Ambidextrous workforces for managing market turbulence

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Abstract

Purpose – This purpose of this paper is to provide evidence regarding the contributions of ambidextrous workforces as a source of value for dynamic companies and organizations facing emerging market turbulence.
Design/methodology/approach – Using structural equation modeling, the paper analyses the data collected via a semi-structured questionnaire administered to a sample of 1,227 employees from 37 Italian small- to medium-sized enterprises to investigate the effect on companies' economic performance of ambidextrous workforce-related elements such as study background, previous work experience, work flexibility and soft capabilities.
Findings – The research shows that multidisciplinary human resources' study background, previous human resources' work experience and human resources' soft capabilities are positively linked to companies' return on sales, providing indirect evidence about the role of ambidextrous workforces in supporting companies facing emerging market turbulence.
Originality/value – The research demonstrates the relevant role of human resources in supporting companies to better align themselves to the emerging social and economic variety.
Keywords Human resource management, Training and education, Ambidextrous workforces, Challenging environment, Soft capabilities, Work flexibility
Paper type Research paper

Introduction

As underlined by Sethi *et al.* (2016), the market is changing from both structural and dynamic perspectives. Accordingly, consolidated managerial approaches are increasingly unable to explain ongoing dynamics, and they seem unable to support researchers and practitioners in forecasting possible coming changes (Del Giudice *et al.*, 2016; Tidd, 1997; Tronvoll *et al.*, 2017).

Recognizing the validity of this general observation, several researchers and practitioners have tried to study market changes with the aim of providing possible innovative interpretational frameworks (Anderson *et al.*, 2014; Calabrese *et al.*, 2017) to identify new key variables on which to focus (Caputo, Carrubbo and Sarno, 2018; Del Giudice and Della Peruta, 2016; O'Riordan and Fairbrass, 2014) and to depict hypothetical managerial models able to better support companies in aligning themselves to the emerging social and economic scenario (Caputo, 2017; Caputo, Walletzky and Štěpánek, 2018; Del Giudice and Maggioni, 2014).

Among the multiple managerial contributions regarding how companies can manage emerging market turbulence, interesting stimuli for reflections can be found in studies rooted in the framework of human resource management (HRM) (Bratton and Gold, 2017; Brewster, Chung and Sparrow, 2016; Brewster, Mayrhofer and Morley, 2016). Building upon the traditional view of human resources as a part of production processes (Kneese *et al.*, 2015), several authors have proposed preliminary reflections on the possibility for human resources to act as "key resources" in determining companies' plans (Snell *et al.*, 2015), vision

(Armstrong and Taylor, 2014), organization (Bolman and Deal, 2017) and activities (Bratton and Gold, 2017). As a consequence, human resources are nowadays considered distinctive resources in supporting companies when building and defending competitive advantages (Lussier and Hendon, 2017).

Recognizing the relevance of human resources in managerial processes (Tukker and Tischner, 2017), the need emerges to understand their potential, and effective, role in helping companies to understand and manage increasing social and economic turbulence (Di Nauta *et al.*, 2018). From this perspective, the following research question can be formulated:

RQ1. In which ways can human resources support companies in better facing market turbulence?

Many of the previous managerial contributions addressing this question, however, have approached human resources as elements that play a part in implementing companies' strategies without considering their features, willingness or expectations (Aswathappa, 2005). This approach seems to be unable to enhance the potential contributions of human resources in supporting companies to better face market turbulence (Cardon and Stevens, 2004). To bridge this gap in literature, Caputo *et al.* (2016) emphasized that human resources can be considered as a sort of "filter" through which companies can better understand social dynamics, while Saviano, Polese, Caputo and Walletzky (2017) hypothesized that human resources, acting both as parts of the companies and as market actors, can support companies in defining interpretation schemes able to better explain emerging market dynamics.

In such a vein, interesting reflections can be developed about human resources and their possible contributions to companies' performance (Del Giudice *et al.*, 2018). The ability of human resources to understand market dynamics can be considered a relevant pillar that supports companies in their struggle for survival (Chen and Miller, 2015) when human resources are endowed with the required competences and capabilities (Helfat and Martin, 2015). With reference to this latter point, it is possible to state that, to manage emerging market dynamics, companies must have ambidextrous workforces as a set of human resources able to perceive and understand social and economic dynamics from several points of view, to adapt themselves to the emerging dynamics, and to summarize social and economic trends in guidelines and behaviors to support companies in adapting their strategies to market needs and expectations. According to Lepak and Snell (1999), human resources are able to perceive market turbulence and adapt themselves to the changing social and economic dynamics, which could support companies in defining more competitive strategies and plans. Similarly, Birkinshaw *et al.* (2016), through their definition of ambidexterity, emphasized the need for increasing companies' ability to adapt themselves to market dynamics. Following this assumption, the paper aims to investigate the following research questions:

RQ2. How can companies increase their ambidexterity through human resources?

RQ3. How could ambidextrous workforces affect companies' economic performance?

To provide possible answers to the above-mentioned research questions, this paper develops a possible theoretical framework, rooted in the research streams related to the HRM, to identify possible variables that describe key features of ambidextrous workforces. The relationship between the identified key features of ambidextrous workforces as independent variables (IVs) and companies' economic performance is then investigated using structural equation modeling (SEM) on data collected via a semi-structured questionnaire administered to a sample of 1,227 employees from 37 Italian small- to medium-sized enterprises (SMEs). Return on sales (ROS) was used as the IV for companies' economic performance as evidence of companies' ability to understand market expectations and provide suitable answers to market requests (Babin and Zikmund, 2015).

Through the summarized research approach, the paper aims to investigate the role of human resources in affecting companies' performance as a consequence of their ability to comprehend market dynamics and adapt themselves (including structure and processes) to the ongoing dynamics. In this vein, the rest of paper is structured as follows. The "Theoretical background" section provides the conceptual umbrella under which the reflections herein are based, culminating in four hypotheses being proposed. The "Method" section presents the research process and method. The results of the study are presented in the "Findings" section and further analyzed in the "Discussions" section. Finally, the "Conclusions, limitations, implications, and future directions for research" section summarizes the key elements of the research, underlines the limitations of the research, and outlines its implications, and highlights directions for further research.

Theoretical background

Interest in human resources in the managerial domain has a long history and has been affected by multiple changes that have influenced social and economic dynamics (Wilton, 2016). Although the topic of human resources has attracted the interest of several disciplines, such as psychology (Albrecht *et al.*, 2015), sociology (Storey, 2014) and marketing (Brewster, Houldsworth, Sparrow and Vernon, 2016), only in the past 20 years has a comprehensive research stream been developed, under the banner of HRM, as a complex set of approaches, models and guidelines dedicated to enhancing the contributions of human resources to companies' achieving their aims and goals (Bratton and Gold, 2017).

