Dynamic Relationships Management Journal

CONTENTS

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Aims & Scope

The Dynamic Relationships Management Journal is an international, double blind peer-reviewed bi-annual publication of academics' and practitioners' research analyses and perspectives on relationships management and organizational themes and topics. The focus of the journal is on management, organization, corporate governance and neighboring areas (including, but not limited to, organizational behavior, human resource management, sociology, organizational psychology, industrial economics etc.). Within these fields, the topical focus of the journal is above all on the establishment, development, maintenance and improvement of dynamic relationships, connections, interactions, patterns of behavior, structures and networks in social entities like firms, non-profit institutions and public administration units within and beyond individual entity boundaries. Thus, the main emphasis is on formal and informal relationships, structures and processes within and across individual, group and organizational levels.

DRMJ articles test, extend, or build theory and contribute to management and organizational practice using a variety of empirical methods (e.g., quantitative, qualitative, field, laboratory, meta-analytic, and combination). Articles format should include, but are not restricted to, traditional academic research articles, case studies, literature reviews, methodological advances, approaches to teaching, learning and management development, and interviews with prominent executives and scholars.

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FROM THE EDITORS: THE IMPORTANCE OF DATA IN RESEARCH – BEST PRACTICES REGARDING DATA COLLECTION, PROCESSING AND VISUALIZATION

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Market-leading organizations know that good inputs are essential for producing high-quality outputs. In academic work, the same logic applies. **Data is our primary or key source of information** that supplements sound theories, state-of-the-art reviews, or conceptual frameworks. It adds the originality to our manuscripts, and enables authors to report about organizational realities. By assessing the quality of reported data, editors decide whether or not they will desk reject (or ultimately accept) your hard work. Therefore, it should not be taken for granted how we collect, process and visualize data. The purpose of this editorial is to draw your attention to the often overlooked yet extremely important and decisive aspects of preparing and using empirical (both qualitative and quantitative) data.

Different data collection processes may be applied depending upon your research question(s). However, scholars should be aware of some of the best and/or well-accepted (recommended) practices. For instance, although cross-sectional designs are most common, we should try to avoid to collect data at a single point in time. Such research design does not allow us to make causal inferences; we can only hypothesize about correlational relationships or make inferential comparisons. Longitudinal data is favorable, yet often unreachable. However, the least what can authors do to try to increase the rigor in data collection is to **have a time-lagged study** (i.e., to measure dependent variable at Time 2, while independent variable is examined at Time 1) or to **use retrospective measures** (see Miller, Cardinal, & Glick, 1997).

Another common methodological fallacy is to have single-source data. Yes, you can run different post-hoc tests for common method bias, but it will never be as good as **having multi-source data**. If the latter is not possible, try to **run a multi-study research**, or at least **make the same respondent to engage in your research twice**. This would mean that the same person will assess both independent and dependent variables, yet at different time points. Such a research design would probably put constraints on the choice of potential outcome variables. However, if you, for instance, would still like to report about work performance as an outcome, a viable option would be to **use meta-perceptions** of how survey respondents are seen by others (Hernaus, Černe, & Škerlavaj, 2021; Schooman & Mayer, 2008).

Data processing means that you have a plethora of different data analysis methods at your disposal. Which one(s) you will apply mostly depends upon your research question. Similar to the corporate world logic, where different strategies require different organizational designs (Galbraith, 2001), you need to **match your research question with the appropriate data analysis method(s) and techniques**. To give an example, if you want to determine which job characteristics are critical for being more creative and innovative, a necessary condition analysis (Dul, 2016; Hauff et al., 2021) should be applied. However, if you are interested in determining which one(s) are dominant antecedents of innovative work behavior, a relative weight analysis would be more appropriate (Tonindanel & LeBreton, 2011; Hakanen, Bakker, & Turunen, 2021). Furthermore, if you search for job characteristics' profiles that might enable higher levels of employees' creativity and innovation, qualitative comparative analysis (Cangialosi, Battistelli, & Odoardi, 2021; Rihoux & Ragin, 2008) would be

the method to consider. The icing on the cake would be to **apply triangulation**, that is, using multiple methods or techniques to conduct your research. You may want to consider combining qualitative (e.g., experiments or interviews) with quantitative (e.g., survey) within the mixed-methods study, or even apply merged methods (Gobo et al., 2021).

Finally, not less important is how you visualize your data. Recently, data visualization has gained the momentum, thus highlighting the well-known adage "The form follows the function" (Jean-Baptiste Lamarck). Although the content is more important, you should be able to provide a high-quality follow-up, that is, to **communicate appropriately the results, insights and conclusions made through different visuals** (i.e., tables, graphs, figures, etc.). Good visualization methods will make your life easier, and enable you not only to explain, but also to explore and understand your data better (Healy, 2019). However, be aware that it requires attention and time to understand the context for the need to communicate (i.e., to whom you communicate, what you audience need to know, and how you will communicate; Nussbaumer Knaflic, 2015).

Volume 11, Number 2 of the Dynamic Relationships Management Journal (DRMJ) consists of seven papers, representing a mixture of theoretical (conceptual or review), methodological and empirical studies. A wide array of relevant topics are covered, thus offering to our readership a diverse set of insights from the field of management.

The first paper, written by Nikolina Dragičević, Amadeja Lamovšek and Saša Batistič deals with a hot topic of **managerial ambidexterity** that **serves as a microfoundation of dynamic organizational capabilities within the world of digital transformation**. This conceptual paper derived from a thorough systematic review offers an integrated framework of thus far unrelated perspectives. In addition, it yields sound multilevel propositions for future research on digital sensing, digital seizing, and digital transformation capability.

The second paper, prepared by Emil Knezović, Hakan Ath, Kerim Lojo and Ognjen Riđić, is an empirical piece that contributes with interesting insights about the role of human resource management and organizational behavior antecedents of the intention to quit. Specifically, they applied structural equation modelling to **analyze and largely confirm direct (i.e., supportive HR practices), mediation (i.e., affective commitment) moderation (i.e., supervisor support) effects on employee retention** within the understudied research context of Bosnia and Herzegovina.

The third one, authored by Mihály Görög, is a reflective paper that offers an overview and invites the reader to reconsider their strategy and approaches to conducting the management research. With an intention to engage, and not to offer recipes, the author **offered a useful interpretation of deductive and inductive reasoning** that is necessary to apply when crafting our research. What we particularly welcome is that the authors reminds us how important the role of logic in research is.

Melita Balas Rant wrote about the implications of ego development on the quality of leader-member exchange relationships. By bringing the neo-Piagetian school of adult (ego) development into management discourse, the author offered both theoretical insights and empirical evidence about **how the evolution of the interpretation schemes of the act of giving between the leader and follower evolve across the levels of ego development**.

The fifth contribution to this Volume has been made by Ibrahim Hamza and Sarolta Tóvölgyi, who addressed **the influential role of gamification as a behavioral modeling tool on organizational behavioral change**. Their empirical results drawn from a cross-sectional sample of 62 employees provided a preliminary evidence that employees who practiced gamification reported to be more engaged and satisfied, although remained at the same performance level as their colleagues who did not practice gamification at the workplace. Expressed differently, embedding game element into work activities adds a fun layer to organizational reality.

The sixth paper, written by Mojca Marc and Nina Ponikvar, is a qualitative study that illustrates how organizations can make their societal impact more visible. By using the social return on investment (SROI) as an evaluation approach, they showed that **financial impact of the Incredible Years parenting program has tremendous positive benefits**, both for children and other stakeholders involved.

Last but not the least, the seventh paper, prepared by Naira Fayaz, Sujata Khandai, Ivan Zupic and Avneet Kaur represents **a thorough 30-year bibliometric and thematic analysis of women entrepreneurship**. By applying a diverse set of bibliographic methods, supplemented with thematic analysis, the authors not only enriched readers with a comprehensive quantitative review of this globally relevant issue, yet identified emerging topics that should bring this stream of research to the next level.

Tomislav Hernaus and Matej Černe

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Dynamic Relationships Management Journal

DEVELOPING DIGITAL TRANSFORMATION CAPABILITY: THE ROLE OF MANAGERIAL AMBIDEXTROUS LEARNING

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Abstract

This paper integrates the individual ambidexterity, digital transformation, and dynamic capabilities literatures to develop a framework that helps to understand the role of managerial ambidextrous learning in building the digital transformation capability of an organization. Based on a comprehensive literature review, the paper identifies competing demands in terms of managerial learning orientation serving as microfoundations of different dynamic organizational capabilities underpinning digital transformation. We adopt an ambidextrous perspective of learning and propose that managers need to balance explorative and exploitative learning to aid building digital transformation capabilities. This paper contributes to ambidexterity and dynamic capabilities theoretical perspectives through its distinctive focus on the role of individual-level learning in the context of organizational-level digital transformation. The paper enhances understanding of how firms may support digital efforts by becoming sensitive to and supporting managerial ambidexterity as a critical factor in a successful digital transformation journey. We suggest that future research efforts should investigate empirically the role of managerial ambidextrous behavior in digital efforts.

Keywords: *individual ambidexterity, digital transformation, generalist learning, specialist learning, microfoundations of dynamic capabilities*

1 INTRODUCTION

Technological advances trigger digital transformation processes that alter value-creating paths in organisations (Vial, 2019) and lead to the emergence of the fourth industrial revolution (Beier et al., 2020; Dragicevic et al., 2020). The role of managers in making digital efforts successful is critical; however, digital transformation initiatives often experience difficulties because managers experience role ambiguity and do not know how to act (Ellström et al., 2021; Fitzgerald et al., 2014). For managers to successfully navigate through the digital journey, a vital challenge is building a digital transformation capability (Ellström et al., 2021; Warner & Wäger, 2019) while at the same time keeping the continuity of business performance, satisfying customer needs, and ensuring the wellbeing of employ-

ees. Essentially, managers need to balance between the integration of new technologies (exploration) and taking care (exploitation) of the core, well-established business (Li et al., 2021; Warner & Wäger, 2019). This premise states that there is a great paradox that surrounds digital transformation processes (Purvanova & Kenda, 2018), requiring managers to deal with tensions resulting from conflicting demands such as free exploration to complement exploitative processes of business as usual (Ellström et al., 2021). Managing competing demands is becoming necessary for effective digital transformation to occur (Montealegre & Iyengar, 2021).

Competing demands at the individual level often are studied using the construct of individual ambidexterity, defined as a capacity of a manager (or another employee) to exhibit seemingly incompatible behaviors (Birkinshaw & Gibson, 2004) of performing both explorative and exploitative activities, which lead to innovation and job performance (Mom et al., 2007; Rosing & Zacher, 2017). Individual ambidexterity is suited to cope with dynamic contexts (Eisenhardt et al., 2010; Good & Michel, 2013) such as technology turbulent environments (Folger et al., 2021). Moreover, in uncertain and interdependent work contexts, managers' ambidexterity has proven to contribute to individual performance (Mom et al., 2015). Despite the promising value of investigating the role of individual ambidexterity in the digital transformation efforts in companies, the literature still lacks relevant studies of the matter. Although some recent research discussed technological change and digital transformation concerning organisational ambidexterity (Ouyang et al., 2020; Scuotto et al., 2019) and some studies connected individual ambidexterity to technology turbulent environments (Folger et al., 2021), less is known about how digital transformation is connected to the individual, and in particular managerial ambidexterity.

We contribute to bridging that gap by investigating the following research question: What type of learning is required from ambidextrous managers to develop digital transformation capability? We focused on the dimension of learning because ambidexterity is associated inherently with learning and two types of learning activities—explorative and exploitative (March, 1991) —which echo the specialist–generalist dilemma at the individual level (Bonesso et al., 2014; Kang & Snell, 2009a; Kelly et al., 2011a). For example, whereas specialist human capital favors exploitative learning (i.e., in-depth learning within a narrow field), generalist human capital fosters explorative learning (i.e., learning within different fields) (Bonesso et al., 2014). Similar to Teece (2007) and Warner and Wäger (2019), we approached digital transformation as a dynamic capability and assumed that managers can contribute to the development of such capability through their knowledge (Helfat & Peteraf, 2015; Pasamar et al., 2015). Dynamic capabilities enable continuous restoring of the firms' resources and competencies in line with environmental changes and new sources of competitive advantage (Teece, 2007). Although researchers have dealt with our topic of interest implicitly to some extent (e.g. Ellström et al., 2021; Laudien & Daxböck, 2016; Warner & Wäger, 2019), we connected the dots from various contributions into an integrated framework to establish the relationship between digital transformation as a dynamic capability and ambidextrous' managers different learning orientations.

We addressed the research aim with a literature review to integrate conceptually the theoretical streams we investigated—managerial ambidextrous learning and digital transformation as a dynamic capability—to gain understanding of how managers can make their way through ongoing business challenges (i.e., competing demands) that they face in adapting to rapid technological and market change. Accordingly, this study builds a framework that explicates managerial learning orientations (i.e., generalist or specialist) serving as microfoundations of different dynamic capabilities underpinning digital transformation. Microfoundations are primary components (e.g. individual-level practices) underlying higher-level constructs such as organizational dynamic capabilities (Felin et al., 2012; Mousavi et al., 2019).

The contributions of this study are as follows. First, the study extends the existing literature on managerial ambidexterity by explaining how the role of a manager's ambidextrous learning is related to different categories of dynamic capabilities underpinning digital transformation (i.e., sensing, seizing, and transforming capabilities). Second, we enhance understanding of how firms may support

digital efforts by becoming sensitive to and supporting managerial ambidexterity as a critical factor in a successful digital transformation journey. Accordingly, we believe that the framework may aid managers with developing and deploying digital strategies that consider important choices that managers need to make in digital efforts, namely which mode of learning on which to focus as a part of capabilities development required for successful digital transformation.

2 MANAGERIAL AMBIDEXTERITY: OVERVIEW OF THE CONCEPT

2.1 Defining Managerial Ambidexterity

Competing or conflicting demands are in management literature studied under the umbrella construct of *ambidexterity*—the exploitation and exploration dilemma, seen as the core to learning, performance, agility, and innovation across the level of analysis (Birkinshaw & Gibson, 2004; Birkinshaw & Gupta, 2013; Raisch et al., 2009). Whereas exploration aids with sensing market opportunities and renewing companies' capabilities, exploitation builds on existing opportunities and creates a return on current capabilities (Levinthal & March, 1993). Ambidexterity at the individual level is seen as having a critical role in organizational ambidexterity (Birkinshaw & Gupta, 2013; O'Reilly III & Tushman, 2013; Raisch et al., 2009). Whereas organizational ambidexterity has been a well-established construct for three decades, recently researchers have started to pay attention to individual ambidexterity, the capacity of an individual to conduct contradictory activities of exploration and exploitation toward job performance and innovation (Bledow et al., 2009; Mom et al., 2015b). We focused on managers as units of our analysis because they are expected to be more exposed to such paradoxical behavior. Accordingly, we subscribed to the definition of individual ambidexterity as "a manager's behavioural orientation toward combining exploration- and exploitation-related activities within a certain period of time" (Mom et al., 2009, p. 812).

The literature describes ambidextrous managers as multitaskers capable of engaging in complex cognitive processes such as integrative and paradoxical thinking, and capable of being involved in both routine and nonroutine activities and in different types of learning activities which both refine existing and increase the variety of their knowledge and skills (Adler et al., 1999; Mom et al., 2007, 2015; Papachroni & Heracleous, 2020). The literature provides examples of various different tensions or conflicting demands that are related to individual ambidexterity (Pertusa-Ortega et al., 2020). For example, studies have focused on the tensions between the exploration of new capabilities and the exploitation of current capabilities (Rosing & Zacher, 2017), adaptability and alignment (Birkinshaw & Gibson, 2004), exploration of new ideas and their implementation (Bledow et al., 2009), flexibility and efficiency (Yu et al., 2020), and the pursuit of new knowledge or use of the existing knowledge (Kelly et al., 2011). However, less is known about how dimensions of learning orientation (i.e., explorative or generalist and exploitative or specialist learning) can influence individuals' ambidexterity.

2.2 Role of Learning in Managerial Ambidexterity

Managerial learning is an integral part of managers' work, and it is essential for organizational change (Sollander & Engström, 2021). From a knowledge-based view, ambidexterity at the individual level includes either the deepening of one's existing knowledge or learning outside one's current knowledge domains (Keller & Weibler, 2015). Therefore, some models of ambidexterity directly connect to the human resource base and perceive these different types of learning activities as a core to building individual and organizational ambidexterity (Kang et al., 2009; Mom et al., 2007, 2015; Prieto & Santana, 2012). In particular, the explorative-exploitative learning orientation echoes the generalist–specialist learning dilemma (Kang & Snell, 2009). Whereas specialists have in-depth knowledge associated with a particular knowledge domain or function and typically occupy more narrowly defined jobs, generalists tend to have cross-disciplinary knowledge that can be enacted across different domains and hence occupy heterogeneous (boundary-spanning) jobs that require diverse skill-sets (Kang & Snell, 2009; Kelly et al., 2011). Generalists are valued for the breadth of their knowledge and entrepreneurial behavior which provides an organization with the ability to explore

new capabilities and to adapt (Kang & Snell, 2009; Shane, 2000). On the other hand, specialists are experts in a given field and are effective in gaining new in-depth knowledge within the narrow range defined by the domain.

Ambidextrous managers exhibit both generalist and specialist learning orientations. For example, Birkinshaw and Gibson (2004) suggested that ambidextrous individuals enact both types of knowledge but are typically more generalists; this stance was adopted by other authors (e.g., Mom et al., 2009). Furthermore, Kelly et al. (2011, p. 620) found that specialist–generalist demarcation is "too rigid as it does not take into account the ways in which individuals themselves may choose to shape their working lives and careers."

3 DIGITAL TRANSFORMATION IN FIRMS

3.1 Defining Digital Transformation

Digital transformation refers to "a process wherein organizations respond to changes taking place in their environment by using digital technologies to alter their value creation processes" (Vial, 2019, p. 3). Digital technologies are combinations of information, computing, communication, and connectivity technologies (Bharadwaj et al., 2013; Vial, 2019). Examples of such technologies driving digital transformation and bringing new market and operational opportunities are mobile technologies, cloud computing, blockchain, artificial intelligence, and the internet of things (IoT) (Vial, 2019; Warner & Wäger, 2019).[1] In a recent literature review, Vial (2019) identified several organizational-level outcomes that digital transformation promises to bring to organizations, such as operational efficiency (i.e., improvement of business processes, automation, and cost savings), organizational performance (i.e., innovativeness, financial performance, firm growth, competitive advantage), and wellbeing of employees. However, digital transformation also has some drawbacks, such as algorithmic control and data security issues (Kellogg et al., 2020; Vial, 2019). Some other challenges require the management of employees' heterogeneous perceptions of digitalization efforts (Schneider & Sting, 2020).

Organizations engaged in digital transformation processes need to reconfigure and innovate their practices to establish a balance between more or less radical improvements and maintaining a core business. Digitalization often serves as a prompt for organizations to experiment and reinvent their business models, including reinventing industries, changing products and services, creating new digital businesses, reshaping value delivery models, and rethinking value propositions (Westerman et al., 2014; Warner & Wäger, 2019). Companies also can use digital technologies to change their business models incrementally, i.e., "to extend, revise, or terminate existing activities in an evolutionary manner" (Cavalcante et al., 2011; Foss & Saebi, 2018; Kim & Min, 2015). Given the strategic nature of change, the efforts that digitalization efforts require, and the challenges that these efforts face, it becomes apparent that the managerial role is critical (Montealegre & Iyengar, 2021).

3.2 Digital Transformation and Managerial Ambidexterity

Underlying the digitalization attempts, tensions emerge which require managers' both explorative and exploitative activities (Montealegre et al., 2019; Warner & Wäger, 2019). Often, the emphasis on either exploration or exploitation will affect a decision regarding the type of business model change (Laudien & Daxböck, 2016). For example, managers are prompted to explore because there are changes in technologies that they potentially need to adopt to keep long-term competitiveness. At the same time, they need to exploit to maintain companies' short-term competitive pressures. Managers also need to either adjust their digital technology portfolio or acquire new technologies (Li et al., 2021). These examples show that digital transformation and digital workplaces often require performing contradictory

[1] Consider also McAfee & Brynjolfsson's (2017) study which identifies three major trends related to technology that are reshaping how the businesses are run: the expanding capabilities of machines, rise of platforms or "digital environment[s] characterized by near-zero marginal cost of access, reproduction, and distribution" (p. 216); and emergence of the crowd—"human knowledge, expertise, and enthusiasm distributed all over the world and now available, and able to be focused, online" (p. 28).

activities and switching between different mindsets and action sets (Bledow et al., 2009), and resolving paradoxical requirements of exploitation and exploration (Raisch et al., 2009). Therefore, developing managerial ambidexterity seems to be critical.

The role of managers' knowledge is an important aspect of balancing competing demands. Managers need to capitalize on previous learning and focus on activities that maintain existing performance or learn new ways of dealing with customers and other stakeholders via digital technologies, opening themselves to new (or adjusted) ways of working (Baptista et al., 2020; Warner & Wäger, 2019). However, such management of competing demands may not be easy. Managers, to deal with uncertainty and complexity arising from digital transformation pressures, sometimes choose to rely on prior expert experience and familiar choices in their decision-making rather than to explore new possibilities that would lead to change (Gavetti & Levinthal, 2000; Laudien & Daxböck, 2016; Warner & Wäger, 2019). Managers tend to exploit already-established technological assets rather than expand their search activities (Teece, 2007). Hence, managing different learning orientations (i.e., specialist or generalist) often is a (necessary) challenge.

Recognizing the value of ambidexterity research, Montealegre and Iyengar (2021) argued that central to successfully managing a digital business platform is the organizational ability to balance renewal (i.e., exploration) and refinement (i.e., exploitation).[2] We build on the premises of their study and focus on the role of the individual level of ambidexterity in digital transformation change process.

3.3 Digital Dynamic Capabilities

Due to its focus on developing mechanisms for organizations to cope with continuous (rapid technological) change and remain competitive (Peteraf et al., 2013; Schilke et al., 2018), the dynamic capabilities framework (Teece, 2007) is regarded as one of the promising underlying theoretical frameworks to study digital transformation (Vial, 2019). The dynamic capabilities framework emerged from and extended the resource-based view of firms to explicate how firms strategically renew resources and competencies to fit uncertain environments (Eisenhardt & Martin, 2000; Helfat et al., 2009; Teece et al., 1997). Continuous restoring of the firms' resources and competencies in line with changes in the organization's business environment enables new sources of competitive advantage (Teece, 2007). Teece (2007) recognized three categories of dynamic capabilities that enable this: sensing, seizing, and transforming capabilities. Sensing involves activities of gaining knowledge about the business environment to make decisions about future development; seizing includes exploitation of the sensed opportunities for the improvement of current and development of new services and products; and transforming involves activities to reconfigure resources and competencies to create better fit with the environment (Teece, 2007, 2014).

Because digital transformation requires organizational adaptation to changing business environment, a dynamic capabilities framework was adopted in some recent digital transformation studies (e.g. Ellström et al., 2021; Matarazzo et al., 2021; Warner & Wäger, 2019). For example, Warner and Wäger (2019) suggested that digital transformation is a capability, and identified digitally based dynamic capabilities and their subcapabilities required for digital transformation: digital sensing, digital seizing, and digital transforming capabilities. Ellström et al. (2021) built on Warner and Wäger's findings to suggest complementary routines for achieving digital transformation in firms. Our work to some extent builds on these studies and is distinguished from them by focusing on the role of managerial ambidextrous learning.

Table 1 provides an overview of the original dynamic capabilities framework (Teece, 2007) and the adoption of this framework to the digital transformation context (Ellström et al., 2021; Warner & Wäger, 2019).

[2] They suggested that three interrelated activities—identifying-nourishing, expanding-legitimizing, and augmenting-embedding—enable the organisational ambidexterity, i.e., "renewal and refinement in the evolution of the digital platform" (Montealegre & Iyengar, 2021, p. 2).

Table 1: Dynamic capabilities and their role in digital transformation

Framework/key reference	Type of dynamic capability		
Teece (2007)	**Sensing** Scanning, creation, learning, and interpretation of local and global technologies and markets; investment in research and related activities.	**Seizing** Improving current technological competencies; investing in new technologies and designs, developing services and products.	**Transforming** Recombining and reconfiguring competencies, assets and organizational structures as technologies or market change.
Warner & Wäger (2019)	**Digital sensing** (1) digital scouting, (2) digital scenario planning, and (3) digital mindset crafting.	**Digital seizing** (1) strategic agility, (2) rapid prototyping, and (3) balancing digital portfolios.	**Digital transforming** (1) navigating innovation ecosystems, (2) redesigning internal structures, and (3) improving digital maturity.
Ellström et al., (2021)	**Digital sensing** (1) cross-industrial digital sensing, (2) inside-out digital infrastructure sensing.	**Digital seizing** (1) digital strategy development, (2) determining enterprise boundaries.	**Digital transforming** (1) decomposing digital transformation into specified projects, (2) creating unified digital infrastructure.

4 AMBIDEXTROUS MANAGERIAL LEARNING ORIENTATIONS AND DIGITAL TRANSFORMATION CAPABILITY

4.1 Integrated Framework

Dynamic capabilities are organizational, higher-level capabilities; nevertheless, they are rooted in and emerge from individual, managerial practices (Helfat & Peteraf, 2015; Teece, 2012, 2014). We recognize that developing digital transformation capability requires managerial handling of competing demands and that the role of learning per se is critical. Researchers have considered ambidexterity to act as a dynamic capability and have recognized the role that managers have in it (Birkinshaw et al., 2016; O'Reilly III & Tushman, 2008). Therefore, we recognize that there is value in developing a framework that connects these different (yet related) theoretical streams.

Specifically, building on the dynamic capabilities, digital transformation, and individual ambidexterity literatures, we suggest a framework that describes the role of a manager's ambidexterity, by considering her or his learning orientation, in building digital transformation capability. In particular, we identify learning (knowledge-based) activities that could be classified as having either a generalist or a specialist orientation, and describe their role in different aspects of building digital transformation as a dynamic capability. We posit that these ambidextrous learning activities serve as microfoundations—or micro-level origins or basic elements—underlying dynamic capability building (Felin et al., 2012; Mousavi et al., 2019). Figure 1 illustrates the framework that lays out the conceptual integration of the selected theories. We posit that building each of the digital transformation capabilities (digital sensing, digital seizing, and digital transforming) includes tasks requiring both managerial generalist and specialist learning orientations.

In an introduction to special issues on digital work and transformation, Baptista et al. (2020) suggested three orders of effects of digital transformation on organizations: convergent change, transforming work, and transforming the organization. Convergent change refers to the appropriation of workplace technologies with immediate effects on the execution of tasks and established patterns of work; transforming work leads to a more fundamental change in the patterns and nature of work; and transforming the organization creates new understandings of work and changes the deep structure of organizations. Building on their idea, we propose that digital capabilities of sensing, seizing, and transforming (together with learning activities associated with them) could be connected with the aforementioned three order effects of digital transformation on organizations.

Figure 1: Conceptual integration of the included theories

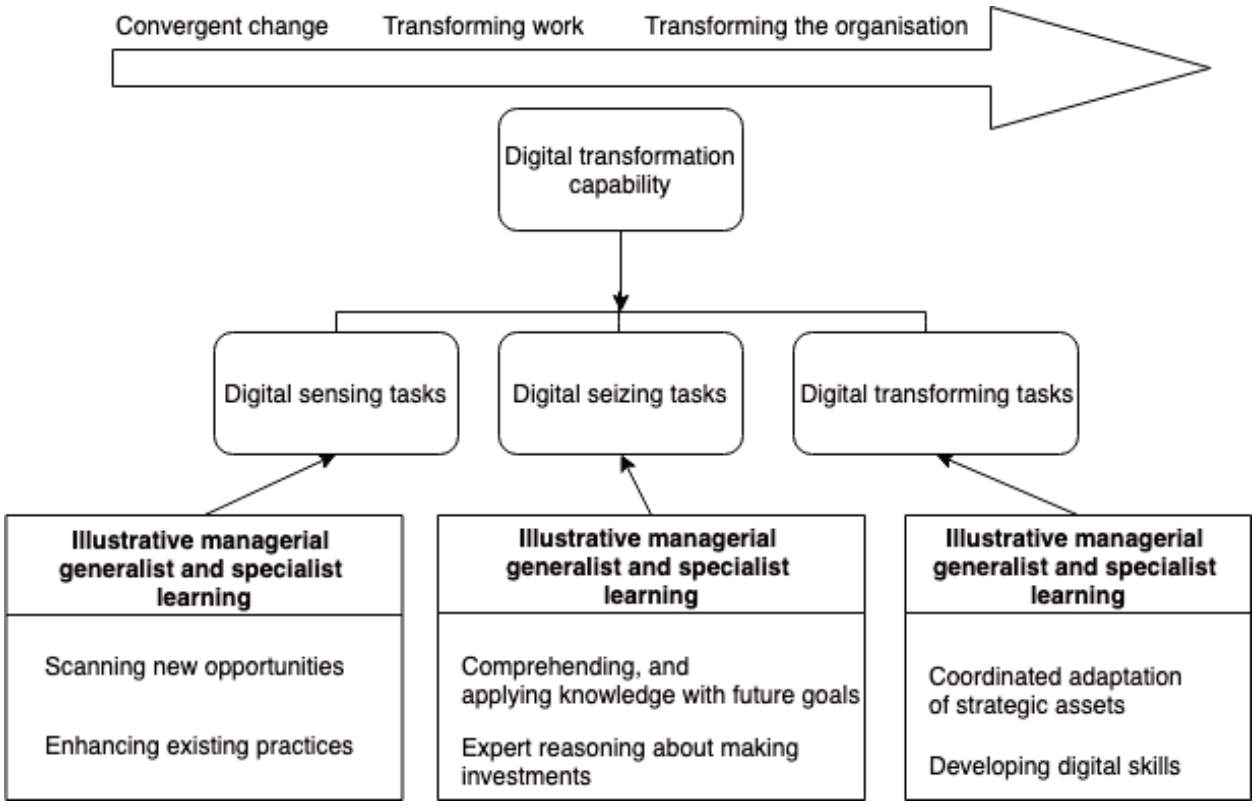

Table 2 summarizes the specifics of managerial ambidextrous learning orientations (i.e., generalists or specialists) in connection to each of the digital transformation capabilities (i.e., sensing, seizing, or transformation).

