly, the atmosphere of the place was also used by those who interacted with customers on the estate to justify the authenticity of the brand. The multisensory experience also relies on the familiar atmosphere that is created by the brand, especially when employees tell the family history behind the brand.

Quotes that focused on these include:

"It's important for us to offer them an experience that will be remembered. So, the best thing that you can do is what we call Passaparola [i.e., in English word of mouth]… So we founded a cooking school and a restaurant to provide wine pairing, lunches, and dinners, cooking classes... we've also organized walks in the parks".

"Authentic... for me it is authentic, it is like a family, and the people that come here to taste feel at home, sit, ask questions, drink… tourists come back because they felt at home".

"But I think the most important thing when people come [to the wine] shop is to feel, to transmit the sensation and to share the sensation that you are in a winery that was built in 1881. I want to communicate that there is passion and there is a family".

View through existential lens

The existential dimension identifies Antonelli as caring for the brand ecosystem, which includes people and the terroir of the place. Firstly, this stems from the passion and alignment of internal stakeholders, not only with the brand but with the terroir and society as a whole. The values of the CEO, managers, and staff are all aligned with the brand values. In particular, the identity alignment of internal stakeholders with the brand emerged throughout the interviews, and showed the managers' and employees' passion for the brand's structural (i.e., objective) elements, such as the ancient arch or the wine's flavors, but also to more emotional-based (i.e., subjective) characteristics, such as nostalgic feelings, which are also linked to the family concept.

Secondly, the brand's integrity and core values are also strongly linked to the brand's care for quality products, which is achieved by its "going organic". Again, the respect and care for the territory and the place strongly emerge as fundamental. Thus, the brand not only preserves the terroir's heritage, but also enhances it with ethical principles to respect all those who are included in the brand ecosystem, starting from the workers and consumers, and going up to the environmental protection of all the animals and wildlife in the terroir, who help in delivering high-quality wine. Here emerges the importance of non-manipulation of the territory through inauthentic practices like fertilizers, thus underlining the importance of naturalness, a key antecedent of brand authenticity. All produced wines have been certified as organic since 2012. This is an essential point of divergence, as only three of the 71 wineries in the region produce organic wine, and this also increases the originality of the brand and represents another major antecedent of brand authenticity.

Thirdly, Antonelli's care for the brand ecosystem requires a greater framework of reference, which also includes competitors who produce red and white wine in the same area (i.e., Montefalco) and are considered part of the brand ecosystem. These results shed light on the presence of a strong collective place-related identity. In particular, the brand's respect and care for the territory imply a "friendship" with Montefalco wine brands, because they share the same vision regarding the preservation and growth of the place. Respondents are driven by an emotional attachment to the wines that are produced in Montefalco and the Umbria region.

The following quotes highlight these elements:

"The arch is beautiful; we even go under it every day when we go to work… I love our flavors… I fell in love with this winery when I saw my father's cellar, and I fell in love with the arch of the winery".

"To me, brand authenticity is quality, respect for everything, the workers, the environment and the customers …In making organic products, we respect the soil, the earth and the environment, and we immediately notice any changes in the country: an insect that disappear, snails, those are signals … Fertilizer is dangerous for everybody. Chemicals harm people and the environment".

"There is no rivalry and the other wineries are friends of ours... When I have lunch outside, I never drink Antonelli's wine. Maybe it is an opportunity to try other wines from this area. This is something that Filippo [i.e., Antonelli's CEO] also does. It is limiting to only watch your own place… We want people to just stroll the streets and buy wine from them. It's important that you try to share what you're doing and it's important not to compete with them".

View through competitive lens

The results of our analysis have unveiled a new category of brand authenticity dimensions, i.e. the competitive dimension, which is considered essential in the company's strategic marketing decision-making and is related to a series of skills: *First of all,* brand (real) storytelling: Direct relationships are still meaningful, and a brand ambassador role focuses on building relationships with consumers with limited advertising and promotions. Moreover, the brand distances itself from advertising, which is perceived as an impersonal form of communication and impedes the communication of the real quality of the brand's products. The CEO and managers therefore prefer more direct and personalized communication, where the main promotion tools are the CEO and managers themselves, who act as brand ambassadors and are able to transmit the alignment of values and the passion for the brand vis-à-vis. In line with Antonelli's aim to tell a story, respondents highlighted the importance of participating in trade fairs both in Italy (e.g., Vivino) and in other countries (e.g., Germany). Trade fairs are especially preferred because it is possible to demonstrate the quality of the brand's products and reach the wine's niche target. Another communication strategy consists in publishing stories in specialized, professional wine magazines, such as articles about the most prominent brands of Montefalco and Umbria's region.

These findings are pointed out in the next quotes:

"You cannot communicate in a commercial way, the only way is to speak with people but it's very difficult, I can speak with just 1, 10 or 50 people per day".

"Mr. Antonelli is the best brand ambassador of our winery because his values are the values we want to communicate to people".

"We don't need to advertise ourselves…Quality is important, it's important for you to express this kind of quality without shouting about what you are doing… this is authenticity".

Second, Collaborative capabilities; Antonelli exhibits a participative vision, which is part of a greater communication intent that imagines the collaboration of various competitive brands from the same region. There is significant promotion of the winery and region through co-branding and coopetition, the latter emerging not as an existential collective identity, but as a competitive form of brand authenticity. The role of the regional wine Consortium was strongly present in the interviews because it unites all producers towards a single intent, namely the awareness and appeal of the territory. Thus, the promotion of the brand is carried out through collaboration among competitors who have non-competitive relationships in order to achieve a greater communicative intent, namely the valorization of the place and the territory with its products. In particular, as highlighted by the CEO, the aim is to transform Montefalco and Umbria into a "top area" for wine excellence.

The CEO strongly emphasized that it is essential to promote the winery as well as the region. The promotion of the place is conceived as more important than the promotion of the brand itself. When the authors asked Filippo about his vision of Antonelli's future, he answered that: "*the big question for me is not about Antonelli, but rather what Montefalco will be like in 10 years…Will it be considered one of the top Italian areas or not?... For me, this is also up to the producers because if we stay united it can happen". Thus, using the CEO's words, "promoting Sagrantino is probably easier and more important (than Antonelli)*". He was the president of the local consortium for 10 years, promoting the Sagrantino wines of Montefalco and is currently president of the Wine Tourism Association in Umbria. This form of coopetition aims not only at promoting the welfare of the region but also at increasing the positive effects stemming from co-branding operations. As highlighted by one of the respondents "*Wine is the product with the highest number of brands on a single bottle. You have the brand of the country, the region… There are so many brands, so it is important for Umbria to be well known*". Cooperation with other wineries producing Sagrantino is the key to promoting the existential collective identity of Antonelli, which includes all the brands belonging to its ecosystem.

These quotes exemplify the presented framework.

"The consortium represents and promotes what Montefalco, our territory and our idea of wine are".

"If another winery here in Montefalco wins an important prize from a guide, we are all happy about it because that means that more people will know Sagrantino… So the market is huge - they're not competitors, they're friends of ours".

Third, eco-capabilities; in the digital age, brands should embrace sustainability in everything they do, thus demonstrating extraordinary eco-capabilities. As highlighted by respondents, "*Being organic is technically more difficult, but gains more respect...Those who succeed will be successful in the long term*". Thus, despite the greater efforts in terms of the "*time and money*" that are required to be authentic, the brand recognizes that being sustainable is an important challenge of the digital era and that it will have a positive impact in the long term. However, brand managers, and in particular the CEO, were originally sceptical about the addition of a label certifying that the products are organic. Such scepticism derives from the brand's care for heritage, which is substantiated by Antonelli's stylistic consistency. Nonetheless, after thinking about it at length, the CEO decided to add the organic certification to Antonelli's bottles of wine.

The following quote confirms this:

"So, you have to communicate that you are organic. We made a new label that I had just received, it's really small that we want to put on the bottle; green leaves in order to claim that we make it by hand… Mr. Antonelli (recently) made the decision to use those labels but had been thinking about it for quite a while".

Fourth, technological skills; Antonelli has a dual position. On the one hand, employees report that technology may be helpful in the production process, especially when it helps in overcoming problems linked to methods of production, which are sometimes driven by human error, as one respondent highlighted: "*Do you see the capsule? If something goes wrong, the machine stops. Those are (positive) changes of technology, before it was done manually*". However, the brand refuses technology in general because it decreases the authenticity of Antonelli, which aims at preserving and valorizing the rather traditional brand's features. In other words, technology implicates fast production methods that would impede the delivery of an authentic offering, based on the quality of and care for the brand's heritage, two characteristics that are, as previously highlighted, at the basis of brand identity.

"Technology should not be invasive…you do not have to overdo it, otherwise we lose in authenticity because you are running too fast, and while technology goes fast, wine does not like to rush".

Fifth, digital capabilities are also underlined as an essential competitive dimension in building and maintaining brand authenticity, especially in dealing with millennials and brand communities. However, the brand struggles to maintain the authenticity of the brand based on a consistent and heritage-based visual identity and the dynamism that is imposed by the digital era to appeal, for example, across diverse generational cohorts. Brands should be promoted in the digital era with excellent, owned digital media. The respondents took on two opposing positions, a more critical one and another that acknowledges the importance of these media and the fact that the company definitely underestimates them. Regarding the latter, one interviewee observed that "*the website is far too busy, far too complicated, it's too much to read … too old fashioned … our website is boring*". However, a number of respondents who highlighted the importance of owned digital media, also highlighted the difficulty of managing them, especially social media, which are too complex and fast, as the quote below indicates:

"It is important to give an identity, it is important to be on social media…if you want to do it, it is important to do so in a good way… I was trying to take care of that, but it's almost impossible because it's becoming much faster than you can follow".

Despite some interviewees highlighting the importance of digital media, many of them hold a different, opposing position. First, the managers and employees believe that no real returns may stem from having a strong presence on social media, as was stated by one respondent: "*I am not sure that the likes that you get will translate in more selling of the wine*," but also "*We've tried with Facebook and other social media. I have never gained a single client from social media. I can say that this has never happened one single time*". Second, and most importantly, managers and employees claimed that worrying about being digital and on social media might diminish the authenticity of the brand. In particular, the use of digital media seems to have had a negative impact on the real brand value, made up of people, personal and direct relationships, and high product quality, as exemplified by the following quotes.

"The more a brand's visibility grows (on social media), the more companies tend to fall into the temptation of selling products of lower quality".

"It's probably more important to have somebody who goes to the vineyard and works there instead of paying somebody to work for a year and take trendy photos to put on the web. You cannot pay one person just to take care of Facebook".

"Perhaps authenticity reduced with the digital era that we're living in… Because there is less personal contact. (Less interaction)… work may seem easier, sure, but sometimes you'll lose something".

The digital era also calls for e-commerce capabilities. However, the Antonelli brand actually decided not to use this digital form of selling and distribution. Therefore, the brand neither sells online, nor does it do so individually or through other distributors. Again, Antonelli relies on direct relationships and "*shipping is a personal or almost personal. Abroad is always personalized*", which is not possible in a digital environment. This choice is driven by the brand's aim of maintaining freedom over decision-making related to product prices. The brand does not disclose its products' prices the managers claim that they "*do not want to have an official price, especially for the US, but this doesn't mean we don't sell to private customers, on the contrary, we send prices and information on shipping, but there is no online shop or website*". The avoidance of e-commerce is also driven by the aim of creating and maintaining a non-competitive relationship with the commercial activities of the Montefalco area and generally, of Umbrian wine shops.

Finally, the digital era calls for new capabilities that can engage millennials and deal with online brand communities. The CEO, managers and employees showed diverse perceptions of this generational cohort. In particular, some respondents seemed to have a very negative opinion of millennials, regarding them as "*superficial … they look at the alcohol percentage more than anything… they come here for a party, and they pay so much money, they order three glasses of wine and get drunk*". Other interviewees observed that this young cohort is not the target of Antonelli, which aims at drawing the attention of "*people who are slower than the younger generation*". Another respondent confirmed that millennials are not the planned target, adding a sarcastic comment about the needs and tastes of this segment, which is perceived as an inappropriate target for wine producers: "*I don't think we produce wines that are good for millennials. Millennials drink Pinot Grigio and Prosecco. Here we produce wine*". However, not all respondents showed this sense of anger and distance from the millennial generation. It is promising that the CEO and his nephew revealed encouraging perceptions about this segment. However, they observed that it is not only an attractive and promising target, but also a challenging one, mainly because it implies embracing the digital era and dealing with its challenges.

"The generation is ready. We are not ready. So in my opinion, it's very dangerous to be digital if you are not ready to begin".

"They are very nice, they are wine lovers, they are enthusiastic to know, to learn more and more; what I don't like is that everybody tastes the wine and puts it on the Internet, like TripAdvisor".

Online brand communities, such as TripAdvisor, VinoVero, and Vivino, represent another challenge for Antonelli. The risk is that of a potential alteration of the real brand story, in other words, loss of control over brand authenticity. Moreover, online brand communities prevent millennials, who seem to be more interested in "*snapping the bottle to have direct feedback from social media*" than listening to an authentic narrative about the story of a family, a place, and people, from having a real brand experience.

"There should be someone who also checks what has been written about us on the Internet and point out, 'Hey, there is a mistake.' For example, I did it on VinoVero with our Sagrantino 2009, there was a Sagrantino 2013 that was still not on the market, the price was wrong, the history was wrong".

"My colleague was explaining the wines to them (i.e., millennials) and they weren't listening to her, they didn't care about anything she was saying because they were reading stuff about our wines on Vivino. It's crazy because you are on the other part of the world, that you have travelled 24 hours to reach, and you don't want to hear our words, but prefer to read on Vivino".

5. General discussion

Theoretical implications

This paper explored wine brand authenticity in the digital era. The findings of our study confirmed the sources of brand authenticity from previous studies in the wine industry (Beverland, 2006; Girardin *et al.*, 2013; Leigh *et al.*, 2006; Morhart *et al.*, 2015). It also confirmed the objective, subjective, and existential sources of brand authenticity from previous research (Beverland, 2006; Girardin *et al.*, 2013; Leigh *et al.*, 2006; Morhart *et al.*, 2015).

Significant contributions of the current study stem from findings related to existential sources by highlighting their vital role when brands aim at building an authentic (wine) brand. Traditionally, academics have conceived the existential source rooted in moral, ethical and integral principles (Beverland and Farrelly, 2010; Beverland *et al.*, 2008; Choi *et al.*, 2015; Girardin *et al.*, 2013; Hasselbach and Roosen, 2015; Leigh *et al.*, 2006; Morhart *et al.*, 2015), which find their expression in Antonelli's care for the brand ecosystem, including people, the terroir and the entire location. Thus, these lenses shed light on a potential connection between being sustainable and being authentic (Alhouti *et al.*, 2016; Beckman *et al.*, 2009; McShane and Cunningham, 2012). In particular, this study substantiates previous research, suggesting that integrity and sustainability should be added to traditional antecedents for brand authenticity (Choi *et al.*, 2015; Girardin *et al.*, 2013; Morhart *et al.*, 2015). Similarly, we concur with Hasselbach and Roosen (2015), who highlighted the importance of being an organic brand in the food industry that, when linked to local provenance, increases consumers' willingness to purchase and pay a price premium. The branch's respect and care for the brand ecosystem and its authentic love for the place and its products highlighted the presence of a collective identity, including competitors, which are regarded as friends. This form of coopetition has been recognized in the wine industry (Dana *et al.*, 2013; Lewis *et al.*, 2015) but in this case it is noteworthy as it is seen as an existential source of brand authenticity that helps in building a collective authentic brand identity. Overall, the existential source linked to care for the brand ecosystem implies the brand attitude of helping all the actors that live in the ecosystem, substantiating Wymer and Akbar's (2018) findings suggesting that construct "attitude towards helping others" represents a significant antecedent of brand authenticity. In the agri-food sector, knowledge sharing could be an important facilitator of sustainable development (Maizza *et al.*, 2019).

In addition to objective, subjective and existential sources of brand authenticity, this study found a new source related to a brand's competitive side, that is fundamental in competing in the digital age, and focused on the importance of narrating the real brand story, engaging in collaborative relationships, and carefully managing eco-capabilities, technological skills, and digital capabilities.

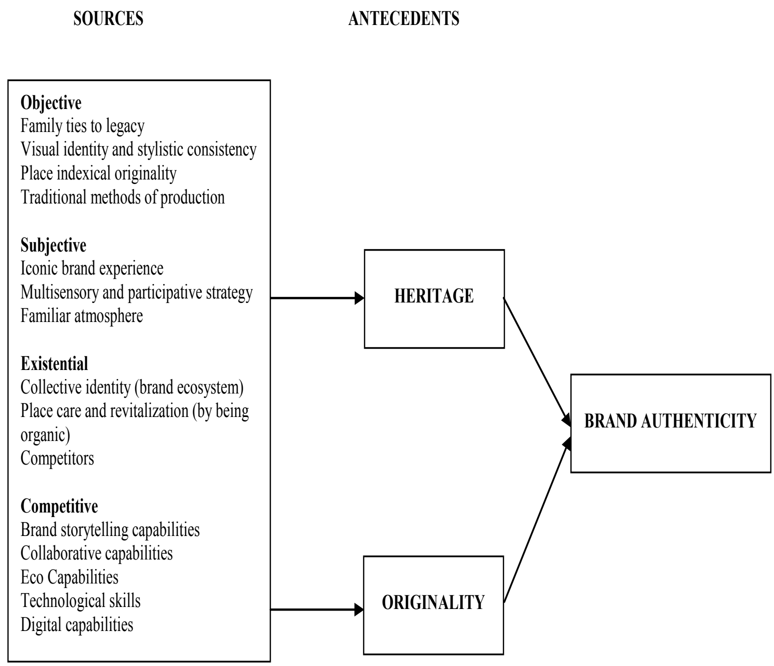
Communicating the real brand story represents the first competitive source of authenticity. This study points out the importance of narrating an indexical and emotional story made of people, heritage, place, and quality, where internal and external brand ambassadors play a key role. In general, to maintain authenticity, the brand distances itself from commercial practices (Beverland, 2005a,b; Beverland and Luxton, 2005; Holt, 2002; Kozinets, 2001) and prefers direct relationships. These findings differ from Beverland and Luxton's (2005) strategic decoupling. In fact, these authors have suggested that, in order to successfully manage the tension between telling a real story and being commercial and relevant, brands use strategic decoupling, thus hiding their commercial features and capabilities. Antonelli strategically decided to downplay commercialism, which also represents a challenge in a time when the lenses are pointed to digital capabilities that are necessary to be competitive in the digital era.

When assuming an intentional and planned shape, the collective identity based on Antonelli's existential care for the brand ecosystem, which also includes competitors, , transforms it into a brand cooperative strategy that is implemented to successfully compete in the digital era while maintaining authenticity. Thus, the brand requires collaborative capabilities that can be transformed into a coopetition strategy, i.e., a paradoxical relationship with competitors who collaborate to create and maintain a competitive advantage, while increasing innovation, technological advancement, and environmental protection, with the end purpose of achieving mutual benefits (Bengtsson and Kock, 2014; Bengtsson *et al.*, 2016; Chou and Zolkiewski, 2018; Volschenk *et al.*, 2016). Thereafter, these findings integrated a resource-based view of coopetition, as well as a combination of competitive dynamics and network theory (Bengtsson *et al.*, 2016), by showing that coopetition is embedded in the daily functioning of Antonelli in the region, in its strategic management, and in the competitive advantage of the brand and its authenticity. As coopetition relationships do not happen in isolation, the Consortium seems to be the primary manager and moderator of the ecosystem - the complex web of interdependent relationships in which Antonelli is embedded (Chou and Zolkiewski, 2018; Czakon and Czernek, 2016).

A different scenario emerges when considering digital capabilities, despite researchers having emphasized that the competitive dimensions of a brand should strongly consider digital efforts (Bernal-Jurado *et al.*, 2017). Antonelli is reluctant to use digital-related instruments, such as e-commerce and social media, which are often believed to undermine the authenticity of the brand. Moreover, questions about millennial customers produced responses across the spectrum. Accordingly, this study supports and extends Brown *et al.*'s (2003) "ambivalent legacy", which sheds light on a challenging side of brand authenticity, especially when this is significantly heritage-based. This study observes that being authentic can be profoundly challenging, especially when considering a technological, fast, and Internet-based scenario that sees growing younger generational cohorts such as millennials and Gen Z, as well as online communities. More specifically, Antonelli is still struggling to understand how to balance heritage-based and authentic features with digital imperatives that are considered necessary to be relevant in the digital age (Bernal-Jurado *et al.*, 2017). Surely, to increase online experiential value while maintaining their authenticity, online communication activities should narrate a brand story that includes its family-based heritage and region of provenance (Iaia *et al.*, 2016; 2017).

The interplay between indexical, subjective, existential and competitive sources enabled the achievement of a rich and multifaceted brand authenticity, comprising two main dimensions: brand heritage and originality (Figure 1). This is in line with Akbar and Wymer (2016), who claimed that the existing fragmented framework on brand authenticity could be simplified by considering originality and heritage. Moreover, this study concurs with Moulard *et al.* (2014, 2015b), who conceived the authenticity construct as the brand's expression of rare (originality) and stable (heritage-based) features. In particular, Moulard *et al.* (2015b) observed that whilst young generations prefer original-based features, older people tend to be more attached to stable characteristics. Thus, this study confirms and extends previous findings by suggesting that being original may help in maintaining the relevance - in terms of market and target relevance - of brand authenticity in the digital era, which otherwise risks being linked only to heritage-based features. In other words, the sources of authenticity that are linked to the dimension of originality may counterbalance heritage-based sources, thus helping in overcoming Brown *et al.*'s (2003) ambivalent legacy and achieving market relevance in the digital era.

Fig. 1: Brand authenticity sources in the digital age



Source: Authors' elaboration

Managerial Implications

In the third millennium, brand authenticity consists of respect for quality, people, place, the environment, production with no manipulation, and being different yet consistent over time. All of this needs to be well managed in the winery's brand architecture and brand portfolio by highlighting the importance of brand associations, where product brands can be strengthened by the country of origin, region, city, and corporate brand itself.