Among the multiple changes that have influenced managerial studies concerning human resources, the most challenging debate has centered around the shift from a reductionist to a holistic view of human resources (Tan, 2014). Specifically, the "industrial approach" was oriented to consider human resources as elements of the production processes that can be standardized and managed in the light of quantitative maximization (Collings *et al.*, 2018). In such a view, little attention was paid to the features of human resources, to their competences or to the way in which they can support companies' strategies and actions beyond the boundaries of production processes (Caputo and Evangelista, 2019).

Only in recent years have research studies in the human resources domain developed a holistic approach, interested in analyzing and understanding in depth the elements that affect the productivity, engagement and efficiency of employees (Hecklau *et al.*, 2016; Kramar, 2014). Accordingly, HRM is expanding upon previous approaches in the study of human resources with the aim of decoding possible ways through which human resources can become a "key resource" able to ensure competitive advantages for companies. In this vein, several contributions have been provided regarding the multiple levels that affect human-resource performance and ability (Ployhart *et al.*, 2014; Rothwell *et al.*, 2018), and a large part of these contributions has highlighted the need for increasing the flexibility of human resources as a way to support companies in better reacting to the ongoing social and economic "revolution" (Bal and De Lange, 2015).

Unfortunately, the managerial contributions focusing on understanding the need for increasing flexibility in managing human resources as a way to enhance the potential contributions of employees to support companies on defining strategies, paths and behaviors able to better face social and economic turbulence seems not to be organized in a cohesive way (Noe *et al.*, 2006). With the aim of systematizing previous contributions on the topic, the concept of ambidextrous workforces could be defined as a general umbrella for clarifying the possible contributions of human resources in supporting companies in better managing market variety.

Building upon previous contributions regarding the need to increase flexibility in HRM (Delaney and Huselid, 1996), Figure 1 depicts the concept of ambidextrous workforces and their possible pillars, such as education/training, work experience, work flexibility
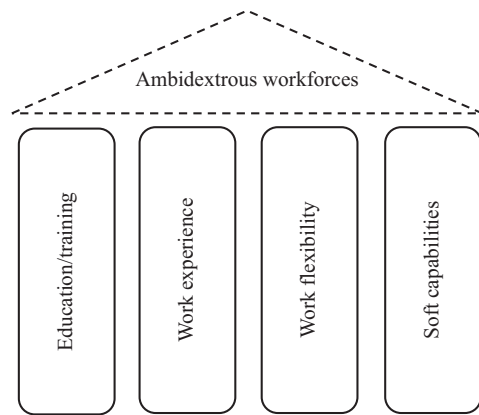
Source: Authors' elaboration

and soft capabilities. These pillars will subsequently be analyzed to clarifying their role in ensuring human resources' contributions to companies' ability to face market turbulence.

The pillars of ambidextrous workforces in Figure 1 are derived from the study of consolidated managerial and organizational contributions rooted in HRM (Kramar, 2014; Noe *et al.*, 2006; Ployhart *et al.*, 2014; Tan, 2014). These pillars have been identified by previous studies as relevant drivers of human resources' influence on companies' performance (Analoui, 2017; Coşar *et al.*, 2016; Goetsch and Davis, 2014; Russell *et al.*, 2016). Specifically, Sorge (1991) showed that human resources' education/training influences companies' ability to identify profitable market segments, Schuler and Jackson (1987) demonstrated that human resources' work experience is strongly related to companies' performance in terms of total amount of products and services sold, Pfeffer (1994) asserted that human resources' work flexibility increases companies' ability to respond quickly to market demands with a positive influence on their revenues, and Zahra *et al.* (2006) emphasized the role of human resources' soft capabilities in increasing companies' ability to better evaluate market dynamics and to define strategies that increase the total amount of products and services sold. Therefore, by summarizing and systematizing all these contributions, it is possible to state that the pillars depicted in Figure 1 can influence companies' performance in terms of ROS.

Hypotheses development
In the field of HRM, the pillar of education/training is one of the most debated (Hughes and Weisbrod, 2016; Wilson, 2012). Within this domain, Leberman and McDonald (2016) have offered broad insights into the levers that act to increase the efficiency of education and training programs for human resources, while Goetsch and Davis (2014) have underlined the need for a radical change in the traditional approaches to the education and training of human resources with the aim of improving their decision-making abilities. Among the many studies focusing on the education/training of human resources, relevant attention has also been paid to the ways in which human resources can affect companies' performance (Alvesson and Sveningsson, 2015). In this vein, Paillé *et al.* (2014) have demonstrated the correlation among study levels of human resources and companies' economic performance, while Saviano, Barile, Spohrer and Caputo (2017) have pointed out the multiple advantages for companies related to the combination of human resources' study programs as a part of companies' structures and plans.

Analyzing these contributions in the light of the increasing need for the flexibility of human resources required by the emerging market configurations, the relevance of multidisciplinarity in human-resource study programs emerges as a possible way to ensure a better combination of human resources' individual contributions to the achievement of companies' goals (Katzenbach and Smith, 2015). This multidisciplinary nature of human resources' study background can be considered a source of value for companies interested in understanding emerging market dynamics ahead of their competitors to define market proposals able that better satisfy market expectations and needs. Accordingly, the multidisciplinarity of human resources' study background could positively influence companies' ROS by improving companies' ability to provide products/proposals/services able to match market expectations. In light of this, this paper aims to verifying the validity of the following hypothesis:

H1. There is a positive relationship between human resources' multidisciplinary study background and companies' ROS.

As underlined by Russell *et al.* (2016), another dimension able to support work flexibility is related to the previous work experience of human resources. Felício *et al.* (2014) stated that human resources with previous work experiences can better support companies in defining strategies able to exploit emerging market opportunities. Similarly, Helfat and Martin (2015) demonstrated that human resources with relevant previous work experience can positively influence companies' economic performance, while Albrecht *et al.* (2015) emphasized that a positive relationship exists between human-resource work experience and companies' productivity. Recognizing the validity of all these contributions, the possibility emerges for considering the previous work experience of human resources as a source of value for companies interested in exploiting emerging market opportunities (Quiñones *et al.*, 1995). It is possible, therefore, to image that the previous work experiences of human resources could positively influence companies' ability to understand and satisfy emerging market needs with a positive impact on their ROS. The paper formulates, therefore, the following hypothesis:

H2. There is a positive relationship between human resources' previous work experience and companies' ROS.