4.2 The Role of Managerial Ambidexterity in Digital Sensing

Digital sensing entails discovering new technological and market opportunities (Helfat & Peteraf, 2015; Teece, 2007), including scanning of data and information available at digital networks [ecosystems "comprised of people, data, processes, and things connected by the shared used of technologies that go beyond the scope of a single system (Henfridsson & Bygstad, 2013; Yoo; Henfridsson, & Lyytinen, 2010)"; Montealegre & Iyengar, 2021, p. 1]. Managers' explorative learning about opportunities regarding digital technologies and ways in which they may reinvent business is guided by discovering and sensemaking activities (Kirzner, 1997; Weick, 1995). Managers also have access to partners' resources and capabilities (Laudien & Daxböck, 2016), which they can use to probe technological possibilities (Teece, 2007).

Digital sensing also may involve deepening ways of knowing and executing the existing tasks. For example, awareness of available workplace technologies (Li et al., 2021) may stimulate managers to apply some of these technologies to enhance their daily practices, that is, to deepen their existing knowledge base. They may use digital technologies, such as IoT platforms, to perform their tasks more efficiently (Laudien & Daxböck, 2016; Warner & Wäger, 2019). Furthermore, managerial specialist knowledge and experience, due to its awareness of firm-specific requirements, may help with setting the initial constraints and feasibility testing of the current digital infrastructure and identified technological opportunities (Cross & Sivaloganathan, 2007; Ellström et al.,

Digital dynamic capabilities	Ambidextrous managerial learning orientation		Organizational effects of digital transformation
	Explorative learning orientation	Exploitative learning orientation	
Digital sensing *An imbalance towards generalist learning orientation*	Scanning new technological and market opportunities via a digital network (Helfat & Peteraf, 2015; Teece, 2007; Montealegre & Iyengar, 2021) by using discovering and sensemaking activities (Kirzner, 1997; Weick, 1995).	Enhancing existing practices with digital tools (Laudien & Daxböck, 2016; Warner & Wäger, 2019) Knowledge specific to the industry to set the initial constraints and test the feasibility of technological opportunities (Cross & Sivaloganathan, 2007).	First-order effects: **Convergent change**
Digital seizing *A balance between generalist and specialist learning orientation*	Decisions on a business model redesign by using digital technologies (Teece, 2007; Warner & Wäger, 2019) and which competencies to build within the firm and which to outsource (Ellström et al., 2021) Flexibility, adaption, and openness to new growth opportunities (Ellström et al., 2021). Skills of interpretations to discover, comprehend, and apply knowledge with future goals (Bunderson & Sutcliffe, 2002; Kelly et al., 2011; Shane, 2000).	Expert reasoning about making investments in digital technologies (Helfat & Peteraf, 2015) Decomposing the projects and building the business processes for effective distribution of resources and team members (Ellström et al., 2021). Eliciting expert feedback or preferences regarding digital seizing choices from internal and external stakeholders; development of detailed design (Cross & Sivaloganathan, 2007).	Second-order effects: **Transforming work**
Digital transforming *A balance between generalist and specialist learning orientation*	Managerial decision making and action regarding the coordinated adaptation of strategic assets that are critical for digital transformation (Helfat & Peteraf, 2015) Leadership, social skills, and effective communication across functions (Bunderson & Sutcliffe, 2002; Helfat & Peteraf, 2015).	Development of digital skills (Warner & Wäger, 2019) Decomposing the projects and building the business processes for effective distribution of resources and team members (Ellström et al., 2021). Overcoming the potential obstacles in building the digital infrastructure by pinpointing best practices for how come some specific challenges (regarding technology and people) may be overcome (Cross & Sivaloganathan, 2007).	Third-order effects: **Transforming the organization**

2021). They also may assist in building and assessing the routines for capturing technological information captured by digital networks (Ellström et al., 2021).

Digital sensing entails mostly a generalist learning orientation (Pasamar et al., 2015), i.e., it includes more entrepreneurial behavior, is open to discovering new possibilities, and is less confined to a certain perspective. Therefore, we suggest:

Proposition 1: Digital sensing predominantly requires a generalist learning orientation.

4.3 The Role of Managerial Ambidexterity in Digital Seizing

Digital seizing may involve business model redesign by using digital technologies (Teece, 2007; Warner & Wäger, 2019), that is, capturing the value of new growth opportunities through new products, processes, and services (Ellström et al., 2021). To pursue business model reinvention, managers need to decide which competencies to build within the firm and which to outsource (Ellström et al., 2021), as well as the form of the human resource base (Matarazzo et al., 2021). For this, they need to have skills of interpretation of varied problems and skills to discover, comprehend, and apply knowledge with future goals, which typically are generalists' traits (Bunderson & Sutcliffe, 2002; Kelly et al., 2011; Shane, 2000). Managers also may act spontaneously, without seeking permission from their superiors (Birkinshaw & Gibson, 2004) in making decisions about which technologies to pursue in developing new services and products.

Nevertheless, adjustments to business model design involve managers' specialist knowledge as well. This can entail, for example, the capacity to make well-thought-out investments in new or improved digital technologies, which requires in-depth knowledge in the field and reasoning skills [i.e., "evaluating information, arguments, and beliefs to draw a conclusion" or "using information to determine if a conclusion is valid or reasonable" (Gazzaniga et al., 2010, p. 342)] (Helfat & Peteraf, 2015). Specialist knowledge may be relevant in deciding on priorities and responsibilities for resources allocation dedicated to strategy realization (Ellström et al., 2021) and human resources hiring (Matarazzo et al., 2021). Moreover, a specialist orientation may be required in (building routines for) eliciting expert feedback or preferences regarding digital seizing choices from internal and external stakeholders, as well as for the detailed design of new digital service or product solutions (Cross & Sivaloganathan, 2007).

Because building digital seizing capability incorporates tasks requiring both generalist and specialist learning, we suggest:

Proposition 2: Digital seizing requires a balance between generalist and specialist learning orientations.

4.4 The Role of Managerial Ambidexterity in Digital Transforming

Digital transforming, for example, requires managerial decision making and action regarding the coordinated adaptation of strategic assets, that is "the selection, configuration, alignment, and modification of tangible and intangible assets (Helfat et al., 2007)" (Helfat & Peteraf, 2015, p. 12) that are critical for digital transformation. Coordination of these strategic changes requires generalist skills of effective communication across functions (Bunderson & Sutcliffe, 2002). Moreover, one of the critical aspects of developing digital transformation capability is the company's culture (Fitzgerald et al., 2014; Hartl & Hess, 2017), and employees may have heterogeneous perceptions of digitalization that may serve as an obstacle to digital transformation processes. Therefore, to overcome resistance to change, managers need both communication and social skills to induce common understanding and cooperative behaviors in their subordinates (Helfat & Peteraf, 2015). Managers need not only to create but also to communicate effectively a digital vision to inspire and support their subordinates in their digital transformation journey (Dery et al., 2017).

Exploitative learning orientation is involved in the application of specialist knowledge and using it for enhancing managers' knowledge base. In particular, managers need to develop new digital skills and/or become sensitive to support the development of such skills in their subordinates (e.g., big data analysis) (Laudien & Daxböck, 2016). Workers need to realize more deeply the potential of digital technology in their daily work practices by learning to apply artificial intelligence, IoT platforms, cloud computing, and others (Warner & Wäger, 2019). Furthermore, specialist expert knowledge may help with decomposing the projects and building the business processes for effective distribution of resources and team members (Ellström et al., 2021). Specialist experience also may aid with overcoming the potential obstacles in building the digital infrastructure by assessing the similarities from past projects and knowing the best practices for how to overcome some specific challenges (regarding technology and people) (Cross & Sivaloganathan, 2007). Expertise also may be required in establishing new functions such as digital marketing and digital reorganization (Matarazzo

et al., 2021). Because building the digital transforming capability includes tasks requiring both generalist and specialist learning, we suggest:

Proposition 3*:* Digital transforming capability requires a balance between generalist and specialist learning orientations.

5 DISCUSSION AND CONCLUSION

5.1 Theoretical Contribution

Our study contributes to the individual ambidexterity literature by investigating the role of managerial ambidextrous learning (i.e., different learning orientations) in building the digital transformation capability. Its focus is in line with the proposition that dynamic capabilities are rooted in managerial capabilities and practices (Helfat & Peteraf, 2015; Teece, 2012, 2014) and that managers [and their ambidextrous learning (Pasamar et al., 2015)[3]] have a key role in developing such capabilities. The microfoundations of dynamic capabilities for digital transformation identified and described in this paper are present to some extent in previous research that focused on the same topic (Ellström et al., 2021; Warner & Wäger, 2019). However, our work complements the existing studies by distinguishing between generalist and specialist learning orientations and recognizing their distinctive microfoundational roles in digital transformation capability building. In contrast to the arguments of Birkinshaw et al. (2016), who equated a "sensing" capability with exploration, a "seizing" capability with exploitation, and "reconfiguring" to a higher-order capability that enables a balance between the first two, we view each digital capability as consisting of both explorative and exploitative activities, and hence including both generalist and specialist learning. Nevertheless, we acknowledge that one learning orientation may prevail in the development of a specific capability. For example, as we argued in the previous sections, whereas digital sensing capability may require a greater generalist learning orientation, both seizing and transforming capability require a balance between generalist and specialist learning orientation. This balance may depend on the environmental circumstances, availability of resources, and strategic choices regarding the kind of digital transformation that will be pursued (Pasamar et al., 2015), as well as on the individual and leadership characteristics, culture, and other factors affecting individual ambidexterity (Pertusa-Ortega et al., 2020).

5.2 Managerial Implications

Because the role of managers is critical in digital efforts, firms need to build guidelines for taking into account both managers' generalist and specialist learning needs. However, managers may not be equally skilled at generalist and specialist learning. Hence, if a certain type of learning is more required for some aspect of dynamic capabilities building (i.e., sensing, seizing, or transforming), managers who have this learning orientation as dominant may provide superior aid in this aspect. Nevertheless, we believe that ambidextrous learning should be a common managerial trait, and that such duality is particularly required to foster change in organizations (Sollander & Engström, 2021). Therefore, human resource management systems should actively aim to stimulate managerial ambidextrous learning, for example, by deploying practices that specifically target building "entrepreneurial ability to identify and exploit opportunities both of experimentation and search for efficiency (Corbett, 2005; Shane, 2000; Short, Ketchen, Shook, & Ireland, 2010" (Bonesso et al., 2014, p. 402). For example, Bonesso et al. (2014) showed how broad knowledge and inter-functional and/or inter-firm work leads to a balance between exploration and exploitation. In contrast, managers' narrow prior knowledge and working experience may direct a search for opportunities for exploitation (e.g., improvement of current technologies). Following this and other studies (e.g. Mom et al., 2009; Un, 2007), we suggest that facilitating participation in cross-functional work may stimulate more-entrepreneurial managerial behavior and balanced learning. Because managers with broader prior work experience may be more likely to exhibit ambidextrous behaviors, HR practitioners in-

[3] Pasamer et al. suggested that ambidextrous learning and diverse architectures of intellectual capital are related to the development of dynamic capabilities; however, they focused on a structural approach to ambidextrous organizations, and not on an individual level as we do.

volved in the recruitment processes might take this insight as a guiding principle in their decision-making.

Furthermore, Mom et al. (2019) drew on self-efficacy (Bandura, 1982) and self-determination theory (Deci & Ryan, 2008) to put forward a set of human resource management practices that stimulate managerial ambidexterity, namely motivating (i.e., job enrichment, behavioral appraisal, and commitment-oriented rewards and compensation), ability (i.e., comprehensive training and job enlargement), and opportunity-enhancing practices (i.e., decision making, information sharing, and support for ideas). We suggest that these are relevant in the context of digital transformation. Furthermore, recent studies identified microfoundations (Warner & Wäger, 2019) and routines (Ellström et al., 2021) underpinning dynamic capabilities in support of firms' digital efforts and the realizing of the potential of digital transformation. Our study complements these works by focusing on ambidextrous learning as the core to building such capabilities. In particular, we suggest a framework that differentiates a role of either generalist or specialist learning orientation in different dynamic capabilities underpinning digital transformation (sensing, seizing, or transforming). We hold that such a framework may assist managers with creating digital strategies that take into account important learning processes underpinning managers' work in digital transformation pursuits.

5.3 Limitations

This study provides a general framework describing the role of managerial ambidextrous learning in developing the digital transformation capability. However, this study does not assume that a specific hierarchical level is associated exclusively with microfoundations of dynamic capabilities and should predominantly practice only a particular learning orientation. Birkinshaw et al. (2016) took a different approach and emphasized that sensing and seizing typically are front-line capabilities, whereas reconfiguring commonly is an executive capability. Montealegre and Iyengar (2021) proposed that the evolution of digital business platforms has three different phases (i.e., initiating, developing, and growing) and that in each phase top, middle, and operational management have different roles in balancing between renewal (i.e., exploration) and refinement (i.e., exploitation). Nadkarni and Prügl (2020) emphasized the critical role of middle managers in implementing digital transformation. Conversely, we believe that it would be beneficial to extend our study to investigate key management practices (including generalist or specialist learning orientations) related to these different management levels. We also suggest that it would be useful to investigate empirically the role of managerial ambidextrous learning in digital efforts in specific firms and across management levels because dynamic capabilities are context-specific (Birkinshaw et al., 2016). Finally, there is an increasing stream of research on the T-shaped individuals in different contexts, including digital transformation (Demirkan & Spohrer, 2018); we believe that future research on individual ambidexterity could connect fruitfully with this stream.

5.4 Conclusion

This study conducted a comprehensive literature review to connect different theoretical streams—dynamic capabilities, digital transformation, and individual ambidexterity literatures—to identify how different managerial learning orientations (i.e., generalist or specialist) underpin digital transformation capabilities (i.e., sensing, seizing, and transforming). Specifically, we build on these theoretical perspectives to offer a more comprehensive conceptualization and framework that reveals the learning mechanisms (predominantly exploitative or explorative) for achieving digital transformation. In doing this, we help to understand how each digital dynamic capability includes managerial learning-based handling of competing demands, i.e., requires development of managerial ambidextrous learning. Future research should investigate empirically the role of managerial ambidextrous learning in digital attempts because our conceptual efforts cannot capture the specific market dynamics.

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EXTENDED SUMMARY/IZVLEČEK

Ta članek združuje literaturo individualne obojeročnosti, digitalne preobrazbe in dinamičnih sposobnosti z namenom razvoja ogrodja, ki pomaga razumeti vlogo managerske prilagodljivosti učenja pri gradnji sposobnosti digitalne preobrazbe organizacije. Prispevek na podlagi obsežnega pregleda literature opredeljuje konkurenčne zahteve v smislu usmeritve managerskega učenja, ki služijo kot mikrotemelji različnih dinamičnih organizacijskih sposobnosti, ki podpirajo digitalno preobrazbo. Sprejemamo dvostransko perspektivo učenja in predlagamo, da morajo managerji uravnotežiti raziskovalno in izkoriščevalno učenje, da bi pomagali pri izgradnji sposobnosti digitalne preobrazbe. Ta članek prispeva k teoretičnim perspektivam obojeročnosti in dinamičnih sposobnosti s svojim izrazitim poudarkom na vlogi učenja na ravni posameznika v kontekstu digitalne preobrazbe na organizacijski ravni. Članek izboljšuje razumevanje, kako lahko podjetja podpirajo digitalna prizadevanja, tako da postanejo občutljiva in podpirajo vodstveno obojeročnost kot kritični dejavnik na uspešni poti digitalne preobrazbe. Za nadaljnje raziskovanje predlagamo, da se empirično razišče vlogo managerskega oboročnega vedenja v digitalnih prizadevanjih.

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SUPPORTIVE HUMAN RESOURCE PRACTICES AND INTENTION TO QUIT: THE ROLE OF AFFECTIVE COMMITMENT AND PERCEIVED SUPERVISOR SUPPORT

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Abstract

This study examines the relationship between supportive human resource practices (SHRPs) and intention to quit (ITQ) by taking into consideration the mediating role of affective commitment (AC) and the moderating role of perceived supervisor support (PSS). A cross-sectional survey design resulted in a final sample of 507 employees from different industries in Bosnia and Herzegovina. To test the hypotheses, structural equation modeling and hierarchical regression were used. The results showed that SHRPs are related favorably to ITQ. Furthermore, AC was found to be an important mediator of the relationship, whereas the evidence for a moderating role of PSS was partial.

Keywords: *supportive HR practices, affective commitment, perceived supervisor support, intention to quit, Bosnia and Herzegovina*

1 INTRODUCTION

Human resource (HR) practices have been an important topic in the last few decades (Boon, Den Hartog, & Lepak, 2019; Memon, 2014). According to Collins (2006), the effective implementation of human resource practices in companies is an important source of competitive advantage and positively affects organizational performance. An organizational capacity to support employees through different mechanisms is considered to be an integral part of employee retention (Pradhan, Srivastava, & Jena, 2019). This means that an organization has to go beyond monetary incentives to a more socio-emotional exchange of resources.

Keeping employees in a company has never been of higher importance. The context of Bosnia and Herzegovina (B&H) is very specific because it is characterized by high unemployment and a massive brain

drain in recent years, which leads to a business struggle to keep employees not just within companies but within the country as well (Knezović, Bušatlić, & Riđić, 2020). This problem in many developing countries is a consequence of both government and business negligence. Although government tends to keep a high number of people employed within the public sector and put additional burdens on the private sector, employees tend to experience several issues in the workplace. For example, employees tend to be underpaid compared with the company's actual earnings, work overtime without being paid, and face low development opportunities (Haskić, 2018). Furthermore, there is a serious divergence between written policies and job descriptions and what is actually expected from the employees. This is harmful to employees and thus increases their chances of leaving the company. In a country in which many companies share the same approach to employees, the next logical step is to migrate.

To investigate employee retention, researchers have focused on different sets of HR practices (Combs, Liu, Hall, & Ketchen, 2006). Therefore, there are different conceptualizations of these sets, ranging from very general, such as "HR system" or "HR bundle," to more specific conceptualizations such as "high performance," "high commitment," or "high involvement" (Boon et al., 2019). In contrast to previous sets with an exhaustive list of HR practices, in this study we used the operationalization of supportive human resource practices (SHRPs) developed by Allen, Shore, and Griffeth (2003). Their rationale was based on a social exchange theory in which support of employees results in employees' support to the organization. What clearly distinguishes SHRPs from other HR practices is that they are perceived as an investment in employees that an organization is not required to offer at all or to offer to some employees (Eisenberger, Huntington, Hutchison, & Sowa, 1986). SHRP is more individually focused because it signals to employees that the organization cares about and values them. Several researchers have demonstrated that perceived investment by employees results in higher employee retention (Huselid, 1995). This is possible through participation in the decision-making process (PDMP), the fairness of rewards or distributive justice (DJ), and growth opportunities (GOs) (Allen et al., 2003). In the B&H context, in which job security is one of the main goals for employees (Knezović et al., 2020), a supportive environment is of immense importance.

Regardless of the name, the dominant amount of research shows the favorable relationship between HR sets of practices and different levels of organizational performance (Chadwick, 2010). One of the problems in the relationship lies in the inconsistency of practices within the same-labeled systems. This divergence results from three decades of research (Huselid, 1995; Boselie, Dietz, & Boon, 2005; Katou, 2011). The set of SHRPs proposed by Allen et al. (2003) is yet to be validated and tested across the different populations. Allen et al. (2003) used two samples from the United States: salespeople working in the beauty and cosmetics areas, and insurance agents of a large national insurance company. Biswas et al. (2020) replicated the study using HR managers in Bangladesh. Therefore, the first objective of this study was to validate supportive HR practices on the general population of employees in B&H.

Furthermore, as Dyer and Reeves (1995) proposed, the relationship between HR practices and organizational performance exists at different levels, but a more direct relationship is at the bottom of the performance pyramid. This is especially important in terms of turnover decisions because they can be influenced at different levels of the organization. Although abundant research exists on the relationship between human resource management (HRM) and employee retention (Ramlall, 2003; Aguenza & Som, 2018), little work has explained how they are related. This unexplored effect of HR practices on different levels of performance is known as the "black box" (Boselie et al., 2005). Because there still is a need to investigate possible underlying mechanisms that associate HR practices and employee retention, some researchers have argued that organizational commitment can be observed as a mediator, especially between a supportive environment and turnover (Rhoades, Eisenberger, & Armeli, 2001; Allen et al., 2003). Because the concept of organizational commitment is very broad, Mercurio (2015) argued that affective commitment (AC) is more directly related to the organizational outcomes than behavioral and transactional constructs of commitment. Importantly, using the conservation of resources theory, which is based on accumulation, protection, and re-

plenishment of personal resources (Hobfoll, 1989), we can argue that by investing in SHRPs and making them well-functioned, the emotional bond that employees exhibit toward the organization, or simply the AC, should be stronger. Therefore, the second objective of this study was to test whether SHRPs are related to employee retention in the context of B&H by considering the mediating role of AC.

The support that employees receive can be observed through the lens of the organizational and supervisors' support. Because organizational support usually is observed through formal policies and procedures, the role of supervisor support was given more attention recently. As a person who highly influences the atmosphere in which employees learn and develop, a supervisor becomes a focal point (Ellinger, Ellinger, & Keller, 2003; Škerlavaj, Černe, & Dysvik, 2014). In particular, if employees perceive their organization and supervisor to be supportive, they tend to engage more with their work and their organization. Therefore, support is a concept that has a multidimensional effect on the organization, and thus it can be considered to be a valuable moderator between the input activities and outcomes. To effectively perceive any kind of organizational support, employees have to understand that the organization is willing to invest in them. Nishii and Wright (2008) proposed the strategic human resource management (SHRM) framework, in which the employees' perception was an important element when predicting employees' reactions. As HR practices become more supportive, employees' reactions tend to be more favorable toward the organization. The person that can transmit the most effective support to employees is their supervisor. Therefore, the third objective of this study was to investigate the moderating role of supervisors' support on the relationship between SHRPs and employee retention.

2 THEORETICAL BACKGROUND AND HYPOTHESES

2.1 Employee Retention

As the work environment becomes more dynamic, businesses invest more in attracting and keeping key employees (Aguenza & Som, 2018). A concept that has been of immense importance is employees' intention to leave in the future. Ahmad (2018) described it as "an employee's cognitive response to the working conditions of a particular organization and to the economic condition of a nation as a whole, which stimulates an employee for the search of a better alternative job and manifest as the intent to leave an organization voluntarily" (p. 79). Simplistically, it is a situation in which an employee has planned to leave the organization (Saeed, 2014). Booth and Hamer (2007) considered this situation to have negative consequences for the organization because it clearly presents weaknesses in terms of managing employees' behavior.

Because the concept of retention received tremendous attention in the recent period, Mathimaran and Kumar (2017) conceptualized effective retention, describing it as "a systematic effort by employers to create and foster an environment that encourages current employees to remain employed by having policies and practices in place that address their diverse needs" (p. 17). In essence, companies are fighting to keep their best employees in the local and international market because retention is not only for keeping a company's employees but also is a great advertising tool for better recruitment. According to Luthans, Norman, Avolio, and Avey (2008), different components of a supportive work environment can play a crucial role in overall employee attitudes and behaviors, which are keys to the employees staying in the organization. For example, Naz et al. (2020) found a significant relationship between a supportive work environment and employee retention. The relationship was not direct, because organizational commitment and person–organization fit mediated it. This shows that the relationship between organizational characteristics and employee retention is complex, and different elements often have to match to produce the desired result.

Although the concept of human resource practices has been present for decades (Beer, 1984), there is a great question of whether employees believe in those practices. The behaviors of employees and their perceptions of human resource practices differ from employee to employee (Nishii & Wright, 2008). The nature of employees' perceptions can differ depending on how their manager or supervisor tends to implement human resource practices (Wright, 2001). This is why it is important to understand employees' perceptions toward SHRPs on the individual level.

2.2 Supportive HR Practices

A vast amount of research has been devoted to examining systematically human resource practices (Boon et al., 2019). The main idea behind supportive HR practices lies in developing a supportive work environment. This approach is founded on the behavioral perspective of HRM that considers attitudes and behaviors of employees as major antecedents of organizational performance (Schuler & Jackson, 1987). Recalling the "black box" phenomenon, Biswas et al. (2020) introduced the individual-level attributes that should explain more precisely the mechanism through which HR practices contribute to organizational performance. This was in line with the argument by Allen et al. (2003) that SHRPs are designed to influence, in the first place, individual attitudes and behaviors and, through them, organizational performance. This distinguishes SHRPs from the other sets of HR practices. Because there are relatively few studies of this particular set of HR practices, to validate them we followed the proposals of Allen et al. (2003).

Together, as a complementary set, SHRPs can contribute to overall organizational effectiveness. Huselid (1995) argued that human resource practices that contribute to employees' development or motivation should increase employee retention. Huselid also found significant evidence that human resource practices play a negative role in employee turnover. This is why the development and selection of specific SHRPs are crucial to the long-term survival of a company. In particular, a supportive environment that is characterized by a larger extent of employee integration with the processes, transparency, and development opportunities enhances the bond with the organization. When employees feel support from the organization, they are more likely to feel obliged to repay the organization with higher productivity and involvement, and eventually to stay with the organization. This argument is founded on Gouldner's (1960) reciprocity concept, that still is a widely used paradigm in organizational behavior studies (Gervasi, Faldetta, Pellegrini, & Maley, 2021). Although the relationship between HRM and employee turnover is very popular, there is a lack of research regarding SHRP, especially in a non-Western context (Biswas et al., 2020). Therefore, we propose the following hypothesis:

H1: There is a negative relationship between supportive HR practices (decision-making process, fairness of rewards or distributive justice, and growth opportunities) and intention to quit (ITQ).

2.3 The Mediating Role of Affective Commitment

The essence of supportive human resource practices lies in social-exchange theory, which explains the cost–benefit relationship between two parties (Allen et al., 2003; Koster & Gutauskaite, 2019). If an organization can show that it cares about its employees, the employees tend to be more attached to the organization. AC represents the emotional bond between employees and an organization that is developed over time by the interaction of different elements, forces, and people and that, therefore, is not broken easily (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Knezović & Greda, 2021). Marescaux, de Winne, and Sels (2012) argued that the perception of favorability is the key factor related to AC. They explained the relationship between HR practices and AC through two aspects: social-exchange relationship, and distributive preference. For example, an organization that provides more social-emotional resources and fair distribution is expected to have a more committed workforce. Furthermore, because employees consider supportive HR practices to be a "sign of appreciation, commitment and trust towards them" (Marescaux et al., 2012, p. 333), they are more willing to exhibit higher commitment to the organization.

Because SHRPs are designed specifically to be perceived as an investment in or recognition of particular employees (Allen et al., 2003), they can be observed as voluntary practices of the organization. Employees that are more involved in deciding the direction the organization will take (Appelbaum & Sluja, 2013), perceive higher growth opportunities within the current organization, and are treated fairly, which is an important determinant of trust and belief in the organization (McFarlin & Sweeney, 1992), tend to be more committed, especially on an emotional level (Knezović & Greda, 2021). In developing countries, where the basic working conditions very often are not met, organizations that manage to go beyond the basics and provide certain investments in employees are considered to be desired employers. Those orga-

nizations have a reputation for not just being able to attract employees but also to keep them. Therefore, we present the following hypothesis:

H2: There is a positive relationship between supportive HR practices (decision-making process, fairness of rewards or distributive justice, and growth opportunities) and affective commitment.

As a predominant construct of commitment, AC is found to be a significant predictor of ITQ (Carayon, Schoepke, Hoonakker, Haims, & Brunette, 2006; Ahmad, 2018). As a result of positive work experience, AC is related favorably to different outcomes such as organizational citizenship behavior, absenteeism, and eventual intention to remain with the organization (Wasti, 2002). Rhoades et al. (2001) stated that there is a higher chance of employee involvement in organizational activities and intention to stay if they exhibit AC. Haqued, Fernando, and Caputi (2019) argued that "employees with AC demonstrate positive intentions to serve their organizations and are likely to think less about quitting their jobs" (p. 51). In particular, employees that exhibit high AC are emotionally tied to the organization, and that relationship is hard to break. Therefore, AC can be considered to be a mitigator of possible employee withdrawal. Therefore, we propose the following hypothesis:

H3: There is a negative relationship between affective commitment and intention to quit.

Although SHRPs have been presented as a significant predictor of employees' turnover, it is obvious that the direct effect is rather weak. The "black box" phenomenon indicates that the relationship between HR practices and different work outcomes is distant and that there is a need to investigate other intervening variables. We argue that the significant mediator is presented in the AC. This is supported by extensive literature that presented AC as a valid mediator in different workplace relations, especially those related to turnover intentions (Tetteh, Osafo, Ansah-Nyarko, & Amponsah-Tawiah, 2019). The main principle relies on social exchange theory, which emphasizes reciprocity (Fazio, 2017). In particular, AC tends to be adjusted toward the perceived organizational support or, in this case, perceived supportive HR practices. If SHRPs are effective, we expect them to stimulate AC and, in return, to create a more loyal workforce. Because AC is one of the proximal outcomes of strategic HR practices, and AC is an important antecedent of employees' turnover intentions, AC could play a mediating role in the relationship between SHRPs and ITQ. Therefore, SHRPs first would influence AC and subsequently would modify the ITQ. Therefore, we propose the following hypothesis:

H4: There is a negative relationship between supportive HR practices (decision-making process, fairness of rewards or distributive justice, and growth opportunities) and intention to quit.

2.4 The Moderating Role of Supervisor Support

Some organizational characteristics tend to be more suitable for HR practices than others. One is perceived support from the organization and immediate supervisor. Perceived organizational support is considered to be the degree of valuing employees' contributions to their prosperity (Kumar & Ghadially, 1989). In other words, when employees see the organization as being supportive, they feel more obligated to fulfill all expectations with greater efforts. It can be said that positive organizational support makes employees care about the organization and want to help the organization achieve its goals, increases employee organizational commitment, and reduce the tendency for employees to miss work (McColl-Kennedy & Anderson, 2002).

In recent times, the role of the supervisor deviated from the general organizational support concept. In particular, supervisors are the "bridge" between top management and employees, and the success of the company most of the time depends on their relationship with the employees. Perceived supervisors' support is reflected in the degree to which supervisors esteem and take care of the prosperity of employees (Kottke & Sharafinski, 1988). Employees are prone to consider the organizational emergency on their well-being based on collaboration with their supervisors, which leads to a point at which they can establish a relationship with their

supervisor in the same way as with the organization for which they work. PSS can be considered to be an important factor that comes from the organization and its commitment (Cole et al., 2006). The supervisor's support is concentrated on the employee's dedication to the job. Every employee creates their own opinion or belief about the organizational dedication and cares about them by evaluating their commitment, which can be presented favorably or unfavorably (Eisenberger et al., 1986).