Brand managers need to consider an ecosystem view of their brand authenticity integrating all internal and external stakeholders, as well as an integrated plan of the dimensions of brand authenticity, including the competitive dimension. In particular, the relationship between the objective, subjective, existential and competitive dimensions may affect the final consumer's perception of brand authenticity, individual value, as well as collective socio-economic value. Thereafter, managers should pay considerable attention to the proposed model to avoid a shift from a virtuous, authentic-based process, to a vicious circle. Managers are called to carefully manage and improve their digital capabilities in the attempt to find the right balance between authenticity and commercialism.

Limitations and directions for future research

Despite the richness that has been provided by this explorative study, the choice of a single case study might limit the generalizability of its findings. Accordingly, future studies could investigate multiple Italian family wineries, including those operating in the wine sector in other countries. Moreover, the sources and dimensions of wine brand authenticity that emerged are contextual, so further research may reveal them to be applicable to other brands and markets. Alternatively, the same study could be carried out on family businesses operating in other sectors where the image of the product is linked to its territory of origin. Another critical point lies in the fact that the difficulty of managing the diversity in the wine consumption behaviour of millennials, as well as the digital environment, are described from an organizational and managerial perspective. Despite Pattuglia and Mingione's (2017) already having described authenticity from the millennials' point of view, their work lacked millennials' considerations on the relationship between being authentic and being digital. Thus, it could be interesting to further investigate this potential link. Is the digital scenario considered as challenging as this study suggests? Or do younger generations have different perspectives? This is also true in the case of other markets. How do commercial brands use digital principles and tools to enhance their authenticity?

References

AITKEN R., CAMPELO A. (2011), "The four Rs of place branding", *Journal of Marketing Management*, vol. 27, n. 9-10, pp. 913-933.

AKBAR M.M., WYMER W. (2016), "Refining the conceptualization of Brand Authenticity", *Journal of Brand Management*, vol. 24, n. 1, pp. 14-32.

ALEXANDER N. (2009), "Brand authentication: Creating and maintaining brand auras", *European Journal of Marketing,* vol. 43, n. 3/4, pp. 551-562.

ALHOUTI S., JOHNSON C.M., HOLLOWAY B.B. (2016), "Corporate social responsibility authenticity: Investigating its antecedents and outcomes", *Journal of Business Research*, vol. 69, n. 3, pp. 1242-1249.

ASSIOURAS I., LIAPATI G., KOULETSIS G., KONIORDOS M. (2015), "The impact of brand authenticity on brand attachment in the food industry", *British Food Journal,* vol. 117, n. 2, pp. 538-552.

BALLANTYNE R., WARREN A., NOBBS, K. (2006), "The evolution of brand choice", *Journal of Brand Management,* vol. 13, n. 4-5, pp. 339-352.

BECKMAN T., COLWELL A., CUNNINGHAM P.H. (2009), "The emergence of corporate social responsibility in Chile: The importance of authenticity and social networks", *Journal of Business Ethics*, vol. 86, n. 2, pp. 191.

BENGTSSON M., KOCK S., LUNDGREN-HENRIKSSON E.L., NÄSHOLM M.H. (2016), "Coopetition research in theory and practice: Growing new theoretical, empirical, and methodological domains", *Industrial Marketing Management,* vol. 57, pp. 4-11.

BENGTSSON M., KOCK, S. (2014), "Coopetition-Quo vadis? Past accomplishments and future challenges", *Industrial Marketing Management,* vol. 43, n. 2, pp. 180-188.

BERNAL-JURADO E., MOZAS-MORAL A., FERNÁNDEZ-UCLÉS D., MEDINA-VIRUEL M.J. (2017), "Explanatory factors for efficiency in the use of social networking sites-The case of organic food products", *Psychology and Marketing,* vol. 34, n. 12, pp. 1119-1126.

BEVERLAND M., LUXTON S. (2005), "Managing integrated marketing communication (IMC) through strategic decoupling: How luxury wine firms retain brand leadership while appearing to be wedded to the past", *Journal of Advertising,* vol. 34, n. 4, pp. 103-116.

BEVERLAND M.B. (2005a), "Crafting Brand Authenticity: The Case of Luxury Wines", *Journal of Management Studies,* vol. 42, n. 5, pp. 1002-1029.

BEVERLAND M.B. (2005b), "Brand management and the challenge of authenticity", *Journal of Product and Brand Management,* vol. 14, n. 7, pp. 460-461.

BEVERLAND M.B. (2006), "The 'real thing': Branding authenticity in the luxury wine trade", *Journal of Business Research,* vol. 59, n. 2, pp 251-258.

BEVERLAND M.B., FARRELLY F., QUESTER P.G. (2010), "Authentic subcultural membership: Antecedents and consequences of authenticating acts and authoritative performances", *Psychology and Marketing,* vol. 27, n. 7, pp. 698-716.

BEVERLAND M.B., FARRELLY F.J. (2010), "The quest for authenticity in consumption: Consumers' purposive choice of authentic cues to shape experienced outcomes", *Journal of Consumer Research*, vol. 36, n. 5, pp. 838-856.

BEVERLAND M.B., LINDGREEN A., VINK M.W. (2008), "Projecting authenticity through advertising: Consumer judgments of advertisers' claims", *Journal of Advertising,* vol. 37, n. 1, pp. 5-15.

BROWN S., KOZINETS R.V., SHERRY, J.F. (2003), "Teaching old brands new tricks: Retro branding and the revival of brand meaning", *Journal of Marketing,* vol. 67, n. 3, pp. 19-33.

BRUHN M., SCHOENMÜLLER V., SCHÄFER D., HEINRICH D. (2012), "Brand authenticity: Towards a deeper understanding of its conceptualization and measurement", *Advances in Consumer Research*, vol. 40, pp. 567-576.

CAMICIOTTOLI B.C., RANFAGNI S., GUERCINI S. (2014), "Exploring brand associations: An innovative methodological approach", *European Journal of Marketing*, vol. 48, n. 5-6, pp. 1092-1112.

CAMPBELL C., PITT L.F., PARENT M., BERTHON P.R. (2011), "Understanding Consumer Conversations Around Ads in a Web 2.0 World", *Journal of Advertising*, vol. 40, n. 1, pp. 87-102.

CARSANA L., JOLIBERT A. (2018), "Influence of iconic, indexical cues, and brand schematicity on perceived authenticity dimensions of private-label brands", *Journal of Retailing and Consumer Services,* vol. 40, pp. 213-220.

CHARMLEY R., GARRY T., BALLANTINE P.W. (2013), "The inauthentic other: Social comparison theory and brand avoidance within consumer sub-cultures", *Journal of Brand Management*, vol. 20, n. 6, pp. 458-472.

CHEAH I., ZAINOL Z., PHAU I. (2016), "Conceptualizing country-of-ingredient authenticity of luxury brands", *Journal of Business Research,* vol. 69, n. 12, pp. 5819-5826.

CHHABRA D., KIM E.G. (2018), "Brand authenticity of heritage festivals", *Annals of Tourism Research*, vol. 68, pp. 55-57.

CHOI H., KO E., KIM E.Y., MATTILA P. (2015), "The role of fashion brand authenticity in product management: A holistic marketing approach", *Journal of Product Innovation Management,* vol. 32, n. 2, pp. 233-242.

CHOU H.H., ZOLKIEWSKI J. (2018), "Coopetition and value creation and appropriation: The role of interdependencies, tensions and harmony", *Industrial Marketing Management,* vol. 70, pp. 25-33

COLLINS M., WEISS M. (2015), "The role of provenance in luxury textile brands", *International Journal of Retail and Distribution Management*, vol. 43, n. 10/11, pp. 1030-1050.

CORCIOLANI M. (2014), "How do authenticity dramas develop? An analysis of Afterhours fans' responses to the band's participation in the Sanremo music festival", *Marketing Theory,* vol. 14, n. 2, pp. 185-206.

CZAKON W., CZERNEK K. (2016), "The role of trust-building mechanisms in entering into network coopetition: The case of tourism networks in Poland", *Industrial Marketing Management*, vol. 57, pp. 64-74.

DANA L.P., GRANATA J., LASCH F., CARNABY A. (2013), "The evolution of co-opetition in the Waipara wine cluster of New Zealand", *Wine Economics and Policy,* vol. 2, n. 1, pp. 42-49.

DANN S. (2010), "Redefining Social Marketing with Contemporary Commercial Marketing Definitions", *Journal of Business Research,* vol. 63, pp. 147-153.

EGGERS F., O'DWYER M., KRAUS S., VALLASTER C., GÜLDENBERG S. (2013), "The impact of brand authenticity on brand trust and SME growth: A CEO perspective", *Journal of World Business*, vol. 48, n. 3, pp. 340-348.

FINE G.A. (2003), "Crafting authenticity: The validation of identity in self-taught art", *Theory and Society,* vol. 32, n. 2, pp. 153-180.

FLORES S.S. (2018), "What is sustainability in the wine world? A cross-country analysis of wine sustainability frameworks", *Journal of Cleaner Production,* vol. 172, pp. 2301-2312.

FRITZ K., SCHOENMUELLER V., BRUHN M. (2017), "Authenticity in branding-exploring antecedents and consequences of brand authenticity", *European Journal of Marketing*, vol. 51, n. 2, pp. 324-348.

GANDOMI A., HAIDER M. (2015), "Beyond the hype: Big data concepts, methods, and analytics", *International Journal of Information Management*, vol. 35 n 2, pp. 137-144.

GIBBERT M., RUIGROK W., WICKI B. (2008), "What passes as a rigorous case study?", *Strategic Management Journal,* vol. 29, n. 13, pp. 1465-1474.

GIRARDIN F., GUÈVREMONT A., MORHART F., GROHMANN B., MALAR L. (2013), "Brand authenticity: An integrative framework", in *AMA Winter Educators' Conference Proceedings,* 15-17 February.

GRAYSON K., MARTINEC R. (2004), "Consumer perceptions of iconicity and indexicality and their influence on assessments of authentic market offerings", *Journal of Consumer Research*, vol. 31, n. 2, pp. 296-312.

GROVES A.M. (2001), "Authentic British food products: a review of consumer perceptions", *International Journal of Consumer Studies,* vol. 25, n. 3, pp. 246-254.

GUÈVREMONT A., GROHMANN B. (2016), "The brand authenticity effect: situational and individual-level moderators", *European Journal of Marketing,* vol. 50, n. 3/4, pp. 602-620.

GUNDLACH H., NEVILLE B. (2012), "Authenticity: Further theoretical and practical development", *Journal of Brand Management,* vol. 19, n. 6, pp. 484-499.

HASSELBACH J.L., ROOSEN J. (2015), "Consumer heterogeneity in the willingness to pay for local and organic food", *Journal of Food Products Marketing,* vol. 21, n. 6, pp. 608-625.

HOLT D.B. (2002), "Why do brands cause trouble? A dialectical theory of consumer culture and branding", *Journal of Consumer Research,* vol. 29, n. 1, pp. 70-90.

IAIA L., SCORRANO P., FAIT M., CAVALLO F., (2017) "Wine, family businesses and web: marketing strategies to compete effectively", *British Food Journal,* vol. 119, n. 11, pp. 2294-2308.

IAIA L., MAIZZA A., FAIT M., SCORRANO P. (2016), "Origin based agro-food products: how to communicate their experiential value online?", *British Food Journal,* vol. 118, n. 8, pp. 1845-1856.

ILICIC J., WEBSTER C.M. (2014), "Investigating consumer-brand relational authenticity", *Journal of Brand Management*, vol. 21, n. 4, pp.342-363.

ILICIC J., WEBSTER C.M. (2016), "Being true to oneself: Investigating celebrity brand authenticity", *Psychology and Marketing*, vol. 33, n. 6, pp. 410-420.

KADIROV D. (2015), "Private labels ain't bona fide! Perceived authenticity and willingness to pay a price premium for national brands over private labels", *Journal of Marketing Management,* vol. 31, n. 17-18, pp. 1773-1798.

KATES S.M. (2004), "The dynamics of brand legitimacy: An interpretive study in the gay men's community", *Journal of Consumer Research,* vol. 31, n. 2, pp. 455-464.

KOWALCZYK C.M., POUNDERS K.R. (2016), "Transforming celebrities through social media: the role of authenticity and emotional attachment", *Journal of Product and Brand Management*, vol. 25, n. 4, pp. 345-356.

KOZINETS R.V. (2001), "Utopian enterprise: Articulating the meanings of Star Trek's culture of consumption", *Journal of Consumer Research,* vol. 28, n. 1, pp. 67-88.

LALICIC L., WEISMAYER C. (2017), "The role of authenticity in Airbnb experiences", *Information and Communication Technologies in Tourism,* pp. 781-794. Springer, Cham.

LATEGAN B.W., PENTZ C.D., DU PREEZ R. (2017), "Importance of wine attributes: a South African Generation Y perspective", *British Food Journal,* vol. 119, n. 7, pp.1536-1546.

LEIGH T.W., PETERS C., SHELTON J. (2006), "The consumer quest for authenticity: The multiplicity of meanings within the MG subculture of consumption", *Journal of the Academy of Marketing Science*, vol. 34, n. 4, pp. 481-493.

LEWIS G.K., BYROM J., GRIMMER M. (2015), "Collaborative marketing in a premium wine region: the role of horizontal networks", *International Journal of Wine Business Research,* vol. 27, n. 3, pp. 203-219.

MAIZZA A., FAIT M., SCORRANO P., IAZZI A. (2019), "How knowledge sharing culture can become a facilitator of the sustainable development in the agrifood sector", *Sustainability*, vol. 11, n. 4, pp. 1-15.

MAIZZA A., FAIT M., SCORRANO P., VRONTIS D. (2017), "Old, New and Third Wine Regions: a Consumer Perspective", *World Review of Entrepreneurship, Management and Sustainable Development,* vol. 13, n. 5/6, pp. 521-541.

MANTHIOU A., KANG J., HYUN S.S., FU X.X. (2018), "The impact of brand authenticity on building brand love: An investigation of impression in memory and lifestyle-congruence", *International Journal of Hospitality Management*, vol. 75, pp. 38-47.

MCSHANE L., CUNNINGHAM P. (2012), "To thine own self be true? Employees' judgments of the authenticity of their organization's corporate social responsibility program", *Journal of Business Ethics*, vol. 108, n. 1, pp. 81-100.

MINGIONE M., BENDIXEN M., ABRATT R., PATTUGLIA S. (2017), "Antecedents and consequences of Brand Authenticity across generational cohorts", *XII Global Brand Conference,* Kalmar, Sweden, 26-28th April.

MODY M., HANKS L. (2017), "Consumption authenticity in the age of the sharing economy: The key to creating loyal customers who love your brand", Boston University Consumer Behavior in Hospitality Research Conference. Boston, MA.

MORHART F., MALÄR L., GUÈVREMONT A., GIRARDIN F., GROHMANN B. (2015), "Brand authenticity: An integrative framework and measurement scale", *Journal of Consumer Psychology*, vol. 25, n. 2, pp. 200-218.

MOULARD J., BABIN B.J., GRIFFIN M. (2015a), "How aspects of a wine's place affect consumers' authenticity perceptions and purchase intentions: The role of country of origin and technical terroir", *International Journal of Wine Business Research,* vol. 27, n. 1, pp. 61-78.

MOULARD J.G., GARRITY C.P., RICE D.H. (2015b), "What makes a human brand authentic? Identifying the antecedents of celebrity authenticity", *Psychology and Marketing*, vol. 32, n. 2, pp. 173-186.

MOULARD J.G., RAGGIO R.D., FOLSE J.A.G. (2016), "Brand authenticity: Testing the antecedents and outcomes of brand management's passion for its products", *Psychology and Marketing*, vol. 33, n. 6, pp. 421-436.

MOULARD J.G., RICE D.H., GARRITY C.P., MANGUS S.M. (2014), "Artist authenticity: How artists' passion and commitment shape consumers' perceptions and behavioral intentions across genders", *Psychology and Marketing,* vol. 31, n. 8, pp. 576-590.

NAPOLI J., DICKINSON S.J., BEVERLAND M.B., FARRELLY F. (2014), "Measuring consumer-based brand authenticity", *Journal of Business Research*, vol. 67, n. 6, pp. 1090-1098.

NAPOLI J., DICKINSON-DELAPORTE S., BEVERLAND M.B. (2016), "The brand authenticity continuum: strategic approaches for building value", *Journal of Marketing Management,* vol. 32, n. 13-14, pp. 1201-1229.

PACE S. (2015), "Can a commercially oriented brand be authentic? A preliminary study of the effects of a pro-business attitude on consumer-based brand authenticity", *Journal of Applied Business Research,* vol. 31, n. 3, pp.1167.

PATTUGLIA S., MINGIONE M. (2017), "Towards a new understanding of brand authenticity: seeing through the lens of Millennials", *Sinergie Italian Journal of Management,* vol. 35, n. 103, pp. 35-55.

PORTAL S., ABRATT R., BENDIXEN M. (2018), "The role of brand authenticity in developing brand trust", *Journal of Strategic Marketing,* DOI: 10.1080/0965254X.2018.1466828

POSTREL V. (2003), The Substance of Style: How the Rise of Aesthetic Value is Remaking Culture, Commerce, and Consciousness, HarperCollins, New York.

PREECE C. (2015), "The authentic celebrity brand: unpacking Ai Weiwei's celebritised selves", *Journal of Marketing Management,* vol. 31, n. 5-6, pp. 616-645.

PRONSCHINSKE M., GROZA M.D., WALKER M. (2012), "Attracting Facebook 'fans': the importance of authenticity and engagement as a social networking strategy for professional sport teams", *Sport Marketing Quarterly*, vol. 21, n. 4, pp. 221.

PROWEIN BUSINESS REPORT (2019), "Climate Change changes the Global Wine Industry", pp. 1-13. Accessed the 22 March, 2020, from: https://www.prowein.com/cgibin/md_prowein/lib/all/lob/return_download.cgi/ProWein_PM_Business_Report_2019_EN.pdf?ticket=g_u_e_s_t&bid=7035&no_mime_type=0

PUCCI T., CASPRINI E., NOSI C., ZANNI L. (2017), "Online buying intentions of wine consumers: The role of knowledge and social media", in *XXXVIII AIDEA (Accademia Italiana di Economia Aziendale) Annual Conference*, Rome, 15 September, 14.

REISINGER Y., STEINER C.J. (2006), "Reconceptualizing Object Authenticity", *Annals of Tourism Research*, vol. 33, n. 1, pp. 65-86.

ROE D., BRUWER J. (2017), "Self-concept, product involvement and consumption occasions: Exploring fine wine consumer behaviour", *British Food Journal,* vol. 119, n. 6, pp. 1362-1377.

SAMUEL A., TAYLOR D., WHITE G.R., NORRIS M. (2018), "Unpacking the authenticity gap in corporate social responsibility: lessons learned from Levi's 'Go Forth Braddock' campaign", *Journal of Brand Management,* vol. 25, n. 1, pp. 53-67.

SHAMS R., ALPERT F., BROWN M. (2015), "Consumer perceived brand innovativeness: Conceptualization and operationalization", *European Journal of Marketing,* vol. 49, n. 9-10, pp. 1589-1615.

SHIRDASTIAN H., LAROCHE M., RICHARD M.O. (2019), "Using big data analytics to study brand authenticity sentiments: The case of Starbucks on Twitter", *International Journal of Information Management*, vol. 48, pp. 291-144.

SICCAMA C.J., PENNA S. (2008), "Enhancing Validity Of A Qualitative Dissertation Research Study By Using NVIVO", *Qualitative Research Journal,* vol. 8, n. 2, pp. 91-103.

SIGGELKOW N. (2007), "Persuasion with case studies", *Academy of Management Journal*, vol. 50, n. 1, pp. 20-24.

SIRIANNI N.J., BITNER M.J., BROWN S.W., MANDEL N. (2013), "Branded service encounters: Strategically aligning employee behavior with the brand positioning", *Journal of Marketing,* vol. 77, n. 6, pp.108-123.

SMITH A.E., HUMPHREYS M.S. (2006), "Evaluation of Unsupervised Semantic Mapping of Natural Language with Concept Mapping", *Behavior Research Methods,* vol. 38, n. 2, pp. 262-279.

SPIELMANN N., CHARTERS S. (2013), "The dimensions of authenticity in terroir products", *International Journal of Wine Business Research*, vol. 25, n. 4, pp. 310-324.

STIEHLER B., TINSON J. (2015), "Opportunistic Luxury branding: Understanding perceptions of brand authenticity in an emerging market context", *The Journal of Global Business and Technology,* vol. 11, n. 1, pp. 39-55.

SZOLNOKI G. (2013), "A cross-national comparison of sustainability in the wine industry", *Journal of Cleaner Production,* vol. 53, pp. 243-251.

THOMPSON C.J., RINDFLEISCH A., ARSEL Z. (2006), "Emotional branding and the strategic value of the doppelgänger brand image", *Journal of Marketing,* vol. 70, n. 1, pp. 50-64.

THYNE M., HEDE A.M. (2016), "Approaches to managing co-production for the co-creation of value in a museum setting: when authenticity matters", *Journal of Marketing Management*, vol. 32, n. 15-16, pp. 1478-1493.

URDE M., GREYSER S.A., BALMER J.M. (2007), "Corporate brands with a heritage", *Journal of Brand Management*, vol. 15, n. 1, pp. 4-19.

VAN DEN BOSCH A. L., DE JONG M.D., ELVING W.J. (2005), "How corporate visual identity supports reputation", *Corporate Communications: An International Journal,* vol. 10, n. 2, pp. 108-116.

VARADARAJAN R. (2010), "Strategic marketing and marketing strategy: domain, definition, fundamental issues and foundational premises", *Journal of the Academy of Marketing Science*, vol. 38, pp. 119-140

VOLSCHENK J., UNGERER M., SMIT E. (2016), "Creation and appropriation of socio-environmental value in coopetition", *Industrial Marketing Management*, vol. 57(August), pp. 109-118.