Moreover, previous studies regarding HRM have demonstrated that it is possible to define work flexibility as the ability of human resources to manage several elements that are not strictly related to their specializations (Coşar *et al.*, 2016). In such a view, work flexibility is considered as tangible evidence of the ability of human resources to support companies' strategies and actions (George, 2015). Specifically, Marchington *et al.* (2016) demonstrated that human resources' work flexibility directly affects companies' economic performance, while Birkinshaw *et al.* (2016) underlined that a high level of work flexibility improves companies' ability to exploit emerging opportunities with a positive impact on companies' economic performance. In line to the above-mentioned contributions regarding work flexibility within the HRM field, it is possible to state that work flexibility positively influences companies' ROS as a consequence of human resources' ability to rapidly align themselves to the changing market demands. Accordingly, the paper aims to verify the following hypothesis:

H3. There is a positive relationship between human resources' work flexibility and companies' ROS.

Finally, managerial contributions concerning human resources consider soft capabilities (those able to effectively combine knowledge from different fields to build shared approaches and tools) as one of the most necessary features for the "new generation" of human resources (Analoui, 2017; Finch *et al.*, 2016; Mayo, 2016). Soft capabilities are not strictly related to the management of specific fields and/or problems, referring rather

to the ability to observe dynamics using different perspectives that are useful for building innovative solutions (Barile *et al.*, 2018). Barile *et al.* (2015) demonstrated that soft capabilities improve human resources' ability to understand their contribution to companies' dynamics, while Del Giudice *et al.* (2017) emphasized how soft capabilities support human resources in defining more efficient strategies and market approaches. Reflecting on these contributions regarding soft capabilities within the HRM field, the possibility emerges to consider them as elements able to influence companies' ability to satisfy market needs and expectations. This paper, therefore, asserts that human resources' soft capabilities can positively influence companies' ROS as a consequence of their contributions in shaping companies' strategies to be better aligned to emerging social and economic dynamics. Accordingly, the paper formulates the following hypothesis:

> *H4.* There is a positive relationship between human resources' soft capabilities and companies' ROS.

Method

This paper adopts a quali-quantitative research approach (Scheurich, 2014). A semi-structured survey composed of 20 questions was used to collect information from a sample of 318 human resources from 37 Italian SMEs located in the Campania Region. The request for collaboration on the research was sent to 73 Italian SMEs located in the Campania Region using official e-mail contacts available on the AIDA Database Version 2018 (https://aida.bvdinfo.com/). The sample was chosen through a random selection of 20 percent of the 352 Italian SMEs located in the Campania Region with a high impact (more than 30 percent) of human resources' costs on the total business costs.

This choice was motivated by the aim to focus attention, in this phase of the research, on companies for which human resources represented a substantial proportion of production costs and, for this reason, should be more interested in maximizing their contributions to their company's economic performance.

In answer to the request for research collaboration, 37 Italian SMEs located in the Campania Region declared their willingness to be part of the research, providing a mailing list of 1,863 employees. The structured questionnaire was submitted via e-mail, using the mailing list provided by the companies' human-resource managers. From March to August 2018, 1,227 employees completed the questionnaire (response rate: 64 percent) and their key features are reported in Table I.

The structured questionnaire was designed to acquire information about the IVs under study as summarized in Table II.

The questionnaire was designed so that the answers to the questions related to the variables "multidisciplinary human resources," "study background" and "human-resource work experience" could be only numeric values and, for these IVs, the value was defined as the sum of the answers provided by the respondents.

For the variables "Human resources' work flexibility" and "Human resources' soft capabilities," a seven-point Linkert-type scale (Norman, 2010) was used (1 = "strongly disagree" to 7 = "strongly agree"). For these IVs, the value was defined as the sum of the answers provided by the respondents.

The research considered companies' ROS as a dependent variable (DV) because it is one of the most tangible proofs of companies' ability to adapt their strategies to market needs and changes (Bresciani *et al.*, 2016; Giacosa, 2015; Giacosa and Mazzoleni, 2012, 2017, 2018; Zhu, 2014). Data on companies' ROS referred to 2017 and were collected from the AIDA Database Version 2018 (https://aida.bvdinfo.com/).

Using the data collected, the hypotheses detailed in Table III were tested via SEM using IBM SPSS Statistics Version 24.

	Value	%
Sex		
Male	575	46.86
Female	652	53.14%
Level of education		
High school	279	22.74%
Bachelor or equivalent	512	41.73%
Master or equivalent	369	30.07%
Doctoral or equivalent	67	5.46
Salary (year)		
< €20.000	325	26.49
€20.001–€40.000	579	47.19
€40.001–€60.000	238	19.40
> €60.000	85	6.93
Previous work experiences (in years)		
< 5	251	20.46
5–10	598	48.74
10–20	228	18.58
> 20	150	12.22

Table I.
Key features of
respondents

The hypotheses under study were analyzed using SEM because it is "a collection of statistical techniques that allow a set of relationships between one or more independent variables (IVs), either continuous or discrete and one or more dependent variables (DVs), either continuous or discrete, to be examined" (Ullman and Bentler, 2012, p. 661). The choice to use SEM was related to the possibility of performing "a series of multiple regressions [through] a test of the overall model fit" (Savalei and Bentler, 2006, p. 339). According to MacCallum and Austin (2000), before conducting the test via SEM, the relations among the variable must be analyzed to test for possible common bias. Harman's single factor test was conducted and indicated an explained variance of 32.23 percent, providing evidence about the absence of common method bias (Malhotra *et al.*, 2006).

Finally, the conceptual model of the research was defined (see Figure 2) and several indices were measured to verifying the fitness of the model.

Findings
The reliability of the data collected through the questionnaire was verified using Cronbach's α coefficients with reference to all the IVs. According to Nunnally (1978), a Cronbach's α equal to or higher than 0.7 can be considered suitable in cases of applied research, while a Cronbach's α equal to or higher than 0.6 is suitable for exploratory research (Hair *et al.*, 2012).

At the same time, the construct validity was analyzed by measuring convergent validity and discriminant validity. Convergent validity was measured by calculating the average variance extracted (AVE) while discriminant validity was verified by comparing the square roots of AVE coefficients to the correlations between constructs.

As reported in Table IV, all Cronbach's α coefficients exceeded the cut-off value of 0.7, the AVE values were over the conventional threshold of 0.50 (Hair *et al.*, 2011), and the square roots of the AVEs were all greater than their respective relationships, providing solid evidence for reliability and discriminant validity of the data collected.