The feeling of being supported implies that workers have common goals and values with the organization and that they are identifying themselves with an organization, which results in loyalty to the organization (Meyer, Allen, & Smith, 1993). As previously mentioned, perceived organizational support is trying to fulfill or meet the employees' socio-emotional needs to make them identify with the organization (Eisenberger et al., 2001), which will increase perceived organizational support and greater commitment. PSS is closely connected with perceived organizational support. Supervisors are those who create an atmosphere among employees, and in most organizations they are the key factor in the maintenance and enhancement of employees' commitment (Erdeji, Jovičić Vuković, Gagić, & Terzić, 2016). When employees feel support from a supervisor, it increases their loyalty to the work environment and decreases the intention to leave the organization (Islam et al., 2013). This is in line with leader–member exchange theory (Dienesch & Liden, 1986), which positions a leader, in this case a supervisor, as pivotal in enhancing different employee-related outcomes. Therefore, we argue the following:

H5: There is a negative relationship between perceived supervisor support and intention to quit.

However, perceived support also fuels other process–outcome relations. In particular, the positive atmosphere that is created by organizational support and high supervisor involvement improves the impact of the process on organizational outcomes. Having an opportunity to participate in the decision-making process will influence employee-related outcomes, but in the presence of relevant supporting factors such as resources and the proper supervisor attitude, the impact should be higher. Employees that are not supported adequately are more reluctant to raise their voice or use opportunities for development, and perceive justice in the organization as non-transparent. Without the proper support, the employees tend to trust the organizational goals and values less, which creates a situation of discomfort.

It is crucially important that the right organizational resources and relevant supervisors' profiles are presented to capture the highest value from the employees (Allen & Meyer, 1990; Liu, Chow, & Huang, 2019). The key here is that support from the organization and supervisor can be different because both can pursue their interests. When they are aligned around the same goal, we can expect rather powerful outcomes. However, when they are not, the outcomes can be questionable. In particular, employees do not leave the organization, but their leaders. Pramudita and Sukoco (2018) argued that the employee–supervisor relationship is built on reciprocity, and that when employees receive more support from their supervisor, their performance increases. Such employees are under a greater obligation to repay, and to do so, they have to stay in the organization. Therefore, we extend the model by hypothesizing the following:

H6: Perceived supervisor support moderates the relationship between supportive HR practices (decision-making process, fairness of rewards or distributive justice, and growth opportunities) and intention to quit.

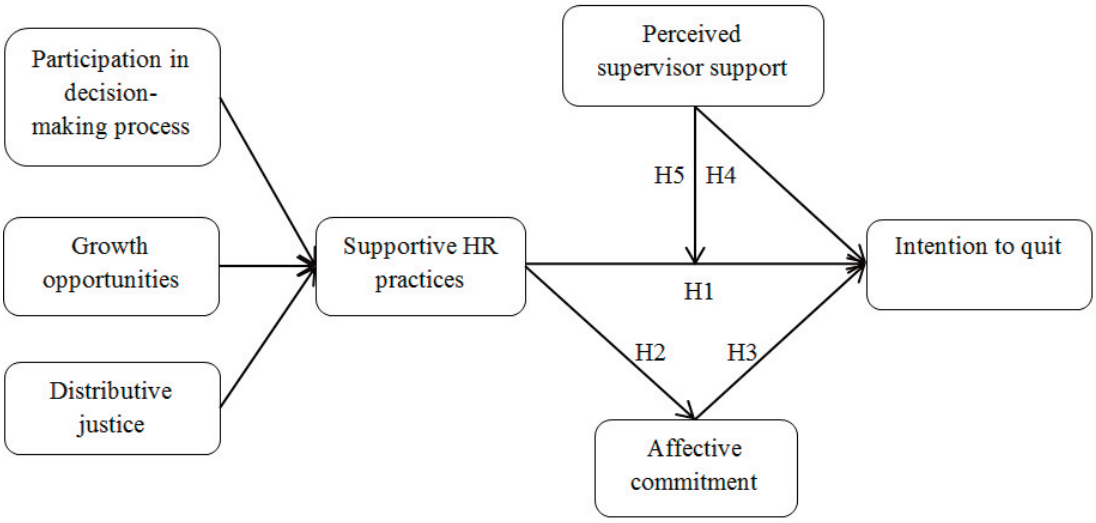
Figure 1 presents the conceptual model that incorporates the hypotheses developed in this study.

3 METHODOLOGY

3.1 Participants and Procedure

This research is based on primary data, for which cross-sectional data collection was used. Questionnaires were distributed in print and online forms to employees in different industries. This helped us to obtain a large and diverse sample, which was important to mitigate the risk of sample

Figure 1: Conceptual model



bias because convenience sampling was used. This method has been used in previous research in which authors encountered problems relating to the lack of reliable data and databases which contained the elements of the entire target population (Vandekerkhof, Steijvers, Hendriks, & Voordeckers, 2019).

For content accuracy and validity, we used the back-translation method because the original constructs were in the English language. Furthermore, to ensure voluntary participation and guarantee data privacy, the first page of the questionnaire provided an option to the respondents to decide whether to participate. After the initial contact, a reminder letter was sent one month later. The final sample consisted of 507 employees.

Among the respondents, 42% were female and 58% were male employees. On average, respondents were 34 years old, and the majority (73%) was highly educated. More than half of the respondents (56%) had more than five years of work experience. Most worked in small and medium-sized enterprises (88%) and were employed in the service sector (60%).

3.2 Measurement

The questionnaire contained seven main constructs. Regarding SHRPs, PDMP was measured using five items. Each item was presented with a seven-point Likert scale developed by Steel and Mento (1987), ranging from 1 = "strongly disagree" to 7 = "strongly agree." DJ was measured using Colquitt's (2001) scale consisting of four items. GOs were measured using four items developed by Weng and Hu (2009). Both DJ and GOs were scored on a five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree."

Regarding the moderating constructs, the PSS was measured using four distinctive items ($\alpha = 0.85$) developed by Colquitt (2001). To measure AC, we used six items ($\alpha = 0.91$) developed by Rhoades et al. (2001), and for ITQ we adopted Colarelli's (1984) scale, which contained two items ($\alpha = 0.88$). All three constructs were measured on a five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree."

3.3 Analyses

3.3.1 Reliability, Validity, Descriptive Statistics, and Correlations

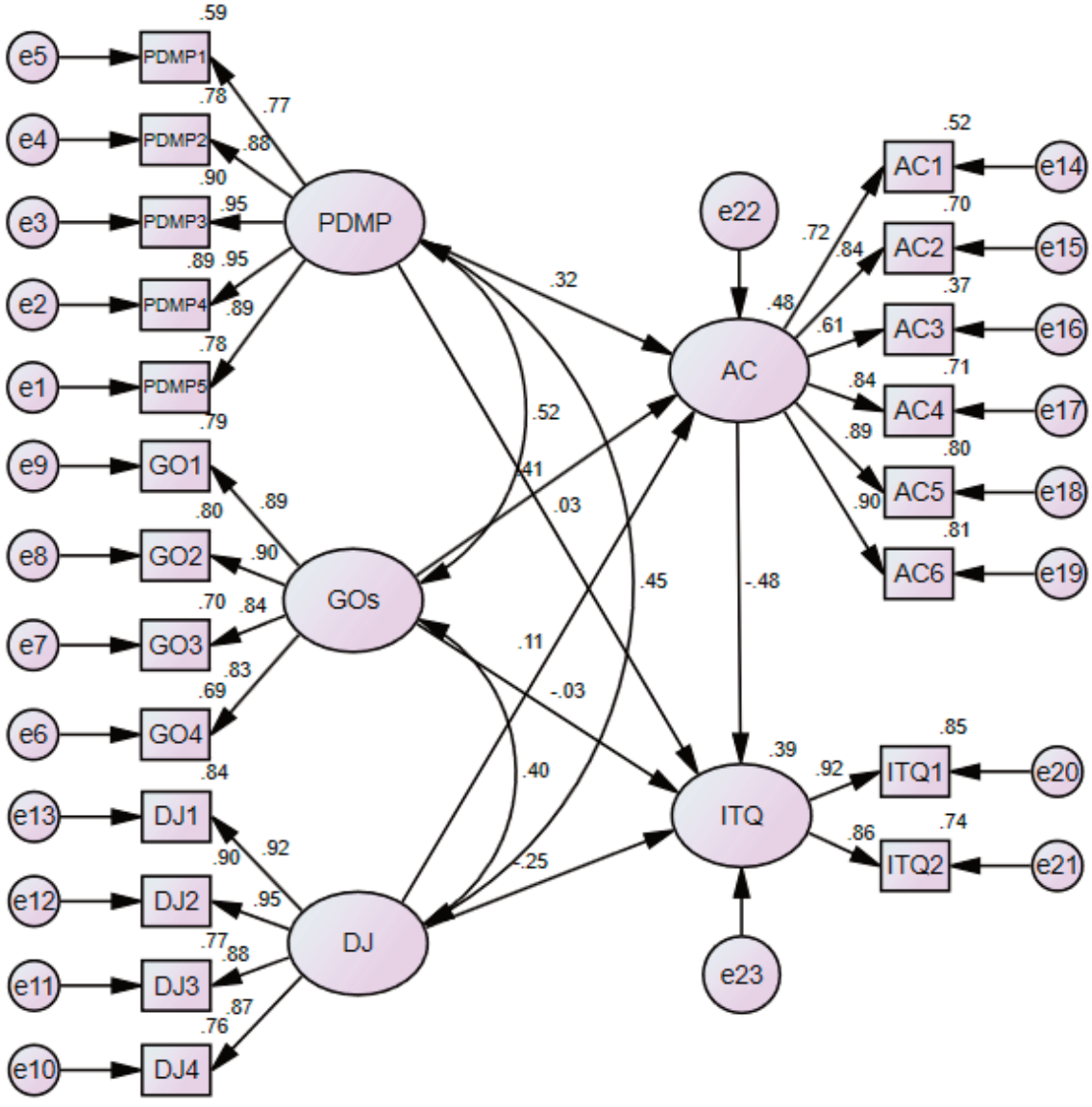
The data used in the study were analyzed in two steps: (1) preliminary analysis, and (2) hypotheses testing. In the preliminary analysis, we checked for reliability and validity concerns using a series of tests (Table 1).

Table 1: Descriptive statistics, reliability, validity, and correlations

		M	SD	α	CR	AVE	1	2	3	4	5	6
1	**ITQ**	2.43	1.22	0.88	0.89	0.80	**(0.89)**					
2	**PSS**	3.75	0.86	0.85	0.89	0.67	-0.40	**(0.82)**				
3	**AC**	3.65	0.87	0.91	0.92	0.65	-0.58	0.59	**(0.81)**			
4	**PDMP**	4.74	1.45	0.95	0.95	0.79	-0.37	0.65	0.58	**(0.89)**		
5	**GOs**	3.97	0.88	0.92	0.92	0.75	-0.41	0.56	0.62	0.52	**(0.86)**	
6	**DJ**	3.11	1.09	0.95	0.95	0.81	-0.45	0.44	0.42	0.46	0.40	**(0.90)**

Note: N =507. $^{*}p < 0.05$; $^{**}p < 0.01$. CR = composite reliability; AVE = average variance extracted; square roots of AVE values are in parentheses.

Figure 2: Final model with standardized estimates



To test the reliability of responses, Cronbach's alpha was used. All the variables scored higher than 0.6, which is a common minimum threshold (Hair et al., 2006). The correlation between variables mostly was moderate. As expected, the correlation of variables with the ITQ was negative, whereas other correlations were positive. Furthermore, we performed confirmatory factor analysis (CFA) on our theoretical model, because we used the already-established constructs. Both convergent and discriminant validity were reached. The results showed that the model fit the data quite well (e.g., x^2 = 928.19, df = 260, x^2/df = 3.57, confirmatory fit index = 0.944, Tucker–Lewis index = 0.935, and root-mean-square error of approximation = 0.071).

In addition, because we collected the data at a single point in time, there was a possibility of common method bias. Following Podsakoff et al.'s (2012) discussion, we performed Harman's single-factor test, a common latent factor test, and a common marker variable test to check for common method bias. The results of all three tests showed that the variance produced by a single factor was below the common threshold of 50%, and thus we could conclude that there was no evidence of common method bias.

3.3.2 Hypotheses Testing

A structural model was used to test the first four hypotheses. The values of the model fit were fairly acceptable (i.e., x^2 = 732.86, df = 179, x^2/df = 4.09, confirmatory fit index = 0.945, Tucker–Lewis index = 0.935, and root-mean-square error of approximation = 0.078). The model is presented in Figure 2.

To test for the mediation, we had to ensure that the basic conditions were met, i.e., a significant relationship between (1) the independent and the dependent variables, (2) the independent and the mediating variables, and (3) the mediating and the dependent variables. The results are presented in Table 2.

Table 2: Standardized weights for structural model

	Std. estimates	SE	t	Note
Model 1: Independent and dependent variables				
PDMP → ITQ	−0.11*	0.04	−2.12	H1
GOs → ITQ	−0.23**	0.07	−4.28	H1
DJ → ITQ	−0.31**	0.05	−6.18	H1
Model 2: Independent and mediating variables				
PDMP → AC	0.32**	0.03	7.14	H2
GOs → AC	0.41**	0.05	8.92	H2
DJ → AC	0.11*	0.03	2.70	H2
Model 3: Mediating and dependent variables				
AC → ITQ	−0.58**	0.06	−13.39	H3
Model 4: Full model				
PDMP → ITQ	0.03	0.04	0.64	—
GOs → ITQ	−0.03	0.07	−0.57	—
DJ → ITQ	−0.25**	0.05	−5.43	—
PDMP → AC	0.32**	0.03	7.10	—
GOs → AC	0.41**	0.05	8.93	—
DJ → AC	0.11**	0.03	2.74	—
AC → ITQ	−0.48**	0.08	−8.04	—

*Note: N =507. *p <0 .05; **p <0 .01. ITQ – R2 = 0.39; AC – R2 = 0.48.*

4 RESULTS

The results for Model 1 showed that SHRPs were negatively related to ITQ (PDMP – β = −0.11, p < 0.05; GOs – β = −0.23, p < 0.01; DJ – β = −0.31, p < 0.01), which provides evidence to support H1. Furthermore, the relationships between SHRPs and AC were positive (Model 2: PDMP – β = 0.32, p < 0.01; GOs – β = 0.41, p < 0.01; DJ – β = 0.11, p < 0.05). These results provide sufficient evidence to support H2. Model 3 showed a negative relationship between AC and ITQ (β = −0.58, p < 0.01). This indicates support for H3. Therefore, we can state that all conditions for mediating effects were met. Finally, in Model 4, the relationships between certain SHRPs and ITQ became insignificant (PDMP – β = 0.03, p > 0.05 and GOs – β = −0.03, p > 0.05). This indicates full mediation through AC. Therefore, additional analysis was conducted to check for the indirect effects of SHRPs on the ITQ through AC. The results are presented in Table 3.

The indirect effect of SHRPs on the ITQ through AC was negative and significant (Table 3). Therefore, taking all the evidence, we can state that the AC partially mediates the relationship between DJ and ITQ (β = −0.06, p < 0.01). In addition, AC fully mediates the relationship between PDMP and ITQ (β = −0.12, p < 0.01) and the relationship between GOs and ITQ (β = −0.25, p < 0.05). Therefore, we can conclude that there is sufficient evidence to support H4.

For H5 and H6, we performed a hierarchical multiple regression. The results are presented in Table 4.

Table 3: Indirect effects through affective commitment with 95% confidence intervals

Mediation	Std. estimates	Lower	Upper	Note
PDMP → AC → ITQ	−0.12**	−0.16	−0.07	H4
GOs → AC → ITQ	−0.25*	−0.35	−0.16	H4
DJ → AC → ITQ	−0.06**	−0.11	−0.02	H4

*Note: N =507. *p < 0.05; **p < 0.01.*

Table 4: Moderating effect of perceived supervisor support

	Model 1	Model 2	Model 3	Note
PDMP	−0.09*	0.01	−0.04	
GOs	−0.23**	−0.16**	0.26	
DJ	−0.28**	−0.26**	−0.25	
PSS		−0.25**	0.22	H5
PDMP×PSS			0.09	H6
GOs×PSS			−0.82*	H6
DJ×PSS			−0.02	H6
ΔR^2	0.237	0.035	0.014	
R^2	0.237	0.272	0.286	
Adjusted R^2	0.232	0.266	0.276	
ΔF	52.070**	23.970**	3.250*	

*Note: N =507. *p < 0.05; **p < 0.01.*

First, we added SHRPs in Model 1. The results showed a negative relationship between each practice and ITQ. Additionally, SHRPs explained 23.7% of the variance in ITQ. Second, in Model 2, we added PSS as a moderating variable. The values showed that PSS was negatively related to the ITQ (β = −0.25, p < 0.01) and that it explained 3.5% of the variance in ITQ. Therefore, there is sufficient evidence to support H5. Finally, in Model 3, we added interaction terms of each SHRPs and perceived supervisor support. The results provided evidence that PSS strengthens the negative relationship only in the case of GOs and ITQ (β = −0.82, p < 0.05). Therefore, there is partial support for H6. The moderating effect of POS is presented in Figure 3.

5 DISCUSSION AND CONCLUSION

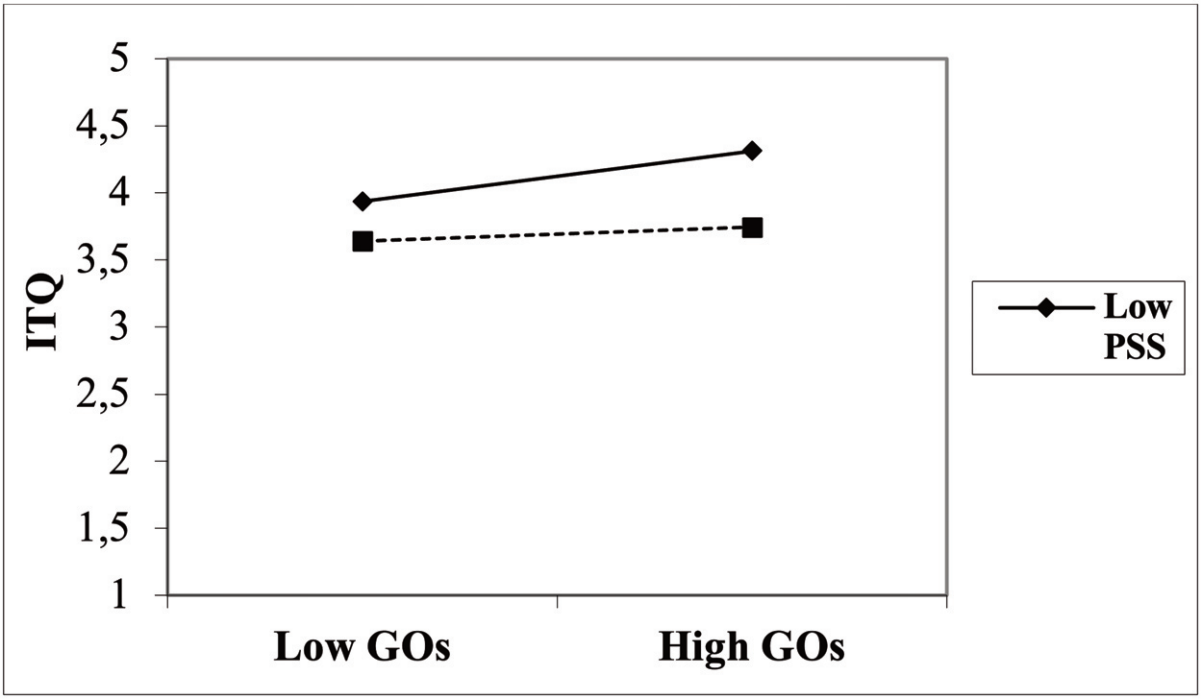
5.1 Theoretical contribution

As B&H experiences a huge brain drain of the well-qualified workforce, employee retention is critical. This study investigated the role of SHRPs in employee retention. Furthermore, because the relationship between SHRPs and ITQ is not direct, and the mechanism of the effect is still to be investigated, we explored possible underlying factors. In particular, we attempted to fill the gap by empirically investigating the relationship between SHRPs and ITQ through the mediating role of AC and the moderating role of perceived supervisor support.

Although the conceptualization of SHRP by Allen et al. (2003) is almost two decades old, validation of the set is still to be supported (Biswas et al., 2020). In addition to the original validation of the set of SHRP using salespeople and insurance agents in the United States, there was a recent validation using HR managers in Bangladesh. This study contributes to the validation of employees across different industries in B&H.

Consistent with the study of Allen et al. (2003), we found that SHRPs are related favorably to ITQ. If employees perceive their working environment to be supportive, they are more likely to exhibit positive attitudes and behaviors toward the organization. This is rooted in social exchange theory and reciprocity, in which SHRPs are considered to be a

Figure 3: Moderating effect of perceived supervisor support on the relationship between growth opportunities and intention to quit



voluntary investment by the company and, therefore to create a sense of obligation toward the company. Reciprocity is even more pronounced in terms of the role of AC. Although this study was based on the work of Allen et al. (2003), we diverged from their work by focusing on AC rather than on the overall three-element organizational commitment. This was because AC is the most important of all commitment constructs for predicting different work-related outcomes. Our results show that there is a negative relationship between AC and ITQ. This is in line with the findings of previous works (Rhoades et al., 2001; Haque et al., 2019). One of the major findings of this study is that AC is the mediator of the relationship between SHRPs and ITQ. Although the role of AC as a mediator in different workplace relations is rather well explored (Tetteh et al., 2019), there is a lack of research into the specific SHRPs and ITQ. The results indicated a significant mediation, which means that when employees perceive their organization to be supportive, primarily through HR practices that are considered to be investments, they are more likely to experience emotional attachment to the organization and eventually to remain with the organization.

Regarding the moderating role of perceived supervisor support, we found mixed results. On the one hand, PSS is negatively related to the ITQ, which is in line with the findings of previous studies (Eisenberger et al., 2001; Islam et al., 2013). On the other hand, we found partial support for the moderating effects of PSS on the relationship between SHRPs and ITQ. Specifically, PSS was a moderator significant only of the relationship between GOs and ITQ. This can be explained by the fact that GOs can be perceived differently under different supervisors. Even when they are relatively scarce, supportive supervisors can create an atmosphere in which employees feel that it is possible to progress and therefore that it is worth staying with the organization. Employees tend to believe more in supervisors who are supportive, and as long as they believe that they can progress at work, they are willing to stay with the organization. Therefore, perceived supervisor support strengthens the relationship between GOs and ITQ. These results provide an extension of the model proposed by Allen et al. (2003), which only dealt with mediators of the basic relationship.

5.2 Practical Implications

Pertaining to the theoretical part, the findings of this study provide some practical implications about employee retention. To generate and develop effective retention strategies, businesses should create a supportive work environment. Firstly, organizations should create an environment in which the employees have a voice in the decision-making process. This could be achieved by promoting the general involvement of employees in the decision-making process through formal and informal meetings or by granting more autonomy to lower-level positions. Secondly, every employee, at each level, has to be rewarded fairly. These rewards may be anything from compensation to vacation, depending on which organizational level the employee occupies. This is especially important for companies that have more-informal policies toward DJ. Therefore, the communication of such decisions is key in promoting transparency across the company. Thirdly, the employees should have a chance to be promoted within the organization, and the best way to provide that is by giving challenging tasks to employees, which will boost their performance. GOs are crucial not just to keep employees, but also to attract new employees. To provide effective opportunities, managers first should understand the career aspirations of employees, whether and to what extent they align with the organizational goals, and how to compromise between an individual and the company.

Furthermore, companies need to understand that SHRPs will not directly influence employees' decisions to quit. These practices will spur and create an emotional bond between employees and the company which eventually will make employees less likely to quit. Although SHRPs are a signal to employees about the company's intentions (Allen et al., 2003), their effect on employees' retention is not immediate. Therefore companies must cultivate a sustainable supportive environment in which employees feel that organizational support is ongoing rather than episodic.

Finally, the supervisors' role cannot be neglected because it also explains the model and partially moderates the relationship between SHRPs and ITQ. Therefore, companies have to consider how to attract and promote employees with particular characteristics into supervisory positions. As

business becomes dynamic, the supervisors' roles shift from universal to individual. In particular, companies should look for supervisors who can develop and sustain healthy personal relations, a one-on-one coaching style, and emotional support.

5.3 Limitations and Future Research

Like many studies, this study also has some limitations, even though it developed important findings regarding supportive human resource practices and their contribution to employees' performance. These limitations can be divided into methodological and theoretical.

Firstly, one of the greatest constraints in this study is that it suffered from the lack of previous research conducted in this region about supportive human resource practices. This caused a lack of opportunity to compare our results with those of previous research. Secondly, this study used a cross-sectional data collection time-frame method, in which the variables were measured in one distinct and limited specific period. Future research may focus on measuring these variables in different periods. Thirdly, this study used a convenience sampling method, which caused limitations on the generalization of the findings to the entire population and population validity. Additionally, this study focused mainly on the measurement of some specific supportive human resource practices. In future studies, the addition of other relevant supportive human resource practices might increase the reliability and variety of findings. In addition, this study gathered data across different industries in B&H. Focusing on one specific industry may provide more-accurate results. Finally, there should be a more thorough theoretical approach to the relationship between strategic HR practices and employee retention by taking into consideration possible new moderators and mediators.

EXTENDED SUMMARY/IZVLEČEK

Ta študija preučuje razmerje med podpornimi praksami ravnanja z ljudmi in namero o prenehanju z mediacijo čustvene predanosti in moderacijo zaznane podpore nadrejenega. Presečna študija je temeljila na anketnem vprašalniku in zajela vzorec 507 zaposlenih iz različnih panog v Bosni in Hercegovini. Za preverjanje hipotez smo uporabili modeliranje strukturnih enačb in hierarhično regresijo. Rezultati so pokazali, da so podporne prakse ravnanja z ljudmi pozitivno povezane z namero o prenehanju. Poleg tega je bilo ugotovljeno, da je čustvena predanost pomemben mediator v tem temeljnem odnosu, medtem ko se je moderacijska vloga zaznane podpore nadrejenega izkazala le kot delno pomembna.

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REFLECTIONS ON APPROACHES TO RESEARCH STRATEGIES IN MANAGEMENT

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Abstract

The literature on research methods, while introducing both inductive and deductive research strategies, as well as the associated qualitative and quantitative research methods, provides the epistemological underpinning of research. However, this literature generally neglects the role of logic in research, which sometimes could lead to inappropriate reasoning in both doctoral thesis work and research papers. Inappropriate reasoning is due primarily to misinterpreting inductive and deductive forms of reasoning in the literature on research methods as a result of neglecting logic. This paper sheds new light on interpreting inductive and deductive forms of knowledge creation including logic, which has played an important role as the science of reasoning in knowledge creation since the time of Aristotle. This paper is speculative in nature, and provides the reflections of an experienced researcher from the management domain.

Keywords: *deductive research, inductive research, role of logic in research, types of research*

1 INTRODUCTION

The primary aim of research in any domain is the creation of new knowledge; thus the validity of research outcomes is of great importance. Janiszewski, Labroo, and Rucker (2016) stated that the validity of research outcomes is strongly related to the appreciation of the contribution of research outcomes to extant knowledge. They proposed two factors that determine the contribution of a research study, namely the quality and the benefit. Quality, they stated, is a twofold phenomenon that includes being grounded in and expanding extant knowledge on the one hand, and the appropriate implementation of the research on the other hand. They defined benefit as the extent to which the new knowledge challenges the existing knowledge. Bryman and Bell (2015) also discussed quality, and they emphasized three criteria against which the quality of business research needs to be evaluated: reliability, replicability, and validity. Bryman and Bell stated that reliability and replicability are strongly interrelated. Whereas reliability relates to measures used to quantify phenomena, replicability implies the potential for achieving the same outcome when a research study is repeated based on the same conditions. Bryman and Bell defined validity as the truth of the conclusions, in terms of generalization, of the research. Mårtensson, Fors, Wallin, Zander, and Nilsson (2016) discussed quality of research in the context of its evaluation, and they asserted that quality research needs to be (1) credible (i.e., coherent, consistent, rigorous, and transparent), (2) contributory (i.e., original, relevant, and generalizable), (3) communicable (i.e., consumable, accessible, and searchable), and (4) conforming (i.e., regulatory aligned, ethical, and sustainable). The importance of a valid generalization also was stressed by Troja (2019), especially in the case of qualitative research, because a superficial generalization could weaken credibility, i.e., validity.

Gray (2004) suggested data triangulation and methodological triangulation in order to ensure validity via reliability. To enhance both validity and practicability Joslin and Müller (2016) emphasized the importance of adopting a double research perspective in terms of observing phenomena based on a dual paradigm. Thus, to

ensure the validity of the research outcomes, Joslin and Müller (2016) strongly suggested the use of triangulation in project studies, such as data triangulation (e.g., adopting multiple data sources), triangulation of researchers (e.g., two researchers are engaged), methodological triangulation (e.g., the use of mixed methods), theory triangulation (e.g., adopting multiple theoretical perspectives), and philosophical triangulation (e.g., adopting different epistemological positions). Joslin and Müller stated that the use of the latter type of triangulation in the investigation of the very same phenomenon is advisable when there is a potential to achieve synthesis of those research outcomes that are derived from such research studies that are based on different epistemological positions.

From the point of view of both validity and quality of research it seems reasonable to consider criticism published in management journals regarding the use of research strategies and methods. Sometimes this criticism is coupled with the moral attitude of the researchers, and authors also tend to couple criticism with the overwhelming use of quantitative research methods. Wolceshyn and Daellenbach (2018), while arguing for the legitimacy of inductive research in management, highlighted the underlying reason for the overwhelming use of quantitative research in the management domain. They stated that this reason is rooted in the emergence of management sciences, when management scholars, to achieve scientific legitimacy by means of emulating the natural sciences, propagated the use of hypothetico-deductive research coupled with quantitative methods. In line with Wolceshyn and Daellenbach (2018), Pernecky (2016) highlighted Émile Durkheim's role in introducing a scientific approach to social science (specifically to sociology) based on his approach to social phenomena. Durkheim's approach proposes that social phenomena are independent of our knowledge of them, and thus they can be observed objectively. In this way, the use of (hypothetico-)deductive research and the underlying positivist epistemological position might result in achieving scientific recognition in the wider community of scientists.