WILK V., HARRIGAN P., SOUTAR G.N. (2018), "Navigating Online Brand Advocacy (OBA): an Exploratory Analysis", *Journal of Marketing Theory and Practice*, vol. 26, n. 1-2, pp. 99-116.

WYMER W., AKBAR M.M. (2017), "Brand authenticity, its conceptualization, and its relevance to nonprofit marketing", *International Review on Public and Nonprofit Marketing*, vol. 14, n. 3, pp. 359-374.

WYMER W., AKBAR M.M. (2018), "Brand Authenticity's Influence on Charity Support Intentions", *Journal of Nonprofit and Public Sector Marketing,* vol. 31, n. 5, pp. 1-21.

YIN R.K. (1994), *Case Study Research: Design and Methods*, 2nd ed., Sage, Newbury Park, CA.

Academic or professional position and contacts

Michela Mingione
PhD, Assistant Professor of Marketing
University Tor Vergata University - Rome - Italy
e-mail: mingione@economia.uniroma2.it

Mike Bendixen
PhD, Full Professor of Marketing
University Gordon Institute of Business Science - University of Pretoria - South Africa
e-mail: BendixenM@gibs.co.za

Russell Abratt
PhD, Full Professor of Marketing
University School of Business - George Mason University Fairfax, VA - United States of America
e-mail: rabratt@gmu.edu

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.11
pp. 181-205

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Original research paper

Investigating the links between the use of the internet, value co-creation, and customer satisfaction in the banking sector[1]

Received
15th July 2019
Revised
31th March 2020
Accepted
26th May 2020

Vincenzo Formisano - Andrea Moretta Tartaglione
Maria Fedele - Ylenia Cavacece

Abstract

Purpose of the paper: *Because of the 2007 financial crisis, the necessity for banks to (re)build a strong dialogue with customers and improve their satisfaction has been particularly felt. Marketing scholars respond to this challenge by encouraging value co-creation initiatives. The aim of this paper is to analyse the role of Internet banking in stimulating value co-creation processes and the consequent effects on customer satisfaction.*

Methodology*: Based on a review of literature on Internet banking, value co-creation, and customer satisfaction in the banking sector, the links between these variables are theoretically outlined and tested through an empirical investigation. Results are analysed with a regression analysis.*

Results*: The results show how, by leveraging digital channels, real-time interactions and advanced advisory services can be implemented in order to encourage clients to participate in the process and meet their own needs, thus increasing their satisfaction.*

Practical implications*: To practitioners, the study provides suggestions on how to improve customer satisfaction by offering opportunities for clients to access services and products through Internet technologies and encouraging them to become increasingly active in the co-creation process.*

Originality and value: *Although the literature on banking management is prolific with regard to studies on Internet banking, value co-creation, and customer satisfaction, these dimensions are often studied separately. This work is the first useful attempt to investigate the links between these dimensions and to test them with an empirical analysis.*

Key words: internet banking; value co-creation; customer satisfaction; banking sector; regression analysis

1. Introduction

Since the global financial crisis of 2007, the banking sector has experienced several challenges due to many companies and families failing to repay loans, in addition to serious episodes of mismanagement.

[1] This research was carried out within the Osservatorio Etica, Finanza, Banca e Impresa, which is co-financed by the University of Cassino and Southern Lazio and Fondazione Roma.

The consequences of the crisis for banks were not just financial; the crisis severely affected consumer behaviour (Hermann, 2009), causing an extraordinary decrease in consumer confidence (Solomon, 2009). The banking system was particularly affected in terms of relationships with consumers who attributed to banks a dominant role in the eruption of the crisis. Banks need to (re)build a strong dialogue with customers and regain their trust. The first step should be to abandon the restrictive, paternalistic practices of the past and become a partner that cares for the financial health of its customers, helping them to become financially secure and confident.

The scientific community has shown great interest in these issues, and several marketing scholars suggest overcoming the dominant company-centric approach to value creation in favour of value co-creation strategies with customers (Ramaswamy and Gouillart, 2010).

According to the value co-creation view, banks should create value with their customers through interactions, dialogue, and mutual involvement in order to obtain reciprocal benefit. The principal benefit for the bank consists in increasing its knowledge of consumer behaviour, thus aligning the services towards what the customer is directly asking for in order to improve satisfaction.

The Information and Communication Technology (ICT) evolution has significantly modified the way customers have access to banking services, transforming the nature of the relationship between banks and customers (Payne *et al.*, 2018). Technologies such as self-service devices, automated teller machines (ATM), Internet banking, and mobile banking allow banks to offer a wide range of service channels to their customers and instant solutions to their problems. In particular, Internet banking allows customers to conduct financial transactions, such as account transfers, paying bills, stock-exchange transactions, and other financial services on a secure website offered by the financial institution (Martins *et al.*, 2014), usually accessed via a laptop device or desktop PC (Shaikh and Karjaluoto, 2015). This new service channel enables customers to become more independent in managing their finances and savings and in carrying out financial transactions, thus actively participating in the creation and provision of financial services according to a value co-creation logic (Liang and Nguyen, 2018). At the same time, Internet banking offers additional benefits to banks in terms of cost savings and cross-selling activity (Baabdullah *et al.*, 2019; Sharma *et al.*, 2015). Moreover, several studies show that Internet banking adoption has a positive impact on customer satisfaction (Hamidi and Safareeyeh, 2019; Toor *et al.*, 2016; Worku *et al.*, 2016).

Based on these considerations, we can state that new bank marketing strategies should involve three important factors: service innovation in terms of Internet banking, value co-creation, and customer satisfaction.

The aim of this paper is to analyse the links between these variables by answering the following research questions:

RQ1: Does the use of Internet banking services affect the customers' value co-creation behaviours?

RQ2: Does the use of Internet banking services affect customer satisfaction?

RQ3: Do customers' value co-creation behaviours affect their satisfaction?

Through a literary review, the links between Internet banking, value co-creation, and customer satisfaction in the banking sector are theoretically outlined in this work and then tested with an empirical analysis; based on the results, conclusions and practical implications are presented.

2. Literature review

2.1 Value co-creation and Internet banking

For several decades, the theories of bank marketing have considered the customer as being passive and the customer value "as the value that the customer generates for the bank, rather than the value banks can offer to their customers" (Payne *et al.* 2000, p. 267).

With the emergence of Service-Dominant logic (Vargo and Lusch, 2004, 2006), the value co-creation perspective has spread in marketing discipline. According to this logic, value is always co-created in interactions between providers and customers through the exchange of knowledge, skills, and resources (Vargo and Lusch, 2004). The provider can only propose a value and provide a service as input for its realization (Flint, 2006), but value is always determined by the beneficiary as either "value-in-use" (Vargo and Lusch, 2004) or "value-in-context" (Vargo and Lusch, 2008).

The perspective of value co-creation shifts the focus to the active participation of the customer in the service offered by the bank (Formisano *et al.,* 2018). Customer participation in defining and creating the service allows banks to create superior value (Prahalad and Ramaswamy, 2004a, 2004b); the literature provides several case studies of banks that faced the financial crisis by involving customers in value co-creation initiatives (Mainardes *et al.*, 2017). Many of the empirical findings acknowledge the importance of co-creation in helping banks to recover consumer confidence (Ramaswamy and Gouillart, 2010) and to better overcome the economic crisis (Preikschas *et al.*, 2014).

However, the literature does not provide a clear framework outlining the strategies that banks should pursue to promote co-creation. Moreover, empirical studies involve only the banking management, leaving a gap in the research about the value of co-creation behaviours of customers in the banking sector.

Some marketing theories, such as Service Science (Maglio and Spohrer, 2008), recognize technology platforms and ICT solutions as the main enablers of consumers' co-creative behaviours.

Banks are among the leaders in offering high quality and convenient services through high technology (Siddiqi, 2011) making the relationship with customers more virtual (Martovoy and Santos, 2012).

Apparently, solutions like Internet banking, by providing new channels to access services without interactions with the staff, should hinder the emergence of value co-creation paths with customers. Prahalad and Ramaswamy (2004b) state, on the contrary, that self-service practices, such as those offered by Internet banking, enable the involvement of customers in value co-creation process as they tend to feel empowered by the valorization of their freedom in conducting the consumption experience. Customers feel more productive and efficient in attaining and producing Internet services in comparison with traditional tools to have the same kinds of services (Alalwan *et al.*, 2018). For this reason, Nuttavuthisit (2010) suggests that organizations should design systems for more independent interactions as the first step in value co-creation. Consumer need to recognize the benefit of self-service in order to be motivated to take part in the process (Grönroos, 2008). Several studies demonstrate that in order for value co-creation to take place, it is not enough to invest in new technologies and ongoing improvements, but banks should also use these technologies to stimulate dialogue with customers and better integrate them in the process (Prahalad and Ramaswamy, 2004b; Ballantyne and Varey, 2006; Hoyer *et al.*, 2010). According to Cambra-Fierro (2017), Internet banking facilitates dynamic relationships and interactive experiences and activities between banks and customers.

Based on the literature, we suggest the following hypothesis:

H1: The use of Internet banking services has positive effects ($\beta > 0$) on value co-creation behaviours.

2.2 Customer satisfaction and Internet banking

Customer satisfaction can be defined as a positive disconfirmation between the perceived service and the expected service (Oliver, 1999). Bank customer satisfaction is regarded as banks fully meeting the customers' expectations (Bloemer *et al.*, 1998) as well as the positive feeling or attitude formed by bank customers after service (Jamal and Naser, 2002).

Generally, customer satisfaction in the banking sector is evaluated in five service quality dimensions according to the SERVQUAL model: reliability, responsiveness, assurance, tangibles, and empathy. However, Toor *et al.* (2016) state that due to the increasing competition in the banking sector over the last few years, banks have focused on Internet banking as the main tool to attain customer satisfaction; it is therefore necessary to consider Internet banking adoption when evaluating customer satisfaction.

Several studies demonstrate a significant and positive relationship between Internet banking and customer satisfaction (Hossain *et al.*, 2019; Sampaio *et al.*, 2017; Hamzah *et al.*, 2017; Amin, 2016; Raza *et al.*, 2015; Sharma and Malviya, 2014; Kervin, 2014; Taleghani *et al.*, 2014; Nimaco *et al.*, 2013; Vasista, 2013). Internet banking has become one of the essential banking tools that can, if properly implemented, increase customer satisfaction and give banks a competitive advantage (Hammound *et al.*, 2018).

Authors highlight different factors of Internet banking that lead to customer satisfaction. According to Liébana, Muñoz, and Rejón (2013), accessibility, ease of use, trust, and usefulness are the principal factors. Qureshi (2008) identify four factors affecting customer satisfaction, which are the perceived usefulness, perceived ease of use, security, and privacy provided by Internet banking. Jun and Palacios (2016) add mobile convenience, accuracy, and continuous improvement to these factors. Robertson *et al.* (2016) find that reliability, user-friendly, enjoyment, and perceived control of the service provided by Internet banking are positively associated with customer satisfaction. The study by Gunawardana *et al.* (2015) reveals that reliability and convenience of Internet banking services have positive impacts on customer satisfaction. Rashidi and Mansoori (2015) find that Internet banking provides customers with reduced costs and categorization of services, and a close relationship between banks and their customers is created and maintained, which can ultimately lead to customer satisfaction. Worku *et al.* (2016) state that there is a significant relationship between customer satisfaction and 24-7 access to bank accounts as well as the possibility of optimized control and monitoring of bank accounts. Kumbhar (2011) notes that Internet banking brings convenience, customer centricity, enhanced service quality, and cost effectiveness, thus increasing customer satisfaction with banking services. Carse (1999) claims that the potential for customers to manage their banking transactions at any time and location increases their satisfaction. According to Nupur (2010), it is the possibility of access to a quicker and dependable service that satisfies customers. Dianat *et al.* (2019) find that there is a significant relationship between banking website usability and user satisfaction while, according to Hossain et at. (2018), difficult technologies combined with complex processes can lead to customer dissatisfaction.

Some authors underline the importance of Internet banking in satisfying different market segments, such as the demands of the electronic market (Balachandher *et al.*, 2001) and the "un-banked customers" (Karjaluoto *et al.*, 2002).

According to the relevant literature, we propose the following hypothesis:

H2: The use of Internet banking services has positive effects (β > 0) on customer satisfaction.

2.3 Value co-creation and customer satisfaction

Several authors state that by establishing value co-creation paths with customers, banks can attain a greater number of satisfied customers (Cambra-Fierro *et al.*, 2017; Hossain *et al.*, 2019) and, consequently, gain a greater share of the financial market (Al-Dmour *et al.*, 2019; Silver and Vegholm, 2009) and better financial performances (Mbama and Ezepue, 2018). Bendapudi and Leone (2003) investigated the psychological implications of co-creation for customers, concluding that the quality of the results and satisfaction are influenced by customer participation. González-Mansilla (2019) prove that customer perception of the value co-creation process has a positive impact on brand equity and perceived value, which in turn are positively linked with customer satisfaction. Clauss *et al.* (2019) identify a significant indirect effect of customers' perceived business model innovativeness on customer satisfaction via customer value co-creation behaviour.

Regarding the reasons why value co-creation should increase customer satisfaction, the literature presents several theories.

First, according to Kuokkala *et al.* (2010), value co-creation helps to overcome the problem of asymmetrical information in the context of financial transactions and to make correct decisions (Mishkin, 1992). Value co-creation improves the levels of mutual understanding (Binks and Ennew, 1997), with consequences such as more higher levels of customer satisfaction. These higher levels of satisfaction derive from the fact that by participating in the relationship with the bank, customers get a better understanding of how and why decisions are made and how services are delivered, and they may be more aware of the constraints on the service provider in terms of what can and cannot be delivered (Kuokkala *et al.*, 2010). The provision of consistent and reliable information to customers favours their positive satisfaction judgements (Rejikumar and Aswathy Asokan, 2017). On the other hand, by acquiring more information and understanding about customers' needs, banks can adapt the final service to them (Harkison, 2018; Wu *et al.*, 2018); however, this result depends on the willingness of customers to provide appropriate information. This means that value co-creation requires continuous dialogue between the bank and the customer, collaboration in the services production, in the definition of objectives and solutions (Prahalad and Ramaswamy, 2004a, p. 8).

Second, through successful value co-creation processes, organizations can improve efficiency and efficacy, thus producing customer satisfaction (Moretta Tartaglione *et al.,* 2018; Prahalad and Ramaswamy, 2000). Efficiency can be improved through customer participation in service development that could replace employees and reduce costs, as well as reduce the need for market research. Customer satisfaction increases if efficiency turns into cost savings for him/her. Efficacy can increase because, according to Hoyer *et al.* (2010), co-created services are more attractive and innovative on a commercial level and ensure high differentiation in the market. According to Etgar (2008), through co-creation, customers can exercise greater control over the quality of the service offered by reducing the gap between the expected and the perceived service.

Other scholars trace the link between value co-creation and satisfaction to some psychological mechanisms of customers. For example, Franke (2010, p. 125) describe the value enhancement that a customer attributes to a self-designed product/service derived solely from the feeling that "I designed it myself". In these cases, customer satisfaction is enhanced by customers' feelings of pride due to their direct participation in the creation of value (Franke and Schreier, 2010).

Heitmann *et al.* (2007) introduce the concept of "decision satisfaction", which is the satisfaction derived from the purchasing decision process itself. This type of satisfaction goes beyond the satisfaction with the final service because it is associated with the service development process. The more the consumer is involved in this process, the more this kind of satisfaction will increase, regardless of the result. In general, customers evaluate their commitment to the co-creation process as a rewarding experience, and they perceive a level of satisfaction greater than that derived from the simple evaluation of the quality of the service (Franke and Schreier, 2010). Customers' satisfaction also derives from the degree to which they are satisfied with their performance during co-creation and with their participation in the provision of services (Bendapudi and Leone, 2003).

With more specific reference to Internet services, Jiménez-Barreto and Campo-Martínez (2018) show a direct and significant relationship between perceived quality and willingness to participate in online co-creation experiences.

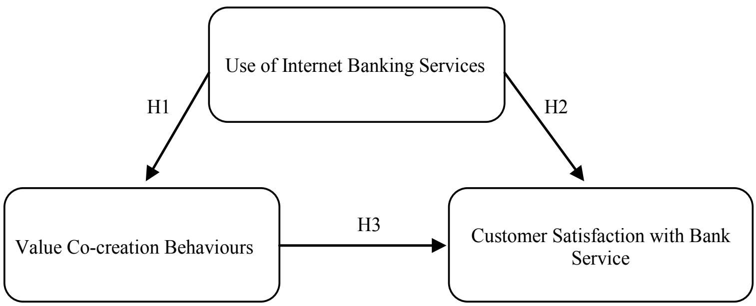
Based on these theories, we propose the following hypothesis:

H3: Value co-creation behaviours have positive effects (β > 0) on customer satisfaction.

3. Method

To test the research hypotheses, we conducted an empirical investigation based on the research model illustrated in Figure 1.

Fig. 1: The research model



Source: Our elaboration

The questionnaire is composed of three measurement scales, described in Table 1.

Tab. 1: Questionnaire structure

Measurement scale	N. items	Source
Use of Internet Banking Services (IBS use)	15	Authors' elaboration
Value Co-creation Behaviours (VCB)	13	Yi and Gong (2013)
Customer Satisfaction with Bank Services (CSBS)	9	Geetika *et al.* (2008); Jham and Khan (2008)

Source: Our elaboration

The scale for measuring the use of Internet banking services was created by the authors through interviews and discussions with three bank managers and 15 bank customers. The most common and relevant online banking services were identified, and respondents were asked to indicate on a 5-point rating scale their usual habits in using Internet banking to access these services.

For the value co-creation measurement, the "customer value co-creation behaviour scale" (Yi and Gong, 2013) was selected. This scale ties customer value co-creation behaviour to two distinct dimensions: participation and citizenship. For this study, we decided to analyse the customers' citizenship behaviours because they represent the highest level of engagement and participation of customers in the value co-creation process (Yi and Gong, 2013).

According to Navarro *et al.* (2016), customers' citizenship behaviours, for example, helping other customers, being tolerant, and providing help or feedback to employees, are those more related to customer satisfaction. Moreover, Van Tonder and De Beer (2018) find a strong relationship between satisfaction with the service provided and customer citizenship behaviours (consumer advocacy and the helping of other customers) in the context of Internet banking.

The scale for customer satisfaction was created by selecting items from several scales related to the satisfaction with bank services (Geetika *et al.*, 2008; Jham and Khan, 2008).

Some of the most common scales to measure customer satisfaction in banks, such as the SERVQUAL model (Parasuraman at al., 1988) and the SERVPERF (Cronin and Taylor, 1992), have not been considered suitable for this research because they are also focused on tangible aspects that are the least influenced by the use of online services and value co-creation. Jham and Khan (2008, p. 35) define customer satisfaction as "a multi-dimensional construct, which has been conceptualized as a prerequisite for building relationships and is generally described as the full meeting of one's expectations, and is the feeling or attitude of a customer towards a product or service after it has been used". The work of Geetika *et al.* (2008) helps to evaluate customer satisfaction related to Internet banking as it shows how users of e-baking give utmost importance to excellent services.

The questionnaire was administered in June 2018 through Google Forms to the customers of three banks in central Italy by email or WhatsApp. Participants responded to each item using a 5-point Likert scale.

To test the validity of each scale, an Exploratory Factor Analysis was conducted. The Principal Components Analysis (PCA) was used to explore the structure of the questionnaire. Internal consistency reliability was tested by the use of the Cronbach's alpha coefficient. Finally, to test the correlations between the variables, the Pearson correlation coefficient between scales was calculated and the regression analysis was conducted.

4. Results

A total of 269 responses were obtained, of which 262 were valid. The characteristics of respondents are described in Table 2.

Tab. 2: Sample characteristics

Age		Levels of education		Profession	
18–30	39%	Primary education	0%	Executive/Official	7.6%
31–50	37.5%	Lower secondary education	1.5%	Entrepreneur	9.5%
51–70	19.7%	Upper secondary education	29%	Independent contractor	19.3%
+ 70	3.8%	First stage of tertiary education	50.8%	Unemployed	1.5%
Sex		Second stage of tertiary education	18.7%	Civil servant	11.4%
Male	52.1%			Employee	25%
Female	47.9%			Student	12.5%
				Housewife	3%
				Pensioner	5.3%
				Other	4.9%

Source: Our elaboration

In the first section of the questionnaire, information on the type and duration of the relationship with the bank was collected (Table 3). In the case of relationships with several banks, it was specified that the questionnaire should be answered by thinking of the bank considered as the main bank.

Tab. 3: Relationship with the bank

Type of relationship		Length of the relationship	
Personal	79.5%	<5 years	33.7%
Business	4.2%	5–10 years	29.9%
Both	16.3%	>10 years	36.4%
Contemporary relationships with other banks		Corporate relationship with the bank	
Yes	30.4%	Yes	11.8%
No	69.6%	No	88.2%

Source: Our elaboration

Subsequently, information on the use of Internet banking was collected (Table 4), and 70.5% of respondents said they prefer remote channels such as the telephone and Internet to access banking services. More than 90% of the sample regularly uses Internet banking mainly for both consultative operations and transactions (51.3%), while 9.5% of the sample declared that they had never used Internet banking.

Tab. 4: Internet banking use

Preferences for service provision	
I prefer physical branches	29.5%
I prefer remote channels	70.5%
Use of Internet banking	
Yes, for consultative operations	20.5%
Yes, for transactions	18.6%
Yes, for consultative operations and transactions	51.3%
No, never	9.5%

Source: Our elaboration

Respondents who declared they did not use Internet banking were invited to indicate the reasons against its use. As shown in Table 5, respondents affirmed that they did not need it, did not know how you use it, and preferred to directly address the banking staff.