Having verified the convergent validity and the discriminant validity, the hypotheses under study were tested using SEM (IBM SPSS Statistics Version 24) and the results are reported in Table V. According to these results, it is possible to state that *H1* ($\beta = 0.680$,

Variables	Brief description	Questions for survey	Sources
Multidisciplinary human resources' study background	Multidisciplinary human resources' study background refers to the information and schemes acquired and developed by human resources thanks to education and training programs. Specifically, this variable tries to quantify the multidimensionality of human resources' knowledge	How many study programs have you followed in your life? How many different topics have you studied in your life? How many specializations do you have? How many business sectors have you analyzed in your life?	Becker and Gerhart (1996), Gupta and Singhal (1993), Delaney and Huselid (1996)
Human-resource work experience	Human-resource work experience refers to the engagement of human resources in work processes as a way of acquiring technical knowledge and competences. Specifically, this variable aims at quantifying previous work experience as a path to measure indirectly the potential contribution of human resources in understanding and managing environmental turbulence	How many years have you worked? Have many years have you worked in the same business sector with the same role? For how many companies have you worked? In how many business sectors have you worked?	May et al. (2004), Noe et al. (2006), Xanthopoulou et al. (2009)
Human resources' work flexibility	Work flexibility is the willingness and the availability of human resources to contribute to companies' processes in ways not directly related to their jobs. Through this variable, the paper aims to quantify the possibility for companies to engage available human resources in several processes required by the dynamic evolution of social and economic configurations	I am available to manage multiple tasks not directly related to my role; I am interested in knowing the multiple activities that compose the business activities of the company for which I work; I work in different processes for my companies not related to the same topic (product, business area, etc.); I try to manage all the dimensions of business processes in which I am involved, including researching data not directly related to my role	MacDuffie (1995), Cardon and Stevens (2004), Michie and Sheehan (2005)
Human resources' soft capabilities	Soft capabilities are considered the way through which human resources can combine technical and specialized knowledge from different domains in order to support the definition of multidimensional perspectives. This variable aims at quantifying the possible contribution of human resources to support a company in better understanding the multidimensionality of social and economic dynamics	I am more interested in understanding the reasons of a problem than simply applying solution techniques; I try to support information sharing with and among my colleagues; Usually I perform my job, while also considering its social implications; I try to build conditions for reciprocal understanding with my colleagues focusing my attention on their character traits	MacGregor (1960), Yeung and Berman (1997), Kazlauskaitė and Bučiūnienė (2008)

Table II.
Dependent variables

$p = 0.602$), $H2$ ($\beta = 0.675$, $p = 0.721$) and $H4$ ($\beta = 0.712$, $p < 0.001$) were supported, whereas $H3$ ($\beta = 0.497$, $p < 0.001$) was not supported.

Finally, the model fit was verified measuring fitness indices such as goodness-of-fit index, normed fit index, confirmatory fit index, standard root mean square residual and root mean square error of approximation. As reported in Table VI, all the fitness indices met the cut-off values provided by the literature.

Discussion

Based on the results, it is possible to state that there is a positive relationship between human resources' multidisciplinary study background and companies' ROS (*H1*).

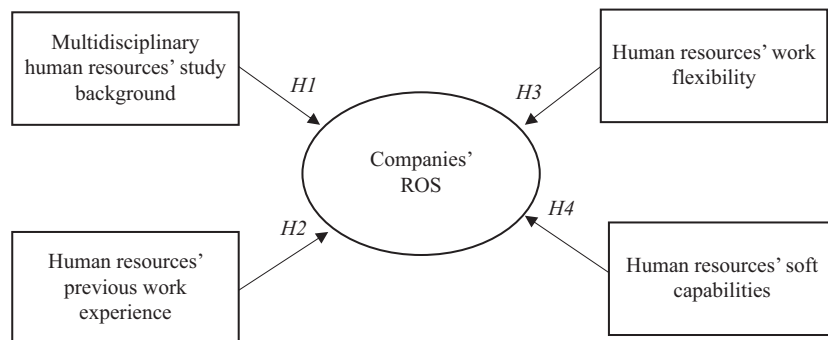| No.	Hypotheses
H1	There is a positive relationship between multidisciplinary human resources' study background and companies' return on sales
H2	There is a positive relationship between previous work experience and companies' return on sales
H3	There is a positive relationship between human resources' work flexibility and companies' return on sales
H4	There is a positive relationship between human resources' soft capabilities and companies' return on sales

Table III.
Hypotheses
under study

Figure 2.
The conceptual model

Independent variables	Cronbach's α	AVEs	Multidisciplinary human resources' study background	Human resources' previous work experience	Human resources' work flexibility	Human resources' soft capabilities
Multidisciplinary human resources' study background	0.73	0.63	0.69	–	–	–
Human resources' previous work experience	0.81	0.71	0.51**	0.58	–	–
Human resources' work flexibility	0.74	0.68	0.60**	0.29**	0.87	–
Human resources' soft capabilities	0.79	0.80	0.38**	0.17**	0.19**	0.67

Notes: On the diagonals are reported the square roots of the AVEs. **Correlation is significant at the 0.01 level (two-tailed)

Table IV.
Cronbach's α, AVE
and relationships
among the variables

This result is in line with previous evidence provided by studies on the effect of education and training on human resources' performance (Alvesson and Sveningsson, 2015; Paillé *et al.*, 2014; Saviano, Barile, Spohrer and Caputo, 2017). From a general point of view, this result underlines the relevance for companies of building workforces endowed with multidisciplinary knowledge as a way to better understand and manage market dynamics (Paauwe and Boselie, 2003). Schuler and Jackson (1987) also clearly identified human resources' education as a key driver for companies interested in creating competitive strategies, while Marr *et al.* (2004) focused on the several advantages that human resources endowed with multidisciplinary knowledge can provide to their companies in terms of better understanding ongoing economic dynamics. Reflecting on this result, it emerges that companies the need to invest in the selection and training of human resources to build ambidextrous workforces able to combine multiple perspectives and to define a holistic view of the market (Lepak and Snell, 1999).

The research also revealed that there is a positive relationship between human resources' previous work experience and companies' ROS (*H2*). This result is strongly aligned with previous research under the conceptual umbrella of HRM (Hughes and Weisbrod, 2016; Lussier and Hendon, 2017; Snell *et al.*, 2015; Wilton, 2016). As clarified by Russell *et al.* (2016), previous work experience provides human resources with information, schemes and approaches useful for understanding environmental dynamics. Similarly, Cox and Blake (1991) stated that work experience represents the way in which human resources can develop a high sensitivity to market changes. Given this result, the need clearly emerges to investigate how previous work experience affects human resources' ability and to analyze which kinds of work experience are useful in building ambidextrous workforces.

The research also demonstrated that there is not a positive relationship between human resources' work flexibility and companies' ROS (*H3*). This result calls attention to the debated topic of flexibility in MRM practices (Noe *et al.*, 2006). Specifically, as underlined by MacDuffie (1995), the flexibility of human resources is a variable difficult to manage and measure, because it is affected by several external dynamics and because it does not follow a

Hypothesis	Standardized regression coefficient	*p*-value
H1 (+) Multidisciplinary human resources' study background → companies' ROS	0.680	0.602
H2 (+) Human resources' previous work experience → companies' ROS	0.675	0.721
H3 (+) Human resources' work flexibility → companies' ROS	0.497	***
H4 (+) Human resources' soft capabilities → companies' ROS	0.712	***
Note: ***Standardized regression coefficient is significant at the 0.001 level (two-tailed)		

Table V.
Hypothesis test
via SEM

Fitness indices	Value	Cut-off values
Goodness-of-fit index (GFI)	0.907	> 0.90 (Jöreskog and Sörbom, 1996)
Normed fit index (NFI)	0.923	> 0.90 (Hu and Bentler, 1999)
Confirmatory fit index (CFI)	0.971	> 0.90 (Hoe, 2003)
Standard root mean square residual (SRMSR)	0.067	< 0.06 (Hooper *et al.*, 2008)
Root mean square error of approximation (RMSEA)	0.091	< 0.08 (Hooper *et al.*, 2008)

Table VI.
Fitness indices

predictable evolution. In this vein, the results of this research represent a call both for practitioners and researchers to define instruments, models and techniques for measuring work flexibility and to understand its general evolutionary path.