Banks et al. (2016) identified several forms of questionable research practice based on a considerable sample that may occur when hypothetico-deductive quantitative research is applied. These findings, which were reinforced by Schwab and Starbuck (2017), include

- reporting hypotheses selectively, i.e., excluding a hypothesis with statistically non-significant results from the paper;
- excluding data from analysis, i.e., excluding outlier data to achieve statistical significance;
- hypothesizing after results are known (HARKing), i.e., adjusting predefined hypotheses to the outcomes;
- including control variables selectively, i.e., including only those control variables that support the statistically significant outcomes;
- falsifying data, i.e., creating data instead of collecting real-life data; and
- rounding off a *p*-value, i.e., manipulating significance.

Unlike in inductive-qualitative research, the aforementioned practices are experienced primarily when hypothetico-deductive quantitative research, i.e., the most frequently employed research strategy in the management domain, is applied. Several studies have highlighted the specific underlying reasons for this phenomenon. Both Banks et al. (2016) and Recker and Mertens (2019) identified several reasons, such as the pressure on academics to publish, the time pressure of publishing new results as quickly as possible, and the ranking policy of journals. Osterloh and Frey's (2020) criticism of the review practice of many leading journals also might imply potential reasons for conducting questionable research. These circumstances have resulted in replication crises (e.g., Banks et al., 2016) or contradicting research outcomes (e.g., Görög, 2019). All in all, the use of these practices weakens the quality and reliability, and therefore the validity, of the research outcomes.

Regarding inductive-qualitative research, a few critical remarks can be found in management journals. These include the potentially limited knowledge of the researcher and the inherent limits of human observations (Zalaghi & Khazaei (2016). However, Mohajan (2018) while pointing out poten-

tial advantageous features of inductive-qualitative research, identified a couple of disadvantages which might limit the validity of research results, including difficulties in demonstrating scientific rigor related to collecting data, and the fact that these research results could not be verified objectively.

Thus, one might conclude that, apart from the researchers' honesty, validity of a research outcome is determined primarily by the use of an appropriate research strategy and methods, or rather by the appropriate use of the strategies and methods. In this way, authors of books on research methods have primary responsibility, because both doctoral students and practicing researchers rely on these books to a great extent. Doctoral students are trained from these books, and practicing researchers refer to these books when justifying the appropriateness of the research strategies and methods deployed in their research. Although articles published in management journals have discussed the use of research strategies (such as inductive, deductive, or abductive) or analytical methods (such as qualitative and quantitative), the authors of such papers basically agree with the book authors.

What does characterize the books, or at least the books cited in this paper, on research methods? Most of these books, while focusing on the wider domain of social sciences, provide an epistemological background of applying different research strategies and the associated analytical methods (including data collection methods as well), or even introducing the appropriate rhetorical aspects in terms of style of writing. However, it is hard to find a book on research methods that provides insight into logic, i.e., the science of reasoning. Tsang (2017) stated that courses lacking logic in doctoral schools result in inappropriate reasoning in thesis works and in the research-based manuscripts submitted to management journals. Logic seems to be a certain kind of interface between philosophy and research strategies. It implies that researchers can operationalize their philosophical (both ontological and epistemological) stance and the associated research methodology by means of the tools of logic. Lacking familiarity with logic might lead to misinterpreting the use of research strategies, in terms of both the inductive and deductive forms of creating new knowledge.

This paper sheds fresh light on interpreting inductive and deductive forms of knowledge creation in relation to the philosophy of science, and the science of logic (as the science of reasoning) which have played an important role since the time of Aristotle in creating scientific knowledge. The basics of logic is introduced in a separate section. Interpreting this approach to knowledge creation provides the potential for, as collateral aims, understanding the unit of analysis, proposing basic research types, and a spiral-based evolution process of knowledge creation in management. This paper is speculative in nature, especially the last section, which summarizes the concluding thoughts of the author. To make this apparent, the first-person pronoun is used in that section.

However, before introducing the existing approaches to the topic, a terminological issue is discussed. A few authors use the term "approach" when discussing inductive and deductive methods of conducting research, whereas others use the term "strategy" when discussing these methods of research. In this paper when the existing literature is introduced, the term used by the authors of each paper is adopted. However, when my own views and proposals are introduced, I use the term "strategy" to classify inductive and deductive research.

The paper is organized as follows. The following two sections introduce how research methods and the underlying strategies to conducting research are interpreted in management articles that discuss the perceived use of these tools, and in books on research methods. The interpretations given in the books are reflected in the articles. This implies that the articles show how the research methods offered in the books are understood and perceived by the researchers in the course of using them. This justifies introducing the approaches available in articles and books in separate sections. Those two sections are followed by the introduction of approaches to research in the literature on logic, beginning with philosophers who stress the role of logic in research. In this way, the paper moves from an application level toward a more theoretical level. The paper ends with concluding thoughts, bearing in mind the underlying epistemological stances when interpreting the use of deductive logic in management research.

2 FINDINGS IN MANAGEMENT ARTICLES DEVOTED TO THE USE OF RESEARCH METHODS

Although each research paper published in management journals introduces the research methods applied in the underlying research, several papers published in these journals have discussed research methods applied in management research. Aldag and Stearn (1988) reported the use of various research methods, and the increasing number of qualitative analytical procedures in addition to the quantitative analyses. Bansal, Smith, and Vaara (2018), while emphasizing the role of qualitative data-based inductive research in theory development, stated that this kind of paper submission has reached 20% of the total submissions to the *Academy of Management Journal*. Bansal, Smith, and Vaara also stressed the need to use different types of qualitative research methods in addition to case-based positivist research. In the project management domain, Müller and Söderlund (2015) highlighted that research studies are very traditional because researchers prefer using questionnaires and quantitative analyses, and emphasised the need to consider context specificity in such research. Barratt, Choi, and Li (2011) argued for conducting case-based qualitative research in operations management, which would contribute to developing the theoretical underpinning of this domain area. Gottfredson and Aguilis (2017) highlighted the importance of adopting a dual deductive–inductive research method to determine the relationships between leadership behaviour and follower performance reliably.

Whitfield and Strauss (2000) stated that there is a definite shift from inductive research adopting qualitative analyses toward deductive research adopting quantitative analysis in order to build (inductively) and test (deductively) theories. However, Whitfield and Strauss did not say that each deductive research is *ab ovo* quantitative or that each inductive research is *ab ovo* qualitative in nature. Hyde (2000), like Whitfield and Strauss (2000), clearly differentiated quantitative and qualitative research, and stated that quantitative research generally is based on a deductive process, whereas qualitative research is based on an inductive process. Hyde further argued for a balanced use of both induction and deduction in each research in order to avoid neglecting useful theoretical perspectives due to extreme induction, or developing (new) theory due to extreme deduction. Those papers considered deductive research to be a theory-testing effort which aims to justify whether a given theory or concept is valid in a given context, whereas inductive research is considered as a theory-building process which aims to generalize specific occurrences of the investigated phenomenon.

In addition to using inductive and deductive research, Kovács and Spense (2005) argued for deploying abductive research in logistics to support theory development in this domain. Abductive research is understood here as a certain combination of inductive and deductive research. In an abductive research process, a theory is matched with challenging real-life cases, and, as a result of resolving their contradictions, a new or a further developed theory is formulated and applied. Although abductive research is used in management research less often than deductive and inductive research, Behfar and Okhuysen (2018) emphasized its advantageous features. In their view, this research method is "an inseparable, indispensable, and valuable approach linking the development of explanation and the testing of resulting hypotheses to advance theory" (Behfar & Okhuysen, 2018, p. 323). Thus, they stated that an abductive research process has an outstanding role in theory development when resolving and explaining contradictions or inconsistencies experienced in the phenomenon researched. Therefore, they suggested that an abductive research method should substitute the traditional deductive and inductive research methods.

In terms of papers which report or propagate the use of different research types, articles have been published in management journals which provide a broader picture of undertaking management-related research.

Janiszewski, Labroo, and Rucker (2016) differentiated deductive-conceptual research and non-deductive-conceptual research. Deductive-conceptual research focuses on a theory, concept-to-theory, or concept relationship to construct new theoretical knowledge; that is, the primary aim is to contribute

to theory development by means of testing the proposed new construct. Non-deductive-conceptual research focuses on relationships between empirically observed phenomena to provide explanation. Zalaghi and Khazaei (2016) approached this issue by making reference to logic, and they differentiated deductive and inductive methods. A deductive method starts by considering general concepts from which a specific conclusion is drawn based on formal logical reasoning. An inductive method starts by observing a specific phenomenon, and then the conclusion drawn is generalized to a similar context. This generalization might lead to constructing a new or novel theory or concept. Recker and Mertens (2019), similarly to Bansal, Smith, and Vaara (2018), used the term "hypothetico-deductive research" when they discussed the importance of significance testing of null hypothesis. This term was used for deductive research in recent management literature, because, according to the broadly accepted notion, in deductive-quantitative research a hypothesis is deduced from extant literature.

Pathirage, Amaratunga, and Haigh (2008) and Wolceshyn and Daellenbach (2018) also adopted the terms "deductive" and "inductive" to differentiate between the two fundamental approaches to conducting research. They considered the terms in the context of epistemology, that is, from the point of view of how knowledge is created and acquired. Bearing in mind the two extremes, Pathirage, Amaratunga, and Haigh (2008) emphasized positivist and social constructivist epistemological positions, and in light of these two positions they highlighted the fundamental differences between deductive and inductive research. Thus, they stated that because positivists believe in an external world which is independent of our knowledge of it (even the social world), the researcher is independent, and is able to reveal causal relationships by means of deductive thinking. Social constructivists believe in a socially constructed (non-objective and non-external) world; thus the researcher is part of the observed phenomenon. Therefore, a researcher collects data from which a general understanding of a phenomenon is achieved by means of inductive thinking. Bredillet (2004) stated that relying on a "being ontology" which postulates a fixed reality and the associated positivist mirror is not appropriate in project-related research, and argued for adopting a "becoming ontology" postulating a changing reality and the associated subjectivism to achieve effectiveness of project management research outcomes.

Despite the slightly different phrasing used by the aforementioned authors, the basic concepts of conducting management research are understood similarly; however, the terms for research approaches (deductive and inductive) and analytical approaches (quantitative and qualitative) sometimes are used as synonyms. Studies differentiate (hypothetico-)deductive and inductive research, and consider these research strategies basically in the same way, although Zalaghi and Khazaei (2016) presented a different notion about deductive and inductive research. However, there seems to be an agreement among studies regarding the strong connection between (hypothetico-)deductive research and the use of quantitative methods on the one hand, and the connection between inductive research and the use of qualitative methods on the other hand. The scope of the research methods propagated for use in management research has been broadened, and the importance of epistemological underpinning of conducting management research has become common.

In addition to the epistemological underpinning of research, a few studies have shed light on the role of axiology in research as well. Axiology is concerned with the involvement of the researchers' value system in the research, i.e., it addresses the question of whether the relationship between the phenomenon being observed and the researcher has an impact on the research (e.g., Pathirage, Amaratunga, & Haigh, 2008). Reiter (2017) argued that researchers' engagement in terms of their positionality is needed in the pure social sciences (e.g., sociology). Bansal, Smith, and Vaara (2018) adopted the term "engaged scholarship," which implies that a researcher is part of the context of the phenomenon being observed. In this way, they stated that the involvement of the researchers' value can strengthen the insight into a researched phenomenon. Hudson and Okhuysen, (2014) and Behfar and Okhuysen (2018) stated that it is naïve to assert that researchers might value neutral participants in the research process.

3 APPROACHES TO RESEARCH IN BOOKS DEVOTED TO RESEARCH METHODS

Although several books have been published in the last decade introducing research methods applicable in social sciences, the number of books devoted to management research is limited. Thus, this section of the paper also considered a few books on the wider scope of social science-related research.

Gray (2004) differentiated deductive and inductive research in the context of organizational research based on the relation between a theory or concept and the research aim. In deductive research the aim is to empirically justify or falsify relationships between theories or concepts asserted in the predefined hypotheses, whereas in inductive research the aim is to construct generalizations and relationships between concepts or theories, or even to construct new theories from the outcomes of empirical observations. Gray (2004) emphasised the potential for a combined use of deductive and inductive processes. Bryman and Bell (2015) used the terms "deductive" and "inductive" theory or strategy alternately. They stated that in deductive research, hypotheses are *deduced* from the extant literature, i.e., from what is already known, whereas in inductive research a theory development is *inferred* from the empirical findings. Akin to Gray's (2004) view, Bryman and Bell did not emphasise a definite separation between deductive and inductive research, and referred to their combined use as abduction. Jensen and Lauire (2016) differentiated between deductive and inductive research based on the nature of empirical information. In their view, quantitative methods rely on numerical data and generally adopt a deductive way of thinking, while qualitative methods rely on non-numerical data and generally follow an inductive method. They referred to the combination of quantitative and qualitative methods as mixed methods.

Tracy (2020) also differentiated deductive and inductive reasoning, using terms from logic. However, bearing in mind a pure social science context, Tracy referred to these as *etic* and *emic* understandings. Emic refers to *emerge*, which implies inductive research aiming at the introduction of human behaviour in a context-specific manner from the point of view of the actors to develop general trends, whereas etic (*external*) refers to deductive research, in which predefined external theories are used to describe and explain a situation. Tracy stated that a qualitative analysis, compared with a quantitative method, implies more elements of subjectivity. Troja (2019) propagated a stepwise-deductive inductive mode which includes a phase from empirical data to concepts or theories as an inductive process. Then, as a deductive process, there is a phase from theoretical toward empirical. However, this model resembles abduction (e.g., Bryman & Bell, 2015).

Most research method books discuss the question of research approaches (deductive or inductive) and the associated data analysis methods (quantitative or qualitative) alongside the epistemological positions. Gray (2004) stressed that selecting a data collection method (e.g., interviews or questionnaires) is determined by the research methodology used (e.g., grounded research or survey research). This methodology is influenced by the theoretical perspectives adopted by the researcher (e.g., positivism), and also is determined by the researcher's epistemological position (e.g., objectivism). Epistemology, as the philosophy of science, is concerned with creating knowledge adequately, whereas ontology is concerned with the external world in relation to which research as knowledge creation is understood. Gray discussed three epistemological positions: objectivism, constructivism, and subjectivism. In Gray's (2004) view, objectivism postulates as an ontological position an objective external world, and the related theoretical perspective is positivism, and thus research involves discovering the objective external world primarily by means of deductive research. Constructivism, in his view, also postulates as an ontological position an objective external world, but its related theoretical perspective is interpretivism, and thus research is about creating knowledge by means of interaction with the external world within the frame of inductive research. Subjectivism, Gray states, does not postulate that an external world objectively exists; thus, knowledge is imposed on the world by the subject, i.e., this world could be interpreted in a qualitative-inductive way.

Creswell (2012), in addition to the epistemological determination of methodological issues, emphasised the role of rhetoric and axiology in research, which include the role of values adopted by the researcher, i.e., whether the researcher's values could

shape the interpretation of the research outcomes. However, in his approach, positivism and constructivism, to name just two concepts, are referred to as paradigms or worldviews, whereas Gray (2004) referred to these concepts as theoretical perspectives. Tracy's (2020) approach to paradigms is similar to that of Creswell (2012), although she emphasized the role of positivist, interpretative, critical, and postmodern paradigms. She also emphasized that choosing a certain paradigm precludes choosing another one simultaneously. Tracy (2020) referred to the term "theoretical framework" (e.g., interpretivism or ethnography) as a system of principles to explain different phenomena. Kuhn's (1970) broadly accepted interpretation of a paradigm includes a combination of ontological stance, epistemological position, and research methodology.

For epistemological positions, Bryman and Bell (2015) differentiated two fundamental philosophical stances, namely positivism and interpretivism, both of which include different genres. They stated that positivism is associated with the natural sciences, and therefore it cannot be applied properly in social science research. According to Bryman and Bell, because the emphasis in social research is on understanding human behavior, interpretivism is considered to be an appropriate epistemological position. Bryman and Bell (2015) also differentiated ontological positions, such as objectivism and constructionism. Whereas objectivism postulates a reality which is external to the social actors, constructionism says that the external world is a social construct. Bryman and Bell also emphasized the role of both ontological and epistemological positions in formulating research questions and conducting research, which leads to adopting a certain paradigm (e.g., Kuhn, 1970). The latter postulates adopting a certain research design (e.g., longitudinal research) which provides guidance for implementing research methods (e.g., questionnaire-based data collection). Bryman and Bell (2015) used the term "strategy" (similar to differentiating the terms inductive and deductive) when differentiating quantitative and qualitative research. In their view, a quantitative research strategy, which emphasizes collecting and analyzing data quantitatively, adopts an objective ontological position and a deductive approach to test theories. A qualitative research strategy, they stated, which emphasizes collecting and analyzing data non-numerically, adopts constructivism as an ontological position and primarily uses an inductive approach to theory generation. Thus, Bryman and Bell considered the phenomenon of mixed methods as a combined use of quantitative and qualitative research strategies.

Drouin, Müller, and Sankaran (2013) stated that very few project-related studies have adopted contemporary epistemological approaches, and they argued in favor of adopting theories from the broader social sciences (e.g., organizational and behavioral sciences) to innovate project management research based on new approaches (such as pragmatism and postmodernism) by using novel research methods (e.g., action research and ethnographic study).

Books on research methods, especially those recently published, also shed light on the role of axiology in research. Tracy (2020) defined axiology as a discipline which deals with values that are associated with a certain research area. This approach postulates value-laden research, e.g., the conscious adoption of the value of social justice in sociology. Bryman and Bell (2015) also approached this question in terms of values which reflect the beliefs and feelings of the researchers. According to Bryman and Bell, the influence of values manifests primarily in terms of sympathy or antipathy when qualitative research and interview-based data collection are applied. They also stressed that research might be consciously value-laden.

Although there are differences in approaches to research, especially in terms of understanding epistemology, the underlying concepts of conducting research are understood basically in the same way despite the use of slightly different phrasing when the basic concepts of research are explained. These primarily include how the terms "deductive" and "inductive" research and, respectively, "quantitative" and "qualitative" research are understood and explained. Most authors agree to a certain extent that deductive research is used to provide empirical justification or falsification of theories, whereas inductive research is used to generate theories from empirical data. However, differences in authors' approaches are important to understanding and explaining epistemological positions and their genres.

4 APPROACHES TO RESEARCH IN PHILOSOPHY AND LOGIC

Both the papers published in management journals and the books on research methods cited in the previous sections emphasize the role of philosophy in research. Tsang (2017) stressed the importance of philosophical perspectives in research, stating that a philosophical perspective includes beliefs and assumptions about the external world and also the way in which a person knows about this world. Thus, a philosophical perspective provides a worldview for a researcher.

Marsh, Ercan, and Furlong (2018) considered this issue in a broader philosophical context, stating that a researcher's attitude toward an observed phenomenon is shaped by their adopted ontological and epistemological position. Ontology and epistemology are the two main branches of philosophy, and although they are related, they are different. Central to ontology is the question of whether there is a real world which "is independent of our knowledge of it" (Marsh, Ercan, & Furlong, 2018, p. 18). Epistemology is the theory of knowledge, and its primary question is what and how one can know about the world. In terms of the ontological positions, Marsh, Ercan, and Furlong differentiated between foundationalism and anti-foundationalism. Whereas foundationalism postulates a real world which is independent of our knowledge of it, anti-foundationalism postulates a socially constructed world. As the most common categorization, Marsh, Ercan, and Furlong (2018) considered scientific (also referred to as positivist) and hermeneutic (also referred to as interpretist) epistemological positions. Adopting a foundationalist ontological position leads to adopting a scientific, i.e., a positivist epistemological position, stating that the real world can be known objectively. Thus, this approach relies on deduction and is concerned with causal relationships between phenomena (using theories to define hypotheses) to produce not only explanatory but predictive models as well by means of quantitative methods. However, an objective direct observation is needed of whether the prediction succeeds and the deduction is valid knowledge. Adopting an anti-foundationalist ontological position leads to a hermeneutic, i.e., an interpretist epistemological position, stating that the socially constructed world might be interpreted only by means of qualitative methods. Although the interpretist position includes different subsections (genres), the underlying features of these genres are similar to the previously mentioned characteristics of interpretism. Because these two epistemological positions are fundamentally different, Marsh, Ercan, and Furlong (2018) stressed that these positions cannot be adopted by a researcher interchangeably.

When differentiating positivist and interpretist epistemological positions as fundamental positions, Marsh, Ercan, and Furlong (2018) stressed the importance of realism, which might be considered to be a certain kind of in-between category. They stated that realism adopts foundationalism as an ontological position, and thus it uses causal statements as hypotheses when observing certain phenomena and their relationships. However, realists state that there are objective social phenomena, and their relationships, that cannot be observed directly, but only interpreted as they are perceived. Thus, realism accepts the use of both quantitative and qualitative research methods.

Pernecky (2016) provided an overview of the history of seeking true knowledge, and also considered the concepts of logic. He stated that the debate over deductive versus inductive thinking has its roots in ancient Greece, and has been continued over the following centuries. Empiricists argued for the supremacy of experience, which postulates inductive thinking, whereas rationalists stated that true knowledge is an achievement of reasoning, i.e., logic which postulates deductive thinking. The underlying deductive thinking of rationalism goes back to the ancient Greek mathematician Euclid, especially his axiomatic system (e.g., Szabó, 1967). However, the outcome of a deduction needs to be justified or falsified by means of experiments or empirical observations. The aim of inductive reasoning is to achieve generalizations by means of observing particular phenomena and inferring general law in terms of theory.

Because both deductive and inductive reasoning are underlying tools for creating new knowledge, they are discussed further based on literature on science of reasoning, i.e., logic. Logic is a method by means of which correct reasoning can be differ-

entiated from incorrect reasoning (Copi, Cohen, & McMahon, 2014). An argument, i.e., reasoning, might be considered to be a sequence of sentences, i.e., a sequence of propositions, which starts with premises and ends with a conclusion (Gamut, 1991).

Propositions are important parts of reasoning because whether something is true or false is stated by means of sentences which are referred to as propositions (e.g., Copi, Cohen, & McMahon, 2014). Although a proposition may include a simple statement (a categorical assertion), it also might be compound, including complex assertions. Copi, Cohen, and McMahon (2014) differentiated the following compound propositions:

- Conjunctive, e.g., "in winter the temperature is below zero, and it is frequently snowing," i.e., each part can be asserted separately.
- Disjunctive (alternative), e.g., "at the end of the road you can turn left or right," i.e., only one of the components is true.
- Hypothetical (conditional), e.g., "if I am sleepy, then I go to bed," i.e., only the if–then proposition, but none of the components is asserted.

Using propositions, one can construct arguments, which include inferences resulting in the conclusion drawn. Thus, the structure of arguments includes propositions (commonly referred to as premises) and a conclusion, in which the premises support the conclusion. The conclusion of an inference may be used to form a new premise in a following structure of argument. Depending on how the premises support the conclusion, an argument, and the implied inference, might be deductive or inductive. When the conclusion is supported conclusively by its premises, the argument is referred to as deductive; however, when this conclusiveness is not ascertained, the argument (and the implied inference) is inductive.

The difference between deductive and inductive reasoning is based on the nature of the claims which are made using arguments about the relations between premises and a conclusion (e.g., Copi, Cohen, & McMahon, 2014). In a deductive argument the conclusion, as a product of inference of the argument, comes from the premises as an absolute necessity. However, in an inductive argument the conclusion, as a product of inference of the reasoning, comes from the premises with a certain degree of probability. The following two examples shed light on this difference:

1) Each six-year-old child has to go to school. Peter is a six-year-old child. Therefore, Peter has to go to school.
2) Most six-year-old children have to go to school. Peter is a six-year-old child. Therefore, Peter probably has to go to school.

The difference between deductive and inductive reasoning places the question of validity at the forefront. Central to logic is highlighting what makes an argument valid, i.e., what makes a valid inference (e.g., Gamut, 1991). Gamut also highlighted that from the point of view of validity, the sequence of sentences, i.e., of the propositions (premises then conclusion), is of vital importance because this sequence ensures the validity of argument schemata, i.e., of the structure of an argument. When true premises irrefutably underpin the conclusion, the argument is considered to be valid. Because this is not the case when an inductive argument is applied, the question of validity is considered in connection with deductive arguments. "A deductive argument is valid when, if its premises are true, its conclusion must be true" (Copi, Cohen, & McMahon, 2014, p. 24). The conclusion of an inductive argument can never be certain, although the level of its probability can vary. Thus, one example of inductive reasoning might be stronger or weaker than another. "Even when the premises are all true, however, and provide strong support for the conclusion, that conclusion is not established with certainty" (Copi, Cohen, & McMahon, 2014, p. 25) in the case of induction. Bearing in mind this difference between deduction and induction, it is clear that considering further information can change the probability of an inductive argument, whereas the validity of deductive reasoning will not change due to additional information. Unlike the validity of an argument, the question of truth is understood related to the propositions, especially to those which are considered to be the premises, stating something about a case. When the premises are true and the argument is valid, this argument is referred to as sound (e.g., Copi, Cohen, & McMahon, 2014). Thus, a sound argument necessarily includes a true conclusion.

Although a simple argument may consist of one premise, for the purpose of scientific reasoning, Aristotle developed his syllogistic logic (e.g., Gamut, 1991) in which two premises are used to draw a conclusion. Thus, syllogism is a deductive argument in which the conclusion is inferred from two premises. The validity of syllogism requires the use of its standard form, which implies, further to the internal structure of the propositions, a specified order of the propositions (argument schemata). In terms of the proper internal structure of the propositions, of both premises and the conclusion, the concepts of major term, minor term, and middle term are differentiated (e.g., Copi, Cohen, & McMahon, 2014) in the following example:

All elephants can fly.
Jumbo is an elephant.
Therefore, Jumbo can fly.

In this example the predicate of the conclusion is *fly*, and this is referred to as the *major term* of this syllogism. The subject of the conclusion is *Jumbo*, and this is referred to as the *minor term* of this syllogism. *Elephant*, referred to as the *middle term*, is in both the premises, but never in the conclusion. The premise in which the major term (fly) is included is referred to as a major premise, whereas the premise in which the minor term (Jumbo) is included is referred to as a minor premise. A categorical syllogism has a standard form when both the premises and the conclusion are a standard form of categorical propositions (e.g., Copi, Cohen, & McMahon, 2014), and these are arranged in a predefined order, i.e., the major premise is first, the minor premise is second, and the conclusion is last. The validity of this syllogism depends on this form.

Further to categorical syllogism which is constructed from categorical propositions, a disjunctive syllogism consists of one disjunctive (alternative) proposition as one of the premises. The other premise denies one of the alternatives stated in the first premise. Thus, a disjunctive syllogism requires the use of a logical constant such as *or*, and the valid conclusion of a disjunctive syllogism includes an alternative that is not denied. For example:

At the end of the road you can turn left or right.
At the end of the road you can't turn left.
At the end of the road you can turn right.

A hypothetical (conditional) syllogism consists of conditional propositions which include an antecedent (e.g., if I am sleepy) and a consequent (e.g., then I go to bed). Whereas the pure hypothetical syllogism relies on two conditional propositions, the mixed hypothetical syllogism is based on one conditional proposition and one categorical proposition as premises. For example:

If I am sleepy, then I go to bed.
I am sleepy.
Then I go to bed.

In this form of mixed hypothetical syllogism (modus ponens) the antecedent included in the conditional premise is confirmed by the categorical premise, whereas the conclusion states the consequent (e.g., Gamut, 1991). In other forms of mixed hypothetical syllogism (modus tollens), the categorical premise denies the consequent stated in the conditional premise, and the antecedent is denied in the conclusion (e.g., Gamut, 1991). The structural validity of the mixed hypothetical syllogisms requires the use of appropriate logical constants, such as *if* ... *then*, *if and only if*, and *not*.

Again, due to the relations between the premises and the conclusion, in the case of deduction the conclusion comes from their premises with certainty, i.e., if a deduction is valid and its premises include true assertions, the conclusion must be true. However, in the case of induction, also due to the relation between its premises and the conclusion, the resulting conclusion is true with a certain probability. To strengthen the probability of an inductively achieved analogical conclusion, Copi, Cohen, and McMahon (2014) drew attention to considering an appropriate number of similar and dissimilar as well as relevant cases, whereas the conclusion needs to be formulated modestly. Further to analogy, an inductive inference might relate to casual relationships as well, in which a *cause-and-effect* relationship is supposed between two phenomena. In this case, it

is postulated that similar effects are produced by similar causes, i.e., generality is available due to the causal law. Inductive generalization, i.e., formulating a general proposition from particular experiences, might be achieved by simple enumeration. Thus, the higher the number of observed causalities, the greater is the potential for a more probably true inductive generalization. However, a negative case casts doubt on the truth of this generalization (e.g., Copi, Cohen, & McMahon, 2014).

The conclusion of any inference might be used as a premise of further inferences to provide building blocks for developing scientific explanations which could lead to constructing general truths or theories which are empirically verified (e.g., Copi, Ercan, & Furlong, 2014). Copi, Ercan, and Furlong stated that this process includes several steps, such as problem identification, formulating preliminary hypotheses, collecting additional evidence to adjust preliminary hypotheses and formulate explanatory hypotheses, drawing and testing consequences, and applying the new knowledge (theory). According to Copi, Ercan, and Furlong, central to this process is formulating hypotheses which are considered to be appropriate when they (1) are compatible with previously established theories, (2) have predictive or explanatory power, and (3) imply relative simplicity.

5 CONCLUDING THOUGHTS ON CONDUCTING RESEARCH IN MANAGEMENT

The preceding brief overview of the research approaches or strategies discussed in management journals and introduced in books on research methods makes it possible to provide a concluding summary of logic and its relation to the philosophy of science. This summary focuses on interpreting deductive and inductive research in the management domain, and its relation to epistemology (philosophy of science).

Addressing these issues provides potential for further discussion and interpretation of questions, such as the unit of analysis in management research and the basic types of management research. All this helps to interpret the evolution process of management knowledge as a certain kind of knowledge creation spiral.