Tab. 5: Reasons against using Internet banking

Reasons against the use of Internet banking (9.5% of the sample)	
I don't need it	26.9%
It is not secure	0%
I don't know how to use it	23.1%
It is too complicated	3.8%
My bank does not provide the service	0%
I do not have a personal computer or an Internet connection	7.7%
I prefer to directly address the staff	30.8%
For another reason	7.7%

Source: Our elaboration

Analysing the socio-demographic profile of those who do not use Internet banking (Table 6), it appears that the majority are women with upper secondary or the first stage of tertiary education (79.2%).

Tab. 6: Characteristics of those who do not use Internet banking

Age		Levels of education		Profession	
18–30	28%	Primary education	0%	Entrepreneur	4%
31–50	24%	Lower secondary education	4.2%	Independent contractor	4%
51–70	40%	Upper secondary education	29.2%	Unemployed	8%
+ 70	8%	First stage of tertiary education	50%	Civil servant	16%
Sex		Second stage of tertiary education	16.6%	Employee	20%
Male	20.8%			Student	28%
Female	79.2%			Housewife	12%
				Pensioner	8%

Source: Our elaboration

4.1 Factor Analysis and Hypotheses Test

According to the results of factor analysis (Table 7), the Kaiser-Meyer-Olkin score (.841 < KMO < .942) and Bartlett's test of sphericity ($p < 0.001$) show the adequacy of the sample size for each scale and satisfy the requirements for carrying out a Principal Component Analysis (Hair *et al.*, 2005).

Tab. 7: Factor analysis

		IBS use	VCB	CSBS
Kaiser-Meyer-Olkin for sampling adequacy (KMO)		.854	.841	.942
Bartlett's Test of Sphericity	Approx. Chi-square	1778.750	1941.603	2034.113
	Df	105	78	36
	Sig.	.000	.000	.000

Source: Our elaboration

Based on the Principal Components Analysis, all items were considered significant, presenting a factor loading > 0.50 (Table 8).

Tab. 8: Principal Component analysis

Construct	Item	Factor Loading
Use of Internet Banking Services	I usually use the Internet Banking for national transfers	.729
	I usually use the Internet Banking for foreign transfers	.597
	I usually use the Internet Banking to recharge my mobile credit	.599
	I usually use the Internet Banking for Purchase/sale of securities	.548
	I usually use the Internet Banking for stock quotes	.598
	I usually use the Internet Banking for balance control and transaction history	.536
	I usually use the Internet Banking for payments	.697
	I usually use the Internet Banking for credit card and debit card lock	.703
	I usually use the Internet Banking to recharge a prepaid card	.759
	I usually use the Internet Banking for the credit card transaction alerts	.768
	I usually use the Internet Banking for the bank account transaction alerts	.785
	I usually use the Internet Banking for the OTP generation	.786
	I usually use the Internet Banking to find the nearest ATMs/branches	.684
	I usually use the Internet Banking for booking appointments at the branch	.655
	I usually use the Internet customer support services (chat, video chat, VoIP)	.603
Value Co-creation Behaviour	If I have a useful idea on how to improve the service, I talk to my bank	.590
	When I receive a good service from my bank, I provide positive feedback	.607
	When a problem occurs, I notify the bank staff	.532
	I spoke positively about my bank with other people	.629
	I have recommended my bank to other people	.671
	I encouraged friends and relatives to use the services provided by my Bank	.671
	I deal with other clients of the Bank	.742
	I help other customers if they seem to have problems	.747
	I teach other customers how to use the services correctly	.758
	I give advice to other customers	.758
	If the service is sometimes not delivered as expected, I am willing to endure it	.614
	If an operator sometimes makes a mistake during service delivery, I am willing to be tolerant	.654
	If I sometimes have to wait longer than the normal waiting time to receive the service, I am willing to adapt	.654
Customer Satisfaction with Bank Services	I am satisfied with the simplicity of procedures of my bank	.789
	I am satisfied with the timeliness of procedures of my bank	.783
	I am satisfied with the type of services offered by my bank	.797
	I am satisfied with the benefits obtained from the management of savings and finances	.766
	I received the services I wanted from my bank	.874
	The services received from my bank were in line with my needs	.863
	If a friend were in the same situation as me, I would recommend the same services of my bank	817
	The services I received from my bank helped me deal with problems more effectively	.868
	I am generally satisfied with the services received from my bank	.872

Source: Our elaboration

In terms of the reliability of the analysis results, Cronbach's Alpha values for each scale are > 0.7 and present high values included in a range from 0.895 to 0.951, showing a high reliability of the factors (Table 9).

Tab. 9: Reliability analysis

	IBS use	VCB	CSBS
N. Items	15	13	9
Cronbach's alpha	.913	.895	.951
Cronbach's alpha based on standardized items	.913	.894	.952

Source: Our elaboration

By calculating the Pearson Correlation coefficient between constructs, it is evident that there is a significant and positive correlation between them (Table 10).

In particular, correlations between the use of Internet Banking Services (IBS use) and Value Co-creation Behaviours (VCB) and Customer Satisfaction (CSBS) show moderate values, while the correlation between Value Co-creation Behaviours and Customer Satisfaction is stronger (r > 0.5).

Tab. 10: Pearson correlation

		IBS use	VCB	CSBS
IBS use	Pearson Correlation	1	.242**	.228**
	Sig. (2-tailed)		.000	.000
	N	237	237	237
VCB	Pearson Correlation	.242**	1	.532**
	Sig. (2-tailed)	.000		.000
	N	237	237	237
CSBS	Pearson Correlation	.228**	.532**	1
	Sig. (2-tailed)	,000	,000	
	N	237	237	237

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

Source: Our elaboration

To test the research hypotheses, a regression analysis was conducted.

The results show that the use of Internet Banking Services has a significant positive effect on Value Co-creation Behaviours ($\beta > 0$), confirming Hypothesis 1 (Table 11).

Tab. 11: Regression analysis IBS use-VCB

Variable	B	Std. Error	β	t	*p*- value
Constant	2.730	.202		13.503	.000
Use of Internet Banking S.	.209	.055	.242	3.827	.000

R = .242
R^2 = .059
R^2 adjusted = .055
Dependent variable: Value Co-creation Behaviours

Source: Our elaboration

Results also show the significant positive effect of the use of Internet Banking Services on Customer Satisfaction with the Bank Services ($\beta > 0$), confirming the Hypothesis 2 (Table 12).

Tab. 12: Regression analysis IBS use-CSBS

Variable	B	Std. Error	β	t	*p*- value
Constant	3.357	.187		18.002	.000
Use of Internet Banking S.	.181	.050	.228	3.584	.000

R = .228
R^2 = .052
R^2 adjusted = .048
Dependent variable: Customer Satisfaction with Bank Services

Source: Our elaboration

Finally, the regression analysis indicates a significant positive relationship between Value Co-creation Behaviours and Customer Satisfaction with Bank Services ($\beta > 0$), confirming the Hypothesis 3 (Table 13).

Tab. 13: Regression analysis VCB-CSBS

Variable	B	Std. Error	β	t	*p*- value
Constant	2.302	.181		12.689	.000
Use of Internet Banking S.	.489	.051	.532	9.636	.000

R = .532
R^2 = .283
R^2 adjusted = .280
Dependent variable: Customer Satisfaction with Bank Services

Source: Our elaboration

5. Discussion

Findings of this work offer interesting evidence for the development of strategies in the banking sector based on the Internet banking tool and aimed at increasing customer satisfaction through value co-creation. In particular, the links between three variables have been analysed: the use of Internet banking services by customers, their level of satisfaction with the bank services, and their value co-creation behaviours.

The first result of this research shows that the use of Internet banking by customers to access the most important services has positive effects on their value co-creation behaviour. In particular, the co-creation behaviours considered in this analysis are those of citizenship, consisting of voluntary extra-role behaviours that provide an unexpected value to the organization (Yi and Gong, 2013), such as the provision of feedback, service promotion to other people, helping other customers, and tolerance of service failures (Bove *et al.*, 2008; Yi *et al.*, 2011). According to relevant literature, these behaviours help banks in building strong relationships with customers (Cambra-Fierro *et al.*, 2017), recovering their confidence (Ramaswamy and Gouillart, 2010), and creating a superior value (Payne *et al.*, 2008) in order to better overcome the consequences of the economic/financial crisis (Mainardes *et al.*, 2017; Preikschas *et al.*, 2014). As stated by Cambra-Fierro *et al.* (2017), customers' value co-creation behaviours are important for building trust and joint learning in the retail banking sector, where the low levels of customer trust in financial institutions and the high level of competition make it necessary to innovate and to be closer to the customers. The Internet represents a virtual space where banks can specialize and complement their resources, collaborating with customers who represent valuable resources that can reduce uncertainty and risk. As highlighted by Neghina *et al.* (2017), this process is even more important in professional services, such as banking, where knowledge intensity and workforce professionalism stimulate consumers to co-create for developmental motives, intended as the development of the customer's operand and operant resources, and not for empowerment motives that reflect the desire to influence the service process or outcome. This means that in these cases, the aim of customers is to improve their knowledge and skills and not to control the co-creation interactions.

In line with the relevant literature (Amin, 2016; Hamzah *et al.*, 2017; Hossain *et al.*, 2019; Kervin, 2014; Nimako *et al.*, 2013; Raza *et al.*, 2015; Sampaio *et al.*, 2017; Sharma and Maloviya, 2014; Taleghani *et al.*, 2014; Vasista, 2013), this analysis also shows that the use of Internet banking services has positive effects on customer satisfaction. Previous works are focused on the different factors or characteristics of Internet banking that lead to customer satisfaction, such as accessibility, ease of use, usefulness, security, convenience, accuracy, and privacy (Gunawardana *et al.*, 2015; Jun and Palacios, 2016; Liébana *et al.*, 2013; Robertson *et al.*, 2016; Worku *et al.*, 2016). This paper, instead, is not aimed at analysing the main features of Internet banking that increase satisfaction but correlates the use of the main services offered by banks through Internet banking with the overall level of customer satisfaction, showing that the higher the use of Internet banking to access bank services, the higher the customer satisfaction. This result is particularly important, considering that customer satisfaction created by Internet banking will be directly reflected in customer loyalty (Alalwan *et al.*, 2018), trust, and positive word-of-mouth (Sampaio *et al.*, 2017), with positive effects on the bank's reputation (Hamzah *et al.*, 2017) and financial performance (Mbama and Ezepue, 2018). Moreover, customer satisfaction with Internet services improve the level of communication with customers (Rostami *et al.*, 2016), and it is the most important factor for attracting and retaining foreign bank customers (Moghavvemi *et al.*, 2018). Although Internet banking through customer satisfaction is one of the essential tools that give banks a competitive advantage, it needs to be properly implemented and managed (Hammoud *et al.*, 2018). Alternatively, it can lead to customer dissatisfaction as in the case of difficult technologies combined with complex processes (Hossain et at., 2018). Moreover, the role of branch service quality cannot be ignored and multi-channel banking, which integrates traditional banking with Internet banking, remains the most suitable strategy for customer satisfaction (Bapat, 2017).

Finally, the regression analysis indicates a significant positive relationship between value co-creation behaviours and customer satisfaction, which is in line with the results of other scholars (Cambra-Fierro *et al.*, 2017; Hossain *et al.*, 2019). The application of value co-creation theories to the study of the banking sector shifts the focus to the client as an operant resource in the value-creating process (Vargo and Lusch, 2004). In fact, according to the Service-Dominant logic, the service provider "... cannot deliver value, but only offer value propositions" and "... value is always uniquely and phenomenologically determined by the beneficiary" (Vargo and Lusch, 2008, p. 7). Consequently, the value co-creation view also moves the analysis from the output to the outcome. The results of this study show that one of the outcomes of value co-creation for banks is the increase in customer satisfaction. Based on the results of previous works, we can state that this effect generates other advantages for banks that need to rebuild their image, reputation, and customer relationships, such as a positive impact on brand equity and perceived value (González-Mansilla *et al.*, 2019) and major innovativeness of the business model (Clauss *et al.*, 2019). If carefully managed, the value co-creation process enables banks to create superior value propositions that will result in higher levels of customer retention and positive WOM behaviours, reinforcing the competitive positions of banks (Cambra-Fierro *et al.*, 2017).

6. Conclusions and implications

During the last decade, the banking sector has experienced several challenges due to the financial crisis, the evolution of ICT, changes in consumers' behaviour, and growing competition. Banks need to rethink their managerial and marketing policies in order to regain the trust of their customers and build stronger and more stable relationships with them.

Marketing scholars propose overcoming these challenges by stimulating paths of value co-creation with customers, offering innovative services through the Internet, and increasing customer satisfaction.

This paper analyses the links between these dimensions, filling a gap in the literature and trying to offer useful suggestions to the bank managers for the development of comprehensive strategies that are not focused just on one or another variable. In fact, as highlighted by the results of this work, the three dimensions (Internet banking, value co-creation, and customer satisfaction) are positively and significantly correlated with each other. In practical terms, this means that when bank managers decide to implement Internet banking services, they must focus on those aspects of e-services that have a greater impact on customer satisfaction and that are able to create an online space that fosters participation and dialogue with the customers to stimulate them to co-create value. In the elaboration of value co-creation policies, on the other hand, managers must focus on those services and characteristics of Internet banking that are more suitable for co-creative practices, and they must try to exploit each occasion of co-creation with customers to increase their satisfaction. Finally, if the bank's aim is to increase customer satisfaction, bank managers must consider both value co-creation and Internet banking as useful tools to achieve this goal.

The results of strategies based simultaneously on all three factors will be the ability to create stronger and lasting relationships with customers, exploit the exchange of competencies and resources with them to reduce costs, increase knowledge, and offer best services.

This paper is based on an exploratory factor analysis and regression analysis conducted to validate the model but, in light of the results, further analyses are needed to deepen the understanding of the links between the variables investigated with a confirmatory factor analysis analysis con structural equation modeling.

References

ALALWAN A.A., BAABDULLAH A.M., RANA N.P., TAMILMANI K., DWIVEDI K. (2018), "Examining adoption of mobile internet in Saudi Arabia: Extending TAM with perceived enjoyment, innovativeness and trust", *Technology in Society*, vol. 55, n. 1, pp. 100-110.

AL-DMOUR H.H., ALGHARABAT R.S., KHAWAJA R., AL-DMOUR R.H. (2019), "Investigating the impact of ECRM success factors on business performance of Jordanian commercial banks", *Asia Pacific Journal of Marketing and Logistics*, vol. 31, n. 1, pp. 105-127.

AMIN M. (2016), "Internet banking service quality and its implication on e-customer satisfaction and e-customer loyalty", *International Journal of Bank Marketing*, vol. 34, n. 3, pp. 280-306.

BAABDULLAH A.M., ALALWAN A.A., RANA N.P., KIZGIN H., PATIL P. (2019), "Consumer use of mobile banking (M-Banking) in Saudi Arabia: Towards an integrated model", *International Journal of Information Management*, vol. 44, n. 1, pp. 38-52.

BALACHANDHER K.G., VAITHILINGAM S., ISMAIL N., PRASAD R. (2001), "Electronic banking in Malaysia: Note on evolution of service and consumer reactions", *Journal of Internet Banking and Commerce Electronic Banking,* vol. 51, n. 1, pp. 135-147.

BALLANTYNE D., VAREY R.J. (2006), "Creating value-in-use through marketing interaction: the exchange logic of relating, communicating and knowing", *Marketing Theory,* vol. 6, n. 3, pp. 335-348.

BAPAT D. (2017), "Exploring the antecedents of loyalty in the context of multi-channel banking", *International Journal of Bank Marketing*, vol. 35, n. 2, pp. 174-186.

BENDAPUDI N., LEONE R.P. (2003), "Psychological implications of customer participation in co-production", *Journal of Marketing,* vol. 67, n. 1, pp. 14-28.

BINKS M.R., ENNEW C.T. (1997), "Smaller Businesses and Relationship Banking: The Impact of Participative Behavior", *Entrepreneurship: Theory and Practice,* vol. 21, n. 4, pp. 83-92.

BLOEMER J., BRIJS T., SWINNEN G., VANHOOF K. (2002), "Identifying latently dissatisfied customers and measures for dissatisfaction management", *International Journal of Bank Marketing,* vol. 20, n. 1, pp. 27-37.

BLOEMER J., DE RUYTER K., PEETERS P. (1998), "Investigating drivers of bank loyalty: the complex relationship between image, service quality and satisfaction", *International Journal of Bank Marketing,* vol. 16, n. 7, pp. 276-286.

BOVE L.L., PERVAN S.J., BEATTY S.E., SHIU E. (2008), "Service worker role in encouraging customer organizational citizenship behaviors", *Journal of Business Research*, vol. 62, n. 1, pp. 698–705.

CAMBRA-FIERRO J., PÉREZ L., GROTT E. (2017), "Towards a co-creation framework in the retail banking services industry: Do demographics influence?", *Journal of Retailing and Consumer Services,* vol. 34, n. 1, pp. 219-228.

CARSE H.T. (1999, "The effect of information technology on banking services: Economic review", *Federal Reserve bank of Richmond,* vol. 77, n. 1, pp. 16-28.

CLAUSS T., KESTING T., NASKRENT J. (2019), "A rolling stone gathers no moss: the effect of customers' perceived business model innovativeness on customer value co-creation behavior and customer satisfaction in the service sector", *R&D Management,* vol. 49, n. 2, pp. 180-203.

CRONIN J., TAYLOR S. (1992), "Measuring Service Quality: A Reexamination and Extension", *Journal of Marketing,* vol. 586, n. 4, pp. 55-68.

DIANAT I., ADELI P., JAFARABADI M.A., KARIMI M.A. (2019), "User-centred web design, usability and user satisfaction: The case of online banking websites in Iran", *Applied Ergonomics*, vol. 81, n. 102892, pp. 1-8.

ETGAR M. (2008), "A descriptive model of the consumer co-production process", *Journal of the Academy of Marketing Science*, vol. 36, n. 1, pp. 97-108.

FLINT D.J. (2006), "Innovation, symbolic interaction and customer valuing: thoughts stemming from a service-dominant logic of marketing", *Marketing Theory,* vol. 6, n. 3, pp. 349-362.

FORMISANO V., FEDELE M., CALABRESE M. (2018), "The strategic priorities in the materiality matrix of the banking enterprise", *The TQM Journal*, vol. 30, n. 5, pp. 589-671-25.

FRANKE N., SCHREIER M. (2010), "Why Customers Value Self-Designed Products: The Importance of Process Effort and Enjoyment", *Journal of Product Innovation Management*, vol. 27, pp. 1020-1031.

FRANKE N., SCHREIER M., KAISER U. (2010), "The "I Designed It Myself" Effect in Mass Customization", *Management Science*, vol. 56, n. 1, pp. 125-140.

GEETIKA, N. TANUJ, ASHWINI U. (2008), "Internet banking in India: Issues and prospects", *Journal of Bank Management,* vol. VII, n. 2, pp. 47-61.

GONZÁLEZ-MANSILLA O., BERENGUER-CONTRÍ G., SERRA-CANTALLOPS A. (2019), "The impact of value co-creation on hotel brand equity and customer satisfaction", *Tourism Management,* vol. 75, n. 1, pp. 51-65.

GRÖNROOS C. (2008), "Service logic revisited: who creates value? And who co-creates?", *European Business Review*, vol. 20, n. 4, pp. 298-314.

GUNAWARDANA H.M.R.S.S., KULATHUNGA D., PERERA W.L.M.V. (2015), "Impact of Self Service Technology Quality on Customer Satisfaction: A Case of Retail Banks in Western Province in Sri Lanka, Gadjah Mada", *International Journal of Business,* vol. 17, n. 1, pp. 1-24.

HAIR J., BABIN B., MONEY A., SAMOUEL P. (2005), *Fundamentos de métodos de pesquisa em administração,* Bookman Companhia Ed.

HAMIDI H., SAFAREEYEH M. (2019), "A model to analyze the effect of mobile banking adoption on customer interaction and satisfaction: A case study of m-banking in Iran", *Telematics and Informatics,* vol. 38, n. 1, pp. 166-181.

HAMMOUD J., BIZRI R.M., EL BABA I. (2018), "The Impact of E-Banking Service Quality on Customer Satisfaction: Evidence From the Lebanese Banking Sector", *SAGE Open*, vol. 8, n. 3, pp. 1–12.

HAMZAH Z.L., LEE S.P., MOGHAVVEMI S. (2017), "Elucidating perceived overall service quality in retail banking", *International Journal of Bank Marketing*, vol. 35, n. 5, pp. 781-804.

HARKISON T. (2018), "The use of co-creation within the luxury accommodation experience - myth or reality?", *International Journal of Hospitality Management,* vol. 71, n. 1, pp. 11–18.

HEITMANN M., LEHMANN D.R., HERRMANN A. (2007), "Choice Goal Attainment and Decision and Consumption Satisfaction", *Journal of Marketing Research*, vol. 44, n. 2, pp. 234-250.

HERMANN S. (2009), 'The crisis and customer behaviour: eight quick solutions', *Journal of Customer Behaviour,* vol. 8, n. 2, pp. 177-186.

HOSSAIN M., ZHOU X., RAHMAN M. (2019), "Customer satisfaction under heterogeneous services of different self-service technologies", *Management and Marketing. Challenges for the Knowledge Society*, vol. 14, n. 1, pp. 90-107.

HOSSAIN M.S., ZHOU X., RAHMAN M.F. (2018), "Examining the impact of QR codes on purchase intention and customer satisfaction on the basis of perceived flow", *International Journal of Engineering Business Management,* vol. 10, n. 1, pp. 1–11.

HOYER W.D., CHANDY R., DOROTIC M., KRAFFT M., SINGH S.S. (2010), "Consumer Cocreation in New Product Development", *Journal of Service Research,* vol. 13, n. 3, pp. 283-296.

JAMAL A., NASER K. (2002), "Customer satisfaction and retail banking: An assessment of some of the key antecedents of customer satisfaction in retail banking", *International Journal of Bank Marketing*, vol. 20, n. 4, pp. 146-160.

JHAM, V., KHAN K.M. (2008), "Determinants of performance in retail banking: Perspectives of customer satisfaction and relationship marketing", *Singapore Management Review*, vol. 30, n. 2, pp. 35-45.