Finally, the research demonstrated that there is a positive relationship between human resources' soft capabilities and companies' ROS (*H4*). This result is also in line with several recent contributions in the HRM field (Hsu and Wang, 2012). As demonstrated by Hansen (2001), soft capabilities allow human resources to build a bridge between the company and the market. More specifically, by utilizing soft capabilities, human resources can effectively provide feedback and useful information about the validity of companies' strategies and market approaches in the light of a holistic view of the market (Collins and Smith, 2006; Evangelista *et al.*, 2016; Teece and Pisano, 1994). The need emerges, therefore, to rethink traditional approaches to human-resource training and education with the aim of widening the focus from a strictly problem-solving view to a view that includes decision-making dynamics and variables (Barile *et al.*, 2012).

Conclusions, limitations, implications and future directions for research

As underlined by multiple researchers through several empirical studies and theoretical contributions, market dynamics are becoming ever more turbulent, and their trends cannot be perceived or forecast using traditional managerial models (Caputo, 2016; Polese *et al.*, 2016; Saviano *et al.*, 2016). As a consequence of this challenging evolution, companies need to have human resources able to support innovative approaches to the market if they want to survive (Fernández *et al.*, 2003; Hsu, 2007). Accordingly, human resources and HRM are progressively becoming relevant topics among researchers and practitioners interested in business management (Aswathappa, 2005; Price, 2007).

Recognizing the relevance of these topics, this paper has focused on the possible relevant contributions that human resources can provide in supporting companies facing emerging market turbulence. The concept of ambidextrous workforces has been formulized as a way of supporting companies facing emerging market turbulence; four variables have been identified as possible pillars of ambidextrous workforces and their relationships with companies' economic performance have been tested using SEM.

Building upon previous managerial contributions and using an empirical study with a sample of 1,227 employees from 37 Italian SMEs, this paper has underlined the relevance of human resources' multidisciplinary study background, human resources' previous work experience, and human resources' soft capabilities in affecting companies' economic performance. Considering the above-mentioned variables as pillars of ambidextrous workforces, the paper also provides evidence that companies need to rethink their approaches to the selection, education and training of human resources.

However, this research cannot be considering exhaustive because it focuses only on four possible pillars for ambidextrous workforces. Accordingly, future research should aim to identify other possible dimensions within the concept of ambidextrous workforces and could possibly analyze their influences on companies' performance, combining qualitative and quantitative research approaches in different cultural areas with the aim of creating a generalizable model.

Nonetheless, this paper enriches previous contributions to HRM, clarifying the need for shifting from a reductionistic view of human resources, as elements able to contribute to companies' strategies and actions in respect to defined boundaries and roles, to a holistic view, in which human-resource knowledge, capabilities and experiences are considered key elements for companies interested in developing and adopting strategies aligned to the challenging market evolution. Moreover, the paper provides evidence regarding the advantages of considering (ambidextrous) employees not simply as resources, but as a source of value for companies through they can better understand and manage social and economic trends.

More specifically, this paper provides several interesting insights, both for researchers and practitioners, within the domain of HRM. First, the research emphasizes that the multidimensionality of human resources' knowledge positively affects companies' economic performance, highlighting the need to develop instruments that support managers in selecting and training ambidextrous human resources to better perceive social and economic dynamics through a multiple-perspectives approach. From a theoretical point of view, the research underlines the need for building both qualitative and quantitative approaches able to clearly define the multidimensionality of human resources' knowledge, their dimensions, and the levers that act to increase their contributions to the achievement of companies' purposes.

In addition, this work points out that there is a positive relationship between the heterogeneity of human resources' previous experience and companies' ROS. From this result, the need emerges for practitioners to develop instruments to evaluate previous human resources' work experiences in more detail and develop approaches that explain how previous work experiences influences human resources' contributions to the achievement of companies' purposes. Finally, empirical evidence regarding the positive relationship between human resources' soft capabilities and companies' ROS underlines the need for rethinking consolidated education and training approaches in order to increase human resources' ability to combine multiple perspectives in their daily actions and decisions. On this point, the research underlines the need for stimulating inter- and multi-disciplinary collaborations among human resources as a way to support the emergence of shared soft capabilities.

Ultimately, this research represents a call for rethinking both theoretical and practical approaches in HRM. Conceptual frameworks and empirical evidence should both be considered as a first step in the process to define the proposed concept of ambidextrous workforces. While this is not a new domain, there remains ample scope for systematizing previous contributions with the aim of understanding the role of human resources in ensuring companies' survival by increasing the alignment between companies' strategies and market changes.

References

Albrecht, S.L., Bakker, A.B., Gruman, J.A., Macey, W.H. and Saks, A.M. (2015), "Employee engagement, human resource management practices and competitive advantage: an integrated approach", *Journal of Organizational Effectiveness: People and Performance*, Vol. 2 No. 1, pp. 7-35.

Alvesson, M. and Sveningsson, S. (2015), *Changing Organizational Culture: Cultural Change Work in Progress*, Routledge, London.

Analoui, F. (2017), *The Changing Patterns of Human Resource Management*, Routledge, London.

Anderson, N., Potočnik, K. and Zhou, J. (2014), "Innovation and creativity in organizations: a state-of-the-science review, prospective commentary, and guiding framework", *Journal of Management*, Vol. 40 No. 5, pp. 1297-1333.

Armstrong, M. and Taylor, S. (2014), *Armstrong's Handbook of Human Resource Management Practice*, Kogan Page, Philadelphia, PA.

Aswathappa, K. (2005), *Human Resource and Personnel Management*, McGraw-Hill Education, New York, NY.

Babin, B.J. and Zikmund, W.G. (2015), *Exploring Marketing Research*, Cengage Learning, London.

Bal, P.M. and De Lange, A.H. (2015), "From flexibility human resource management to employee engagement and perceived job performance across the lifespan: a multisample study", *Journal of Occupational and Organizational Psychology*, Vol. 8 No. 1, pp. 126-154.