Although terminology tends to differ sometimes, the authors of studies in management journals and of books all consider and interpret both deductive and inductive research strategies. It is accepted broadly that deductive research follows a theory–hypotheses–justification/falsification process, whereas inductive research is based on an observation–pattern/hypotheses–theory process. Research tends to associate a deductive approach with quantitative analysis, and an inductive approach with qualitative analysis. However, the broadly used term "hypothetico-deductive research" implies, and a few authors (e.g., Bryman & Bell, 2015) state *expressis verbis*, that in deductive research hypotheses are *deduced* from extant literature, i.e., from what we already know. These authors also state that in the course of inductive research a theory is *inferred* from the empirical findings.

In the science of logic, inference as the form of reasoning is considered to be a process in which the premises lead to a conclusion. An inference, depending on the relations between its premises and its conclusion, is either deductive or inductive. Although it seems acceptable that in inductive research, knowledge is inferred inductively as a result of inductive generalization, stating that hypotheses are deduced from extant knowledge in hypothetico-deductive research is questionable in terms of logic. To make this issue clear, we need to discuss further the approaches to knowledge creation.

Gray (2004) introduced three types of studies: (1) exploratory, which aim to determine a situation; (2) descriptive, which aim to describe a phenomenon as it is; and (3) explanatory, which focus on highlighting relationships between phenomena. To produce these studies, different types of research need to be completed. Both exploratory and descriptive studies require observation in order to introduce a new phenomenon or an undiscovered aspect of a known phenomenon. An example is introducing the concept of a project as a temporary organization (e.g., Lundin and Söderholm, 1995). However, an explanatory study might require either inductive or deductive research. When the relationships between phenomena are highlighted as a result of inductive generalization the researcher, based on existing knowledge of these phenomena, *assumes* (but does not deduce) a certain relation-

ship between them. This assumption is formulated as a hypothesis; then, by collecting and analysing empirical data, this hypothesis is justified (or falsified) as a result of inductive generalization. An example is highlighting the relationship between project types and the project manager's leadership style (e.g., Müller and Turner, 2007). When the relationships between phenomena are determined as a result of deductive reasoning, the researcher, based on existing knowledge (in terms of concepts or theories) related to these or other phenomena, *deduces* (as a result of logical succession, i.e., inference) a certain relationship between them. This deductive conclusion is formulated as a hypothesis; then, by empirical observation, this hypothesis is reinforced (or refuted). An example is determining the relationship between the market position perceived by project-based organizations and the type of contract used by the project clients. (e.g., Görög, 2016).

Bearing in mind the difference between inductive and deductive inference (reasoning) as introduced in the literature on logic, I would say that use of the term *hypothetico-deductive* research is misleading because it relies on a certain kind of misconception related to deductive research. Therefore, most of the research which is referred to as deductive in management journals and books on research methods actually is inductive research (inductive generalizations) reflecting the science of logic. The preceding cases exemplify this statement and also provide justification for it. However, in the case of quantitative analysis–based research, the inductive generalization is underpinned quantitatively, and qualitative analysis–based research qualitatively supports the inductive generalization.

In terms of epistemological stances, the literature on philosophy differentiates two fundamental positions, namely positivist (also referred to as scientific) and interpretist (also referred to as hermeneutic). However, Marsh, Ercan, and Furlong (2018) differentiated an in-between position, realism, which adopts foundationalism as an ontological position, emphasizing the need to consider causal relationships between phenomena. Realists also state that there are objective relationships between social phenomena that cannot be observed directly, only interpreted as they are perceived. It is characteristic of the hermeneutic/interpretist epistemological position that this stance includes several different genres (branches); however, it seems that there is no commonly agreed name for these different genres. Most of these genres sometimes named are differently when introduced in books on research methods and briefly interpreted in management journals, which can result in a certain amount of cognitive confusion for practicing researchers. Creswell (2012) provided an extensive list, including postpositivism, social constructivism, pragmatism, postmodern perspectives, feminist theory, critical race theory, etc., whereas Troja (2019) adopted the umbrella term "research perspective" and introduced symbolic interactionism, ethnomethodology, phenomenology, and social constructivism. However, Marsh, Ercan, and Furlong (2018) drew attention to the lack of discussion of the potential relevance of these genres.

In my view, adopting one of these genres as an epistemological position is strongly related to the unit of analysis (and the underlying research aim) considered in a research study and also to the axiological approach of the researcher. Authors (e.g., Creswell, 2012; Troja, 2019) when exemplifying the use of different research methods (based on a certain epistemological genre) regularly consider, as the unit of analysis, a person or a small well-defined group of people. Revealing behavior of persons or a small and well-defined group of persons might explain conducting value-laden research. For me, many of the genres that have emerged in the last decades seem to present certain axiological worldviews rather than addressing the question of what and how one can know about the world. Adopting this kind of approach might be explained in sociology; however, management research does not need to emulate the current research practices of sociology.

At this point, the following interrelated questions need to be raised:

- What is the unit of analysis in management research?
- What are the appropriate epistemological positions in management research?
- What is the role of axiology in management research?

Although management is strongly related to leadership, it is considered to be a different domain (e.g., Griffin, 2016) Thus, I might say, in line with Bryman and Bell (2015), that in management research the unit of analysis, in a broader sense of the term, is the organization. More precisely, management research, in terms of the unit of analysis, focuses on different aspects of the structure and process of the organization, and also at different levels, such as core activities, projects, and the strategic apex. However, organizations are social constructs; they exist independently of our knowledge of them. Organizations existed before our knowledge of them, i.e., they existed before their recognition as phenomena. The case of the primitive tribes justifies this statement. Therefore, in line with Durkheim's view, there is a potential to observe objectively their structures and processes at different levels, and to analyze relationships among different operational aspects of organizations. Consequently, both positivism/scientific and realism (e.g., Marsh, Ercan, & Furlong, 2018) might be adopted as epistemological positions. This seems to be in line with Lewis and Thornhill's (2016) research opinion in which the proposed underlying epistemological stance of deductive (logic-based) research is positivism or (critical) realism.

As was mentioned previously, Bredillet (2004) stressed that a "being ontology" which postulates a fixed reality and the associated positivist mirror is not appropriate in research, and he argued for adopting a "becoming ontology" postulating a changing reality and the associated subjectivism (regardless the unit of analysis and the associated research aim) to achieve effectiveness of research outcomes. However, one might say that natural constructs also undergo changes, and adopting positivism in research into them broadly is accepted. The evolution of our planet or the current climate change are examples. Of course, natural constructs change slowly. Business organizations can change rapidly, but they have permanent features, such as process or structure, and the old linear-functional organizational structure is in use nowadays as well.

Although organizations are objectively existing phenomena, the influence of values adopted by the researcher cannot be excluded fully. This influence might appear in terms of sympathy or antipathy (e.g., Bryman & Bell, 2015) related to informants, which can occur in the natural sciences as well (e.g., in research on climate change) related to the consequences of the observed phenomenon. However, the use of a consciously value-laden, i.e., worldview-driven research methodology does not support creating additional knowledge in management sciences when structures and processes of organizations are studied. Thus, value-inspired, worldview-based management research could not provide new insight into the structure and process of organizations. On the contrary, consciously value-laden research in this respect could result in rather non-valid, and thus unreliable, research outcomes. However, when the unit of analysis (and the underlying research aim) is the behavior of people acting in an organization, a researcher might adopt a different epistemological stance.

One final question is whether there is the potential to apply such deductive research in management science as it is understood in the science of logic. Further to the structural validity (argument schemata), this kind of knowledge creation requires commonly agreed true concepts or theories by means of which true propositions as premises are formulated. Concepts define phenomena and are considered to be the building blocks of theories. Theories conceptualize and explain phenomena, and also are used to generate future expectations (in terms of explanations) about (social and natural) phenomena (e.g., Pathirage, Amaratunga, & Haigh, 2008). Joslin and Müller (2016) emphasized that theory needs to be used in research in order to explain a phenomenon being observed. In this way, a theory primarily is used to provide an answer to why something happens; thus, a theory helps the researcher to reveal and understand the causes that create the phenomenon being observed.

To exemplify applying deductive research strategy in the management domain, a more general interpretation of Fiedler's (1967) contingency theory is considered. Using this theory, we can construct valid deductive arguments (as modus ponens) regarding the appropriate use of different organizational structures as follows:

If the core activity of an organization can be standardized, then sufficient coordination can be ensured in this organization by means of direct supervision.

The core activity of this organization can be standardized.

Therefore, sufficient coordination can be ensured in this organization by means of direct supervision.

If sufficient coordination can be ensured in this organization by means of direct supervision, then the use of the linear-functional organizational structure is appropriate in this organization.

Sufficient coordination can be ensured in this organization by means of direct supervision.

Therefore, the use of the linear-functional organizational structure is appropriate in this organization.

The outcome of this deduction, i.e., the conclusion related to the appropriateness of a linear-functional organizational structure, can be reinforced or rejected by means of empirical observations. Triangulation, especially data triangulation, triangulation of researchers, and methodological triangulation, as suggested by Joslin and Müller (2016), could increase the objectivity and reliability of this observation, and could reinforce the validity of the conclusion. However, knowledge creation based on a deductive approach requires familiarity with logic, the science of reasoning. Unlike the philosophy of science, which is a core course in many doctoral schools, logic generally is neglected in most management doctoral schools. I strongly propose teaching logic in doctoral schools to enhance the use of both inductive and deductive reasoning in research. To achieve this end, authors of research method books need to introduce not only the epistemological underpinning but also the logical underpinning of the different research strategies.

Bearing in mind the example related to the use of linear-functional organizational structure, we need to address the question of how to formulate appropriate premises in order to draw reliable and valid conclusions. Central to the premises of the first argument (inference) is the concept of coordination (as the primary role of any organizational structure) and its relationship with standardization, whereas the premises in the second argument (inference) include propositions related to the concept of direct supervision (as one of the coordination mechanisms) and its relationship with the linear-functional organizational structure. Thus, the conclusion of the first inference (argument) is used as a premise of the second inference (argument) to provide scientific reasoning for the use of a linear-functional organizational structure (from among the potential choices) in a given context.

Further to the case of organizational structures, it is characteristic of the broader management domain that there is more than one tool to complete the very same management task. In strategic management there are different tools (PEST, SWOT, etc.) to analyze internal and external operational environments, different strategic choices (e.g., cost leadership, differentiation, etc.), and different ways in which strategy is defined (i.e., strategy development patterns). Project management is an example because there are different time-planning tools, different risk assessment tools, different project implementation strategies, and so forth. One can state that none of those tools which might be deployed to complete the very same management task is better than another. However, each of them has both advantageous and disadvantageous features from the point of view of their efficient use. Organizations operate in different internal and external contexts, and in different contexts the use of different tools to address the very same management task seems to be appropriate.

The proposed deductive reasoning provides the potential to elaborate such a method (as new knowledge) by means of which the contextual features and the features of the considered management tools can be matched. Achieving this postulates formulating premises which imply (1) relationships between the characteristics of the operational environment and the different characteristics of those management tools which are available to complete the very same management task, and (2) relationships between organizational characteristics and the different characteristics of those management tools which are available to complete the very same management task. These premises might be used as statements (propositions) in syllogisms to implement deductive

reasoning and achieve a context-related application of these management tools. Table 1 presents some potential methods for using deductive reasoning in management research. To formulate appropriate (i.e., true) premises, there is a need for a detailed exploration of the characteristics of those tools by which the underlying concepts are operationalized in the course of their use, and of the characteristics of the context in which these tools are used. However, in the case of different management tasks (i.e., the management tools), different characteristics of the context (internal and external) should be considered.

Applying this deductive argument (reasoning) in management research might enrich management science with research outcomes that have practical managerial implications as well. These likely results could eliminate, or at least moderate, the disadvantageous consequences of the frequently experienced trial-and-error–based application of the potential management solutions and the use of the associated management toolkit. The research outcomes achieved might be justified or falsified by means of empirical observations focusing on the success rate achieved in the case of using the management toolkit in a context-related manner.

Wolceshyn and Daellenbach (2018), with reference to Aristotle, stated that induction and deduction are more complementary than contradictory. Thus, bearing in mind the previously mentioned three basic research types, the evolution of knowledge of a management domain area (a branch of it, e.g., project management) might be described as a knowledge development spiral. Janiszewski, Labroo, and Rucker (2016), proposed factors that determine the contribution of a research study, and introduced the metaphor of a knowledge tree, which also has implications for the evolution of management knowledge or of the different branches within the management domain. However, the proposed spiral-based approach focuses directly on the likely evolutionary process.

This spiral-based evolution process commences with observations to describe and define the phenomena in order to formulate concepts. These concepts make it possible to generalize relationships among phenomena by means of inductive research in order to formulate and develop theories as a result of inductive generalization. The theories, and the concepts, enable researchers to produce new knowledge by means of deduction (i.e., formulating premises by means of theories or concepts) to provide explanatory models for understanding reality. This evolutionary process could be characteristic of each branch within the management domain, and new phenomena might emerge. Emergence of a new phenomenon could generate a new spiral, and, primarily in the deductive phase of the spiral, concepts and theories developed in other branches or other domains could be considered to formulate premises for deducing new knowledge. Furthermore, by further observing a previously observed phenomenon, a new aspect of this phenomenon could be revealed which could result in further inductive and deductive phases of the spiral. This evolution process of knowledge creation is in line with Maylor and Söderlund's (2015) notion of project management knowledge. They emphasized that studies and their outcomes are built on each other over time to increase the level of knowledge. Accordingly, research in management might be (1) ob-

Table 1: Potential methods for deductive management research

Management task (associated tools that operate the underlying concepts)	**Contextual features considered**
Strategy development	Internal (organizational) and external (operational environment) characteristics
Strategic analysis	Internal (organizational) and external (operational environment) characteristics
Strategic choice	Internal (organizational) and external (operational environment) characteristics
Applying organizational structure	Task (core activities) characteristics and diversification-related characteristics
Managing project (e.g., the use of project organizations and project implementation strategy)	Project characteristics and parent organization characteristics

servational, to highlight phenomena; (2) inductive, to deepen and widen existing knowledge; and (3) deductive, to create new knowledge based on existing knowledge. These basic types of research might build on each other alongside the spiral-based evolution process of knowledge creation, or might be combined in a complex research study.

Applying deductive research (as it is understood in logic) when it seems possible is justified by the inherent potential disadvantageous features of inductive generalization, such as (1) limited sample size in terms of limited number of informants, cases, numerical data, etc.; and (2) informants' familiarity with the research topic, and their honesty. However, in the case of a deductive approach, the structural validity of the arguments and the true propositions as premises guarantee a true conclusion. In this way, the validity of research outcomes, as was discussed in the Introduction, and their objectivity, might be improved. However, as Marsh, Ercan, and Furlong (2018) noted, the objective observation needed in this case might be as objective as the observer who completes this observation.

6 LIMITATIONS AND FURTHER THOUGHTS

The limitations of this paper primarily derive from the limited knowledge of the author. The author is a practicing researcher in one of the branches of management sciences. It seems impossible to highlight all the potential methods for adopting deductive reasoning, as it is understood in logic, in the wider management domain; such an effort exceeds the limitations of a paper. However, the author hopes this paper generates further, specific thoughts on the potential use of deductive reasoning as a research strategy in different branches of the management domain, and that it proves to be a starting point for further discussion.

EXTENDED SUMMARY/IZVLEČEK

Literatura o raziskovalnih metodah ob uvajanju induktivnih in deduktivnih raziskovalnih pristopov ter s tem povezanih kvalitativnih in kvantitativnih raziskovalnih metod zagotavlja epistemološko podlago raziskovanja. Kljub temu pa ta literatura na splošno zanemarja vlogo logike v raziskovanju, kar bi včasih lahko pripeljalo do neustreznega sklepanja tako v doktorskih disertacijah kot tudi pri raziskovalnih delih na splošno. Neustrezno sklepanje se največkrat zgodi zaradi napačne interpretacije induktivnih in deduktivnih oblik sklepanja v literaturi o raziskovalnih metodah, kot posledica zanemarjanja logike. Ta članek meče novo luč na interpretacijo induktivnih in deduktivnih oblik ustvarjanja znanja, vključno z logiko, ki ima pomembno vlogo kot znanost sklepanja pri ustvarjanju znanja že vse od Aristotelovega časa. Ta prispevek je špekulativne narave in ponuja refleksije izkušenega raziskovalca s področja managementa.

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EVOLUTIONARY TENDENCIES OF SIMPLE SOCIAL EXCHANGE ACROSS THE STAGES OF EGO DEVELOPMENT: IMPLICATIONS FOR LEADERSHIP

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Abstract

This paper addresses the research question of how the stages of ego development impact the interpretation schemes of the simple social exchange (act of giving). Using a sample of N = 290 respondents, we present the research findings on the evolution of the interpretation schemes of the act of giving across the levels of ego development. Research findings reveal the tendency of the stage of ego development to impact the properties and effects of the simple social exchange (act of giving). We theorize implications for leadership. We propose that the higher order of ego development induces a higher quality leader–member exchange (LMX) and greater likelihood of resolution of adaptive leadership challenges. Furthermore, followers are more likely to entrust power to a leader in exchange for high-quality relationships. The paper is a tentative attempt of merger of the LMX theory with the constructive school of adult development. This merger illuminates an interesting relation, namely that the stage of ego development might be a likely determinant of the quality of the LMX and leadership effectiveness.

Keywords: *ego development, LMX theory, generativity, act of giving, social exchange*

1 INTRODUCTION

In leader–member exchange (LMX) theory, leadership is a function of the quality of the leader–member interaction; dynamics of this interaction construct the quality of the social exchange. Predictors of high-quality social exchange have been identified on the side of the leader (charisma), on the side of the follower (follower innovative role expectations) (Meindl, Erlich, & Dukerich, 1985; Hollander, 1980), and in the dyadic leadership relationship (LMX) (Hollander, 1980; Graen & Scandura, 1987). One of the predictors of the quality of the social exchange is demographic and relational similarity (Green, Anderson, & Shivers, 1996; Tsui, Xin, & Egan, 1995); both similarities increase the likelihood of trust in the relationship (Scandura & Pellegrini, 2008; Harris, Wheeler, & Kacmar, 2009). Trust is a higher-order attribute of high-quality social exchange.

Trust also is a function of perceptions and interpretations of the both sides of the relationship; thus, in leader–members social exchange, a followers' perceptions and interpretations also are highly important for the trust and high-quality social exchange (Hollander, 1978, 2009). "Changes can occur in perception, when enriched by experience. The prospect for trust or mistrust may thereby grow. If positive, there will likely be loyalty and solidarity of purpose, and the reverse is also likely. Trust and loyalty are among those qualities needed to bind relationships" (Hollander, 2009: 5).

The purpose of this paper is to understand how trust is formed between two people in the social exchange while being impacted by stages of ego development. Because both (1) the stage of ego development (Loevinger, 1976) and (2) the quality of social exchange are complex phenomena, the impact of stage of ego development of the quality of social exchange thus is a higher-order complex phenomenon. To uncover the basic regularities of this impact between two complex phenomena, we focus on the most elementary form of the social exchange, "the act of giving."

The act of giving is worthy of study for several reasons: (1) it is the action/behavioral expression of the personal tendency for generativity (Erikson, 1950; Fein, 2018;); (2) generativity depends on the stage of adult development (Erikson, 1950, 1959, 1963); (3) generativity might be a possible explanatory variable of a leader's capacity for integrating across difference interests and expectations (Volckmann, 2014) and to resolve the adaptive leadership challenges (Heifetz, Linsky, & Grashow, 2009).

The paper contributes to the field of LMX theory. It gives a new perspective on LMX theory by merging the neo-Piagetian school of adult development with LMX theory. Furthermore, this paper brings the new concept to the field of trust formation, namely generativity viewed from the perspective of a simple act of social exchange—i.e., how the act of giving contributes to trust formation in the LMX relationship. Thirdly, the paper explains the trust formation in the LMX relationship from the perspective of the leader and the perspective of the follower.

This paper is organized in eight sections. The second section reviews properties of ego development as identified by the constructive neo-Piagetian school of adult development. The third section focuses on the Eriksonian view of adult development, the phenomenon of generativity, and research on the act of giving. The fourth section presents the research design, followed by how the perception and interpretations of the act of giving evolve across the ego development stages. We apply the Washington University Sentence Completion Test (WUSCT) ego development decoding scheme and the grounded theory approach to identify properties of the act of giving at the given ego development stage (sample size N = 290 respondents). In the sixth section we speculate on the possible influence of ego development stage on the trust aspect of a simple social exchange (in our case, represented by the act of giving). We propose a tentative framework of co-fluence (Hollander's abbreviated expression for the two-side influence or collective influence) from the two perspectives of the leader–follower relationship: (1) the follower perspective—how the willingness to entrust power to another person in exchange for services (the follower perspective) might evolve as one moves across the stages of ego development; and (2) the leader perspective—how the willingness of a leader to address the adaptive challenges might evolve as one moves across the stages of ego development. The seventh section discusses theoretical contributions, practical implications, research limitations, and possibilities for future research. The last section summarizes the main findings.

2 THEORETICAL BACKGROUND

2.1 Adult (Ego) Development

The neo-Piagetian constructive school of human development studies different evolutionary tendencies in humans such as self-referential and meaning-making systems (Kegan, 1982, 1994), social cognition (Selman, 1971, 1980), reflective judgment (King & Kitchener, 2004), moral judgment (Kohlberg, 1984), the structure of the ego (Loevinger, 1976; Hy & Loevinger, 1996), cognitive complexity (Commons, Trudeau, Stein, Richards, & Krause, 1998), the complexity of perspective-taking and the affective sensitivity (Cook-Greuter, 1985/revised 2013; 2000), action logics (Tolbert & Associates, 2004; Rooke & Tolbert, 2005), leadership styles (Harris & Kuhnert, 2008), needs and motivations (Maslow, 1967; Barret, 2016), and dominant subconscious values and beliefs (Graves, 1974; Beck & Cowan, 1996).

Regardless of the foci of the studies, neo-Piagetian scholars have identified the following evolutionary regularities in human/leader development (McCauley, Drath, Palus, O'Connor, & Baker, 2006):

1) People try to make sense of themselves by forming meaningful and coherent narratives around the experience (Bauer & McAdams, 2004).
2) The story and experience interpretation is dependent of the subject–object relationship and meaning-making mechanisms (Kegan, 1982, 1994, 2009). Subject–object relationships and the meaning-making mechanisms evolve.
3) The meaning-making mechanisms evolve in stages, referred to as orders of consciousness, ways of knowing, or orders of development (McCauley et al., 2006).

The stages of development unfold in a specific invariant sequence, with each successive order transcending and including the previous order (Wilber, 1995/2001). Erikson (1950, 1959, 1963) constructed eight core polarities operating in the human psyche that need to be resolved in the process of human (ego) development. These are trust vs. mistrust, autonomy vs. doubt/shame, initiative vs. guilt, industry vs. inferiority, identity vs. identity diffusion, intimacy vs. isolation, generativity vs. stagnation, and integrity vs. despair; these polarities construct an eight-stage model of adult development. In the case of ideal development, the person proceeds successively through these stages.

From the perspective of the leadership and sustainability, the most interesting opposition is generativity vs. stagnation (Ghislieri & Gatti, 2012). Generativity "is meant to include . . . productivity and creativity" (Erikson, 1950, p. 267). In the original Eriksonian notion of generativity, the emphasis is on the intergenerational inclusion; however, the personal tendency for inclusion also could be applied across all other social and business divides, and thus is critical for integral leadership (Volckman, 2014).

Slater (2003) added to Erikson's stage of conflict between generativity vs. stagnation by including seven psychosocial conflicts, namely inclusivity vs. exclusivity, pride vs. embarrassment, responsibility vs. ambivalence, career productivity vs. inadequacy, parenthood vs. self-absorption, being needed vs. alienation, and honesty vs. denial. Some of Erikson's most compelling examples of generativity appear in his psychobiographical explorations of the lives of Martin Luther and Mahatma Gandhi, two great leaders, both of whom appear to have been their most generative in the bright light of public action rather than in the private realms of friends and family. Generativity as a stage of adult development is affected by family background and cultural background (Pratt, Matsuba, Lawford, & Villar, 2020).

2.2 Generativity and the Act of Giving

McAdams and de St Aubin (1992) studied the phenomena of generativity from a wider perspective–how a shared psychosocial space impacts the expression of the generativity, inclusion, and tendency for giving. They identified a seven-feature conceptual model operating within a shared psychosocial space that induces the generative action: (1) cultural demands for generativity and acts of giving; (2) wish, desire, and the force in the human psyche for generativity; (3) the power of the concern for the next generation (the narrow Erikosonian view of generativity); (4) a personal belief in the goodness of oneself; (5) implemented generative action and its consequences; (6) a virtuous loop in which the generative action is strengthened further by cultural demand or inner desire; and (7) a person's narration of generative action into the coherent subjective story about the self. Bradley (1997) and Bradley & Marcia (1998) studied the resolution of generativity vs. stagnation from the perspective of ego-identity structure. They found that the resolution of the conflict is dependent upon the capacity of the individual to synthesize the care with receptivity. Two criteria determine the extent of care or receptivity: (1) an individual's level of involvement, defined as the active concern for the growth of the self and others; and (2) an individual's inclusivity and scope of caregiving concern. Adults can rate high or low on these two criteria in relation to self and others. These ratings allow adults to be classified into five identity statuses: generative, agentic, communal, conventional, and stagnant. Bradley and Marcia (1998) also showed that expression of generativity and the five identity statuses tends to be a property of the higher-order stages of ego development, which they measured using the WUSCT (Hy & Loevinger, 1996).

Generativity is a personality trait (placed in the upper left quadrant of the Wilberian all quadrants, all levels [AQAL] model), whereas the act of giving is the behavior expressed in a specific moment in time and context (placed in upper right quadrant of Wilberian AQAL integral theory; Wilber, 1995/2001). In the research literature, the act of giving is defined as "freely offering something of oneself to another person, which needs to be of value to the recipient without the expectation of receiving anything in return" (Knight, Skouteris, Townsend, & Hooley, 2014, p. 258). Such a definition conceals the unexpected nature of returns for the giver; for that matter, Knight et al. (2014) question whether the unexpected nature of

returns is truly unexpected due to hidden benefits for the giver, and thus the act of giving is inherently a two-way social exchange in nature.

A meta-research review of the act of giving within the context of non-familial reciprocal intergenerational interaction implied positive behavioral change on both sides of the social exchange (Knight et al., 2014). Furthermore, for both sides in the relationship, the act of giving causes positive emotional states (Morrow-Howell, Hong, & Tang, 2009), improved self-esteem, increased meaning, and purpose in one's life (Folts, 2006; Hegeman, Roodin, Gilliland, & Ó'Flathabháin, 2010; Reisig & Fees, 2007; Rozario, 2006). Furthermore, the act of giving increases proximity within relational links (Lohman, Griffiths, Coppard, & Cota, 2003); increases social cohesion across generations (De Souza, 2007); and increases affective and instrumental reciprocity (Breytspraak, Arnold, & Hogan, 2008). The effects of the act of giving are influenced by personal values (Cruz Passos, Silva Leite & Rezende Pinto, 2020), which evolve through stages of adult development (Hy & Loevinger, 1996).

3 METHODOLOGY

3.1 Research Question

The research question is how trust is formed between two people in the social exchange while being impacted by stages of adult or ego development. The social exchange was studied in terms of the act of giving. What are the regularities of the act of giving across stages of adult development? After the identification of regularities, what are the implications for the LMX relationship, from the perspective of a leader and of a follower?

3.2 Research Setting and Data Gathering

We used convenience sampling strategy (Robinson, 2014). Data were gathered over the period December 2018–December 2020 from the Slovenian adult population (aged above 18 years). The request first was sent to post-graduate students at the University of Ljubljana, who were asked to disseminate it among their private network in which also more senior people are represented. To increase motivation for taking the test, all respondents were offered the opportunity to receive written coaching feedback on the dominant adult developmental stage. In that case, the person needed to reveal his/her email address. Otherwise, the person could stay anonymous. The WUSCT was conducted in Slovene.

3.3 Method

We used a questionnaire composed of three sections: (1) an ego development section; (2) interpretations of the act of giving; and (3) the socio-demographic of the respondent.

For the ego development stage, we adopted Loevinger's abbreviated sentence completion test (WUSCT), composed of 18 stem roots (Raising a family…; Being with other people…; My thoughts…; What gets me into trouble is…; Education…; When people are helpless…; A man's job is…; I feel sorry… ; Rules are…; I can't stand people who…; I am…; My main problem is …; My emotions…; A good mother…; My conscience bothers me…; A man (women) should always…; The meaning of life is…; and Happiness is…). We identified the stages by decoding using the guidelines in the WUSCT decoding manual (Hy & Loevinger, 1996). Decoding was done by two decoders, both of whom were experts in the field of a constructive approach to adult development with experience in the WUSCT decoding procedure. Cohen's kappa is above 98.2%, indicating good inter-rater reliability (Figure A-1).

Answers on the reflective question "Reflecting on your personal experience, please share with us what are the expected and unexpected consequences of act of giving?" We deliberately left the act of giving undefined, thus inviting respondents to apply their own interpretations to "the act of giving." This aligned with the philosophy of the sentence completion test, in which the choice of approach and interpretation is an important variable of the research observation. These answers were decoded using the grounded theory approach (Glaser & Strauss, 1967; Corbin & Strauss, 1990). We grouped people in subgroups according to their stage of ego development identified though the WUSCT scheme.

For more-effective pattern recognition, we also extracted the generic ego properties at each developmental stage (Hy & Loevinger, 1996). Generic ego properties in each stage presented thematic lenses through which we observed answers. We paid attention to the material/non-material aspects, positive/negative, affective/cognitive aspects, and self/other/relational aspects of answers at each adult stage. Figure A-2 summarizes how these properties across the stages of adult development were identified.

3.4 Sample Characteristics

The sample totalled 290 individuals who completed the SCT and shared their interpretations of the act of giving. The ego development stages ranged from E2 (impulsive) to E7 (individualistic). Figure 1 summarizes the socio-economic features of the sample. A majority of the sampled cases occupied the E4 stage of ego development (59.7%), followed by the E5 stage of ego development (19.7%). The post-conventional stage (E7) was weakly represented in the sample. The sample shows that people who occupy higher stages of ego development are on average older, which confirmed that the stage of ego development is impacted by age and experience (Kegan, 1994).