JIMÉNEZ-BARRETO J., CAMPO-MARTÍNEZ S. (2018), "Destination website quality, users' attitudes and the willingness to participate in online co-creation experiences", *European Journal of Management and Business Economics*, vol. 27, n. 1, pp. 26-41.

JUN M., PALACIOS S. (2016), "Examining the key dimensions of mobile banking service quality: an exploratory study", *International Journal of Bank Marketing,* vol. 34, n. 3, pp. 307-326.

KARJALUOTO H., MATTILA M., PENTO T. (2002), "Factors underlying attitude formation towards online internet banking in Finland", *International Journal of Bank Marketing,* vol. 20, n. 6, pp. 261-272.

KERVIN E.B. (2014), "Customer satisfaction and loyalty among internet banking users of Philippine National Bank in Batangas city", *Asia Pacific Journal of Multidisciplinary Research*, vol. 2, n. 2, pp. 41-48.

KUMBHAR V.M. (2011), "Factors affecting customer satisfaction: Some evidence from Indian banks" *Romania Knowledge Management Research and Practice,* vol. 3, n. 4, pp. 1-14.

KUOKKALA H.R., MÄENPÄÄ I., UUSITALO O. (2010), "The ingredients of customer value in banking services: Defining the needs of small and medium sized enterprises", in *Proceedings of Peer-Reviewed Symposium 2010, Annual Symposium fo the Financial Services Institute,* September 9-11, 2010, St John's University, New York, USA (pp. 1-8)

LEE K.C., CHUNG N. (2009), "Understanding factors affecting trust in and satisfaction with mobile banking in Korea: a modified DeLone and McLean's model perspective", *Interacting with Computers,* vol. 21, n. 5-6, pp. 385-392.

LIANG C.C., NGUYEN N.L. (2018), "Marketing strategy of internet-banking service based on perceptions of service quality in Vietnam", *Electronic Commerce Research,* vol. 18, n. 1, pp. 629–646.

LIÉBANA C., MUÑOZ L., REJÓN G. (2013), "The determinants of satisfaction with e-banking", *Industrial Management and Data Systems,* vol. 113, n. 5, 750-767.

MAGLIO P.P., SPOHRER J. (2008), "Fundamentals of service science", *Journal of the Academy of Marketing Science,* vol. 36, n. 1, pp. 18-20.

MAINARDES E.W., TEIXEIRA A., DA SILVEIRA P.C. (2017), "Determinants of co-creation in banking services", *International Journal of Bank Marketing,* vol. 35, n. 2, pp. 187-204.

MARTINS C., OLIVEIRA T., POPOVIČ A. (2014), "Understanding the internet banking adoption: a unified theory of acceptance and use of technology and perceived risk application", *International Journal of Information Management*, vol. 34, n. 1, pp. 1-13.

MARTOVOY A., SANTOS J. (2012), "Co-creation and co-profiting in financial services", *International Journal of Entrepreneurship and Innovation Management*, vol. 16, n. 1-2, pp. 114-135.

MBAMA C.I., EZEPUE P.O. (2018), "Digital banking, customer experience and bank financial performance UK customers' perceptions", *International Journal of Bank Marketing*, vol. 36, n. 2, pp. 230-255.

MISHKIN F. S. (1992), "Anatomy of a financial crisis", Journal of Evolutionary Economics, vol. 2, n. 2, pp. 115-130.

MOGHAVVEMI S., LEE S.T., LEE P. (2018), "Perceived overall service quality and customer satisfaction A comparative analysis between local and foreign banks in Malaysia", *International Journal of Bank Marketing*, vol. 36, n. 5, pp. 908-930.

MORETTA TARTAGLIONE A., CAVACECE Y., CASSIA F., RUSSO G. (2018), "The excellence of patient-centered healthcare: Investigating the links between empowerment, co-creation and satisfaction", *The TQM Journal,* vol. 30, n. 2, pp. 153-167.

NAVARRO S., LLINARES C., GARZON D. (2016), "Exploring the relationship between co-creation and satisfaction using QCA", *Journal of Business Research,* vol. 69, n. 1, pp. 1336–1339.

NEGHINA C., BLOEMER J., VAN BIRGELEN M., CANIËLS M.C.J. (2017), "Consumer motives and willingness to co-create in professional and generic services", *Journal of Service Management*, vol. 28, n. 1, pp. 157-181.

NIMAKO S.G., GYAMFI N.K., WANDAOGOU A.M.M. (2013), "Customer satisfaction with internet banking service quality in the Ghanaian banking industry", *International Journal of Scientific and Technology Research,* vol. 2, n. 7, pp. 165-175.

NUPUR J.M. (2010), "E-banking and customer' satisfaction in Bangladesh: an analysis", *International Review of Business Research Papers*, vol. 6, pp. 145-156.

NUTTAVUTHISIT K. (2010), "If you can't beat them, let them join: the development of strategies to foster consumers' co-creative practices", *Business Horizons,* vol. 53, n. 3, pp. 315-324.

OLIVER R.L. (1999), "Whence Consumer Loyalty?", *Journal of Marketing*, vol. 63, n. Special Issue 1999, pp. 33-44.

PARASURAMAN A., ZEITHAML V.A., BERRY L. (1988), "SERVQUAL: a multiple-item scale for measuring customer perceptions of service quality", *Journal of Retailing*, vol. 64, n. Spring, pp. 12-40.

PAYNE A.F., HOLT S., FROW P. (2000), "Integrating employee, customer and shareholder value through an enterprise performance model: an opportunity for financial services", *International Journal of Bank Marketing,* vol. 18, n. 6, pp. 258-273.

PAYNE A.F., STORBACKA K., FROW P. (2008), "Managing the co-creation of value", *Journal of the Academy of Marketing Science,* vol. 36, n. 1, pp. 83-96.

PAYNE E.M., PELTIER J.W., BARGER V.A. (2018), "Mobile banking and AI-enabled mobile banking The differential effects of technological and non-technological factors on digital natives' perceptions and behavior", *Journal of Research in Interactive Marketing*, vol. 12, n. 3, pp. 328-346.

PRAHALAD C.K., RAMASWAMY V. (2000), "Co-opting Customer Competence", *Harvard Business Review,* vol. 78, n. 1, pp. 79-87.

PRAHALAD C.K., RAMASWAMY V. (2004a), "Co-creation experiences: the next practice in value creation", *Journal of Interactive Marketing,* vol. 18, n. 3, pp. 5-14.

PRAHALAD C.K., RAMASWAMY V. (2004b), "Co-creating unique value with customers", *Strategy and Leadership,* vol. 32, n. 3, pp. 4-9.

PREIKSCHAS M.W., CABANELAS P., RÜDIGER K. (2014), "Fighting Against the Economic Crisis: Innovation in B-to-B Markets Through Co-creation", in Rüdiger K., Ortiz M.P., Blanco González A. eds. *Entrepreneurship, Innovation and Economic Crisis*, Berlin, Springer, pp. 31-40.

QURESHI T.M., ZAFAR M.K., KHAN, M.B. (2008), "Customer Acceptance of Online Banking in Developing Economies", *Journal of Internet Banking and Commerce,* vol. 13, n. 1, p. 1.

RAMASWAMY V., GOUILLART F.G. (2010), "Building the Co-Creative Enterprise", *Harvard Business Review*, vol. 88, n. 10, pp. 100-109.

RASHIDI E., MANSOORI E. (2015), "Discussing the effects of internet banking on customer satisfaction", *Indian Journal of Fundamental and Applied Life Sciences*, vol. 5, n. S2, pp. 182-187.

RAZA S.A., JAWAID S.T., HASSAN A. (2015), "Internet banking and customer satisfaction in Pakistan", *Qualitative Research in Financial Markets*, vol. 7, n. 1, pp. 24-36.

REJIKUMAR G., ASWATHY ASOKAN A., "Information seeking behavior causing satisfaction modification intentions. An empirical study to address emerging challenges in a service context", *Journal of Indian Business Research*, vol. 9, n. 4, pp. 304-328.

ROBERTSON N., MCDONALD H., LECKIE C., MCQUILKEN L., (2016), "Examining customer evaluations across different self-service technologies", *Journal of Services Marketing,* vol. 30, n. 1, pp. 88-102.

ROSTAMI A., KHANI A.H., SOLTANI G. (2016), "The Impact of E-service Quality on the improvement of the Level of Communication with Customers of Bank Melli Branches in South Tehran Affairs Office", *Procedia Economics and Finance,* vol. 36, n. 1, pp. 448-455.

SAMPAIO C.H., LADEIRA W.J., SANTINI F.D.O. (2017), "Apps for mobile banking and customer satisfaction: a cross-cultural study", *International Journal of Bank Marketing*, vol. 35, n. 7, pp. 1133-1153.

SHAIKH A.A., KARJALUOTO H. (2015), "Mobile banking adoption: a literature review", *Telematics and Informatics,* vol. 32, n. 1, pp. 129-142.

SHARMA G., MALVIYA S. (2014), "Internet banking service quality and its impact on customer satisfaction in Indore district of Madhya Pradesh", *International Journal of Business and Management Invention,* vol. 3, n. 3, pp. 1-6.

SHARMA S.K., GOVINDALURI S.M. (2014), "Internet banking adoption in India: structural equation modeling approach", *Journal of Indian Business Research*, vol. 6, n. 2, pp. 155-169.

SHARMA S.K., GOVINDALURI S.M., AL BALUSHI S.M. (2015), "Predicting determinants of Internet banking adoption: a two-staged regression-neural network approach", *Management Research Review,* vol. 38, n. 7, pp. 750-766.

SIDDIQI K.O. (2011), "Interrelations between service quality attributes, customer satisfaction and customer loyalty in the retail banking sector in Bangladesh", *International Journal of Business and Management*, vol. 6, n. 3, pp. 12.

SILVER L., VEGHOLM F. (2009), "The dyadic bank - SME relationship - Customer adaptation in interaction, role and organization", *Journal of Small Business and Enterprise Development,* vol. 16, n. 4, pp. 615-627.

SOLOMON M. (2009), *Consumer behaviour, buying,* having & being, Pearson Education Inc., USA.

SONNE A.M. (1999), "Determinants of customer satisfaction with professional services: A study of consultant services", *Journal of Marketing*, vol. 41, n. 2, pp. 159-171.

TALEGHANI M., MONA S., FALLAH (2014), "Electronic banking services to increase the level of satisfaction and loyalty of customers", in *proceedings of the National Conference of Modern Management Science,* Gorgan Wise Jorjani Non-profit Institution of Higher Education.

TOOR A., HUNAIN M., HUSSAIN T., ALI S., SHAHID A. (2016), "The Impact of E-Banking on Customer Satisfaction: Evidence from Banking Sector of Pakistan", *Journal of Business Administration Research*, vol. 5, n. 2, pp. 27-40.

VAN TONDER E., DE BEER L.T. (2018), "New perspectives on the role of customer satisfaction and commitment in promoting customer citizenship behaviours", *South African Journal of Economic and Management Sciences*, vol. 21, n. 1, p. a1894.

VARGO S.L., LUSCH R.F. (2004), "Evolving to a new dominant logic for marketing", *Journal of Marketing*, vol. 68, n. 1, pp. 1-17.

VARGO S.L., LUSCH R.F. (2006), "Service dominant logic: what it is, what it is not, and what it might be", in Lusch, R.F. and Vargo, S.L. (eds), *The Service-Dominant Logic of Marketing: Dialog, Debate and Directions*, Armonk: M. E. Sharpe, pp. 43-56.

VARGO S.L., LUSCH R.F. (2008), "Service-Dominant Logic: Continuing the Evolution", *Journal of the Academy of Marketing Science*, vol. 36, n. 1, pp. 1-10.

VASISTA T. (2013), "The Effect of Internet Banking Service Quality on Customer Satisfaction in Riyadh, Saudi Arabia", *Journal of Business Administration*, vol. 2, n. 3, pp. 112-136.

WORKU G., TILAHUN A., TAFA M.A. (2016), "The Impact of Electronic Banking on Customers' Satisfaction in Ethiopian Banking Industry (The Case of Customers of Dashen and Wogagen Banks in Gondar City)", *Journal of Business and Financial Affairs,* vol. 5, n. 2, pp. 1-18.

WU S.J., LAW R., LIU J. (2018), "Co-creating value with customers: A study of mobile hotel bookings in China", *International Journal of Contemporary Hospitality Management*, vol. 30, n. 4, pp. 2056-2074.

YI Y., GONG T. (2013), "Customer value co-creation behavior: scale development and validation", *Journal of Business Research,* vol. 66, n. 9, pp. 1279-1284.

YI Y., NATARAAJANB R., GONG T. (2011), "Customer participation and citizenship behavioural influences on employee performance, satisfaction, commitment, and turnover intention", *Journal of Business Research*, vol. 64, n. 1, pp. 87–95.

Academic or professional position and contacts

Vincenzo Formisano
Full Professor of Management
University of Cassino and Southern Lazio - Italy
e-mail: v.formisano@unicas.it

Andrea Moretta Tartaglione
Associate Professor of Management
University of Cassino and Southern Lazio - Italy
e-mail: a.moretta@unicas.it

Maria Fedele
Assistant Professor of Management
University of Cassino and Southern Lazio - Italy
e-mail: m.fedele@unicas.it

Ylenia Cavacece
Adjunct Professor of Management
University of Cassino and Southern Lazio - Italy
e-mail: ylenia.cavacece@unicas.it

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.12
pp. 209-230

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Night at the museum: technology enables visitor experiences[1]

Received
18th February 2020

Revised
4th May 2020

Accepted
10th June 2020

Fabiola Sfodera - Isabella Mingo - Alberto Mattiacci
Maria Colurcio

Abstract

Purpose of the paper: *This paper aims to investigate how technology affects the cultural heritage (CH) experience and how it may configure a new service ecosystem, enabling resource integration, and leveraging resource liquefaction.*

Methodology*: A model with four dimensions of CH experience is proposed and empirically tested using structural equation modeling with data on 300 visitors to three heritage sites in Rome (Italy), which exhibit a high level of technology integration.*

Results*: Technology enables learning processes in the cultural heritage visit experience. The CH experience is configured as a service ecosystem and technology enables increases in resource integration, liquefaction, and density by operating both as an operant and operand resource.*

Research limits: *The study of technology from a service-dominant (S-D) logic perspective is nascent vis-a-vis framing the CH visit experience.*

Practical implications: *Technology acceptance is important for learning and positive perceptions of authenticity. A dynamic approach to the conceptualization of cultural supply structures is important.*

Originality of the paper: *This research advances both theory and practice, adding to existing discourses on CH from a broader perspective that includes CH as a potential part of a service ecosystem, highlighting the role of technology in designing and shaping resource integration. The paper, therefore, offers a novel perspective on CH in terms of value co-creation, highlighting the role of participating architecture for learning.*

Key words: Cultural heritage experience; resource integration; authenticity; augmented reality and virtual reality; S-D Logic

1. Introduction

Technology is almost essential in cultural heritage (CH) contexts for enhancing visitor experiences as well as preserving the integrity of CH sites (Chung *et al.*, 2018).

Technology improves accessibility and communication of the CH value proposition by developing the interactions between cultural

[1] Paragraph allocation:
Fabiola Sfodera: background, conceptual model (included 3.1. Technology acceptance, 3.2. Authenticity, 3.3. Historical reconstruction and cultural & heritage awareness), discussion; Isabella Mingo: methodology, results; Alberto Mattiacci: introduction; Maria Colurcio: conclusion.

institutions (e.g., museums and archeological site) and visitors (Cataldo and Paraventi, 2007). Furthermore, technology contributes to broaden the user base and gives important impetus to the evolution of the learning process that accompanies CH visits, enabling new forms of interactive and participatory learning (Solima, 2010).

CH plays a pivotal role in creating value for actors (tom Dieck and Jung, 2017; Chiabai *et al.*, 2013) within the service ecosystems of CH (Vargo and Lusch, 2011). Some studies stress the relevance of a relational approach among all stakeholders of the CH network (museum staff, technology providers, customers, governmental decision-makers) for the development of successful enhancement plans (Izzo *et al.*, 2015).

From a service perspective, the antecedent of value co-creation is the integration of resources of all the actors involved in the process (Vargo and Lusch, 2017). Specifically, in the CH "value system", the users, be they residents or tourists, play an important role in the resource integration process. From the perspective of visitors "cultural value emerges from the interaction between an offering system, which has been organized to propose a value, and a beneficiary/user who is capable of extracting that value through the interaction process" (Barile *et al.*, 2012, p. 121).

The way in which CH is used has changed profoundly (e.g., Timothy, 1997). Technology shapes CH value offers by creating new experiences and ways of consumption e.g., virtual reality and 3D (e.g., Solima, 2016), but, above all, accelerates innovation and redefines the same ecosystem of services, enriching it with new actors and meanings. Technology offers many opportunities for innovative service design (Bakhshi and Throsby, 2012; Hume, 2015) to face competitive challenges which are pertinent to CH, whilst simultaneously enhancing functional (Berry *et al.*, 2002) and experiential value (Yuan and Wu, 2008). Technology has an important potential for creating an interactive and enjoyable experience in CH; it is a stimulus for knowledge (Sánchez-Fernández and Iniesta-Bonillo, 2007), learning (Yoon *et al.*, 2013), and experience (e.g., Ciasullo *et al.*, 2016; Errichiello *et al.*, 2019).

Although technology is a critical operant resource (Akaka and Vargo, 2014) for value co-creation and innovation in CH, studies that holistically consider technology vis-à-vis CH experiences from an S-D logic perspective, are lacking. Indeed, thus far, the extant literature has focused mainly on the impact of specific technology to enhance the learning experience and co-create value (e.g., Jung *et al.*, 2018; Tscheu and Buhalis, 2016).

This research explores how technology acceptance positively accelerates the dimensions of experience and how it may configure a new service ecosystem enabling resources integration (Akaka and Vargo, 2015; Caridà *et al.*, 2019).

2. Background

From a service perspective in the domain of cultural heritage, two important areas of research can be distinguished. The first relates to consumption patterns which represent a new concept from a service ecosystem perspective. The second relates to technology implementation and the gap between its ability to stimulate innovation (Lusch and Nambisan, 2015) and its use as an operant and operand resource in CH (e.g., Sfodera *et al.*, 2018).

According to Smith (2015), the performative nature of visits allows visitors to create their own meanings, which are not necessarily related to the intentions of organizations. Relatedly, these meanings are not necessarily learned from the exhibition or the cultural assets but can be created or reinforced by the performance of the visit itself and highlight a wide variety of ways through which visitors use both museums and tangible and intangible heritage (Kuflik *et al.*, 2015).

The experiential transformation of CH that emerges from the literature corresponds to a shift in the meaning of the consumer experience that develops through a dynamic process of fruition, in which the cultural proposal is defined through the active involvement of the user. Cognitive co-creation of contents and meanings (Ramírez, 1999) takes place due to the co-creation of value in interactional experience (Ramaswamy and Ozcan, 2018).

As a service ecosystem is defined as a "relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange" (Vargo and Lusch, 2016, p. 11) and as it focuses on the multiple levels of interaction and 'institutions' as drivers of value creation (Vargo *et al.*, 2017), herein we consider CH as a service ecosystem. Therefore, CH experiences occur through and in a services system (Vargo and Lush, 2008; Gummesson *et al.*, 2010) which corresponds to state-of-the-art conceptualizations of the user experience.

On the other hand, heritage tourism offers experiences that involve visiting as the combination of specific learning motivations with recreational and immersive motivations (Poria *et al.*, 2004).

The experience is configured as multi-dimensional and unique for each situation and consumer (Lemon and Verhoef, 2016), and is influenced by expectations, social interactions, and memory (Sfodera, 2011). Creating value through experiences is not a novel notion, neither is the idea that tourists and visitors co-create experiences (e.g., Uriely, 2005). The consumer acts as a resource integrator (Arnould, 2006) and value is derived from the consumption (use) experience. From the perspective of S-D logic, consumers, defined as operant resources, are able to contribute to value creation by integrating physical, social, and cultural resources.

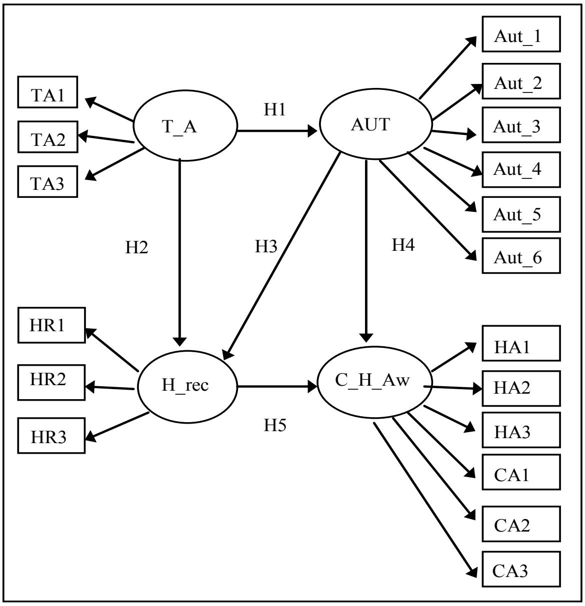
In this context, the construction of experience itself has evolved emphasizing the subjective, personal, and dynamic dimension (O'Dell and Billing, 2005). As stated by Neuhofer *et al.* (2012), technology is a source of innovation to co-create enhanced destination experiences, consumers play an active role in co-creating their own experiences, and technology is increasingly mediating those experiences. The CH sector is one of the most affected by the implementation of technology and ICT (e.g. Pallud and Monod, 2010). Advances in ICT can improve both the quality and quantity of cultural information that can be customized and contribute to learning through the application of theories of social constructivism and experiential education.