Barile, S., Saviano, M. and Simone, C. (2015), "Service economy, knowledge, and the need for T-shaped innovators", *World Wide Web*, Vol. 18 No. 4, pp. 1177-1197.

Barile, S., Franco, G., Nota, G. and Saviano, M. (2012), "Structure and dynamics of a 'T-shaped' knowledge: from individuals to cooperating communities of practice", *Service Science*, Vol. 4 No. 2, pp. 161-180.

Barile, S., Orecchini, F., Saviano, M. and Farioli, F. (2018), "People, technology, and governance for sustainability: the contribution of systems and cyber-systemic thinking", *Sustainability Science*, Vol. 13 No. 5, pp. 1197-1208.

Becker, B. and Gerhart, B. (1996), "The impact of human resource management on organizational performance: progress and prospects", *Academy of Management Journal*, Vol. 39 No. 4, pp. 779-801.

Birkinshaw, J., Zimmermann, A. and Raisch, S. (2016), "How do firms adapt to discontinuous change? Bridging the dynamic capabilities and ambidexterity perspectives", *California Management Review*, Vol. 58 No. 4, pp. 36-58.

Bolman, L.G. and Deal, T.E. (2017), *Reframing Organizations: Artistry, Choice, and Leadership*, Wiley, New York, NY.

Bratton, J. and Gold, J. (2017), *Human Resource Management: Theory and Practice*, Palgrave, London.

Bresciani, S., Culasso, F., Giacosa, E. and Broccardo, L. (2016), "Two models of family firms in dividends and investments policy", *Global Business and Economics Review*, Vol. 18 Nos 3/4, pp. 320-343.

Brewster, C., Chung, C. and Sparrow, P. (2016), *Globalizing Human Resource Management*, Routledge, London.

Brewster, C., Mayrhofer, W. and Morley, M. (Eds) (2016), *New Challenges for European Resource Management*, Springer, New York, NY.

Brewster, C., Houldsworth, E., Sparrow, P. and Vernon, G. (2016), *International Human Resource Management*, Kogan Page, New York, NY.

Calabrese, M., Iandolo, F., Caputo, F. and Sarno, D. (2017), "From mechanical to cognitive view: the changes of decision-making in business environment", in Barile, S., Pellicano, M. and Polese, F. (Eds), *Social Dynamics in a System Perspective*, Springer, New York, NY, pp. 223-240.

Caputo, F. (2016), "A focus on company-stakeholder relationships in the light of the stakeholder engagement framework", in Vrontis, D., Weber, Y. and Tsoukatos, E. (Eds), *Innovation, Entrepreneurship and Digital Ecosystems*, EuroMed Press, ~~Cipro,~~ pp. 455-470.

Caputo, F. (2017), "Reflecting upon knowledge management studies: insights from systems thinking", *International Journal of Knowledge Management Studies*, Vol. 8 Nos 3/4, pp. 177-190.

Caputo, F. and Evangelista, F. (2019), "Information sharing and cognitive involvement for sustainable workplaces", in Khosrow-Pour, M. (Ed.), *Corporate Social Responsibility: Concepts, Methodologies, Tools, and Application*, IGI Global, New York, NY, pp. 1403-1420.

Caputo, F., Carrubbo, L. and Sarno, D. (2018), "The influence of cognitive dimensions on consumers-SMEs relationship: a sustainability oriented view", *Sustainability*, Vol. 10 No. 9, available at: https://doi.org/10.3390/su10093238

Caputo, F., Walletzky, L. and Štěpánek, P. (2018), "Towards a systems thinking based view for the governance of a smart city's ecosystem: a bridge to link smart technologies and big data", *Kybernetes*, Vol. 48 No. 1, pp. 108-123.

Caputo, F., Del Giudice, M., Evangelista, F. and Russo, G. (2016), "Corporate disclosure and intellectual capital: the light side of information asymmetry", *International Journal of Managerial and Financial Accounting*, Vol. 8 No. 1, pp. 75-96.

Cardon, M.S. and Stevens, C.E. (2004), "Managing human resources in small organizations: what do we know?", *Human Resource Management Review*, Vol. 14 No. 3, pp. 295-323.

Chen, M.J. and Miller, D. (2015), "Reconceptualizing competitive dynamics: a multidimensional framework", *Strategic Management Journal*, Vol. 36 No. 5, pp. 758-775.

Collings, D.G., Wood, G.T. and Szamosi, L.T. (2018), "Human resource management: a critical approach", in Collings, D.G., Wood, G.T. and Szamosi, L.T. (Eds), *Human Resource Management*, Routledge, London, pp. 1-23.

Collins, C.J. and Smith, K.G. (2006), "Knowledge exchange and combination: the role of human resource practices in the performance of high-technology firms", *Academy of Management Journal*, Vol. 49 No. 3, pp. 544-560.

Coşar, A.K., Guner, N. and Tybout, J. (2016), "Firm dynamics, job turnover, and wage distributions in an open economy", *American Economic Review*, Vol. 106 No. 3, pp. 625-631.

Q2

Q3

Cox, T.H. and Blake, S. (1991), "Managing cultural diversity: implications for organizational competitiveness", *Academy of Management Perspectives*, Vol. 5 No. 3, pp. 45-56.

Del Giudice, M. and Della Peruta, M.R. (2016), "The impact of IT-based knowledge management systems on internal venturing and innovation: a structural equation modeling approach to corporate performance", *Journal of Knowledge Management*, Vol. 20 No. 3, pp. 484-498.

Del Giudice, M. and Maggioni, V. (2014), "Managerial practices and operative directions of knowledge management within inter-firm networks: a global view", *Journal of Knowledge Management*, Vol. 18 No. 5, pp. 841-846.

Del Giudice, M., Caputo, F. and Evangelista, F. (2016), "How are decision systems changing? The contribution of social media to the management of decisional liquefaction", *Journal of Decision Systems*, Vol. 25 No. 3, pp. 214-226.

Del Giudice, M., Carayannis, E., Palacios-Marqués, D., Soto-Acosta, P. and Meissner, D. (2018), "The human dimension of open innovation", *Management Decision*, Vol. 56 No. 6, pp. 1159-1166.

Del Giudice, M., Khan, Z., De Silva, M., Scuotto, V., Caputo, F. and Carayannis, E. (2017), "The microlevel actions undertaken by owner-managers in improving the sustainability practices of cultural and creative small and medium enterprises: a UK–Italy comparison", *Journal of Organizational Behavior*, Vol. 38 No. 9, pp. 139-1414.

Delaney, J.T. and Huselid, M.A. (1996), "The impact of human resource management practices on perceptions of organizational performance", *Academy of Management Journal*, Vol. 39 No. 4, pp. 949-969.

Di Nauta, P., Merola, B., Caputo, F. and Evangelista, F. (2018), "Reflections on the role of university to face the challenges of knowledge society for the local economic development", *Journal of the Knowledge Economy*, Vol. 9 No. 1, pp. 180-198.