4 FINDINGS

How do the perceptions and interpretations of the act of giving change when one moves through the stages of ego development? We observed the answers from material/non-material aspects, positive/negative, affective/cognitive aspects, and self/other (relational) aspects of answers at each ego stage; Figure A-2 presents an in-depth review of the decoding process. On the most generic level, the following movements of perception and interpretation of the act of giving were identified:

- There was a tendency for perception and interpretation to move from the material to non-material aspect of the act of giving when moving vertically from lower (E3) to higher stages of ego development (E7);
- There was a tendency for perception and interpretation to move from the negative to the positive aspect of the act of giving when moving vertically from lower (E3) to higher stages of ego development (E7);
- There was a tendency for perception and interpretation to move from the simple affects to a more nuanced recognition of affects—cognitive interpretations of the act of giving gained higher-order phenomena recognition (response, interaction, and trust) and higher-order perspective-taking—when moving vertically from lower (E3) to higher stages of ego development (E7);

Figure 1: Socio-economic features of the sample

Stage of development (Loevinger's framework)	Distribution of cases (N = 290)	Average age	Gender		Educational background		
			Male	Female	Natural sciences, engineering	Social sciences, economics	Other
Group of ordinary people							
Impulsive (E2)	1.8%	20	70%	30%	30%	60%	10%
Self-protective (E3)	8.6%	31	50%	50%	50%	50%	0%
Conformist (E4)	59.7%	30	50%	50%	29.1%	55.6%	15.4%
Self-aware (E5)	19.7%	41	50%	50%	41.9%	51.6%	6.5%
Conscientious (E6)	5.4%	43	50%	50%	10%	60%	30%
Individualistic (E7)	4.4%	45	50%	50%	10%	60%	30%

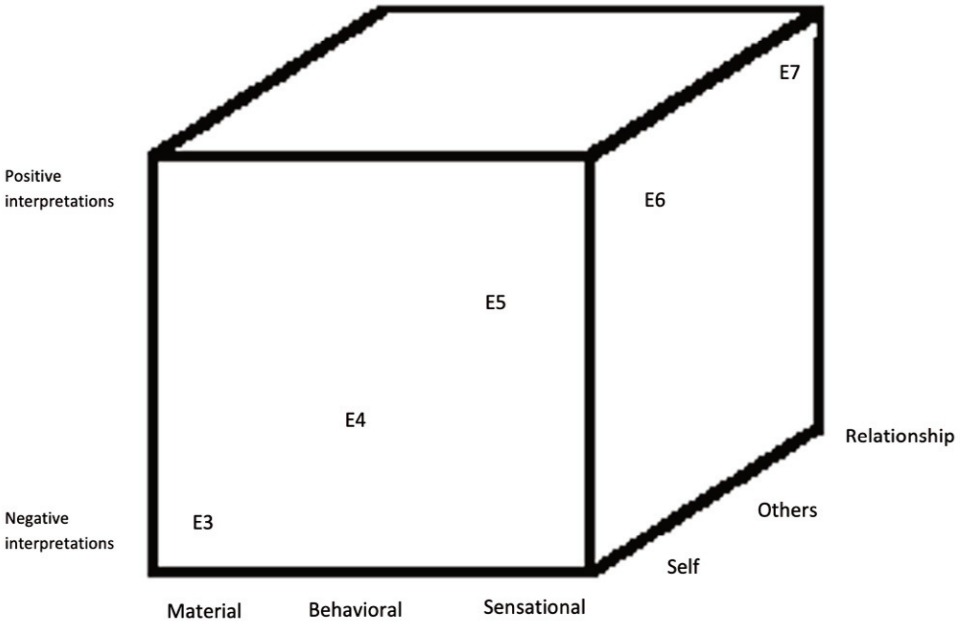
- There was a tendency for perception and interpretation to move from a focus on the impact of the act of giving directly on the self, to a focus on the impact indirectly on the self (through the response of the other side), on the quality of social exchange, on trust in the relationship, and on the counter-response of the self to others, and on the effects of this on the quality of social exchange, proximity, and trust in the relationship and well-being of the other side.

These tendencies of perceptions and interpretations of the act of giving across stages of adult development are presented graphically in Figure 2. The vertical axis depicts a negative vs. positive focus in the interpretations, the horizontal axis depicts outer-material to inner-sensational focus, and the third axis depicts the focus of the effects of the act of giving on the self, on others, or on the relationship. The pattern identified in the answers reveals a tendency for diagonal movement from inner lower left to the outer upper right corner. This indicates movement from a negative, material, self-focus to a positive, sensational and relational focus (i.e., quality social exchange). A positive, sensational, and relational focus of the act of giving on the quality social exchange (E7) vs. a negative, material, and self-focus (E3) indicates that E7 is more likely to induce trust and create a high-quality social exchange than is E3. Furthermore, a person becomes a more effective inducer of trust and a high quality of social exchange when he/she reconstructs the ego toward higher developmental levels.

What implications can we generalize about the evolutionary tendencies around social exchange as people progress through the stages of adult development from this specific (narrow) case of social exchange (act of giving)? How might our findings around the impact of the stages of ego opment on the perceptions and interpretations of the act of giving inform the rehabilitation of trust in social exchanges between leader and follower?

Based on our findings, we speculate how the willingness of a follower to entrust power to another person in exchange for services (expected benefits) might evolve as one moves across the stages of ego development, and how the willingness of a leader to address the adaptive challenges might evolve across the stages of ego development.

Figure 2: Impact of the ego development stage on the simple social exchange (act of giving)



5 DISCUSSION AND CONCLUSION

5.1 Follower perspective: How can the willingness to entrust power to another person in exchange for services (expected benefits) evolve as one moves across the stages of ego development?

Heifetz (2015) calls for research (failing, successful, micro, macro, case-studies, and qualitative) that studies authority and leadership separately because of rising mistrust toward people in an authority position due to the tendency that "people in authority violate the trust of the power that they have been given and, having violated that trust, they generate significant scar tissue; some of that scar tissue gets carried from generation to generation" (Heifetz, 2011, p. 306). In addition to the research on the dark side of leadership and the corrupting tendencies of leaders in a position of authority (Conger, 1990; Kets de Vries, 2005), more research is needed on (1) how to establish and amplify trust, and (2) how to renew trust when mistrust has been established (Heifetz, 2015). Thus, we need to better understand the factors that impact the willingness to authorize the other side (the leader) and entrust him/her with power.

The willingness to authorize the other side (i.e., the leader) depends on how followers perceive and interpret the actions, motives, and attributes of a person (Hollander, 1978, 1980, 2013). A leader's legitimacy is a function of followers' perceptions and interpretations. The level of legitimacy impacts the leader's power and influence to facilitate change (Hollander, 1978, 2013). Follower acceptance is essential to the legitimacy and trust of leaders; thus, leadership is a process of co-fluence between the leader and followers (Hollander, 2008, 2013)[1].

In constructing these perceptions and interpretations, followers are the active component of leadership. Followers' interpersonal evaluations of the leader are a function of the needs and expectations of the followers (Hollander, 1978, 1980, 2013). Accordingly, "followers' needs also determine which tangible and intangible rewards suffice in motivating them to follow recognizing that individual differences do matter" (Hollander, 2013, p. 131).

Investigating innovators, Scharmer (2009) found that two people in the same circumstances doing the same thing can bring about completely different outcomes because the outcomes depend not only on what the person does, but also on their "interior condition," or the inner place from which they operate (Scharmer, 2009, p. 7). The quality of inner place or the quality of awareness is a function of ego development (Loevinger, 1976; Cook-Greuter, 1985/revised 2013). We claim that followers' perceptions and interpretations of any outer observations (for example, words and acts of the leader) are thus a function of the quality of awareness captured by level of ego development.

Under what conditions is the person at the lower stages of ego development (follower) willing to entrust power to another, and what do they expect in return?

Based on the findings about how expectations and interpretations around the act of giving evolve across stages of ego development, we assume that if a follower is at the lower stages of ego development (in our case, at E3 or E4), he/she would be willing to entrust power to another in exchange for the benefits valued for the self. The valued benefits are self and materially focused. It is preferable that the expected benefits should be perceived as a prospect

[1] Hollander's (2013) attribution of the idiosyncratic credit to a leader is a function of perceived competence in the main group task and loyalty to group norms. The IC model thus explains the upward influence. When followers accord such credits to leaders, followers have "upward influence" (Hollander, 2004). IC is relevant for IC dynamics of "giving and taking credit," which the essence of the process of leadership (Hollanders, 2004b). Spending of leadership credit is constrained by the expectations of the followers. The challenge of the IC model is that leaders may initiate change, but also show sufficient compliance to the group norms; the leadership challenge is to balance both forces. Hollander puts forth three limitations to a leader's potential influence that arise from the follower side: (1) "What have you done for us lately?"; (2) the lack of perceptiveness of a leader on an available credit; and (3) followers represent a variety of interests (Hollander, 2013, p. 218).

for increased monetary reward, promotion, improved social status, and other forms of tangible rewards. Furthermore, a person at the lower stage of ego development tends to pay more attention to the instances in which expectations of the rewards are not met. They prefer to interpret the effects of the social exchange negatively. In an open-system case (i.e., election and voting), the follower would prefer (attribute idiosyncratic credit) a person who is perceived to be more likely to deliver valued benefits (i.e., increase in wages, employment stability, etc.). In a closed-system case (i.e., a company), the selection of a person in a position of authority unfolds in a top-down manner; in this case, we propose that a person at the lower stage of ego development would engage in more work effort in the case of perception and delivery of material and status benefits.

Under what conditions is a person at the higher stages of ego development (follower) willing to entrust power to another, and what is expected in return?

If the follower is at the higher stages of ego development (in our case, at E6 or E7), the criteria for entrusting a power shift from material to non-material (sensational; shifting attention from material and behavioral appearances to feelings, assumptions, and beliefs behind specific appearances), from benefits for the self to the quality of the relationship (the other side is taken in consideration in terms of its effects on the quality if the relationship). The core criteria for evaluating the quality of the relationship are proximity and trust. Here, the person recognizes the active role in defining the quality of the relationship in terms of how she/he frames their own expectations and controls responses. People at higher stages of ego development prefer to interpret the effects of the social exchange positively. In an open-system case (i.e., election and voting), the follower prefers to vote for the person who is perceived to be more likely to create trust and build proximity in the relationship (inclusiveness). In a closed-system case (i.e., a company), the person at the higher stage of ego development engages in a more dyadic relationship in a case in which proximity and trust also are valued from the leader (i.e., the person in a position of authority).

5.2 Leader perspective: How can the willingness of the leader to address the adaptive challenges evolve across the stages of ego development?

From the perspective of how a leader should approach the leadership situation, Heifetz, Linsky, and Grashow (2009) differentiated between two types of leadership challenges: technical problems and adaptive challenges. Whereas technical problems may be very complex and critically important (i.e., cardiac surgery), they have known solutions (the knowledge and capacity already exist); thus, such problems can be resolved by an authority, an expert, or by tested procedures, norms, and systems. In contrast, adaptive challenges have no solution or the solution lies outside of people's current repertoires; therefore, the solution can be addressed only through changes in people's priorities, beliefs, habits, and loyalties. An adaptive challenge is defined as the gap between the values people stand for and the reality that they face (their current lack of capacity to realize those values in their environment). In the next decade, the most predictable trend will be a rise of adaptive challenges (Sowcik, Andenoro, McNutt, & Murphy, 2015). The distinctive attribute of a leader is the capacity to address complex organizational challenges through adaptive leadership (Nelson & Squires, 2017).

A classic leadership error is treating an adaptive challenge as a technical problem (Heifetz, Linsky, and Grashow, 2009). When dealing with the adaptive challenge, adaptive leaders are "certainly not as well received as when you are mobilizing people to address a technical issue that is within their competence or requires expertise that can be readily obtained" (Heifetz, Linsky & Grashow, 2009, p.17). Not benefiting from adaptive challenges, losing credits and authority, etc., are the core obstacles for addressing adaptive challenges. There is a need to extend the strategic leadership research to better understand phenomena of addressing adaptive challenges from the perspective of (a) chief executive officer (CEO) characteristics and (b) the dynamics of interactions among the CEO, the top management team, and the Board (Vera, Bonardi, Hitt, & Withers, 2022).

The core task of an adaptive CEO is to enable the dynamic networks of all stakeholders (not only followers) to achieve common goals in an environment of uncertainty. The stakeholders are all those individuals who place value on a role (Mitroff, 1983) while also expecting to be impacted by the leader (Volckmann, 2014). When co-electively activating such networks of stakeholders, the system first tends to de-construct [i.e., it goes down the U curve in Schamer's (2009) U-theory concept). This initially increases disequilibrium and causes an increase in the negative effects on the followers and other stakeholder groups.

When operating in disequilibrium, the negative effects on different stakeholder groups experienced in the state of disequilibrium will be attributed to the leader. Adaptive leaders thus need the capacity to sustain operations in disequilibrium (Heifetz, Linsky, & Grashow, 2009). A high level of conflict, frustration, panic, confusion, disorientation, and fear can be attributed to the leader (i.e., a person in the position of authority). Thus, the personal challenge of a leader is to sustain their own effective functioning when faced with negative returns. In other words, what are the conditions under which a person is more willing to address the adaptive challenge and function effectively in the face of negative returns?

Under what conditions is the person at a lower stages of ego development (leader) willing to address the adaptive challenge, and what is the expectation in return?

If the leader is at the lower stages of ego development (in our case, at E3 or E4), he/she gives more attention to the material benefits for the self; even when it comes to most elementary social exchanges, such as the act of giving, such people tend to interpret it in a sense of "what's in it for me?" If addressing the adaptive challenge, a leader at the lower stage of ego development would need to foresee such benefits in order to embark on an adaptive leadership journey. However, when addressing the adaptive challenge, the collective (stakeholder) system tends to move into a larger state of disequilibrium. The experience of conflict, frustration, panic, confusion, disorientation, and fear in a leader at the lower stage of ego development most likely would put more attention on decisions and actions that increase the likelihood to gain the material benefits for the self. In this case, a negative, vicious circle is created, and the negative perceptions and attributions may amplify. This creates the dynamic of "absencing" in Scharmer's sense (2009). Absencing might become a leader–stakeholder dynamic despite the fact that the leader initiates the adaptive challenge.

Under what conditions is a person at the higher stages of ego development (leader) willing to address the adaptive challenge, and what does he/she expect in return?

When a leader is at the higher stages of ego development (in our case at E6 or E7), he/she substantially changes interpretations of the benefits caused by the act of giving; the core interpretational movement is from material to non-material (sensational; shifting attention from material and behavioral appearances to feelings, assumptions, and beliefs behind the specific appearances), from benefits for the self to the quality of the relationship (the other side is taken into consideration as much as it effects the quality of the relationship), from a negative to a more positive-oriented focus. The core criteria for evaluating the quality of the relationship are proximity and trust. When a leader at the higher stage of ego development addresses an adaptive challenge, he/she is more capable of operating and living in the face of conflict, frustration, panic, confusion, disorientation, and fear. This capacity to thrive in chaos is sustained by the leaders' attention to decisions and actions that increase the likelihood of trust and proximity in the relationships with stakeholders, positive interpretations, and the constant scanning of the assumptions and beliefs behind the specific appearances. Such leaders thus are more likely to induce a cycle of presencing in the collective of stakeholders (Scharmer, 2009).

5.3 Theoretical Contributions, Practical Implications and Research Limitations

The core theoretical contribution of this study is the merging of LMX theory with neo-Piagetan adult development theory, also referred to as constructive developmental theory, which is understudied in the

leadership literature (McCauley et al., 2006). This is addressed through the study of the evolution of the act of giving through ego development stages. The identified evolutionary properties of act of the giving are interpreted through the perspective of LMX theory. This merger brings a completely novel perspective to LMX theory. It sets the cognition, perception, and interpretation of a leader and a follower as an object of study. This also is an understudied phenomenon in leadership research (Toader & Martin, 2022).

The next theoretical contribution is explaining the follower perspective through the willingness to entrust power to another person in exchange for services (expected benefits), whereas the leader perspective is explained through the willingness of the leader to address the adaptive challenges. This is another novel perspective on LMX theory. Our findings advance the understanding of the development of leader–follower relationships and have implications for strengthening follower perceptions of high-quality relationships with their leaders, and when a leader is addressing adaptive challenges. This also is an understudied phenomenon in leadership research (Wang, Jiang, Xu, Zhou, & Bauer, 2022).

This study may have several practical implications. When selecting people for leadership positions, the selection criteria should include the stage of adult development. Leaders at a higher stage of adult development are more willing to address adaptive leadership challenges. Next, followers' stages of adult development also matters. Whereas followers at a lower stage of adult development entrust power to a leader in exchange for more material benefit, followers at a higher stage of adult development are more willing to entrust power to a person who is more likely to create trust and build proximity in the relationship (inclusiveness). This has profound implications for the practice of leading and leadership effectiveness. The stage of adult development and self-awareness are critical elements in the practice of leading and leadership effectiveness that are on the rise in leadership research (Carden, Jones, & Passmore, 2022).

The study has several research limitations. Although it appears that the use of adult development is gaining traction in the field of leadership development, instruments for assessing adult development such as the WUSCT can appear to be unreliable (Realms, 2017). The study was conducted in the Slovene language and then translated into English; in the process of translation, some of the meaning may change or even be lost. The proposed relationships for LMX theory also have weak generalizability. This study is hard to replicate.

However, we propose some future research that may overcome some of the research limitations. We propose the study of leader–member social exchange using quantitative questionnaires that include the identified adult development constructs: positive/negative interpretations, material/behavioral/sensational focus, and focus on self/other/relationship. These constructs can be studied quantitatively using appropriate questionnaires. Some in-depth case studies of leaders' intentions for addressing the adaptive challenges and followers' intentions for entrusting power to a leader also would add novel evidence that would validate or invalidate our findings. Future research should include the stage of adult development as an important explanatory variable in LMX relationship.

5.4 Conclusion

This paper addresses the research question of how the stages of ego development impact the interpretation schemes of the simple social exchange (act of giving)? The act of giving is worthy of study for several reasons: (1) the act of giving is the behavioral expression of generativity, which is an important aspect of ego development; and (2) generativity is an important phenomenon to be observed in a case scale system transformation. Using a sample of N = 290 respondents, we present the research findings of how the evolution of the interpretation schemes of the act of giving evolve across the levels of ego development. Based on research findings, we theorize how different interpretation schemes of the act of giving might inform the phenomenon of social exchange between the leader and followers (and all relevant stakeholders). Specifically, we formed implications from two LMX perspectives: (1) the follower perspective—how a willingness to entrust power to another person in exchange for services (expected benefits) might evolve as one moves across the stages of ego devel-

opment; and (2) the leader perspective—how a willingness of the leader to address the adaptive challenges might evolve across the stages of ego development. The attempt to generalize the implications from a simple case of social exchange (the act of giving) to a more complex case of social exchange (leader–member exchange) led to the conclusions that (1) the stage of ego development on the side of the follower and on the side of a leader significantly impact the properties and effects of the social exchange; and (2) higher orders of ego development in the leader and follower induce higher-quality social exchange and a greater likelihood of resolution of adaptive challenges. Hence, mechanism, approaches, and methodologies that accelerate the progression to higher ego stages of both followers and leaders (preferably all stakeholders) should become the object of studies.

EXTENDED SUMMARY/IZVLEČEK

Članek obravnava raziskovalno vprašanje, kako stopnje osebnega razvoja posameznika vplivajo na osmišljanje preproste družbene izmenjave (preučujemo dejanje prostovoljnega dajanja daril, pohval ipd.). Na vzorcu 290 anketirancev predstavljamo izsledke raziskave o evoluciji osmišljanja prostovoljnega dajanja po stopnjah osebnega razvoja. Izsledki raziskave razkrivajo, da višje stopnje osebnega razvoja osmišljajo dejanje prostovoljnega dejanja manj materialno, bolj pozitivno, pri tem doživljajo bolj kompleksna čustva, izhajajo iz več zornih kotov in so bolj osredotočene na kvaliteto odnosa z prejemnikom darila. Identificirane tendence posplošimo na učinke za vodenje, pri čemer izhajamo iz teorije izmenjave vodja-član (angl. leader–member exchange; LMX). Zaključimo, da višja stopnja osebnega razvoja vodi do bolj kakovostne izmenjave vodja-član in povečuje verjetnost rešitve prilagoditvenih problemov pri vodenju. Poleg tega je verjetneje, da bodo člani bolj zaupali vodji v zameno za visokokakovostne odnose med njimi. Članek poskuša združiti teorijo LMX s konstruktivno šolo razvoja odraslih. Ta združitev osvetljuje zanimivo razmerje, in sicer, da je stopnja osebnega razvoja verjeten dejavnik kakovosti izmenjave vodja-član in povečuje uspešnost vodenja.

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APPENDIX:

Figure A- 1: Inter-rater reliability measured by Cohen's kappa

Intraclass Correlation Coefficient							
	Intraclass Correlation[a]	95% Confidence Interval		*F* Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig.
Single Measures	0.965[b]	0.953	0.973	55.462	184	184	0.000
Average Measures	0.982[c]	0.976	0.987	55.462	184	184	0.000
Two-way mixed-effects model in which people effects are random and measures effects are fixed.							
[a] Type A intraclass correlation coefficients using an absolute agreement definition..							
[b] The estimator is the same, whether or not the interaction effect is present.							
[c] This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.							

Figure A-2: Perceptions and interpretations of the intentions for giving and the expected or unexpected consequences resulting from the act of giving across ego development stages

	General cognitive and behavioral tendencies of the stage (Loevinger, 2013)	Perspective focus on the expected and unexpected outcome of giving	Excerpts
Self-protective (E3)	Controlled by impulses. Poor language. Interpersonal relationships are viewed from the perspective of taking. A manipulative or deceptive attitude toward others. Fear of being manipulated and deceived.	Material focus. Act of giving and its consequence not under reflective attention. Focus on negative effects (negative feelings and thoughts). Words and feelings simplistic. Material focus. Effects on the self (how I feel). Effects on another person not included in the interpretation	"Dissatisfaction of a person." "Spoiling." "Not-good enough present." "Good feeling when I give." "Bad if getting an expensive gift." "The embarrassment of choosing a gift." "Gratitude not shown." "Something in return." "Feeling to give back."
Conformist (E4)	Give many conventional responses. Interpretations conceptually simplistic. Frequent use of like, never, or everyone. Judgmental approach, right/wrong. Interpersonal relationships described as behaviors. Search for social acceptability and belonging.	Giving gets more attention. Material focus. More complex interpretations. Focus on the emotional impact of the act of giving on the self. Emotional effects are framed simplistically (satisfaction, dissatisfaction). The other side enters into the perspective, but the attention is given primarily to how the response of the other side effects the self. Transactional-material approach to act of giving (exchange of equal values). The expectation of reciprocation of equal value. Disappointment if the reciprocated response is not aligned with the expectations. A lack of clarity around the expectations as a response.	"Feeling of joy, love, importance." "That the gift is not well received or does not end where it should." "A problem can arise when the value of gifts is different, and you may feel that you owe someone else who gave you a more expensive gift." "I get a sense of possession or abundance." "Gifting is something nice, and it is polite for the gifted person to accept and give thanks. It also happened to me that he did not want to accept the gift." "If you receive a gift, you feel obliged to return it yourself." "In the past, I learned that it is necessary to think carefully who you give to, and how much one deserves. In the past, I probably, like everyone, was very negatively surprised in this regard." "People taking it for granted, and forgetting what I have done for them." "You give too much to someone who doesn't deserve it." "Dissatisfaction with high expectations, desire for more and more." "More willingness to engage." "Gifting brings a smile to your face." "Tears of happiness if the gift was a surprise." "We always want more and more." "Satisfaction." "Satisfaction that you help."

Self-awareness (E5)	Perceived multiple possibilities and alternatives in the situation. Actions in terms of appropriateness. More intimately tied to interpersonal relationships. More aware of individual differences in attitudes, interests, and abilities. Being responsible and fair is an important theme. The morality is one of helpfulness, altruism, and some concern for larger social issues.	Material focus. Giving in the perspective from effects on both sides, thus focus on the relationship, social exchange. Recognition of multi-faceted nature of effects giving on the relationship. Effects of giving on the social exchange are positive (social glue), negative (subversive expression of) and neutral (a method of influence). Emotional impact of the act of giving on the self is becoming more nuanced, emotional distinctions are becoming more fine-grained; attention remains on the positive effects of the self, yet the effects are induced by the quality of social exchange (and not narrowly by the behavioral response of the other side).	"Now and again I am amazed at how grateful some people can be, sincerely grateful when you give them something, even if you give only a little." "In the past, I was very disappointed to give more than I received, and over time, I learned how to evaluate people well and thereby reduce uncertainty in such situations." "Giving promotes collaboration and social cohesion." "Too many people give things just to display a higher social status than they hold. We should give to those to whom we are precious, and not only to those who are dear to us." "Some special emotion like joy when you sense someone happy/joyful/satisfied with the gift and attention." "That instead of having a positive effect on a person, your effect is negative, and that way you hurt a person, and cause damage to the relationship."
Conscientious (E6)	Absolute statements and rules replaced by comparison, contingent statements. Capable of combining opposing alternatives holistically. Presenting choices and decisions. Have long-term goals and ideals. Concerned with life's purpose. Recognize the inevitability of human imperfections. Report emotional nuances. Distinguishes appearances from the underling feelings. The physical aspect of a person is contrasted to mental and spiritual aspects. A broader temporal and social context.	The non-material aspects of giving enter our attention (i.e., giving attention to someone is also an act of giving). Giving as a mechanism of high-quality bonding; a tool to induce trust in the relationship. The creation of trust in the relationship is a function of my response on the response of others; becoming aware that proper/improper act of giving is defined expectations one carries; starting to learn to loosen expectations; not to expect anything is the best approach. The properly performed act of giving increases proximity with other person in the relationship, high quality. A high-quality social exchange creates a positive impact on the self because it induces a feeling of connectedness (compassion).	"It is more important to take time and effort to make someone happy and joyful; material things are not so important." "When I give something, I can feel good, a little more fulfilled; sometimes I expect something in return but not always. Sometimes when I give, do that to express attention that is expected in our society. When I give, I am also aware of my will to serve. Sometimes I have assisted people with different acts of kindness out of my sub-consciousness because this is part of us humans. When I help, I also give advice, because this helps build up communication and trustful relationships and friendships. I help because I feel I am connected and I am not uncaring. In school, I have received more help than I have given in return. . . . At work, I help most of the time and only sometimes and rarely say no." "Tears of happiness and a hug. Pleasure and compassion." "I expect not to be moved, but usually it pleases me. Usually, people are surprised. I prefer to give time, affection, gifts, and emotional support. You need me, I'll be there. Why would I need to get anything from it? I like it, so I do it." "Satisfaction, the feeling that I have done something right—when I see the positive reaction in the person I have influenced with a gift or attention." "What I give to others it is unconditional and I expect nothing in return, so I have no unexpected consequences." "Consequence is the connection through a sense of fulfilment, inner warmth, positive affect." "When giving, releasing even greater happiness than when receiving a gift." If the gift is perceived with sincere joy, I feel that I made that person happy and I get the feeling of satisfaction. I think that I like the person more. If the gift is not appreciated. I try not to show disappointment. I think that after such "acceptance" of the gift I move away from that particular person." "When I'm a giver and I need to give a gift to my family or friends I initially feel stressed out! This is when I have to choose a gift. Usually, I choose something they would be able to use. When this phase is behind me, I am happy that I was able to choose "the proper" gift. When I give the gift to the person that is close to me, I usually feel happy and gentle. However, more important for me is how the gift is being perceived. If the gift is perceived with sincere joy, I feel that I made that person happy and I get the feeling of satisfaction. I think that I like the person more. If the gift is not appreciated (you can hear thank you, but your gut feeling tells you it is not sincere), I try not to show disappointment. I think that after such "acceptance" of the gift I move away from that particular person.

Individualistic (7)	Responses are unique, but not all unique responses are rated that highly in terms of interpretation and perspective-taking. The exact wording is rarely replicated. Embrace simple ideas expressed at the lower levels as one complex idea). Like to reconcile ideas that are at previous stages expressed as polar. Distrust purely rational analysis in favor of a more holistic view. feelings and context are taken into an account. Realizes that most prior meaning-making and identities were socially constructed and culturally conditioned. Learn to consciously scrutinize their own beliefs and assumptions. do not impose their views on others.	Non-material aspects of giving receive full acknowledgement. Giving is a language of social exchange. Expectations of the response of giving are loosened. Attention is paid to the intentions and assumptions behind the act of giving. Better sensing the intentions and assumptions behind the act of giving serves to structure more proper response. The proper response is defined by the capacity to create a positive impact on others. Critical to assess the impact on other is change well-being. An increase of the feeling of well-being in others increases the feeling of well-being in the self. Giving creates a space/mirror for learning about the self and others. Giving as a form of being. When attention is paid to society at large, recognition that there is a mismatch between how one act in terms of being and what is unfolding in the outer reality.	"When I receive something, I understand it as a sign of appreciation and thank you, either for good deeds done or just as gratitude for being there for someone. I'm always interested in what the purpose of giving is so that I can thank them for their attention and see what made them feel so good that they decided to give me something. It is always good to know the reason so that you can make them feel good more often and teach you what one cherishes and appreciates. Besides, it gives me the reflection to see how much they know me and give me things that means a lot to me. Things in this context can be material or immaterial, such as "thank you," hug, kiss, breakfast, help in preparing lunch, a voluntary initiative to do something instead of me . . . in a business setting, we do not take time for personal relationships, for building the trust and letting each other know that going the extra mile matters and it's noticed. It also creates a team spirit, where mutual wins are greater than individual ones, and that we are not an egoistic society. Unfortunately, this doesn't always work." "I always want to give a gift-hit. Of course, it happens a gift-miss to me, too. But giving is a kind of language, so if I give a gift-miss, then we speak two different languages. The unexpected consequence is that I start analysing where I missed and plan to improve that on the next occasion; I want to know you. This means a lot to me. The unexpected consequence is a reflection on how people care less and less: 'Just bring a present like each year and we're done.' This happens in a personal and business context. This reflection is for me unpleasant. I estimate it is also a reflection of the time we are living in. At the end of the day, I just wish the receiver recognizes my effort in preparing and giving the gift to him. I shake hands, I hug, I kiss."