There is a substantial literature that considers the role of technology in creating experiences, including virtual reality (e.g., Guttentag, 2010), augmented reality (e.g., Yovcheva *et al.*, 2012), mixed reality, and the use of supporting technologies (such as touch screens for example). However, although technology plays an important role in value by virtue of co-creation and innovation (Maglio and Spohrer, 2008), few studies consider technology in terms of its capacity to transform the nature of experiences (Neuhofer *et al.*, 2014; Akaka and Vargo, 2014). Technological applications increase the value of cultural experiences, as a cultural and aesthetic practice rather than a technology. Technology enhances the achievement of the primary - cultural, historic, or artistic - functions of CH and allows combining known facts with contested heritage, simultaneously stimulating knowledge conversion and resource liquefaction. The purpose is both conservation and development of CH (Bec *et al.*, 2019), with the aim of attracting, entertaining, and educating visitors (Hume and Mills, 2011).

3. Conceptual model

The conceptual model (Figure 1) was constructed on the basis of a thematic literature review which aimed to take a holistic approach to experience and the role of technology in the use of CH, analyzed both as a tool and as a resource.

Fig. 1: Conceptual model and proposed effects



Source: own elaboration

We developed our analysis through the lens of res ource integration (Vargo and Lusch, 2008; Colurcio *et al.*, 2017). Specifically, resource liquefaction (Lusch and Nambisan, 2015) - that is the condition for decoupling, sharing, and improving information - is a key concept in our conceptual model. Four dimensions of CH experience have been isolated. Each of these dimensions is sensitive to (i) tech-based enhancement, (ii) technology acceptance, (iii) authenticity (object based and existential), and two different but related aspects of the learning experience (iv) historical reconstruction and (v) awareness (cultural and heritage) (see Table 1).

Tab. 1: Dimensions, subdimensions, and survey variables

Dimension	References	Variables
Technology Acceptance (TA)	TAM (Davis *et al.*, 1989) Extended TAM with TTF (Dishaw and Strong, 1999) Tourists' acceptance of advanced technology-based innovations for promoting arts and culture (Pantano and Corvello 2014)	TA1 The technology used in the museum definitely improved the show TA2 The technology definitely helped my learning TA3 My basic knowledge was enough to use the virtual technology
Authenticity (Object based and Existential) (AUT)	A consumer-based model of authenticity (Kolar and Zabrak 2010) A typology of technology-enhanced tourism experiences (Neuhofer *et al.*, 2014) Exploring the tourist experience: A sequential approach (Park and Santos 2017)	AUT1 I found the information on the structure and the work (artistic, historical, etc.) that make up the exhibition / guided tour consistent with my visit AUT2 The path immerses me fully or largely in the historical / artistic period of the exhibition / guided tour AUT3 The proposed visit path seemed to me to be coherent and similar to the historical context told AUT4 I liked the technologies used because they involved me AUT5 During the visit I felt an integrated part of the cultural experience offered AUT6 Without the building and its particular presentation I would not have had the same experience
Historical Reconstruction (H_Rec)	SGs model (Mortara *et al.*, 2014) Embodiment of wearable augmented reality technology in tourism experiences (Tussyadiah *et al.*, 2017) From 3D reconstruction to virtual reality: A complete methodology for digital archaeological exhibition (Bruno *et al.*, 2010) Perceived value constructs for AR in the CH tourism context (tom Dieck and Jung, 2017) Hume and Mills (2011) Resource liquefaction (Lusch and Nambisan, 2015)	HR1 Without the use of technology, I could not have imagined the original place HR2 Thanks to the technology I felt immersed in the historical period referred to HR3 The reconstructions helped my understanding and improved my knowledge HR4 Thanks to the technology, I had no problems learning the history and the artistic value of the works (artistic, historical, etc.) / archaeological site
Cultural and Heritage Awareness (C_H_Aw)		CA1 I felt mentally transported to a historical period different to my own CA2 I really understood the meaning and importance that were attributed to the site / exhibited works CA3 Thanks to the historical reconstruction I learned the values of the artistic period of reference
		HA1 Thanks to the visit I really understood the value and the artistic importance of the place and the artistic period HA2 The place builds and fully presents the artistic side of the historical period represented HA3 Thanks to this experience I have acquired and / or improved my knowledge on the historical period represented

Source: own elaboration

3.1 Technology acceptance

The propensity of people to accept technology, even the unknown, is one of the determinants of the implementation of technology in cultural contexts (Hume, 2015). Technology acceptance models and theories have been applied in a wide variety of domains. Furthermore, the speed and ease of access and exchange of information, the immediacy and intuitive nature of technology, foster engagement of the cultural consumer easier by configuring technology as an enabling factor for interaction and value co-creation (Jaakkola and Alexander, 2014).

According to Kolar and Zabrak (2010), technology can provide a surplus of authenticity in the CH experience without negatively impacting its uniqueness and without creating commodification effects (Pantano and Corvello, 2014; Bruno *et al.*, 2010). Technology influences both object-based authenticity, the desire to visit a unique and unrepeatable asset, as well as existential authenticity, the subjective dimension of experience. To better explain the behavior of individuals in CH experience consumption whilst allowing for a multiplicity of interpretations concerning works and their attractiveness (Goulding, 2000), the Extended Technology Acceptance Model (ETAM) was adopted (Venkatesh *et al.*, 2003).

On this basis, the following hypotheses are put forward:

H1: *Technology has a positive influence on authenticity (object based and existential)*

H2: *Technology acceptance has a positive influence on historical reconstruction.*

3.2 Authenticity

To define CH, the requirement of authenticity must be satisfied (Wang *et al.*, 2015). Although in the CH system, authenticity is identifiable and objective (Trilling, 1972), the authenticity perceived by the visitor or tourist, that is an intrinsic part of the overall experience, is subjective and may well be tacit rather than explicit (Reisinger and Steiner, 2006; Steiner and Reisinger, 2006).

MacCannel (1976) stated that the search for authenticity is a constant and continuous part of the journey and that it takes place mainly in heritage settings. For the purposes of this study, when referring to CH, both tangible and intangible aspects are considered. The value of the CH experience is expressed according to two macro dimensions, the authenticity of the experience (object-based and existential authenticity, subsequently defined) (e.g., Kolar and Zabkar, 2010) and the acquisition and development of visitor knowledge (resource liquefaction) (e.g., Poria *et al.*, 2003).

Accordingly, the following hypotheses are put forward:

H3: *Authenticity (object-based and existential) has a positive influence on historical reconstruction*

H4: *Authenticity (object-based and existential) has a positive influence on cultural and heritage awareness.*

3.3 Historical reconstruction and cultural & heritage awareness

Technology enables the construction of a holistic experience in which the process of meaning production is activated by integrating the tangible and intangible dimensions of CH. This integration of contents and resources is defined by the following taxonomy: historical reconstruction, cultural and heritage awareness (Mortara *et al.*, 2014).

Historical reconstruction aims for an accurate representation of the site or of the artistic, historical, or cultural work through technology, starting from a part of it. However, its effectiveness is measured by the ability to generate (i) cultural awareness, i.e., immersion in the intangible aspects of CH (values, beliefs, traditions, and perceptions), and (ii) heritage awareness, i.e., knowledge of the artistic and cultural value of the art or place (Mortara *et al.*, 2014; Bec *et al.*, 2019).

Specifically, AR and 3D reconstruction enhance the experience during the fruition of CH through overlaid information (Jung *et al.*, 2018) augmenting both hedonic and learning experience (Leue *et al.*, 2014). Further, "incorporating sensory experience using immaterial reconstruction constitutes a new form of knowledge and a major methodological change in the field of cultural heritage" (Suárez *et al.*, 2016, p. 567).

Historical reconstruction co-created through technology offers an immersive experience and develops visitors' awareness and knowledge of CH (tom Dieck and Jung, 2017).

The fifth and final hypothesis put forward is as follows:

H5: *Historical reconstruction positively influences cultural and heritage awareness.*

4. Methodology

To test the proposed hypotheses in our model an empirical study was conducted. The choice of the field of analysis was guided by two main criteria: the first is related to the type of CH distinguishing, within the tangible heritage, between archaeological site, permanent exhibition, and temporary exhibition (e.g., McIntosh and Prentice 1999). The second criterion is represented by the degree of implementation of technology, with reference to 3D reconstruction, AR, social media interaction, device use (smartphones, tablets, and so on), projection of video reconstructions (PVR), custom audio guides, and touch screens. Following the aforementioned criteria, three sites are considered, all of which are in Rome and exhibit a high level of technology integration both as an operand and as an operant resource: the Domus Aurea, the Ara Pacis, and the Chiostro del Bramante.

The Domus Aurea is a villa built by the Roman emperor Nero after the great fire that devastated Rome in 64 AD. Today this archaeological site offers an immersive experience (Pine and Gilmore, 1998) with the use of video mapping, which allows projections to reconstruct the original structure of the Domus, and an immersive VR that is used to reconstruct the life, the music, and sounds of that time.

The Ara Pacis is a museum containing an altar dedicated to the Roman emperor Augustus and "L'Ara com'era" is a museum project that offers an immersive experience, with the use of AR, VR integrated with computer graphics, and 3D. Chiostro del Bramante - Enjoy exhibition offers a sensory entertainment experience (Pine and Gilmore, 1998) with the use of custom audio guides, social network interaction #enjoychiostro, virtual touch, and sensorial experience.

A survey approach was adopted to collect empirical data. In the absence of previous information on the socio-demographic characteristics of visitors to the three sites considered, and given the main topic of research, i.e., technology, age is deemed to be a key variable (Edison and Geissler, 2003). Therefore, a stratified sampling technique has been adopted to uniformly represent three different generations: 14-32 years (Z and Y-millennial generation; Oblinger *et al.*, 2005); 33-53 years (X generation); 54-72 years (baby-boomers) (Howe and Strauss, 1992; Istat, 2016). Over a period of two weeks, and at different times of the day, 300 individuals (100 for each analyzed site) were surveyed immediately after the cultural experience. In addition to socio-demographic variables (gender, age, education level, job status), the standardized questionnaire included context variables concerning knowledge and evaluation of different technological tools (seven-point rating scale, 1-7, not at all / perfectly). The evaluation considered both the effectiveness of technologies for the success of the visit and for the fun which visitors had (seven-point rating scale, 1-7, not at all/a lot). Moreover, drawing on the extant literature, the questionnaire was designed to collect relevant information concerning model dimensions as described above (18 variables, seven-point rating scales, 1-7, totally disagree/totally agree) (Table 1).

To illuminate sample characteristics, data were analyzed with descriptive statistical techniques, while, to test our hypotheses, a structural equation modeling approach was used (Jöreskog and Sörbom, 1979; Bollen, 1989). Specifically, a Full Latent Variable model was applied (IBM AMOS 24.0) (Arbuckle, 2016) that comprised both structural and measurement models (Figure 1). The measurement model tested the relationship between observed variables and the following latent variables: Technology Acceptance (T_A), Authenticity (AUT), Historical Reconstruction (H_Rec), and Cultural-Heritage Awareness C_H_Aw). The structural model tested the relationship between the above dimensions. Considering the type of indicators (7-point rating scales), MLE, a Bayesian approach (Bolstad, 2004; Arbuckle, 2016), and a bootstrapping procedure (Byrne, 2010; Awang *et al.*, 2015), were applied to test the hypotheses and explore the robustness of parameter estimates.

5. Results

Sample characteristics

Almost two thirds of respondents were female (64.8%). Further, respondents tended to exhibit a relatively high level of education (tertiary 55.3%) with only 12.3% of individuals in the sample below an upper-secondary level of education; this accords with other surveys on museum fruition in Italy (Floridia and Misiti, 2003). A large proportion of respondents were in full-time employment (46.4%) whilst 19.5% of individuals in the sample were students. Regarding age, the three generations are similarly represented (Z generation 32.4%; X generation 34.5%; Baby Boomers 33.1%). Considering context variables, it emerges that knowledge of technology declared by visitors is focused on the most common tools namely devices, social media, and touch screens. However, in the ranking of technologies in terms of their effectiveness and their fun in the visit context, the top three tools were less-known technologies: 3D reconstruction (6.31, 6.16), VR (6.25, 6.38), and PVR (5.93, 5.82) (Table 2).

Tab. 2: Technologies: knowledge, effectiveness, and fun (means)

	3d	VR	Social Media	Ar	Device	PVR	Custom audio guide	Touch screen
Knowledge	3.58	3.84	5.31	3.22	5.44	3.81	3.55	4.89
Effectiveness	6.31	6.25	4.08	5.41	5.46	5.93	5.01	5.02
Fun	6.16	6.38	3.79	5.13	4.88	5.82	4.95	4.74

Source: own elaboration

In preparing the analysis of the four dimensions, descriptive statistics of all observed variables were examined. Their means, between 5.0 and 6.3, show that respondents were very likely to use technologies during their museum experience; indeed, the items concerning technology acceptance have the highest average values (> 6) (Table 3). The indicators are moderately non-normal in terms of skewness < |2.2| and substantially non-normal in terms of kurtosis < |5.0| (Curran *et al.*, 1996).

Tab. 3: Observed variables: descriptive statistics

	Mean	Median	St Dev.	Skewness	Kurtosis	Min	Max
TA1	6.35	7.00	1.20	-2.21	4.72	1.00	7.00
TA2	6.34	7.00	1.15	-2.12	4.23	1.00	7.00
TA3	6.28	7.00	1.33	-2.25	4.93	1.00	7.00
AUT1	5.76	6.00	1.51	-1.20	0.66	1.00	7.00
AUT2	5.54	6.00	1.60	-0.96	0.05	1.00	7.00
AUT3	5.76	6.00	1.39	-1.24	1.18	1.00	7.00
AUT4	6.09	7.00	1.34	-1.66	2.18	1.00	7.00
AUT5	5.80	6.00	1.58	-1.40	1.11	1.00	7.00
AUT6	5.55	6.00	1.76	-1.04	-0.08	1.00	7.00
HR1	5.37	6.00	1.80	-0.93	-0.19	1.00	7.00
HR2	5.51	6.00	1.65	-0.87	-0.32	1.00	7.00
HR3	5.82	6.00	1.43	-1.20	0.59	1.00	7.00
HR4	5.54	6.00	1.53	-1.02	0.35	1.00	7.00
CA1	5.17	6.00	1.91	-0.78	-0.58	1.00	7.00
CA2	5.52	6.00	1.61	-1.09	0.50	1.00	7.00
CA3	5.26	6.00	1.60	-0.85	0.10	1.00	7.00
HA1	5.25	6.00	1.78	-0.78	-0.47	1.00	7.00
HA2	5.03	5.00	1.71	-0.62	-0.47	1.00	7.00
HA3	5.33	6.00	1.70	-0.84	-0.14	1.00	7.00

Source: own elaboration

Test of the measurement models

For the purposes of multivariate data analysis, a structural equation approach was applied using IBM SPSS AMOS. In the first step, the measurement models of the four latent theoretical variables were tested by a confirmatory factor analysis (CFA), following which two indicators (AUT6, TA3), were deleted due to low loadings (< 0.55). Furthermore, to reduce multicollinearity, two other indicators (HR4 and CA1) were deleted because of their relatively strong associations with indicators of other constructs. Thus, measurement models which are more parsimonious have been derived. In the resulting models, the measurement validity of each latent variable was tested according to Bagozi *et al.* (1991). Cronbach's alpha for each factor was greater than 0.86 and local fit measures (AVE >0.5 and composite reliability >0.7) for each factor can be considered satisfactory (Table 4).

Tab. 4: CFA: Measurement models for the four latent variables (MLE)

	Alpha	AVE	CR	HSI
Technology Acceptance (T_A)	0.886	0.793	0.885	0.437
Authenticity (AUT)	0.873	0.642	0.899	0.589
Historical Reconstruction (H_Rec)	0.869	0.696	0.843	0.674
Cultural and Heritage Awareness (C_H_Aw)	0.914	0.635	0.842	0.695

CMIN/df=2.00; SRMR= 0.0358; RMSEA=0.059; TLI= 0.971; CFI =0.979; AIC= 270.019*p<0.0001

Source: own elaboration

Overall, considering the four latent variables using a multiple index approach (Hu and Bentler 1999; Byrne, 2010), the CFA model exhibited good fit to the data (SRMR= 0.0358; RMSEA=0.059; TLI= 0.971; CFI =0.979, CMIN/df=2.00; AIC= 270.019. Finally, Bayesian and bootstrapping approaches (1000 replications) were used to assess the robustness of factor loading unstandardized parameter estimates resulting from ML (Byrne, 2010): the estimates are highly convergent and confirm the unidimensional structure of each construct.

Test of the structural model

Table 5 presents the results of the structural model using both MLE and bootstrapping. The results are similar (SE Bias ≤0.005). By inspecting the probability values, it is evident that all paths are significant. To explore model fit we considered the following statistics: CMIN/df=1.973; SRMR=0.0362; GFI= 0.934; TLI=0.972; CFI=0.979; RMSEA=0.58. Thus, the theoretical model provides a good fit to the empirical data.

Squared multiple correlations show that the structural model explains 70.8%, 64.3%, and 42% of the variance in Cultural and Heritage Awareness, Historical Reconstruction, and Authenticity, respectively.

Tab. 5: Structural model results

5a. Regression weights: maximum likelihood and bootstrap estimations

Path			ML				Bootstrap
Estimate			P	Mean	Bias		SE-Bias
Aut	<---	T_A	0.742	***	0.747	0.005	0.003
H_Rec	<---	T_A	0.302	***	0.304	0.002	0.003
H_Rec	<---	Aut	0.575	***	0.573	-0.003	0.003
C_H_Aw	<---	Aut	0.248	0.003	0.245	-0.003	0.003
C_H_Aw	<---	H_Rec	0.782	***	0.788	0.006	0.007

***p<0.001

5b. Standardized effects: total, direct, and indirect

		Total effect		Direct effect		Indirect effect		
	T_A	Aut	H_Rec	T_A	Aut	H_Rec	T_A	Aut
Aut	0.646	0	0	0.646	0	0	0	0
H_Rec	0.660	0.598	0	0.273	0.598	0	0.386	0
C_H_Aw	0.577	0.613	0.661	0	0.218	0.661	0.577	0.395

Source: own elaboration

Considering direct, indirect, and total effects (Table 5b), it is evident that the total impact of Technology Acceptance on all other dimensions is significant (≥0.577). This is partly attributable to the mediation of Authenticity that has a direct impact on Historical Reconstruction (0.598), but also affects Cultural and Heritage Awareness with a considerable total effect (0.613). Finally, as hypothesized, Historical Reconstruction has a substantial impact on Cultural Awareness (0.661).

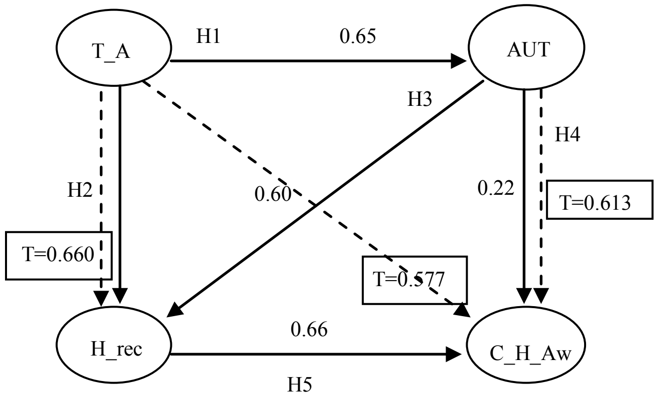
Based on the identified significant interdependencies and by referring to the research hypotheses (as shown in Figure 2, where the structural model with standardized direct and total coefficients are represented) the results can be summarized as follows.

The exogenous variable Technology Acceptance positively and directly affects both Authenticity (0.65) and more weakly Historical Reconstruction (direct effect= 0.27; total effect=0.66). These results permit acceptance of hypotheses H1 and H2. The model also highlights the positive effect of Technology Acceptance on Cultural and Heritage Awareness (0.577).

Authenticity positively and directly affects both Historical Reconstruction (0.60) and weakly Cultural and Heritage Awareness (direct effect= 0.218; total effect=0.613). These results lead to acceptance of H3 and H4

Historical Reconstruction positively affects (0.66) Cultural and Heritage Awareness. This allows acceptance of H5.

Fig. 2: Structural model with standardized direct and total coefficients



Source: own elaboration

6. Discussion

Technology is increasingly pervasive and ubiquitous in everyday life and the CH sector is no exception in this respect. Visitors bring mobile devices and computers with them which they use to co-create and maximize their experience.

Neuhofer *et al.* (2014) demonstrated how technology leads to redefinition of experience and is able to increase the capacity of the experience itself to create value for the consumer, which becomes maximized when combined with the processes of co-creation. When technology is necessary for the creation of the experience itself, it is pervasive throughout the process of co-creation, contributes to the personalization of experience, increases satisfaction, and enables maximization of the value created by experience. The results generated herein suggest that technology acceptance has a positive influence on cultural performance experience (TA1). When technology is used as a mediator and as a resource for creating experiences related to CH, it positively influences the authenticity and value of the experience, as well as the extent of learning. Technology allows an innovative approach to learning, able to combine increased knowledge with the development of creativity and innovative thinking, based on attitudes and values, with emotions such as fun, and feelings such as inspiration. The combination of cognitive, physical, social, and affective components (Wang *et al.*, 2015) stimulates deepening of the learning process. As demonstrated by Moorhouse and Jung (2017), using AR in CH increases learning, knowledge, and the value of experience. Our study shows that acceptance of technology (VR, AR, 3D, and customized audio guides in our case) positively affects knowledge and learning (TA2). In fact, it positively influences understanding of the historical period and reference context (HR1 and HR2), increasing visitors' awareness. Technology also positively influences learning with respect to knowledge of the CH and its historical or artistic value (HR3, HR4, and HA3)

Interaction with technology allows the visitor to understand the artistic, historical, or cultural value of CH (HA1). This result is particularly significant for the enhancement of intangible CH or expression of a civilization that does not present elements of absolute prestige and authenticity (for example, in the case of the Enjoy exhibition and part of the exhibition, L'Ara com'era). Technology positively influences knowledge of the historical period and the context in which the cultural asset is located, allowing visitors to immerse themselves in this cultural habitat (HA2). Technology is able to positively influence (operant) the processes of learning and increasing knowledge, creating value both in the individual process of co-creation and the effect of interaction with the environment, CH, and other visitors. Technology allows liquefaction of the resources of the CH experience through "decoupling of information from its related physical form or device" (Lusch and Nambisan, 2015, p. 160). The authenticity related to CH refers to the physical and material sphere as well as intangible and experiential domains. It is therefore both intrinsic to the cultural object or museum (object based) and extrinsic (existential based), connected to the mood of the visitor and to the sensations arising from the visit. In this case it does not necessarily matter if the object is an original or a copy, it is the level of emotional and cognitive involvement in the experience which is important.