Evangelista, F., Caputo, F., Russo, G. and Buhnova, B. (2016), "Voluntary corporate disclosure in the era of social media", in Caputo, F. (Ed.), *Governing Business Systems. Theories and Challenges for Systems Thinking in Practice 4th Business Systems Laboratory International Symposium*, Business Systems Laboratory, Avellino, pp. 124-129.

Felício, J.A., Couto, E. and Caiado, J. (2014), "Human capital, social capital and organizational performance", *Management Decision*, Vol. 52 No. 2, pp. 350-364.

Fernández, E., Junquera, B. and Ordiz, M. (2003), "Organizational culture and human resources in the environmental issue: a review of the literature", *International Journal of Human Resource Management*, Vol. 14 No. 4, pp. 634-656.

Finch, D.J., Peacock, M., Levallet, N. and Foster, W. (2016), "A dynamic capabilities view of employability: exploring the drivers of competitive advantage for university graduates", *Education + Training*, Vol. 58 No. 1, pp. 61-81.

George, C. (2015), "Retaining professional workers: what makes them stay?", *Employee Relations*, Vol. 37 No. 1, pp. 102-121.

Giacosa, E. (2015), *Fabbisogno Finanziario e Indebitamento nelle Piccole e Medie Imprese*, Franco Angeli, Milano.

Giacosa, E. and Mazzoleni, A. (2012), *Il Progetto di Risanamento dell'Impresa in Crisi*, Giappichelli, Torino.

Giacosa, E. and Mazzoleni, A. (2017), "Company's indebtedness trends in small and medium-sized firms within the company systems theory", *International Journal of Business and Social Science*, Vol. 8 No. 5, pp. 69-75.

Giacosa, E. and Mazzoleni, A. (2018), *I Modelli di Previsione dell'Insolvenza Aziendale. Efficacia Predittiva, Limiti e Prospettive di Utilizzo*, Giuffrè, Milano.

Goetsch, D.L. and Davis, S.B. (2014), *Quality Management for Organizational Excellence*, Pearson, London.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", *Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139-152.

Hair, J.F., Sarstedt, M., Ringle, C.M. and Mena, J.A. (2012), "An assessment of the use of partial least squares structural equation modeling in marketing research", *Journal of the Academy of Marketing Science*, Vol. 40 No. 3, pp. 414-433.

Hansen, M.T. (2001), "Introducing T-shaped managers: knowledge management's next generation", *Harvard Business Review*, Vol. 79 No. 3, pp. 106-116.

Hecklau, F., Galeitzke, M., Flachs, S. and Kohl, H. (2016), "Holistic approach for human resource management in Industry 4.0", *Procedia CIRP*, Vol. 54, pp. 1-6.

Helfat, C.E. and Martin, J.A. (2015), "Dynamic managerial capabilities: review and assessment of managerial impact on strategic change", *Journal of Management*, Vol. 41 No. 5, pp. 1281-1312.

Hooper, D., Coughlan, J. and Mullen, M. (2008), *Structural Equation Modelling: Guidelines for Determining Model Fit*, Dublin Institute of Technology, Dublin.

Hsu, L.C. and Wang, C.H. (2012), "Clarifying the effect of intellectual capital on performance: the mediating role of dynamic capability", *British Journal of Management*, Vol. 23 No. 2, pp. 179-205.

Hsu, S.H. (2007), "Human capital, organizational learning, network resources and organizational innovativeness", *Total Quality Management*, Vol. 18 No. 9, pp. 983-998.

Hu, L.T. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55.

Hughes, H. and Weisbrod, B. (Eds), (2016), *Human Resources, Employment and Development*, Springer, New York, NY.

Jöreskog, K.G. and Sörbom, D. (1996), *PRELIS 2 User's Reference Guide: A Program for Multivariate Data Screening and Data Summarization: A Preprocessor for LISREL*, Scientific Software International, London.

Katzenbach, J.R. and Smith, D.K. (2015), *The Wisdom of Teams: Creating the High-performance Organization*, Harvard Business Review Press, Cambridge, MA.

Kazlauskaitė, R. and Bučiūnienė, I. (2008), "The role of human resources and their management in the establishment of sustainable competitive advantage", *Engineering Economics*, Vol. 5 No. 60, pp. 7-84.

Kneese, A.V., Ayres, R.U. and d'Arge, R.C. (2015), *Economics and the Environment: A Materials Balance Approach*, Routledge, London.

Kramar, R. (2014), "Beyond strategic human resource management: is sustainable human resource management the next approach?", *The International Journal of Human Resource Management*, Vol. 25 No. 8, pp. 1069-1089.

Leberman, S. and McDonald, L. (2016), *The Transfer of Learning: Participants' Perspectives of Adult Education and Training*, Routledge, London.

Lepak, D.P. and Snell, S.A. (1999), "The human resource architecture: toward a theory of human capital allocation and development", *Academy of Management Review*, Vol. 24 No. 1, pp. 31-48.

Lussier, R.N. and Hendon, J.R. (2017), *Human Resource Management: Functions, Applications, and Skill Development*, Sage, London.

MacCallum, R.C. and Austin, J.T. (2000), "Applications of structural equation modeling in psychological research", *Annual Review of Psychology*, Vol. 51 No. 1, pp. 201-226.

MacDuffie, J.P. (1995), "Human resource bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry", *Industrial and Labor Relations Review*, Vol. 48 No. 2, pp. 197-221.

MacGregor, D. (1960), *The Human Side of Enterprise*, McGraw-Hill, New York, NY.

Malhotra, N.K., Kim, S.S. and Patil, A. (2006), "Common method variance in IS research: a comparison of alternative approaches and a reanalysis of past research", *Management Science*, Vol. 52 No. 12, pp. 1865-1883.

Marchington, M., Wilkinson, A., Donnelly, R. and Kynighou, A. (2016), *Human Resource Management at Work*, Kogan Page, New York, NY.

Marr, B., Schiuma, G. and Neely, A. (2004), "Intellectual capital – defining key performance indicators for organizational knowledge assets", *Business Process Management Journal*, Vol. 10 No. 5, pp. 551-569.

May, D.R., Gilson, R.L. and Harter, L.M. (2004), "The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work", *Journal of Occupational and Organizational Psychology*, Vol. 77 No. 1, pp. 11-37.

Mayo, A. (2016), *Human Resources or Human Capital? Managing People as Assets*, Routledge, London.

Michie, J. and Sheehan, M. (2005), "Business strategy, human resources, labour market flexibility and competitive advantage", *The International Journal of Human Resource Management*, Vol. 16 No. 3, pp. 445-464.

Noe, R., Hollenbeck, J., Gerhart, B., Wright and P. (2006), *Human Resources Management: Gaining a Competitive Advantage*, 10th global ed., McGraw-Hill Education, New York, NY.