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EMPIRICAL ANALYSIS OF THE INFLUENCE OF GAMIFICATION ON EMPLOYEES' BEHAVIOR

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Abstract

Gamification is a relatively new concept that refers to the use of game elements in non-game productive activity. It also can be implemented as a behavioral modeling tool influencing behavioral change in an organizational context. A remaining challenge in gamification is the absence of measurement focus to empirically quantify gamification attributes. This paper measures key behavioral changes that gamification influence among employees and assesses their theoretical foundation. We combined validated measurement tools to empirically measure behavior changes, especially engagement, performance, and satisfaction. The combined measurement tool includes the Utrecht Work Engagement Scale (UWES), the Individual Work Performance Questionnaire (IWPQ), and the Minnesota Satisfaction Questionnaire (MSQ). Research results proved that there is a significant behavioral difference between employees that were influenced by gamification and employees that were not. Employees that were exposed to gamification demonstrated higher engagement and satisfaction levels and verified the potency of gamification. Research results evidenced no significant differences between the two groups in terms of performance levels. This research paper will guide practitioners to better evaluate gamification attributes and improve gamification organizational assimilation.

Keywords*: gamification, engagement, job performance, satisfaction, organizational behavior*

1 INTRODUCTION

Gamification can be defined as embedding game elements into activities that are not themselves games (Werbach & Hunter, 2012). This engaging phenomenon helps in implementing motivational affordances in services to evoke game-like experiences and improve behavioral results. Gamification processes are being applied today in numerous fields, including education, health, business, and management (Bozkurt & Durak, 2018). This effective problem-solving and goal-achieving tool (Zainuddin, Chu, Shujahat, & Perera, 2020) also is implemented for behavioral change by influencing and promoting desired learning behavior (Ērgle & Ludviga, 2018; Buckley & Doyle, 2017), and invoking in individuals the same psychological experiences as games generally do (Huotari & Hamari, 2012). Gamification is portrayed through and defined by game elements, the choice of which differs from one researcher to another. However, the most identified ones in the literature are points, badges, leader boards, avatars, quests, performance graphs, and certificates (Scheiner, 2015; Cardador, Northcraft, & Whicker, 2017; Mekler, Brühlmann, Opwis, & Tuch, 2013). With its potent game design aspects, gamification stimulates individual incentives and drives user behavior. Therefore, to better understand gamification, it is of supreme importance to acknowledge and fully comprehend user behavior, specifically user behavioral changes in organizational contexts. These changes are induced by interpersonal and organizational factors.

Behavioral change is the abandonment of certain behaviors and the adoption of new ones (Prochaska & Velicer, 1997). Changing behavior is not about changing one act; it is about altering the behavioral routines in which the acts are embedded (Heimlich & Ardoin, 2008). Behavioral change is saturated with complexities, and for that reason there is no single theory that can fully account for it. However, such a change could be well described when it is caused by gamification. Self-determination theory and flow theory could be classified as principal theories that elucidate how gamification influences behavioral change (Krath, Schürmann, & von Korflesch, 2021).

According to self-determination theory (SDT), relatedness, autonomy, and competence are three primary psychological needs that all individuals aspire to fulfil. SDT is applicable to the settings of learning and games because it explains the social contexts that can either boost or lessen intrinsic motivation (Kam & Umar, 2018). On the other hand, flow theory delineates the state in which users become entangled in a certain activity and lose their sense of time (Csikszentmihalyi, 1991). When individuals are fully engaged in an activity, they perceive the intrinsic nature of hoped-for rewards (Csikszentmihalyi, 2014). Flow theory illustrates one of the principal goals of gamification, and the recent literature has examined the efficacy of using gamification elements to retain users in a flow experience (Huang et al., 2018).

Empirically evaluating the behavioral changes imposed by gamification on employees has remained a hurdle. There are no studies that clearly show how such a measurement can be quantified exclusively. In our work, we applied a combined tool that is formed by three validated measurement tools to empirically measure employees' engagement, performance, and satisfaction, because these are important factors of organizational behavior.

2 METHODOLOGY

2.1 Hypotheses

Previous research addressed the importance of implementing gamification in business and its potential positive influence on employees' engagement (Robson et al., 2016; Ponis et al., 2020), performance (Nacke & Deterding, 2017; Hosseini et al., 2021) and satisfaction (Nacke & Deterding, 2017; Schöbel et al., 2020). Gamification is a kind of technology that influences change without enforcing it (Liu, Santhanam, & Webster, 2017). We developed a novel approach that validates gamification effects on employees' behavior, and which can quantitatively measure behavioral aspects. Gamification is a behavioral-change modeling tool when tailored adequately. In this research, the hypotheses are as follows:

H1. Gamification has a positive effect on employees' behavior.

H1-1. Gamification has a positive effect on employees' engagement.

H1-2. Gamification has a positive effect on employees' performance.

H1-3. Gamification has a positive effect on employees' satisfaction.

2.2 Measurement

To address these hypotheses, we constructed a measurement tool that can analyze employees' key behavioral changes in an organizational context. Our measurement tool is a combination of three self-reporting validated tools: the Utrecht work engagement scale (UWES), the Individual Work Performance Questionnaire (IWPQ), and the Minnesota Satisfaction Questionnaire (MSQ). We name this novel theoretical contribution EPS, which highlights the three variables measured: engagement, performance, and satisfaction. We applied the Utrecht scale to measure empirically how gamification implementations influences engagement. The method consists of 17 items and provides a more concrete overview of employees' vigor, dedication, and absorption (Schaufeli & Bakker, 2003; Seppälä et al., 2009). Vigor refers to energy levels and mental resilience while working. Respondents answer the scale using a 7-point Likert in which 0 indicates Never and 7 indicates Always. The second applied measurement tool is the IWPQ, which incorporates task performance, interpersonal performance, and counterproductive work behavior (Koopmans et al., 2012; Koopmans, Bernaards, Hildebrandt, De Vet, & Van Der Beek, 2014). Originally the IWPQ consisted of 47 items, however, to address our re-

search aim we selected a shorter 25-item version. The items were scored on a 5-point Likert scale in which 1 indicates Strongly disagree and 5 indicates Strongly agree. Finally, we applied the MSQ to measure the effect of gamification on employees' satisfaction. The measurement tool is used widely in the literature (Gillet & Schwab,1975; Weiss, Dawis, England, & Lofquist, 1967; Inayat & Khan, 2021) and provides actual evidence of any changes in employees satisfaction levels. The MSQ is a 5-point Likert-type scale formed of 20 items and is a time-stable instrument.

2.3 Participants and Procedures

Our sample was formed of 62 European employees who were pursuing their higher education in Hungary. Our data were obtained using questionnaires. The surveys were distributed using Google forms, emails, and social media. Because gamification is not yet a widely recognized concept, we conveniently conducted this research among employees who were continuing their higher education at Budapest University of Technology and Economics. Our sample comprised 56.5% males, 41.9% females, and 1.6% who identified themselves as other; 54.8% of our questionnaire respondents were between 18 and 25, 37.1% were between 26 and 35, and only 8.1% were between 36 and 45. Most of our respondents were university graduates; 48.4% had finished their bachelor's degree, and 33.9% had completed their master's degree. The level of work experience also indicated that 53.2% of our respondents had 1–5 years of experience, whereas 24.2% had less than 1 year.

Our demographical data can help us unravel employees' perception factors, which are examined in the Analysis and Results section. Table 1 presents our sample's age distribution, Table 2 presents their educational distribution, and Table 3 presents our respondents' years of experience.

Table 1: Age distribution

Age	Percentage
18-25	54.8%
26-35	37.1%
36-45	8.1%

Table 2: Educational level distribution

Education levels	Percentage
Elementary school	1.6%
High school graduate	11.3%
Bachelor's degree graduate	48.4%
Master's degree graduate	33.9%
PhD graduate	4.8%

Table 3: Employment years distribution

Employment years	Percentage
1	24.2%
1-5	53.2%
6-10	17.7%
11-15	4.8%

3 ANALYSIS AND RESULTS

Our research data indicates that 21% of our respondents were never exposed to gamification at work, whereas 79% acknowledged being exposed to gamification and game design elements in an organizational context. Furthermore, 41.9% of the respondents acknowledged a high level of familiarity with the concept of gamification and procedures, and 27.5% of respondents indicated low familiarity levels. The collected data demonstrate that most of our sample had a good level of familiarity and understanding of gamification in an organizational context. Our population was divided into two groups: Group 1 (G1) is the employees that were not exposed to gamification, and Group 2 (G2) is formed of employees that were exposed to gamification in an organizational context. Our research goal was to empirically measure the effects of gamification and compare Groups G1 and G2 in terms of engagement, performance, and satisfaction levels. Firstly, we conducted Kolmogorov–Smirnov and Shapiro–Wilk normality tests to address our sample distribution better.

Table 4: Test of normalities: Kolmogorov–Smirnov

	Statistics	df (Sig)
Satisfaction	0.135	62 (0.46)
Engagement	0.150	62 (0.007)
Performance	0.113	62 (0.001)

According to the Kolmogorov–Smirnov test, our data on satisfaction and engagement are not normally distributed (0.0113 < 0.05, and 0.153 < 0.05). Our test results analysis indicates that performance levels are normally distributed (0.150 > 0.05). We also conducted a Shapiro–Wilk normality test to validate our results further (Table 5).

Table 5: Test of normalities: Shapiro–Wilk

	Statistics	df (Sig)
Satisfaction	0.980	62 (0.398)
Engagement	0.914	62 (0.000)
Performance	0.915	62 (0.000)

The Shapiro–Wilk test indicates the same results as the Kolmogorov–Smirnov test. Our data on satisfaction and engagement are not normally distributed (0.0113 < 0.05, and 0.153 < 0.05), and, in contrast, our performance levels are normally distributed (0.150 > 0.05).

Based on our results, we conducted Mann–Whitney U tests on our variables of satisfaction and engagement levels, and an independent T-test on our variables of performance levels. These tests allow us to determine if there were any differences between Groups G1 and G2. Table 6 presents the results of the Mann–Whitney U test.

Table 6: Mann–Whitney test statistics

	Satisfaction	Engagement
Total N	62	62
Mann-Whitney U	452.500	450.000
Wilcoxon W	1677.500	1675.000
Test Statistic	452.500	450.000
Standard Error	57.786	57.792
Standard Test Stat	2.319	2.275
Asymptotic Sig. (2-sided test)	0.020	0.023

Data analysis in Table 6 indicates moderate to strong differences between Groups G1 and G2 in terms of engagement levels (0.023 < 0.05), with a Mann–Whitney U value of 450.0 and a standard error of 57.792. Examining the data results carefully led us to conclude the validity of our first sub-hypothesis, H1-1. Moderate to strong differences exist between employees that were exposed to gamification and employees that were not in terms of organizational engagement. The same differentiated result was evident when we replicated the data analysis on our satisfaction variable as indicated in Table 6. There were moderate to strong differences between Groups G1 and G2 in terms of job satisfaction (0.020 < 0.05), with a Mann–Whitney U value of 452.5 and a standard error of 57.78. Based on this analysis, we can conclude that Hypothesis H1-3 is accepted: moderate to strong differences exist between employees that were exposed to gamification and employees that were not exposed to gamification in terms of organizational satisfaction. Owing the results of the normality tests in Tables 4 and 5 that proved the normality of our performance variable distribution, we conducted an independent T-test to validate our second sub-hypothesis. Table 7 demonstrates the independence of performance from the influence of gamification. No significant differences existed between Groups G1 and G2 in terms of organizational performance (significance value of 0.082 > 0.05, and a T-value of 1.731). Elaborating on our results, we conclude that our second sub-hypothesis is rejected. We repeated our tests on satisfaction and engagement levels using the independent T-test to validate the achieved results further.

Table 7: Performance: independent T-test

	t	df	Sig. (2-tailed)	St. Error Differences
Equal Variances assumed	-1.731	60	0.089	0.19277
Equal Variances not assumed	-1.519	16.298	0.148	0.21974

The T-test measurements demonstrate a significance value of engagement: (0.039 < 0.05, and a T-value of −2.236), which also validates Sub-hypothesis H1-1. Employees that were exposed to gamification

demonstrated higher engagement levels than employees that were not. Our results also were significant (0.037 < 0.05, and a T-value of −2.268), which validates our third research sub-hypothesis, H1-3. Employees demonstrates higher satisfaction levels in a gamified work environment. Furthermore, as explained by Pallant (2016) we applied the eta-squared rule to measure how significantly game elements influenced employees' engagement and satisfaction. In the following equations, N1 is the number of respondents of Group 1, and N2 is the number of respondents of Group 2.

$$\text{Eta}^2 = \frac{-2.5^2}{-2.5^2 + (13 + 49 - 2)}$$

$$\text{Eta}^2 = 0.09434$$

$$\text{Eta}^2 = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

Engagement analysis indicates that gamification exposure had moderate to strong effects on employees' engagement levels. Results demonstrate the efficiency of gamification in changing employees' behavior. We applied the same formula to measure employees' satisfaction levels.

$$\text{Eta}^2 = \frac{-2.617^2}{-2.617^2 + (13 + 49 - 2)}$$

$$\text{Eta}^2 = 0.102451$$

The analysis of satisfaction levels also indicates that gamification had moderate to strong effects on employees' organizational satisfaction levels. We can conclude that gamification changes employees' behavior by improving their engagement levels and satisfaction levels.

Because of the importance of initial or accumulated perceptions, we investigated employees' perceptions of the gamification concept and if they realised its potential negative attributes. Results indicate that only 4.3% of the respondents stated that gamificationis a source of nuisance, and 8.5% indicated no negative or positive attributes. The solid majority of our respondents—precisely 87.2%—indicated positive effects after being exposed to gamification. Positive responses included better psychological well-being, improved interdepartmental communication, knowledge sharing, and higher motivation levels.

4 DISCUSSION AND CONCLUSION

4.1 Theoretical Contributions

Our research methodology was based on a hybrid-type approach that utilized three scales to measure and compare employee's engagement, performance, and satisfaction. Combining the Utrecht Work Engagement Scale, Individual Work Performance Questionnaire and Minnesota Satisfaction Questionnaire enabled us to conduct a holistic analysis of gamification behavioral influence. Consistent with the previous literature (Huang et al., 2018; Krath, Schürmann, & von Korflesch, 2021) self-determination theory and flow theory are two of the most important theories in the field of gamification, and our proposed measurement tool, EPS, incorporates them both. Gamification influences behavior change rather than mandating it, and every game element can be categorized according to its own influence and phycological effect. Therefore, game element selection is crucial in promoting the desired behavioral change.

4.2 Practical Implications

Our research elaborated a new approach in investigating the influence of gamification on employees, and is a cost-effective and fast empirical approach. Furthermore, the results of this study can help practitioners scientifically quantify behavioral changes in an organizational environment. Research results proved the usefulness of gamification in influencing organizational behavior. Our results also indicate gamification assimilation among employees between 18 and 35. Gamification exposure moderately to strongly increased employees' organizational engagement and satisfaction. Moreover, the research findings indicate that in this sample, gamification had no significant influence on employees' organizational performance, which is a notable exception.

4.3 Limitations

Because gamification is a relatively new concept, measuring gamification influence among blue-collar employees proved difficult, which is a notable limitation. Therefore, the implementation processes should include a comprehensive gamification description. We planned to assess the impact of gamification on employees' turnover rates, but acquiring such data contradicted corporate regulations. Our combined measurement tool is accurate; nevertheless, owing to its hybrid nature, it was paired with a lengthy questionnaire, making it more difficult to obtain employees' responses.

4.4 Future Research Directions

Our research was conducted among employees residing in Hungary, from different cultural backgrounds. Selecting a more homogeneous sample would enable researchers to detect a mediating role of culture in gamification and should provide cultural perception of integrated game elements by applying the same hybrid measurement tool. Researchers' interpretations of what constitutes "gamification" varies depending on the game elements they select to include. Therefore, we recommend utilizing a larger sample of employees to evaluate the effects of game elements individually and collectively. The aforementioned method would provide empirical evidence of the appropriate game element combinations based on organizational objectives. Employees did not provide consent before participating in a gamified process, which is a noteworthy observation. Gamification incorporation in on-site job tasks adds a fun layer to organizational activities. Nevertheless, employees' awareness of the process and its goals should be addressed.

EXTENDED SUMMARY/IZVLEČEK

Igrifikacija je razmeroma nov koncept, ki se nanaša na uporabo elementov igre v neigrnih produktivnih dejavnostih. Prav tako se lahko uporablja kot orodje za vedenjsko modeliranje, ki vpliva na vedenjske spremembe v organizacijskem kontekstu. Izziv, ki ostaja povezan s tem konceptom, je pomanjkanje empiričnih meritev lastnosti igrifikacije. Prispevek meri ključne vedenjske spremembe, na katere vpliva igrifikacija med zaposlenimi, in ocenjuje njihovo teoretično podlago. Združili smo že prej potrjena merska orodja za empirično ugotavljanje sprememb vedenja, predvsem zavzetosti, uspešnosti in zadovoljstva. Skupno merilno orodje vključuje Utrechtsko lestvico delovne zavzetosti (angl. Utrecht Work Engagement Scale; UWES), vprašalnik o individualni delovni uspešnosti (angl. Individual Work Performance Questionnaire; IWPQ) in Minnesota vprašalnik o zadovoljstvu (angl. Minnesota Satisfaction Questionnaire; MSQ). Rezultati raziskave so pokazali, da obstaja velika vedenjska razlika med zaposlenimi, na katere je vplivala igrifikacija, in zaposlenimi, na katere ni. Zaposleni, ki so bili izpostavljeni igrifikaciji, so pokazali višjo stopnjo zavzetosti in zadovoljstva ter tako potrdili moč igrifikacije. Glede ravni uspešnosti pa rezultati niso pokazali statistično značilnih razlik med obema skupinama. Ta raziskovalni članek bo v praksi vodil k boljšemu ocenjevanju lastnosti igrifikacije in k izboljšanju uporabe koncepta v organizacijah.

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HOW TO MEASURE OUR IMPACT ON SOCIETY: AN ILLUSTRATION OF SOCIAL IMPACT ANALYSIS

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Abstract

The purpose of this paper is to help organizations facing the challenge of measuring the social impact of their activities. Although examples of environmental effects' analyses abound, this is not the case for the analysis of social impact. To illustrate how organizations can demonstrate their impact on society, we evaluated the activities of the Incredible Years (IY) parenting program using the social return on investment (SROI) approach, considering not only the direct impact of the program on children, but a broader range of outcomes for different stakeholders. We show that the monetized impacts of the program are about 10 times higher than the costs of the program. The SROI as an evaluation approach is generally applicable to activities of for-profit and nonprofit organizations, and serves as a reference to demonstrate the value of expected social impact to investors and funders. Therefore, SROI is a valuable tool not only for managers but for policy makers as well. We discuss the steps, data requirement, interpretation of results, and limitations of the social impact analysis.

Keywords: *social impact, social impact analysis, SROI, ESG, parenting program*

1 INTRODUCTION

In light of sustainable development, a modern organization is expected to operate and demonstrate its performance not only in terms of maximizing value for the owner but also in terms of impact on society and the environment (e.g., United Nations, 2015; European Commission, 2022a). This holds for both companies and nonprofit organizations (NPOs). The incentive for measuring and reporting firms' social impact comes from the market—from both buyers and peers. Additionally, the regulators in particular economic sectors might prescribe the scope and depth of reporting on social impacts by following the set goals of sustainable development (European Commission, 2014). The Proposal for a CSR Directive (European Commission, 2022d) indicates that reporting on social impacts will be even more demanding in terms of depth and scope, and will be integrated into the overarching non-financial reporting framework (European Commission, 2014). This also is proposed by the environmental, social, and governance criteria of the so-called ESG initiative (European Commission, 2020b). In particular, when organizations are co-funded by public sources to create social value, in addition to their financial performance, they also need to focus on the measurement of impacts on society (Millar & Hall, 2013). Nonprofit organizations, which largely are co-financed by public funds, represent a growing sector in developed countries, bringing calls for more legitimization and evidence of effectiveness to provide accountability and justify

the funding (Arvidson, Lyon, McKay, & Moro, 2013). Accordingly, managers of nonprofit organizations also are expected to justify the spending of public funds for social impact by reporting on their programs' efficiency and effectiveness. All this means that social impact analysis will gain importance as a tool to identify, measure, and evaluate the social desirability of activities.

This paper addresses these important and timely issues. Although examples of environmental effects analyses abound, this is not the case for the analysis of social impact. This corresponds to the development of the regulatory framework, which currently is more developed for environmental effects (European Commission, 2020c). Therefore the purpose of this paper is to help organizations facing the challenge of measuring the social impact of their activities by providing an example. We use the case of the Incredible Years (IY) parenting program to illustrate the steps, data requirements, interpretation of results, and limitations of such analysis.

The case was chosen because the program has a range of effects, occurring across a longer time frame and for multiple stakeholders. This allows us to demonstrate how to capture such features within the social impact analysis. We used the social return on investment (SROI) approach, taking into account not just the program's direct effects on the children but a broader set of outcomes for different stakeholders. Namely, studies show that parenting training programs are an extremely effective way to reduce children's behavioral problems and improve parent–child relationships (Hutchings et al., 2007), given that parents have a crucial influence on a child's behavior (Gardner, 1987). Such programs provide better chances to finish schooling and to prosper in life, and better quality of life for parents and siblings as well. Furthermore, these effects extend beyond their families to communities and society in the broadest sense. Still, the target groups of such programs often represent minor segments of the population, and the positive direct effects are challenging to evaluate, so the economic viability of these programs is often questioned despite the undoubtedly positive quality effects. Moreover, there is growing pressure on the program initiators to demonstrate empirically the value of the expected social impact created by invested funds. Because the SROI is based on the monetary value of inputs and impacts, managers can use the results of such analyses for this purpose.

We define social impact analysis as an umbrella term for the variety of methodological approaches developed in different literature streams. The professional and academic community recognizes that mere economic indicators of performance, such as costs and profits, do not adequately reflect the broad scope of impacts expected from organizations and projects aiming to create social value. Many attempts have been proposed in economics, accounting, and the social impact assessment literature (e.g., Burdge, 2003; Freudenburg, 1986; ICPGSIA, 2003; O'Faircheallaigh, 2009) to improve the performance measurement (and management) in this respect. The SROI approach is just one possible method to systematically identify, measure, and evaluate a broader set of individual and social effects. SROI has been applied across different public health areas, including health promotion, mental health, sexual and reproductive health, child health, nutrition, healthcare management, health education, and environmental health (see review by Banke-Thomas, Madaj, & Van den Broek, 2015). Recently, SROI studies also have emerged in the areas of physical activity and sport (see review by Gosselin, Boccanfuso, & Laberge, 2020), as well as in social enterprises to measure their social value (Nicholls, 2007).

The SROI value is based on the monetary valuation of inputs and the monetary valuation of impacts of the analyzed program or activities. Although measuring such programs' inputs usually is not problematic, measuring the benefits of these programs in a way that allows us to include them in the SROI calculation, namely in money terms, poses a considerable challenge to scholars and practitioners (Millar & Hall, 2013; Maier, Schober, Simsa, and Millner, 2015; Arvidson et al., 2013). Our study contributes to the growing knowledge base in economic evaluations of social impact by addressing some of the challenges of measuring and monetizing the effects in economic evaluations. The example we use can be generalized to many similar activities, particularly those aimed at preventing negative impacts, implemented by different organizations.

This paper first presents a literature review of the effects of parenting programs and social impact measurement. Then we explain the SROI technique for economic evaluation. Next we explain how we identified and measured the social impact of the IY parenting program carried out in the period 2017–2019 in Slovenia. The results section contains the empirical results for the studied case, and the conclusion wraps up the paper.

2 THEORETICAL BACKGROUND

In this section, we first review the literature on the effects of parenting programs to understand where to look for stakeholders and social impacts. Second, we briefly overview the analytical approaches to measure social impact.

2.1 Effects of Parenting Programs

The literature on the effects of intervention and preventive health programs, including parenting programs, confirms their short- and long-term positive impact on the health and well-being of individuals and their immediate community (Copeland, Shanahan, Costello, and Angold, 2009; Scott, Knapp, Henderson, and Maughan, 2001). Intervening early in childhood is essential for preventing or mitigating later consequences of mental disorders (Pardini and Frick, 2013), such as failure in school, suicidal tendencies, crime, teen pregnancy, mental and physical health problems, social isolation, and even death. Parenting programs effectively reduce children's behavioral issues; improve parenting skills; and reduce anxiety, stress, and depression among parents (Hutchings et al., 2007).

The IY parenting program for parents of children aged 3–8 includes preventive interventions in the field of mental health of children. Parents' participation in such programs statistically significantly reduces behavioral disorders in children (Menting, de Castro, & Matthys, 2013; O'Neill, McGilloway, Donnelly, Bywater, & Kelly, 2010), thus reducing or preventing the adverse effects of behavioral disorders with early onset on education, health, addiction, delinquency and crime, teen pregnancy, child neglect, etc. IY improves parenting skills; relationships within the family; the self-image of family members; social, emotional, and communication skills of children; willingness to learn; prevention of serious behavioral disorders; the interaction between children and parents; relationships and connections; parents' problem-solving skills; and children's social skills and emotional control, school-readiness, and readiness for problem-solving; and reduces children's behavioral and emotional problems (see Menting et al. 2013 for a review of studies).

Long-term and, to a large extent, measurable program benefits include social savings in the field of various health services (from the treatment of psychiatric disorders to chronic non-infectious diseases), at all levels of education, in social services, in the prevention of consumption of legal and illegal drugs and non-chemical addiction, and in the field of juvenile delinquency and crime (Menting et al. 2013). The program also contributes to children's better academic achievement and to a greater level of their economic activity in adulthood, thus reducing the need for compensation for unemployment and social transfers (Cleary, Fitzgerald, and Nixon, 2004; Colman et al. 2009; Scott et al. 2001).

2.2 Social Impact Measurement

In this paper, we understand "social impact" as an impact on society. Typically, the intended direct effect of an activity is a positive impact, so we also call it a "benefit" for society. There are many calls for more examples, especially studies that enable comparison in monetary terms either within or across organizations. Because the analyses need to include effects occurring for a range of stakeholders, such calculations are complex and demand considerable resources. Various approaches to social impact measurement share the aim of measuring and evaluating the impacts as consequences of activities on relevant target groups (stakeholders). We identified three areas in which methods were developed for capturing the impacts of activities creating social instead of purely monetary added value: economics, social accounting, and social impact assessment. In this section, we briefly summarize the main approaches.

Traditionally, economic evaluation methods such as cost-effectiveness, cost-utility, and cost–benefit analyses (CBA) have been used to assess the value-for-money of public programs, especially in the health sector. For example, CBA is based on the demand function and evaluates benefits in money terms, either by the willingness-to-pay or willingness-to-accept approach (Then, Schober, Rauscher, & Kehl, 2017). In the accounting field, social accounting emerged as a contemporary approach to value and measure social impacts (Richmond, Mook, & Quarter, 2003). This approach focuses on including stakeholder input among data analyzed for the accounting statements (Richmond et al., 2003) and on providing a common language and metric for comparing heterogeneous social impacts (Mook, 2013). Examples include the Global Impact Investing Ratings System (GIIRS, 2008) and the Impact Reporting and Investment Standards (IRIS, 2009).

The social return on investment method developed from traditional CBA and social accounting. The SROI approach originated from the social impact literature and was introduced in the 1990s by the Roberts Enterprise Development Foundation. In addition to some professional analyses, several academic studies produced different advanced analytical techniques for calculating the SROI (Adler, 2006; Gair, 2002; Hammitt & Haninger, 2011). The SROI has been promoted as a more ”holistic” approach to demonstrating value for money (Banke-Thomas, Madaj, Charles, & van den Broek, 2015).

Both the SROI and CBA try to evaluate the effects of an activity or a program at the societal level. Accordingly, the purpose of undertaking a cost–benefit analysis is similar, if not identical, to that of undertaking an analysis of social return on investment (Cordes 2017). Some even define SROI as “a form of adjusted cost-benefit analysis that takes into account, more holistically, the various types of impact” that programs have (Arvidson et al., 2010). SROI also has been described as an extension of the CBA to incorporate in addition the broader socio-economic and environmental outcomes (Banke-Thomas et al., 2015).

At the same time, several differences have been pointed out by the academic literature (e.g., Arvidson et al., 2010; Then et al., 2017). First, CBA differs from the SROI in the scope of the impacts considered. CBA has a narrower focus on the economic impacts with direct and indirect costs, and barely considers social, political, and cultural impacts. Compared with CBA, SROI analysis uses different terminology, focusing on the investment approach, including profit. In addition, there is a very strong explicit emphasis on stakeholders within SROI and the types of involvement they can have. Consultation with stakeholders and their importance is one of the strongest features of conducting a SROI. It appears within CBA but is given much less emphasis. This characteristic of “bottom-up” SROI (vs. “top-down” CBA) has been recognized by health economists (Edwards & Lawrence, 2021). SROI can be deployed as a management tool and integrated into organizational flows. Furthermore, SROI is presented as one way an organization may learn and use SROI to direct resources to areas with the most significant impact (Then et al., 2017). CBA is more likely to be conducted by external agents who report on the efficacy of particular proposals or interventions.

3 METHODOLOGY

3.1 The Analyzed Program

We analyzed the IY parenting program for parents of children aged 3–8, which was implemented in Slovenia in the 2017–2019 period. The effectiveness and transferability of the program have been studied for over 40 years in different cultural environments. The goals, structure, and implementation of the certified IY program are standardized across countries. The program includes mainly parents of children with behavioral issues who have been referred for or already are receiving treatment. In Slovenia, the IY pilot implementation started in the period 2015–2016 and, similar to other countries, yielded exceptional results. Consequently, in 2017, 10 IY centers were set up in five Slovenian regions. In the 2017–2019 period, funds were provided by the Ministry of Health and a consortium of partner institutions with the support of the local community and by the Ministry of Labor, Family, Social Affairs and Equal Opportunities. This study analyzed the costs of the program for the volume planned for 2018 and the benefits arising in a 10-year period after the implementation in 2018.

3.2 The SROI Analysis

The core of the SROI method is the "impact model," composed of several "impact chains"—one for each of the key stakeholders affected. In every chain, hypothetical relations between inputs, activities, and outputs are specified (Figure 1). Outputs are determined as directly measurable results of activities leading to the desired outcomes. Outcomes are understood as gross effects, of which only a part is a consequence of the program and represent the actual impacts (Then et al., 2017). Equivalently, the impact is defined as the difference between outcomes that would occur with and without the program (i.e., a net effect). Impacts for each of the stakeholders typically are determined first in natural units, but they also can be monetized. For economic evaluations, we strive to monetize as many impact chains as possible and sensible.