Our research demonstrates how technology positively influences awareness of the uniqueness of CH and / or of the works contained therein (AUT1, AUT2, and AUT3) as well as being able to stimulate emotional and cognitive involvement (AUT4 and AUT5).

Technology acts both as a mediator of experience and as an experience itself. Technology therefore directly and indirectly influences the learning process (operant) and the perception of CH authenticity while also influencing historical reconstruction, becoming itself a resource for realization (operand) (Vargo and Lusch, 2008).

The research also demonstrates that the choice and combination of technologies in CH, when it takes place both as a function of the influence on authenticity and historical construction, increases the density of resources (Lusch and Nambisan, 2015); because it improves customers/visitors sensemaking processes, use of technologies can increase resource density and improve the set of resources available to them increasing the value of the co-created experience.

Indeed, as shown in Table 2, the most known technologies (especially devices, social media, and touch screens) are also those which are considered less engaging and less experiential. Thus, although VR, 3D, AR, and PVR are generally less familiar (values less than 4), they have a greater ability to engage and are considered more fun.

7. Limitations and conclusions

This study contributes to research in the CH domain by providing novel insights into the role of technology in designing and shaping the customer experience, stressing the relevance of resource integration. Indeed, "value co-creation is becoming ever more inherent to the cultural sector as the lines between the producer and consumer are becoming increasingly blurred" (Dowell *et al.*, 2019, p. 3). Specifically, our study shows that the integration of technology into heritage sites' service offerings, enhances value creation in terms of both functional and experiential value (Yuan and Wu, 2008). Technology works as a service dimension that facilitates and enables resource integration between actors (both users and providers) and therefore enables, and contributes to, value co-creation processes (Caridà *et al.*, 2019). Through technology, consumers access new resources that they would otherwise not access (Åkesson and Edvardsson, 2018). Technology allows information to be separated from physical form (Lusch *et al.*, 2010), and increases efficiency. Different actors may access and use the same resource in different ways, increasing the level of communication and opening up new forms of information (sharing). Technology facilitates personalized and contextualized experience creation (Buhalis and Sinharta, 2019): actors interact and through interaction they integrate existing and new resources in different ways (Colurcio and Caridà, 2019). Through this exchange and recombination process, resources and resource density increase, that is new optimized combinations of resources are configured for availing of the best value alternative (Lusch and Vargo, 2014). Moreover, technology enables resource liquefaction (Lusch and Nambisan, 2015) and individualistic experiential value as each customer may decouple, use, and recombine information to get a better understanding of history and improve his/her knowledge about the story (tom Dieck *et al.*, 2016), building their own experience. Specifically, technology facilitates emotional reactions and feelings.

Within CH contexts, technology plays a pivotal role in enabling the interaction of consumers and in turn, in enabling the process of resource integration. Our results suggest that in the same experience, technology can perform both an operand and operant function and that VR, AR, and 3D technologies are able to engage the visitor in immersion and sensorial experiences.

Knowledge of the value created by individual technologies to understand the operand / operant orientation in the creation of the experience of CH so as to match users´ needs and the available functionality of IT (FTT model), is an important avenue for future research.

According to Lusch and Nambisan (2015), the most fundamental operant resource is knowledge and the technology it fosters (Capon and Glazer, 1987). Technology is the practical application of knowledge; thus, technology, innovation, and service are interlinked. S-D logic emphasizes the application of specialized knowledge and skills for the benefit of another actor or the actor itself. Service innovation is technological (operant resource based), but it also often creates new operand resources.

There are various practical implications of our findings in terms of supporting museums in digitization activities, expanding target markets, and increasing their attractiveness. Our research validates an important nascent empirical trend: technology implementation, according to a holistic approach to service, has a positive influence on authenticity (existential before objective), as well as the learning and knowledge of visitors. Technologies, such as social media or devices in general, are less appreciated and less effective than immersive alternatives such as 3D reconstructions, VR, or AR, which can stimulate greater involvement and co-creation. Furthermore, the use of technology is particularly effective for learning and the positive perception of authenticity when it involves a rethinking of the cultural supply structure, overcoming the logic of the historicized guided path to propose dynamic and customizable experiences.

To overcome a limitation of the present paper and to enrich communal knowledge about the impact of technology on consumer satisfaction with CH experiences, we suggest the measurement of different dimensions of the cultural heritage construct, including value co-creation through interaction among visitors, measurement of the overall perceived value of the experience, and the impact on repurchase intentions.

References

AKAKA M.A., VARGO S.L. (2014), "Technology as an operant resource in service (eco) systems", *Information Systems and e-Business Management,* vol. 12, n. 3, pp. 367-384.

AKAKA M.A., VARGO S.L. (2015), "Extending the context of service: from encounters to ecosystems", *Journal of Services Marketing,* vol. 29, n. 6/7, pp. 453-462.

ÅKESSON M., EDVARDSSON B. (2018), "Customer roles from a self-service system perspective", *International Journal of Quality and Service Sciences,* vol. 10, n. 2, pp. 196-210.

ARBUCKLE J.L. (2016), IBM® SPSS® Amos™ 24 User's Guide, IBM.

ARNOULD E.J. (2006), "Service-dominant logic and consumer culture theory: natural allies in an emerging paradigm", *Marketing Theory,* vol. 6, n. 3, pp. 293.

AWANG Z., AFTHANORHAN A., ASRI M.A.M. (2015), "Parametric and non-parametric approach in structural equation modeling (SEM): the application of bootstrapping", *Modern Applied Science,* vol. 9, n. 9, pp. 58-67.

BAGOZI R.P., YI Y., PHILLIPS L.W. (1991), "Assessing construct validity in organizational research", *Administrative Science Quarterly,* vol. 36, n. 3, pp. 421-458.

BAKHSHI H., THROSBY D. (2012), "New technologies in cultural institutions: theory. evidence and policy implications", *International journal of cultural policy*, vol. 18, n. 2, pp. 205-222.

BARILE S., MONTELLA M., SAVIANO M. (2012), "A service-based systems view of cultural heritage", *jbm-Journal of Business Market Management,* vol. 5, n. 2, pp. 106-136.

BEC A., MOYLE B., TIMMS K., SCHAFFER V., SKAVRONSKAYA L., LITTLE C. (2019), "Management of immersive heritage tourism experiences: a conceptual model", *Tourism Management*, vol. 72, pp. 117-120.

BERRY L.L., CARBONE L.P., HAECKEL S.H. (2002), "Managing the total customer experience", *MIT Sloan Management Review*, vol. 43, n. 3, pp. 85-89.

BOLLEN K.A. (1989), *Structural Equations with Latent Variables*, John Wiley & Sons, New York, NY.

BOLSTAD W.M. (2004), *Introduction to Bayesian Statistics*, John Wiley & Sons, Nre York, NY.

BRUNO F., BRUNO S., DE SENSI G., LUCHI M.L., MANCUSO S., MUZZUPAPPA M. (2010), "From 3D reconstruction to virtual reality: a complete methodology for digital archaeological exhibition", *Journal of Cultural Heritage*, vol. 11, n. 1, pp. 42-49.

BUHALIS D., SINARTA Y. (2019), "Real-time co-creation and nowness service: lessons from tourism and hospitality", *Journal of Travel and Tourism Marketing,* vol. 36, n. 5, pp. 563-582.

BYRNE B.M. (2010), *Structural Equation Modelling with Amos. Basic Concepts, Applications, and Programming*, 2nd Edition, Routledge, New York, NY.

CAPON N., GLAZER R. (1987), "Marketing and technology: a strategic coalignment", *Journal of Marketing*, vol. 51, n. 3, pp. 1-14.

CARIDÀ A., EDVARDSSON B., COLURCIO M. (2019), "Conceptualizing resource integration as an embedded process: matching, resourcing and valuing", *Marketing Theory,* vol. 19, n. 1, pp. 65-84.

CATALDO P., PARAVENTI M. (2007), *Il museo oggi. Linee guida per una museologia contemporanea,* Hoepli, Milano.

CIASULLO M.V., GAETA A., GAETA M., MONETTA G. (2016), "New modalities for enhancing cultural heritage experience. The enabling role of digital technologies", *Sinergie Italian Journal of Management,* vol. 34, n. 99, pp. 119-139.

CHIABAI A., PASKALEVA K., LOMBARDI P. (2013), "e-Participation model for sustainable cultural tourism management: a bottom-up approach", *International Journal of Tourism Research*, vol. 15, n. 1, pp. 35-51.

CHUNG N., LEE H., KIM J.Y., KOO C. (2018), "The role of augmented reality for experience-influenced environments: The case of cultural heritage tourism in Korea", *Journal of Travel Research,* vol. 57, n. 5, pp. 627-643.

COLURCIO M., CARIDÀ A., EDVARDSSON B. (2017), "Conceptualizing resource integration to advance service innovation", *Innovating in Practice,* Springer, Cham, Switzerland, pp. 237-259.

COLURCIO M., CARIDA' A. (2019), *Resource Integration. From Generic Concept to Marketing Construct,* Pacini, Pisa.

CURRAN P.J., WEST S.G., FINCH J.F. (1996), "The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis", *Psychological Methods,* vol. 1, n. 1, pp. 16-29.

DAVIS F.D., BAGOZZI R.P., WARSHAW P. R. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science,* vol. 35, n. 8, pp. 982-1003.

DISHAW M.T., STRONG D.M. (1999), "Extending the technology acceptance model with task-technology fit constructs", *Information and Management,* vol. 36, n. 1, pp. 9-21.

DOWELL D., GARROD B., TURNER J. (2019), "Understanding value creation and word-of-mouth behaviour at cultural events", *The Service Industries Journal,* vol. 39, n. 7-8, pp. 498-518.

EDISON S., GEISSLER G.J. (2003), "Measuring attitudes towards general technology: antecedents. hypotheses and scale development", *Journal of Targeting. Measurement and Analysis for Marketing*, vol. 12, n. 2, pp. 137-156.

ERRICHIELLO L., MICERA R., ATZENI M., DEL CHIAPPA G. (2019), "Exploring the implications of wearable virtual reality technology for museum visitors' experience: A cluster analysis", *International Journal of Tourism Research,* vol. 21, n. 5, pp. 590-605.

FLORIDIA A., MISITI M. (2003), *Musei in Toscana: Beni Culturali e Sviluppo Regionale*, Franco Angeli, Milano.

GOULDING C. (2000), "The museum environment and the visitor experience", *European Journal of Marketing,* vol. 34, n. 3/4, pp 261-278.

GUMMESSON E., LUSCH R.F., VARGO S.L. (2010), "Transitioning from service management to service-dominant logic: observations and recommendations", *International Journal of Quality and Service Sciences,* vol. 2 n. 1, pp. 8-22.

GUTTENTAG D.A. (2010), "Virtual reality: Applications and implications for tourism", *Tourism Management,* vol. 31, n. 5, pp. 637-651.

GYORGY P. (2013), *Museum, the Learning House. Case Studies, Museum Theory,* [Museum, the study house. Museum theory case studies. Fine Arts, Budapest.

HOWE N., STRAUSS W. (1992), *Generations: The History of America's Future. 1584 to 2069,* Paperback Publisher, New York, NY.

HU L., BENTLER P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Models,* vol. 6, n. 1, pp. 1-55.

HUME M. (2015), "To technovate or not to technovate? Examining the inter-relationship of consumer technology. museum service quality. museum value. and repurchase intent", *Journal of Nonprofit and Public Sector Marketing*, vol. 27, n. 2, pp. 155-182.

HUME M., MILLS M. (2011), "Building the sustainable iMuseum: is the virtual museum leaving our museums virtually empty?", *International Journal of Nonprofit and Voluntary Sector Marketing,* vol. 16, n. 3, pp. 275-289.

ISTAT (2016), 2016 Annual Report. The situation of the country. National Institute of Statistics.

IZZO F., MUSTILLI M., GUIDE M. (2015), "Augmented Reality and enhancement of cultural heritage. Reflections on the cultural offer of the case", *XXVII Annual Meeting of Sinergie Heritage, management and enterprise: what Sinergie?,* 9-10 July 2015 - University of Molise-seat of Termoli, IT.

JAAKKOLA E., ALEXANDER M. (2014), "The role of customer engagement behavior in value co-creation: a service system perspective", *Journal of Service Research*, vol. 17, n. 3, pp. 247-261.

JÖRESKOG K.G., SÖRBOM D. (1979), *Advances in Factor Analysis and Structural Equation Models,* AbtBooks, Cambridge, UK.

JUNG T.H., LEE H., CHUNG N., TOM DIECK M.C. (2018), "Cross-cultural differences in adopting mobile augmented reality at cultural heritage tourism sites", *International Journal of Contemporary Hospitality Management*, vol. 30, n. 3, pp. 1621-1645.

KOLAR T., ZABKAR V. (2010), "A consumer-based model of authenticity: An oxymoron or the foundation of cultural heritage marketing?", *Tourism Management,* vol. 31, n. 5, pp. 652-664.

KOTLER N., KOTLER P. (2000), "Can museums be all things to all people? Missions. goals. and marketing's role", *Museum Management and Curatorship,* vol. 18, n. 3, pp. 271-287.

KUFLIK T., WECKER A.J., LANIR J., STOCK O. (2015), "An integrative framework for extending the boundaries of the museum visit experience: linking the pre, during and post visit phases", *Information Technology and Tourism*, vol. 15, n. 1, pp. 17-47.

LEMON K.N., VERHOEF P. C. (2016), "Understanding customer experience throughout the customer journey", *Journal of Marketing*, vol. 80, n. 6, pp. 69-96.

LEUE M.C., TOM DIECK D., JUNG T. (2014), "A theoretical model of augmented reality acceptance", *eReview of Tourism Research,* vol. 5, pp. 1-5.

LUSCH R.F., NAMBISAN S. (2015), "Service innovation: A service-dominant logic perspective", *MIS Quarterly,* vol. 39, n. 1, pp. 155-175.

LUSCH R.F., VARGO S.L. (2006), "Service-dominant logic: reactions, reflections and refinements", *Marketing Theory*, vol. 6, n. 3, pp. 281-288.

LUSCH R.F., VARGO S.L., TANNIRU M. (2010), "Service, value networks and learning", *Journal of the Academy of Marketing Science*, vol. 38, n. 1, pp. 19-31.

LUSCH R.F., VARGO S.L. (2014), *The service-dominant logic of marketing: Dialog, debate, and directions,* Routledge, New York, NY.

MACCANNEL D. (1976), *The Tourist. A New Theory of the Leisure Class,* University of California Press, Berkeley and Los Angeles, USA.

MAGLIO P.P., SPOHRER J. (2008), "Fundamentals of service science", *Journal of the Academy of Marketing Science,* vol. 36, n. 1, pp. 18-20.

MCINTOSH A.J., PRENTICE R.C. (1999), "Affirming authenticity: consuming cultural heritage", *Annals of Tourism Research*, vol. 26, n. 3, pp. 589-612.

MOORHOUSE N., JUNG T. (2017), "Augmented reality to enhance the learning experience in cultural heritage tourism: an experiential learning cycle perspective", *eReview of Tourism Research*, vol. 8, http://e-space.mmu.ac.uk/617555/

MORTARA M., CATALANO C.E., BELLOTTI F., FIUCCI G., HOURY-PANCHETTI M., PETRIDIS P. (2014), "Learning cultural heritage by serious games", *Journal of Cultural Heritage,* vol. 15, n. 3, pp. 318-325.

NEUHOFER B., BUHALIS D., LADKIN A. (2012), "Conceptualising technology enhanced destination experiences", *Journal of Destination Marketing and Management*, vol. 1, n. 1-2, pp. 36-46.

NEUHOFER B., BUHALIS D., LADKIN A. (2014), "A typology of technology-enhanced tourism experiences", *International Journal of Tourism Research*, vol. 16, n. 4, pp. 340-350.

O'DELL T., BILLING P. (2005), *Experiencescapes: Tourism, Culture and Economy*, Copenhagen Business School Press, Copenhagen, DK.

OBLINGER D., OBLINGER J.L., LIPPINCOTT J.K. (2005), E*ducating the net generation*, EDUCAUSE.

PALLUD J., MONOD E. (2010), "User experience of museum technologies: the phenomenological scales", *European Journal of Information Systems*, vol. 19, n. 5, pp. 562-580.

PANTANO E., CORVELLO V. (2014), "Tourists' acceptance of advanced technology-based innovations for promoting arts and culture", *International Journal of Technology Management*, vol. 64, n. 1, pp. 3-16.

PARK S., SANTOS C.A. (2017), "Exploring the tourist experience: A sequential approach", *Journal of Travel Research*, vol. 56, n. 1, pp. 16-27.

PINE B.J., GILMORE J.H. (1998), "Welcome to the experience economy", *Harvard Business Review*, July-August, pp. 97-105.

PORIA Y., BUTLER R., AIREY D. (2003), "The core of heritage tourism", *Annals of Tourism Research*, vol. 30, n. 1, pp. 238-254.

PORIA Y., BUTLER R., AIREY D. (2004), "Links between tourists, heritage, and reasons for visiting heritage sites", *Journal of Travel Research,* vol. 43, n. 1, pp. 19-28.

RAMASWAMY V., OZCAN K. (2018), "Offerings as digitalized interactive platforms: a conceptual framework and implications", *Journal of Marketing,* vol. 82, n. 4, pp. 19-31.

RAMÍREZ R. (1999), "Value co-production: intellectual origins and implications for practice and research", *Strategic Management Journal,* vol. 20, pp. 49-65

REISINGER Y., STEINER C.J. (2006), "Reconceptualizing object authenticity", *Annals of Tourism Research*, vol. 33, n. 1, pp. 65-86.

SÁNCHEZ-FERNÁNDEZ R., INIESTA-BONILLO M.Á. (2007), "The concept of perceived value: a systematic review of the research", *Marketing Theory*, vol. 7, n. 4, pp. 427-451.

SFODERA F. (2011), *Turismi, Destinazioni e Internet*, FrancoAngeli, Milan.

SFODERA F., MINGO I., MATTIACCI A., COLURCIO M. (2018), "Technology as operant resources for the cultural heritage reconstruction experience", in *IRSSM-9 symposium proceedings*, vol. 9, pp. 40.

SMITH L. (2015), "Theorizing museum and heritage visiting", in Macdonald, S. and Lehay, H.R. (Eds.), *The International Handbooks of Museum Studies*, John Wiley & Sons, London and New York, pp. 459-485.

SOLIMA L. (2016), "Smart Museums. Sul prossimo avvento della Internet of Things e del dialogo tra gli oggetti nei luoghi" (Smart Museums. On the coming advent of the Internet of Things and the dialogue among objects in places of culture), *Sinergie Italian Journal of Management*, vol. 34, n. 99, pp. 263.283.

SOLIMA L. (2010), "Social Network: verso un nuovo paradigma per la valorizzazione della domanda culturale", *Sinergie*, n. 82, pp. 47-74.

STEINER C.J., REISINGER Y. (2006), "Understanding existential authenticity", *Annals of Tourism Research*, vol. 33, n. 2, pp. 299-318.

SUÁREZ R., ALONSO A., SENDRA J.J. (2016), "Archaeoacoustics of intangible cultural heritage: the sound of the Maior Ecclesia of Cluny", *Journal of Cultural Heritage*, vol. 19, pp. 567-572.

TSCHEU F., BUHALIS D. (2016), *Augmented reality at CH sites, Information and Communication Technologies in Tourism*, Springer Cham Switzerland, pp. 607-619.

TIMOTHY D.J. (1997), "Tourism and the personal heritage experience", *Annals of Tourism Research*, vol. 24, n. 3, pp. 751-754.

TOM DIECK M.C., JUNG T., HAN D.I. (2016), "Mapping requirements for the wearable smart glasses augmented reality museum application", *Journal of Hospitality and Tourism Technology,* vol. 7, n. 3, pp. 230-253.

TOM DIECK M.C., JUNG T.H. (2017), "Value of augmented reality at cultural heritage sites: a stakeholder approach", *Journal of Destination Marketing and Management*, vol. 6, n. 2, pp. 110-117.

TRILLING L. (1972), *Sincerity and Authenticity*, Oxford University Press, London, UK.

URIELY N. (2005), "The tourist experience", *Annals of Tourism Research*, vol. 32, n. 1, pp. 199-216.

VARGO S.L., AKAKA M.A., VAUGHAN C.M. (2017), “Conceptualizing value: a service-ecosystem view”, *Journal of Creating Value*, vol. 3, n. 2, pp. 117-124.

VARGO S.L., LUSCH R.F. (2008), “Service-dominant logic: continuing the evolution”, *Journal of the Academy of Marketing Science*, vol. 36, n. 1, pp. 1-10.

VARGO S.L., LUSCH R.F. (2011), “It’s All B2B…and beyond: toward a systems perspective of the market”, *Industrial Marketing Management*, vol. 40, pp. 181-187.

VARGO S.L., LUSCH R.F. (2016), “Institutions and axioms: an extension and update of service-dominant logic”, *Journal of the Academy of Marketing Science,* vol. 44, n. 5, pp. 1-19.

VARGO S.L., LUSCH R.F. (2017), “Service-dominant logic 2025”, International *Journal of Research in Marketing*, vol. 34, n. 1, pp. 46-67.

ZHOU J., URHAHNE D. (2017), “Self-regulated learning in the museum: understanding the relationship of visitor’s goals, learning strategies, and appraisals”, *Scandinavian Journal of Educational Research,* vol. 61, n. 4., pp. 394-410.