Norman, G. (2010), "Likert scales, levels of measurement and the 'laws' of statistics", *Advances in Health Sciences Education*, Vol. 15 No. 5, pp. 625-632.

Nunnally, J. (1978), *Psychometric Methods*, McGraw-Hill, New York, NY.

O'Riordan, L. and Fairbrass, J. (2014), "Managing CSR stakeholder engagement: a new conceptual framework", *Journal of Business Ethics*, Vol. 125 No. 1, pp. 121-145.

Paauwe, J. and Boselie, P. (2003), "Challenging 'strategic HRM' and the relevance of the institutional setting", *Human Resource Management Journal*, Vol. 13 No. 3, pp. 56-70.

Paillé, P., Chen, Y., Boiral, O. and Jin, J. (2014), "The impact of human resource management on environmental performance: an employee-level study", *Journal of Business Ethics*, Vol. 121 No. 3, pp. 451-466.

Pfeffer, J. (1994), "Competitive advantage through people", *California Management Review*, Vol. 36 No. 2, pp. 9-21.

Ployhart, R.E., Nyberg, A.J., Reilly, G. and Maltarich, M.A. (2014), "Human capital is dead; long live human capital resources!", *Journal of Management*, Vol. 40 No. 2, pp. 371-398.

Polese, F., Caputo, F., Carrubbo, L. and Sarno, D. (2016), "The value (co)creation as peak of social pyramid", Paper Presented at the 26th Annual RESER Conference: "What's Ahead in Service Research: New Perspectives for Business and Society", 8–10 September, Università di Napoli "Federico II", Naples.

Price, A. (2007), *Human Resource Management in a Business Context*, Cengage Learning, London.

Quiñones, M.A., Ford, J.K. and Teachout, M.S. (1995), "The relationship between work experience and job performance: a conceptual and meta-analytic review", *Personnel Psychology*, Vol. 48 No. 4, pp. 887-910.

Rothwell, W.J., Hohne, C.K. and King, S.B. (2018), *Human Performance Improvement: Building Practitioner Performance*, Routledge, London.

Russell, Z.A., Ferris, G.R., Thompson, K.W. and Sikora, D.M. (2016), "Overqualified human resources, career development experiences, and work outcomes: leveraging an underutilized resource with political skill", *Human Resource Management Review*, Vol. 26 No. 2, pp. 125-135.

Savalei, V. and Bentler, P.M. (2006), "Structural equation modeling", in Grover, R. and Vriens, M. (Eds), *The Handbook Of Marketing Research: Uses, Misuses, and Future Advances*, Sage, London, pp. 330-364.

Saviano, M., Barile, S., Spohrer, J.C. and Caputo, F. (2017), "A service research contribution to the global challenge of sustainability", *Journal of Service Theory and Practice*, Vol. 27 No. 5, pp. 951-976.

Saviano, M., Caputo, F., Formisano, V. and Walletzký, L. (2016), "From theory to practice: applying systems thinking smart cities", in Caputo, F. (Ed.), *Governing Business Systems. Theories and Challenges for Systems Thinking in Practice 4th Business Systems Laboratory International Symposium*, Business Systems Laboratory, Avellino, pp. 35-40.

Saviano, M., Polese, F., Caputo, F. and Walletzky, L. (2017), "The contribution of systems and service research to rethinking higher education programs: a T-shaped model", *Sinergie, Italian Journal of Management*, Vol. 104, pp. 94-114.

Scheurich, J. (2014), *Research Method in the Postmodern*, Routledge, London.

Schuler, R.S. and Jackson, S.E. (1987), "Linking competitive strategies with human resource management practices", *Academy of Management Perspectives*, Vol. 1 No. 3, pp. 207-219.

Sethi, R., Mayfield, J.E., Axtell, R.L., Couzin, I., Fricke, D., Hens, T. and Burnham, T.C. (2016), *Complexity and Evolution: Toward a New Synthesis for Economics*, MIT Press, Cambridge, MA.

Snell, S., Morris, S. and Bohlander, G.W. (2015), *Managing Human Resources*, Nelson Education, London.

Sorge, A. (1991), "Strategic fit and the societal effect: interpreting cross-national comparisons of technology, organization and human resources", *Organization Studies*, Vol. 12 No. 2, pp. 161-190.

Storey, J. (2014), *New Perspectives on Human Resource Management*, Routledge, London.

Tan, E. (2014), "Human capital theory: a holistic criticism", *Review of Educational Research*, Vol. 84 No. 3, pp. 411-445.

Teece, D. and Pisano, G. (1994), "The dynamic capabilities of firms: an introduction", *Industrial and Corporate Change*, Vol. 3 No. 3, pp. 537-556.

Tidd, J. (1997), "Complexity, networks and learning: integrative themes for research on innovation management", *International Journal of Innovation Management*, Vol. 1 No. 1, pp. 1-21.

Tronvoll, B., Barile, S. and Caputo, F. (2017), "A systems approach to understanding the philosophical foundation of marketing studies", in Barile, S., Pellicano, M. and Polese, F. (Eds), *Social Dynamics in a System Perspective*, Springer, New York, NY, pp. 1-18.

Tukker, A. and Tischner, U. (Eds) (2017), *New Business for Old Europe: Product-Service Development, Competitiveness and Sustainability*, Routledge, London.

Ullman, J.B. and Bentler, P.M. (2012), "Structural equation modeling", in Weiner, I.B. (Ed.), *Handbook of Psychology*, Wiley, New York, NY, pp. 661-690.

Wilson, J.P. (2012), *International Human Resource Development: Learning, Education and Training for Individuals and Organizations*, 3rd ed., Kogan Page, London.

Wilton, N. (2016), *An Introduction to Human Resource Management*, Sage, London.

Xanthopoulou, D., Bakker, A.B., Demerouti, E. and Schaufeli, W.B. (2009), "Reciprocal relationships between job resources, personal resources, and work engagement", *Journal of Vocational Behavior*, Vol. 74 No. 3, pp. 235-244.

Yeung, A.K. and Berman, B. (1997), "Adding value through human resources: reorienting human resource measurement to drive business performance", *Human Resource Management*, Vol. 36 No. 3, pp. 321-335.

Zahra, S.A., Sapienza, H.J. and Davidsson, P. (2006), "Entrepreneurship and dynamic capabilities: a review, model and research agenda", *Journal of Management Studies*, Vol. 43 No. 4, pp. 917-955.

Zhu, J. (2014), *Quantitative Models for Performance Evaluation and Benchmarking: Data Envelopment Analysis with Spreadsheets*, Springer, New York, NY.

Further reading

Hoe, S.L. (2008), "Issues and procedures in adopting structural equation modeling technique", *Journal of Applied Quantitative Methods*, Vol. 3 No. 1, pp. 76-83.

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