VENKATESH V., MORRIS M., DAVIS G., DAVIS F. (2003), “Usage acceptance of information technology: toward a unified view”, *MIS Quarterly,* vol. 27, n. 3, pp. 365-382.

WANG Y., HUANG S., KIM A.K. (2015), “Toward a framework integrating authenticity and integrity in heritage tourism”, *Journal of Sustainable Tourism,* vol. 23, n. 10, pp. 1468-1481.

YOON S.A., ELINICH K., WANG J., SCHOONEVELD J.B., ANDERSON E. (2013), “Scaffolding informal learning in science in science museums: how much is too much?”, *Science Education*, vol. 97, n. 6, pp. 848-877.

YOVCHEVA Z., BUHALIS D., GATZIDIS C. (2012), “Overview of smartphone augmented reality applications for tourism”, *e-Review of Tourism Research,* vol. 10, n. 2, pp. 1-5.

YUAN Y.H.E., WU C.K. (2008), “Relationships among experiential marketing, experiential value, and customer satisfaction”, *Journal of Hospitality and Tourism Research*, vol. 32, pp. 387-410.

Academic or professional position and contacts

Fabiola Sfodera
Researcher and Adjunct Professor of Marketing and Management
Sapienza University of Rome - Italy
e-mail: fabiola.sfodera@uniroma1.it

Isabella Mingo
Associate professor of Social Statistics
Sapienza University of Rome - Italy.
e-mail: isabella.mingo@uniroma1.it

Alberto Mattiacci
Full professor of Management
Sapienza University of Rome - Italy
e-mail: alberto.mattiacci@uniroma1.it

Maria Colurcio
Full professor of Management
University of Magna Grecia, Catanzaro - Italy
e-mail: mariacolurcio@unicz.it

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.13
pp. 231-250

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Book reviews

EMANUELE FELICE, **Storia economica della felicità**, Il Mulino, Bologna 2017, pp. 356.

L'autore di questo libro è docente di storia economica presso l'Università Autonoma di Barcellona e presso l'Università di Pescara e si occupa di storia economica dell'Italia ed in particolare dell'Italia del sud, sulla quale ha pubblicato il suo ultimo libro *Il Sud, l'Italia, l'Europa. Diario civile,* edito nel 2019. Conosciamo le qualità originali di questo giovane ricercatore, perché lo abbiamo già segnalato (vedi «Sinergie» n. 99, gennaio-aprile 2016) a proposito di un'altra sua opera intitolata *Ascesa e declino. Storia economica d'Italia* (2015), giudicata come il tentativo pienamente riuscito «di una ampia sintesi della storia economica italiana a seguito non solo della attuale grande crisi globale ed Europea, ma anche di quella, che più ci interessa da vicino, dei nostri ultimi anni».

Molto complessa è la tematica della felicità affrontata e discussa dall'autore, che ha realizzato un libro che ha messo a dura prova le sue capacità di sintesi storiografica. Scegliere la felicità come campo di indagine, secondo Felice, si rivela molto utile in quanto viene adottato un metro di valutazione della plurimillenaria vicenda umana che pure risulta essere strumento di comprensione indispensabile per ragionare sulla causa del divenire storico. Tutto ciò implica un approccio multidisciplinare, perché mette in relazione la storia economica con altre discipline sociali che si sono occupate della felicità in passato, con riferimento alla sua dimensione concettuale (più che materiale) come la filosofia morale, la storia delle idee, l'antropologia ed infine anche la psicologia.

Nel primo capitolo, intitolato *Una storia perduta,* viene presentata l'impostazione strutturale del libro, che parla delle tre rivoluzioni della storia degli uomini avvenute, secondo l'autore, nel lungo cammino del genere umano, dalla comparsa dei primi ominidi fino ai giorni nostri, rivoluzioni senza dubbio di portata millenaria. Infatti esse sono state trasformazioni economiche e culturali al tempo stesso in grado di cambiare il modo di produrre, di pensare e di vivere della comunità umana ed anche di produrre una o più «visioni» diverse della felicità.

Nel capitolo secondo intitolato *Il giardino dell'Eden* si parla della prima rivoluzione, quella cognitiva da cui «originano i cacciatori - raccoglitori *Sapiens Sapiens* (biologicamente uguali a noi) e alla cui esistenza mitizzata si ispira, per certi aspetti, l'immagine del "giardino dell'Eden"». Di questi cacciatori - raccoglitori non conosciamo né il sistema di pensiero né la visione della vita. Erano individui perennemente perseguitati dallo spettro della fame, data la loro tecnologia primitiva, non avevano modo di accumulare alcun surplus alimentare, né tanto meno di coltivare il tempo libero o di creare cultura.

Erano tuttavia felici, anche nella condizione di assoluta povertà, perché nutrivano pochi bisogni e ancor meno ambizioni, ma si trovavano a vivere in perfetta armonia con il mondo, come sembra suggerire lo stesso racconto biblico del giardino dell'Eden. Ma un tale stile di vita non poteva durare in eterno, come si può leggere nel capitolo terzo *La valle di* *lacrime*. I cacciatori -raccoglitori occupando aree distinte in tutto il globo terracqueo si stanziarono in luoghi dove esisteva una particolare ricchezza naturale di flora e fauna.

La copiosa abbondanza in quelle terre arrivò a provocare la crescita della popolazione e pertanto si dovette migliorare la disponibilità di cibo per la popolazione stanziale e così il terreno venne scavato in profondità e irrigandolo e fertilizzandolo si rese più produttivo il suolo. Era nata l'agricoltura, che non fu una scelta, ma una necessità dovuta all'aumento della popolazione, e così l'esito della seconda rivoluzione quella agricola generò per un esteso arco temporale un modo di produzione, una società di uomini, in cui la sofferenza fisica, la fatica e le malattie risultavano ormai pervasive, radicate per sempre. La felicità, come la avevano già intesa le religioni orientali, gli epicurei e i cinici dell'età ellenistica e dei primi cristiani, parve possibile agli uomini di allora solo estraniandosi dalle tribolazioni terrene. Andiamo avanti con la nostra esposizione in modo estremamente semplificato, perché in questa sede è impossibile dare una idea precisa ed esauriente delle sterminate ricerche che caratterizzano il quadro di insieme di questo libro, e quindi dobbiamo trasferire rapidamente le nostre osservazioni al capitolo quarto intitolato *La città dell'uomo.*

È d'obbligo superare secondo l'autore le visioni precedenti della felicità proprie del mondo preindustriale e agricolo ed occorre accennare al lungo processo che parte dall'Europa medievale e che si svilupperà in seguito, tra l'altro, con la riforma protestante. Non solo. Dobbiamo anche tener presente quella che è stata chiamata «la rivoluzione delle idee» avvenuta nella Europa dei secoli XVII e XVIII e che «cominciò nella sfera della conoscenza (la Rivoluzione scientifica) per passare a quella delle relazioni umane (l'Illuminismo). Rappresentò la definitiva messa in crisi del paradigma agricolo. E vi sostituì un nuovo paradigma, incardinato nel mondo industriale, proprio dell'ordine liberal-democratico a tutt'oggi prevalente: conoscenza utile, uguaglianza giuridica, diritto alla felicità e arricchimento personale». Così scrive l'autore che intende segnalare come la terza rivoluzione dell'umanità, ancora in corso, possa essere in qualche modo sorprendente per i suoi sviluppi futuri.

Dobbiamo prendere atto, sulla base delle nuove affermazioni dell'autore, che i rivolgimenti storico-culturali della età moderna hanno modificato rispetto al passato lo stesso concetto di felicità, ridefinendolo in quello finora inedito di «diritto alla felicità». Infatti chiamando in causa il sociologo Herbert Marcuse l'autore ha fatto notare che «la tecnologia ha finalmente liberato l'essere umano dell'obbligo di lavorare: in linea di principio è ora possibile, per tutti, dedicare sempre meno ore al lavoro alienante, avere sempre più tempo da dedicare alla crescita personale, alla socialità, al piacere: alla felicità», come leggiamo appunto in una pagina del capitolo quinto intitolato *Il villaggio Globale*.

Ma va tenuto presente che erano stati gli Illuministi a porsi per primi con forza il tema della felicità terrena, realizzabile sia nella sua dimensione individuale e collettiva (tramite il buon governo) e per tale ragione il tema della felicità terrena diventò fin da allora, almeno secondo l'illuminista Denis Diderot, «il principale dovere dell'uomo». Come suggerisce lo stesso titolo del sesto ed ultimo capitolo del libro, *Coltivare la felicità* vuole significare essenzialmente che essa si alimenta costantemente con la libertà, intesa sia come emancipazione dalle costrizioni materiali sia come capacità di ridurre gli ostacoli, intenzionali o meno, prodotti dalle persone, per non debilitare del tutto indispensabili e proficue relazioni sociali.

Umberto Casari

sinergie
italian journal of management

ISSN 0393-5108
DOI 10.7433/s111.2020.14
pp. 253-255

FONDAZIONE CUEIM

SIMA
Italian Society of MANAGEMENT

Sinergie Italian Journal of Management

Useful information for readers and authors

Aims and scope

Sinergie, Italian Journal of Management (formerly Sinergie, rivista di studi e ricerche) is a peer-reviewed scholarly publication focusing on the main trends in management studies.

The Journal has a generalist positioning, meaning that it intends to cover various management topics, including strategy, marketing, human resources, finance, and corporate governance without limiting itself to company functions or business sector boundaries that are too specialised.

The Journal aims to promote both empirical and conceptual contributions that are not merely descriptive and/or quantitative in nature. Sinergie aims to balance relevance with rigor and encourages interpretation, critical discussion and reasoning with respect to the measurement of more or less significant phenomena.

Sinergie aims to bring the Italian management perspective to the international debate on business enterprise and its role in society.

Values
- Rigor in selecting the studies and papers submitted to the Journal.
- Innovation in research pathways and in service to readers.
- Consideration of 'voices' from the scientific community.
- Openness to all researchers-particularly young researchers.
- Internationalisation of relations with foreign researchers and journals edited in foreign countries.
- Simplicity, in the sense of valuing carefully crafted results and paying attention to interpersonal relationships.
- Respect for the thoughts of authors, staff and the audience.

Vision
- Connections between research, thought and managerial action are the foundation premises on which to build a future based on the common good.

Editorial policies
- The Journal is interested in papers with future scenarios/visions that contribute to Sinergie's mission to be a review that is oriented towards the future of business and management.
- The Journal has a generalist positioning, meaning that it intends to cover various management and corporate governance topics, including strategy, marketing, human resources and finance, without limiting itself to company functions or business sector boundaries that are too specialised.
- The Journal aims to promote both empirical and conceptual contributions that are not merely descriptive and/or quantitative in nature. Sinergie aims to balance relevance with rigor and encourages interpretation, critical discussion and reasoning with respect to the measurement of more or less significant phenomena.

Sinergie's publisher, Fondazione CUEIM, contributes to developing management knowledge by publishing additional editorial lines (with ISSN or ISBN):

- Sinergie Rapporti di ricerca, a printed publication dedicated to disseminating the results of relevant empirical research carried out by CUEIM (Consorzio Universitario di Economia Industriale e Manageriale) and other research organisations.
- Sinergie Quaderni, a printed series of papers that collects contributions on a variety of topics related to business governance issues.
- Sinergie Management Research, an online publication for research reports (the research editor has to provide evidence of the review process).
- Sinergie Referred Electronic Conference Proceedings, which gathers the contributions presented during the annual Conference or other conferences patronised by the Journal. In both cases, published papers are submitted to blind peer review.

SINERGIE
Address: Via Interrato dell'Acqua Morta, 26
37129 Verona, Italy
Tel. +39 045 597655; Fax +39 045 597550
E-mail: redazione@sinergieweb.it
Website: www.sijm.it

Peer review procedures

Sinergie is a double-blind reviewed journal. Each paper is submitted for evaluation by two anonymous independent reviewers, who are academics chosen among experts of the topic.

Editorials and explicitly indicated invited contributions are not subjected to peer review.

The peer-review process can lead to:

- acceptance of the paper as it is
- acceptance with minor proposals for improvements
- acceptance subject to substantial modifications
- rejection.

In the second and third cases, the paper will be sent back to the author/s, who has/have to return the paper within a specified timeframe after it has been revised on the basis of the reviewers' comments.

An annual meeting of the Sinergie panel of Appointed Reviewers is organised during the annual Sinergie Conference. The aim of the meeting is to improve the peer-reviewing process.

Guidance by editors in chief, guest editors and blind referees results in a 'training ground for young researchers', which was declared as Sinergie's mission by its founder, Giovanni Panati.

Reviewers apply the following criteria when assessing single papers:

1. correctness of the methodological approach
2. significance of the bibliographical base
3. clarity of exposition
4. originality/innovation
5. relevance from theoretical and empirical standpoints, and managerial implications.

Sinergie Italian Journal of Management is accredited by AIDEA (Accademia Italiana di Economia Aziendale) Italian Academy of Business Economics.

Publishing ethics

Authors who submit articles to Sinergie agree to the following terms.

The article has not previously been published in its current or a substantially similar form, and it is not under consideration with another journal. Sinergie requires all authors to submit original content. If authors have used the work and/or words of others, it must be appropriately cited or quoted. Redundant publication is only acceptable if it leads to different or new conclusions, or if it contains comparisons with new data. In all cases, it is important to reference the previously published work and ensure that the scope of the paper and its conclusions differ from the previous research. If the repetition has not been sufficiently highlighted, then a note of clarification may be required.

The article must not contain any unlawful statements and must not infringe any existing copyright. Authors must include the necessary permission of copyright released with the tacit/explicit assent of the authorities responsible in the place in which the article has been published. Such permission is necessary to reproduce in the article, in all media and in all countries any included materials, tables and figures that are not owned.

All authors will receive a final version of the article, take responsibility for the content, agree to its publication, the order of the authors listed on the paper and the allocation of paragraphs. In multi-authored papers, it is important that all authors who have made a significant contribution to the paper are listed. Those who have provided support but have not contributed to the research should be acknowledged on the first page of the article.

All authors, editors and reviewers have to declare any potential conflicts of interest in the research. In particular, conflicts of interest include: a) a financial or personal interest in the outcomes of the study; b) undisclosed financial support for the research by an interested third party; c) a financial or personal interest in the suppression of the research. A note that highlights the financial support received from third parties for the research, or any other possible conflicts of interest, must be included prior to review and published on the first page of the article.

All authors must read and adhere to the Journal's author guidelines.

Most importantly, ethical misconduct includes plagiarism, redundant publication (dual publication or self-plagiarism) and conflicts of interest.

Submission procedure and editorial rules

Authors who want to submit a paper to the Journal should comply with the submission procedures and the Authors' Guidelines, which are presented on the Journal's website.

Sinergie only publishes original work; therefore, submitted papers must not have previously been published in a refereed journal in its current or a substantially similar form, and it must not be currently under consideration for publication in another refereed journal (any explanation on the matter must be provided to the Editor in the accompanying e-mail).

Editors cannot provide any excerpts of the paper. Authors may download the PDF file of their paper's final layout from the Journal's website.

Authors are required to express their consent to the publication of their disclosed e-mail addresses, as stated by Italian Law D.Lgs. 196 of 30 June 2003. They must also commit themselves to respect the Journal's publishing ethics.

Authors may submit papers in English or Italian by sending the paper directly to the Publisher Secretary (redazione@sinergieweb.it).

The submission procedure requires authors to provide:

Two separate files, which are created using Microsoft Word for Windows:

- The first file should be called 'IA', and it should only include the title of the paper, information about the authors (qualifications, scientific sector, e-mail addresses and corresponding author's mobile phone number, which will be reserved for internal use), possible allocation of paragraphs, acknowledgements and references to research projects that led to the drafting of the paper.
- The second file should be called 'FP'. It must not contain any details regarding the author(s), or any information that could be traced back to the author(s) (e.g., acknowledgements and similar expressions).

Title
No longer than 125 characters (spaces included).

Abstract
No longer than 250 words. The Abstract must be structured according to the following layout: purpose of the paper, methodology, results, research limitations, practical implications and originality of the study.

Keywords
A minimum of three and a maximum of six keywords must be included to identify the framework of the study's main topic.

Length
The paper should not exceed 7.000 words, including charts, figures, tables, footnotes and references.

Text style
The body of the text and of the notes must be justified.
Italics may be used to emphasise certain parts of the text, and for English words that are not commonly used. Neither boldface (except in paragraph titles) nor underlining should be used.

Text graphic rules
Citations must be indicated by double quotation marks ("…") followed by the cited author's surname, year of publication, and page number(s) (e.g., Panati, 1981, pp. 48–53). The author is responsible for referencing citations in the bibliography, which means that all citations in the text must correspond to their relative final bibliographical references before the file is uploaded. Citations that are not indicated in final references will be removed from the text. Footnotes are only to be used for comments, in-depth examinations and further remarks, and not as bibliographical references.

Tables and figures
Any tables and figures included in the paper must be numbered in progressive order, have a title (above the table/figure) and source (under the table/figure), be black and white (or grey if necessary), and be inserted in the Word document in the most appropriate position.
Tables, figures and graph files must be uploaded in their original format. Word (.doc or .docx), Excel (.xls) and PowerPoint (.ppt) files are accepted. Image formats that are not accepted include .png, .gif, .jpeg, .bmp and .pdf.

References and Internet websites
References must be placed at the end of the text. They should be listed in alphabetical order and, for authors with multiple references, ordered chronologically. References must follow these rules:

Books
GOLINELLI G.M. (2010), *Viable systems approach (VSA). Governing Business Dynamics*, Cedam, Wolters Kluwer, Padova.

Articles
BACCARANI C., GOLINELLI G.M. (2008), "The enterpreneur and the frontiers of complexity", *Sinergie*, n. 75, pp. V-X.

Book chapters
VARALDO R. (1987), "The internationalization of small and medium-sized italian manufacturing firms", in Rosson P., Reid S., (edited by), *Managing export entry and expansion: concepts and practice,* Praeger, New York.

Internet websites
Websites should be mentioned separately below the references.
http://www.cueim.it
http://www.univr.it

For papers being submitted in Italian, authors are required to provide:

- A title in Italian and in English of no more than 125 characters each (spaces included)
- An abstract in Italian and in English of no more than 250 words each. Both abstracts must be structured according to the following layout:
  (Italian abstract)
  - obiettivo del paper
  - metodologia
  - risultati
  - limiti della ricerca
  - implicazioni pratiche
  - originalità del paper
  (English abstract)
  - purpose of the paper
  - methodology
  - results
  - research limitations
  - practical implications
  - originality of the paper.
- A minimum of three and a maximum of six keywords-in both Italian and English-that identify the framework of the study's main topic.

Subscription

sinergie
italian journal of management

2020 subscription fees
(reduced fees Covid-19 Emergence)

Italy	SIMA MEMBER	SIMA NON-MEMBER
Full and associate professors (VAT included)	€ 80, 00	€ 120, 00
Researchers/assistant professors (VAT included)	€ 80, 00	€ 120, 00
PhD, fellows, and students (VAT included)	€ 40, 00	€ 60, 00
Supporters	€ 1.000, 00	
Libraries	€ 80, 00	
Book shops	€ 100, 00	
Abroad		
Standard fee	€ 240, 00	

As official journal of Italian Society of Management, Sinergie subscription is offered on favorable terms to SIMA members.
Subscription to the quarterly Sinergie is on an annual basis, starting from January of each year. It includes three issues of the journal and an additional issue (Rapporti di Ricerca or Quaderni di Sinergie). A supporter subscription entitles the subscriber to receive five copies of each issue and special visibility in the journal.

Each subscription is due for renewal by the end of April to guarantee subscribers a regular mailing of the publications. Late subscribers are entitled to receive back issues, which are sent at the end of the year.

Completion of the subscription procedure (subscription and payment offee + 22% VAT) within may 31th 2020 entitles the subscriber to attend the Sinergie-Sima 2020 virtual Conference free of charge. This promotion is restricted to standard fees, researchers, students, Phd students and supporters. It is not available through libraries or bookshop.
A supporter subscription allows three people to attend the annual Sinergie-SIMA Conference free of charge. More details may be found on the conference website.

To subscribe, complete the subscription form at:
www.sijm.it → Journal → Subscribe to Sinergie

To become a SIMA member visit the web site:
www.societamanagement.it

Subscribers may pay for their subscription via:
- Paypal/prepaid credit card
- Bank transfer to the following account: FondazioneCueim at BNL, Banking IBAN IT 67 W 01005 11700 000000004041—BIC/SWIFT CODE BNLIITRR. In addition to personal identification data, please specify the reason for payment (Name Surname + Sub. Sinergie 2020).

For more information, and to request back issues of the Journal, contact:

Administration, subscription and advertising
Annalisa Andriolo
Via Interrato dell'Acqua Morta, 26
37129 Verona
Tel. (+39) 045 597655; Fax 045 597550
Email: *amministrazione@sinergieweb.it*

Upon receiving the subscription request and payment, the administration office will issue the related note to the subscriber.

For subscriptions by public institutions, submission payments must be made only after the note has been issued. In this case, the number of the note and the name and surname of the subscriber must be indicated in the reason of payment.

Forthcoming issues:

Opportunities and challenges in internationalization of family business

Grand challenges: companies and universities working for a better society

Responsible Editor
Marta Ugolini

Registered with Law Court of Verona, Italy, reg. no. 570, 1 April 1983

450 copies printed by

GRAFICHE BAIETTA -Via Carcirago, 14, 37022 Fumane (VR) Italy - Tel. 045 770 2088
June 2020

€ 66, 00

Sinergie italian journal of management

Official Journal of Italian Society of Management
Vol. 38, Issue 1 - January/April 2020 - ISSN 0393-5108

Quadrimestrale - Poste Italiane s.p.a. - Spedizione in Abbonamento Postale D.L. 353/2003 (conv. in L. 27/02/2004 n. 46) art. 1, comma 1, DCB VERONA