After each impact chain is evaluated in monetary terms, the impacts can be summed and compared to the inputs' cost. The comparison usually is expressed as the SROI value, which is a ratio of the total impact (sum of all impact chains) to the total input cost (Equation 1). For example, a SROI value of 5 means that each €1 spent in the program creates a value of €5 in social effects.

$$\text{SROI} = \frac{\sum_{i=1}^{n} \text{Impact}_i}{\sum_{j=1}^{m} \text{Cost of input}_j} \qquad (1)$$

These are the five elementary steps in the SROI analysis carried out for our case, the IY parenting program:

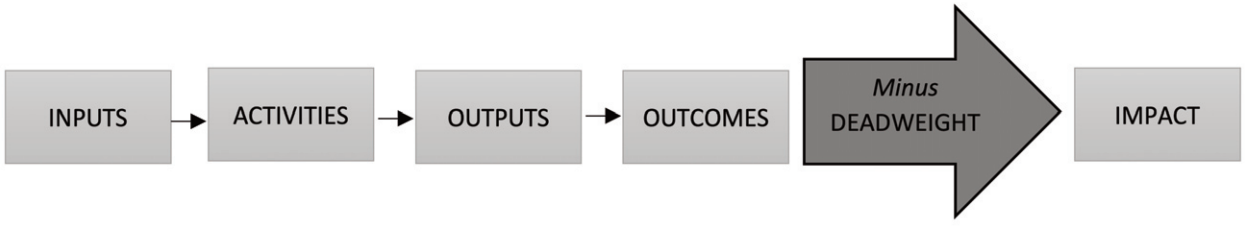
Step 1. Identify a broad set of potential stakeholders affected positively or negatively by the program.

Special care must be taken to ensure that as many direct and indirect effects on individuals, organizations, and institutions are identified, regardless of how directly they are involved in the program's activity. The impacts sometimes can be unintended or harmful for some stakeholders; such stakeholders must not be neglected in the analysis. The reviewed literature on early childhood interventions exposes several potential stakeholders. The expected positive impacts on the health and well-being of individuals and their immediate community are most apparent and, consequently, the child, parents, and families represent key stakeholders in this analysis. Moreover, the institutions from health-related, educational, and social sectors also are sources of potential stakeholders. Finally, society also can be considered to be a stakeholder.

Step 2. Identify key stakeholders, typically those for whom the most considerable effects are expected.

Careful consideration must be taken to avoid including too broad a range of those affected by the program, but to include those stakeholders for whom principal effects can be expected. In addition to the *child* and *parents*, we identified institutions from *pre-school* and *primary school education* (kindergartens and elementary schools) as key stakeholders. The IY program's effects on secondary and tertiary education are generated over a more extended period and are beyond the time horizon of our analysis. For the health sector, we treated *institutions* offering primary and secondary treatment of behavioral and emotional problems as crucial

Figure 1: Impact model in SROI analysis (one impact chain)



stakeholders. We also included *society* as a key stakeholder because some effects on the perceived level of safety and crime rate were expected within the study's time horizon.

Step 3. Set up the impact model by specifying (hypothetical) impact chains for each stakeholder.

The theoretical impact chains for children and parents are well substantiated by the literature (Menting et al., 2013). Hence, we expected that the inputs required by the IY program's activities will result in measurable outputs leading to the program's intended outcomes. For the immediate stakeholder group, *parents,* this means that by participating in the program's activities (attended weekly classes and special events are the outputs), they will improve their parenting skills and benefit from having a better family and professional life (outcomes and impacts). The *children* do not participate in the weekly sessions; however, they have short-term benefits in terms of fewer requirements for special assistance (hours of health services, educational services, and social workers' services are the outputs) as well as a happier and more productive life over the long term (outcomes and impacts).

Step 4. Collect empirical data to calculate the cost of inputs and the impact for each chain.

Figure 1 shows how the impact was determined by first understanding the program's outputs and outcomes. Usually, the outputs and outcomes are evaluated first in natural units, and then the impact is determined. Afterward, the non-monetary impacts of the program are given a monetary value. *Outputs* of the IY program are the services directly provided to participants (parents): class hours, advisory sessions, events, or similar directly countable results. The outcomes represent the intended and unintended consequences for the target group after the activities are carried out. Unintended consequences are the positive or negative effects that are not part of the program's mission. The *outcomes* of parenting programs usually are measured with diagnostic questionnaires filled in by participants before and after implementation.

Within the studied IY program, data were recorded only for the immediate stakeholders (children and parents) based on an initial interview with parents and with diagnostic questionnaires such as the Parenting Scale, Eyberg Child Behaviour Inventory (ECBI), the Warwick–Edinburgh Mental Wellbeing Scale (WEMBS), and the Development and Well-Being Assessment (DAWBA) diagnostic interview. Unlike certain IY programs (O'Neill et al., 2010), the children's need for health, social, and educational services before and after parents' involvement in the program was not measured [for example, using the Client Socio-Demographic and Service Receipt Inventory (Chisholm et al., 2000)]. For SROI analysis, data collected with such a questionnaire would be useful. Instead, as a proxy measure of outcomes (and hence, impacts), we used secondary data and interviews with the manager of the largest IY program provider in Slovenia, the head of the Department for Child Psychiatry of the Pediatric Clinic in Ljubljana, and the director of the IY programs in Slovenia.

Step 5. Calculate the SROI value for the program.

After evaluating the costs of inputs and monetizing impacts on the stakeholders, we calculated the SROI index as the ratio of the total value of the impacts to the value of inputs. In principle, a SROI index higher than 1 indicates a program producing social effects greater than its costs. Hence, such a program is not only socially desirable but also economically rational for society. However, we must emphasize that the SROI value does not encompass the whole "value" of the program impacts, because many of the impacts are not monetized, yet it is clear that they exist. Hence, the SROI index should serve mainly as a benchmark and starting point for discussion regarding how social value services are provided in society.

4 RESULTS

4.1 Steps 1 and 2

The initial steps of SROI require that we first identify potential stakeholders affected by the program, followed by pinpointing the key stakeholders. This program's target beneficiaries and stakeholders are (1) children and (2) their parents and extended families. We primarily assessed direct benefits for the parents,

and, similar to other studies in this field (O'Neill, McGilloway, Donnelly, Bywater, & Kelly, 2013), focused only on the key stakeholders for whom the effects of the program are the strongest and evident in the analyzed period, for which data are available. These stakeholders are (3) primary and pre-school education organizations, (4) healthcare organizations, and (5) society.

Due to non-available data, we only qualitatively describe the programs' impacts in the fields of delinquency, crime, and unemployment for the children of the participants, as well as the indirect benefits and other external effects of the program on third parties. Thus, the calculation of impacts included only a part of the program's actual positive effects, whereas costs of implementing the program were included in full. Such analysis is prudent and leads to underestimated impacts of the program per unit of cost.

4.2 Step 3

Table 1 presents the impact model, composed of seven impact chains. It shows the assumed (hypothetical) impact chains for seven identified key stakeholders: children, parents, pre-school (kindergartens), elementary schools, healthcare institutions, social service institutions, and, finally, society in its broadest sense. The program's expected *outputs* for the children are foremost better results in school, and lower incidence of conflicts with parents and other family members, friends, and teachers (educators). The expected *outcomes* are better quality of life, less likelihood for unemployment in adulthood, better health, higher education level, and less neglect and abuse. However, most of these effects can be quantified and monetized only after the children become part of the active population, which occurred beyond the time horizon of this analysis.

Table 1: Hypothetical impact model comprising seven individual impact chains

Stakeholder	Output	Outcome/impact	Monetized outcome and impact
Children	Improved results in school, lower incidence of conflicts with family, friends, and teachers	Improved quality of life (less unemployment), health, a higher level of education, less neglect or abuse	/
Parents/family	Lower incidence of conflicts with children, less parent absenteeism	Improved quality of life, health	Cost of absenteeismData: number of medical treatments, average salary
Preschool education institutions (kindergartens)	Lower incidence of conflicts, fewer hours of APA	Improved quality of learning environment	Cost of APAData: number of children eligible for APA, cost of issuing APA decisions, hours of assistance provided per week, salary cost of assistants to children
Primary education institutions (elementary schools)	Lower incidence of conflicts, fewer hours of APA	Improved quality of learning environment	Cost of APAData: number of children eligible for APA, cost of issuing APA decisions, hours of assistance provided per week, salary cost of assistants to children
Healthcare institutions	Fewer treatments required	Improved availability of service	Cost of medical treatmentsData: number of children in treatment for emotional and behavioral problems, estimated number of hours of treatment, cost of salaries of medical teams
Social work centers	Fewer services required	Improved availability of service	/
Society	Lower incidence of addiction and juvenile delinquency	Improved safety level, lower crime rates	Cost of treating addiction and juvenile delinquencyData: annual cost of Centers for the Prevention and Treatment of Illicit Drug Addiction, annual cost of social assistance programs in the field of illicit drugs, annual cost of residential juvenile delinquency treatment institutions

Note: APA = additional professional assistance

The program's expected *outputs* for the parents (participants in the program) mainly are a lower incidence of conflicts with children, and less absenteeism due to lower needs of the child for the services of the health system and the social service system. There are two primary *outcomes* for this stakeholder: a better quality of life, and better health. Due to data limitations, we focused only on the savings in the cost of absenteeism to monetize the expected impact. The expected *outputs* for preschool and primary education institutions are a lower incidence of conflicts and a lower need for additional professional assistance (APA). We did not have data on the incidence of conflicts in schools; hence, we monetized only the latter impact by estimating the savings in the cost of providing APA.

The expected *output* for the healthcare institutions and the social service institutions is a lower number of treatments in the former and less need for services provided by social work centers in the latter. The expected *outcome* in both cases is better availability of service for others. In the analysis, we quantified and monetized only the impact on the health sector institutions by evaluating the savings in the cost of treatments for children with emotional and behavioral problems. The expected impact on the social service system certainly is not negligible, but due to data unavailability, it was not quantified and monetized.

Finally, from society's perspective, the expected *outputs* from this parenting program are a lower incidence of addiction and juvenile delinquency. The expected *outcomes* are a greater level of safety and lower crime rates. We quantified and monetized these effects by evaluating the savings in the cost of treating addiction as well as savings in the cost of juvenile delinquency residential treatment.

4.3 Step 4

This section explains the monetization of impacts from Table 1 in more detail. We primarily assessed direct benefits and focused only on the stakeholders for whom the program's impacts were the strongest and most evident in the analyzed period, for which data were available. Other impacts of the program were defined in qualitative terms.

4.3.1 Measuring the Cost of Inputs

The cost of inputs included in the SROI analysis was estimated based on the 2018 IY implementation costs (€173,551). The funding was provided by the Ministry of Health of the Republic of Slovenia (95%) and by a group of consortium partners (5%) (Mala ulica, 2017).

The cost calculations are based on the projected average of 180 participants annually (Anderluh, 2017). The estimated program cost per participant (parent) and per child was calculated by assuming that one participant (parent) had one child, following Kuzma, Mirković, Svetina, and Anderluh (2017). Because most participants have more than one child, the program's benefits actually are available to more children. However, because both parents may participate, fewer children than participants possibly will benefit from the program. In the program's pilot, the total number of children impacted by the program was higher than the number of participants (343 parents and 438 children) (Kuzma et al., 2017). This indicates that our assumption (one participant equals one child) likely underestimates the number of children benefiting from the program.

Considering the projected participants' volume for 2018 leads to a cost per participant to €964.17 (€173,551/180). This is the first indicator for the assessment of the SROI value of the IY parenting program. The program will have a SROI value higher than 1 if the estimated program's social impacts exceed €964 per participant. If we apply the ratio of parents/children from the pilot implementation of the program, in which the number of children benefiting from the program exceeded the number of participants by 28%, the program's estimated annual cost per child would be €753.

4.3.2. Measuring the Value of Impacts

Regarding the IY parenting program's impacts, we first established that the program is a novelty in Slovenia, and there are no alternative programs with comparable effects. This means that the entire flow of the program's outcomes is incremental and arises due to the program's implementation. Hence, the outcomes of the program can be considered

equal to its impacts (net effects). Second, because this is a public preventive health program financed from public sources and is free of charge for participants, it does not have any direct monetary outcome in the market. Thus, the program's positive effects arise exclusively in non-monetary form as indirect effects due to the prevention of adverse effects on society.

The program's impacts were assessed within the 10 years for the projected volume of 180 participants in 2018, as specified in the program's application documents (Mala ulica, 2017). As mentioned previously, in terms of program impacts, we primarily assessed direct effects and focused on the fields in which the program's impacts were the strongest and were evident in the analyzed period, for which data were available. These fields are primary and pre-school education, healthcare, addiction, and juvenile delinquency. Other impacts of the program, such as effects on parents and families; to a limited extent delinquency and crime, higher education attainment, and the likelihood of employment; and external positive effects of the program were defined in qualitative terms.

The program indirectly leads to children being more successful in the educational field and attaining higher academic levels (Colman et al., 2009; Fergusson, Horwood and Ridder, 2005; O'Neill et al., 2010), and to reducing the probability and duration of unemployment. Because these effects rarely would occur within the analyzed 10-year period, we did not calculate their monetary value.

The impacts for the parents participating in the program were evaluated based on the savings in parent absenteeism costs (lower loss of income due to accompanying the child to medical treatments). It was assumed that these savings are generated throughout the analyzed 10-year period. These costs are incurred due to the time spent on transportation, waiting, and accompanying the child, and were estimated as 2 times specified number of hours of medical treatment per child (2 × 12.75 hours = 25.5 hours; see also the subsequent analysis for stakeholders in healthcare) times the average gross salary per hour in 2018, €11.31 (SURS, 2019). The annual cost of absenteeism per child thus amounted to €288.33, not including transportation costs. The evaluation of the IY parenting program (Kuzma et al., 2017) shows that 14% of children from the program were included in medical treatment. Assuming the same share (14%), 25.2 of the 180 children from the program are included in medical treatment and must be accompanied by parents. The total costs of parent absenteeism are €7,266 (€288.33 × 25 children). We considered that the IY parenting program's effect will stand at 50%, which means that children from the program will need 50% fewer hours of medical treatment, and hence the savings in this field amount to €3,633 annually (€7,266/2). Therefore the monetized impact of the IY program for parents is at least €3,633 annually. The program further generates benefits for parents by reducing absenteeism and allowing them to spend leisure time attending to children or helping them with their school work. It also reduces the possibility of inappropriate actions, wrong parenting methods (Evans, Davies, Williams, & Hutchings, 2015), child neglect, or even abuse (Sethi et al., 2018). Consequently, it reduces the need for social services and social policy measures. The savings in this area were not quantified and monetized due to lack of available data.

For the stakeholders in pre-school education, it was assumed that children whose parents were included in the IY program in 2018 would require less APA. By Slovenian regulation, children have the right to 3 weekly hours of APA (individual supplementary tutoring by trained pedagogical specialists) if they have confirmed emotional and behavioral problems. APA's cost covers issuing decisions on APA (€210 per child) and implementing APA (specialists' work, €1,837 annually per child). APA savings due to lower needs emerge immediately after the implementation of the program. According to the head of the Center for Early Intervention in Child Mental Health and experience from the program provider Center for Child and Adolescent Mental Health, we assumed that the effect of parenting program stands at 40%, which means that 40% of participants' children (72 of the 180 children) would not require APA in kindergartens. Annual savings amount to €147,404, which is the program's impact on pre-school education stakeholders.

In addition to APA, in Slovenian primary education, children with severe emotional and behavioral disorders (for example, autism) have the right

to personal assistants during school hours. Similar to the case for pre-school, children of parents included in the IY parenting program in 2018 potentially need fewer hours of APA and fewer personal assistants. We assumed that these savings, on average, start in the third year after the implementation of the program, when children enter primary school. Three elements of savings were considered: the costs of issuing the decision on APA (€210 per child), the costs of implementing APA (€2,944 annually per child), and the costs of personal assistants to children with severe emotional and behavioral disorders (€9,905 annually per child). In line with observed program effects in the Celje Primary Healthcare Centre, the IY effect on APA needs was evaluated at 20%. This means that 20% of participants' children (36 of the 180 children) will not require APA, which leads to savings of €113,525. The need for personal assistants was estimated based on the share of children with an autism spectrum disorder in the population of children with special needs. Following the conservatism principle, our calculation considered that 1% (Kuzma et al., 2017) of parents in the program have children with an autism spectrum disorder (1.8 of the 180 children in the program). In reality, this percentage is higher, because the structure of the program does not reflect the population. We assumed that the need for personal assistants would decrease by 30% (0.54 children) due to the IY program. This means an annual saving of €5,349. The total savings for stakeholders in primary education attributable to the IY parenting program thus amounts to €118,874. Because we monetized only a part of the effects, the program's full impact is likely to be higher.

Impacts for the healthcare stakeholders were assessed based on the avoided costs of health services (fewer treatments needed at primary and secondary levels). We assumed that these savings are generated throughout the analyzed 10-year period due to fewer healthcare teams' services required at the primary and secondary level. We considered that the healthcare team at the primary level comprises one specialist (pediatrician) and one nurse, earning gross monthly salaries of €3,808 and €2,114, respectively (MJU, 2019). Furthermore, considering a 174-hour monthly workload and an equal division of work in the team, the primary healthcare team's labor cost per hour is €17.02. The secondary-level healthcare team comprises one specialist (pedopsychiatrist or psychiatrist) and one nurse. The same salaries were assumed as in the case of the primary healthcare team, but with different work division—90% specialist and 10% nurse—for a team labor cost per hour of €20.91. We assumed that a child with behavioral and emotional disorders needs, on average, three primary-level 15-minute appointments, a total of 0.75 hours of treatment at a primary level every year and a cost of €12.76 annually. At the secondary level, such children need, on average, 12 1-hour appointments per year, with a cost of €250.96 annually per child. Together with primary healthcare, this amounts to €263.73 annually per child. The secondary level costs also may include the costs for other specialists, such as a clinical psychologist, special education teacher, and speech and language therapist. However, these costs were not included in the calculation.

The evaluation study of the IY parenting program (Kuzma et al., 2017) showed that 14% of children of the program's participants are included in medical treatment. We assumed the same share for the program in 2018 (25.2 of the 180 children). Assuming the aforementioned costs, medical treatment for these 25 children amounts to €6,646 annually. We considered that the IY parenting program's effect will be 50%, which means that the children from the program will need one-half fewer hours of treatment by healthcare teams at the primary and secondary levels. Hence, the monetized impact of the program for stakeholders in healthcare is at least €3,323 annually. Compared with education, the estimated savings in healthcare are low, because the Slovenian pediatric mental health system capacities currently are very limited. At least one-third of the children of parents included in the IY parenting program meet the criteria for a clinical behavioral disorder (Kuzma et al., 2017), but only 14% of these children are included in medical treatment. If all children who meet the criteria for a clinical behavioral disorder were included in medical treatment (60 of the 180 children), the IY parenting program's positive effect in this field would be substantially higher, amounting to approximately €7,900 annually.

For society as the stakeholder, the program's *outcome* is a greater safety level and a lower crime rate. We estimated these *impacts* by monetizing the anticipated savings due to fewer cases of addiction and juvenile delinquency requiring institutional treatment, due to implementing the IY parenting program. The savings due to reducing addiction include only addiction to illicit drugs and are based on publicly available data on expenditures in 2015 (NIJZ, 2016), which amounted to €7,762,541 for 3,719 users, resulting in a cost of treatment of €2,087 per person. We assumed that due to the IY program, 1% of children of the 180 participants in 2018 (1.8 children) will not require treatment due to illicit drug addiction and that these savings occur only in the last year of the analyzed 10-year period, leading to a monetized impact of €4,052. These savings relate to illicit drugs addiction only, but no other effects, such as reducing alcohol addiction and non-chemical addiction, which can be substantial.

The literature review showed that parenting programs reduce juvenile delinquency. In this area, we assessed only the savings from the reduced costs of care in residential treatment institutions, which amount to €31,800 annually (MIZŠ, 2018). Assuming that one child (of the 180 participants) will not have to be placed in a residential treatment institution due to the parents' participation in the IY parenting program, annual savings amount to €31,800. The effect of reducing juvenile delinquency was considered only in the last year of the analyzed period; however, actual savings can occur for several years beyond the analyzed time horizon. Our analysis did not consider the program's effects on postponing referral to residential treatment institutions to a later year or the effects of shortening the average time spent in a residential treatment institution. The program's long-term impacts lead to lower crime and delinquency rates in adulthood. Impacts of the program thus include savings in court fees and costs of prison sentences. These costs are estimated to be exceptionally high (O'Neill et al., 2010). In Slovenia, the daily cost per prisoner in 2017 was €79.51 (Kosmač 2018), which is slightly more than €29,000 per prisoner per year. Therefore, we justifiably can assume that the savings calculated (€31,800) are underestimated and represent the lower limit for the actual monetary value of the program's impact in this area.

Further IY effects arise not only for the analyzed stakeholders but for the society as well. These effects were not included in the calculation of SROI. First, parenting programs also lead to indirect impacts on the society, such as a greater probability of an individual's economic independence, less need for social policy measures, and larger net contribution to the financing of public services (O'Neill et al., 2010). Second, the program's long-term effects include a higher level of attained education, better physical and mental health of children when they reach adulthood, a greater probability of employment, or shorter unemployment duration. Third, the improved welfare of children and families leads to healthier and more-responsible members of society, and, consequently, to improved welfare in society. Finally, less juvenile delinquency, addiction, and crime lead to greater safety levels in society.

Table 2 presents the monetized impacts for the identified stakeholders' groups, as well as the total value of impacts in the analyzed 10-year period. The actual value of impacts is likely to be even higher because we monetized only a part of the identified effects.

Table 2: Monetized impacts per stakeholder

Impacts over 10-year period per stakeholder (€)							Total impact
Child	Parents	Kindergartens	Elementary schools	Health system	Social service	Society	
*	36,329.31	279,687	786,757	33,229.36	*	35,852	1,171,854.72

** 10-year impacts for these stakeholders are described qualitatively and were not monetized.*

4.4 Step 5

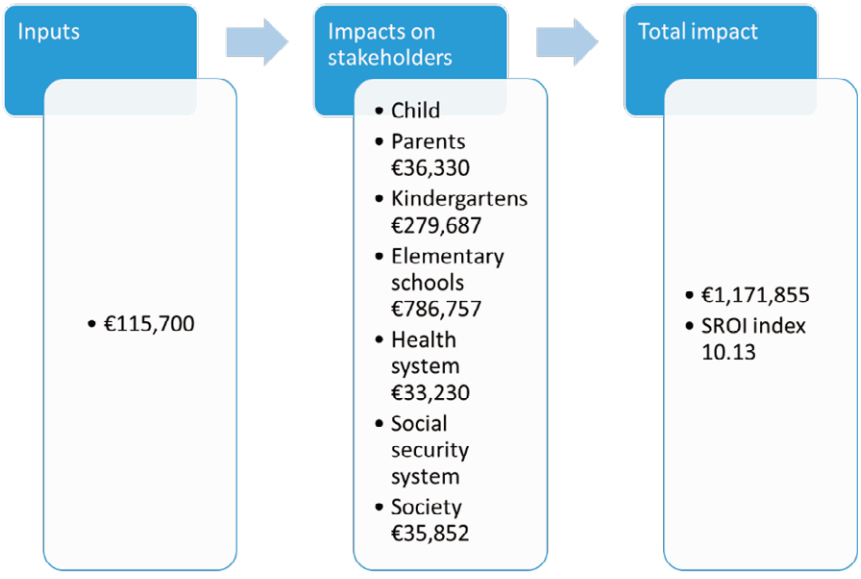
Figure 2 shows the impact chain and the results of the SROI calculation. The SROI value for the 2018 IY program is 10.13. This means that every €1 invested in the parenting program in 2018 generates positive effects for various stakeholders in the total amount of €10.13 within the following 10 years.

The program creates immediate effects by reducing the need for medical treatment or health services for these children, generated throughout the observed period. Immediately after implementing the program, the program's impact in pre-school education also is evident. When the children of these parents start primary school, the impact is transferred to that level. In the last year, the program creates savings in the fields of addiction and juvenile delinquency. Because only parts of the impacts were monetized, and they were analyzed for 10 years only, the actual SROI likely is higher. The summation of impacts across the identified impact chains for each of the stakeholders amounts to €1,171,855. The program's average annual impact is €117,185 and the average impact per participant in the 10-year period amounts to €6,510. As explained previously, our calculations did not include effects of the IY that occur after the observed 10-year period (for example, impacts in the field of unemployment), or benefits that have been analyzed only qualitatively (for example, program benefits for participants' children). The estimated impact in the 10-year period (€1,171,855) is generated as the consequence of a single (1-year) implementation of the program in 2018 and thus needs to be compared to the costs of IY implementation in 2018, that is, €173,551. Each repetition of the program at the same scale generates impacts as calculated.

4.5 Robustness Check

Our calculation of SROI is based on several assumptions about the outcome parameters. To verify the results' robustness to the chosen assumptions, we used the sensitivity analysis presented in Figure 3. The baseline assumption on the value of costs was varied by as much as 50% up and down, and the corresponding SROI was calculated. Similarly, the program's impacts on stakeholders were examined to determine how SROI changes if the program's effect on each stakeholder group is increased or decreased by as much as 50%. Regardless of the direction of the change and the type of impact, all recalculated SROIs were greater than 1, which confirms the robustness of the conclusion that the IY program is socially valuable and economically sound.

Figure 2: Impact chain and results of the SROI analysis



As shown in Figure 3, the SROI index is most sensitive to the assumption regarding inputs' value. Compared with the monetization of impacts, this value is relatively more accurate and reliable. Among impacts, the assumptions regarding the effects on elementary schools and kindergartens are more critical than others for the value of SROI. Nevertheless, even if individual effects are only half as large as assumed in our analysis (with other effects unchanged), the SROI value still is above 5.

Finally, we calculated the critical value of an individual effect (with the others remaining unchanged) for which SROI would equal 1. The annual program costs would have to increase by more than 900% (for the volume of 180 participants) to bring the SROI index value to 1.

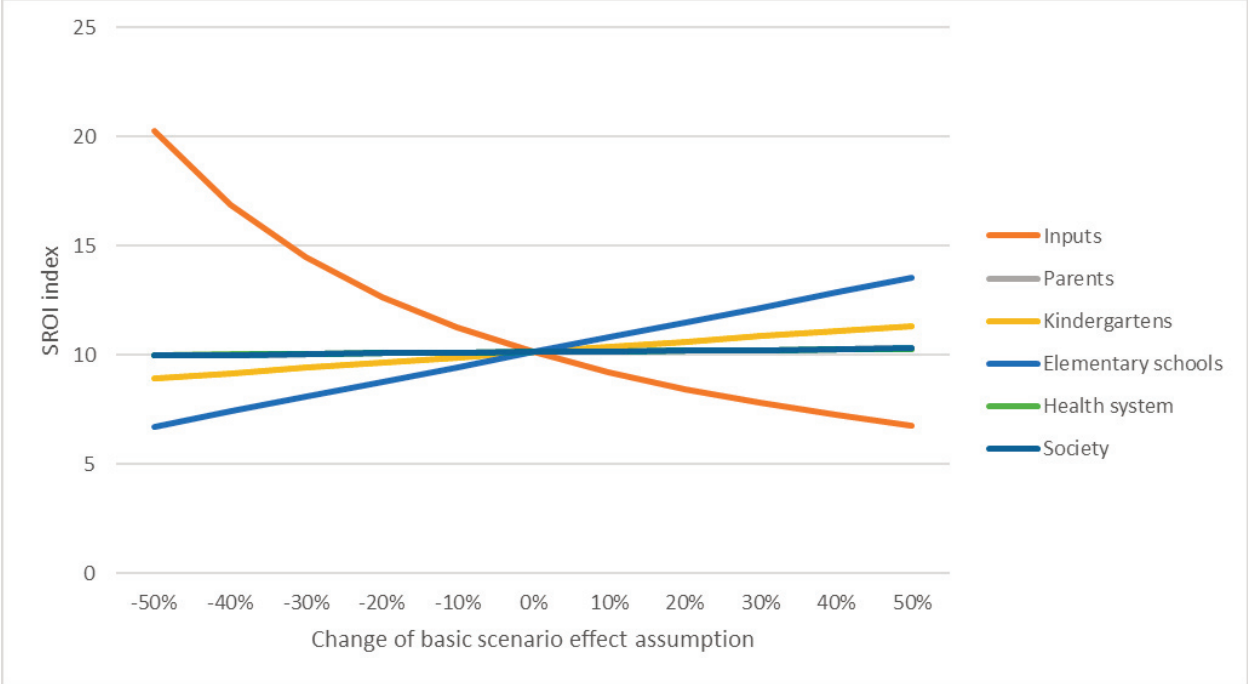
The calculated critical values of assumptions regarding the impact on each stakeholder are negative. This means that the program has a SROI greater than 1 even if one of the stakeholder impacts does not arise, because the effects on other stakeholders are higher than the program costs. The negative critical values of assumptions also mean that the IY parenting program would have a SROI less than 1 only if it generated damage, i.e., had adverse effects on the analyzed stakeholders, which, as we established, certainly is not the case.

We further compared each particular stakeholder's impact and the entire costs of the IY program, and calculated the critical standalone impact size for each stakeholder. In pre-school education, a 40% effect was assumed, whereas to achieve a SROI index higher than 1, at least a 31% effect is sufficient (with the effect on other stakeholders equal to zero). In the field of primary education, a 19% effect would be sufficient. In other fields, the critical level of the effect, in the absence of all other effects, is higher than the value assumed in the analysis, because their impact is relatively small.

5 DISCUSSION AND CONCLUSION

Increasing requirements for disclosure of environmental, social, and governance information and policies are prompting companies and nonprofit organizations to consider the extent to which they are

Figure 3: Robustness of the SROI index to changes in the basic scenario assumptions about program costs and effects on stakeholders



prepared to meet these expectations. Over the last decade, the identification, measuring, and reporting of environmental impacts has become relatively familiar, and is outlined by several frameworks. In contrast, guidelines for social and governance pillars, including a methodological framework for measurement, largely are yet to be developed. This paper illustrates how social impacts can be identified, measured, and even monetized using the SROI approach. Unlike other economic evaluation methods, such as the CBA, the SROI approach focuses on a wider set of affected stakeholders. Another distinguishing characteristic is that only the difference between the effects that would have occurred without and with a preventive program is considered to be an impact. We consider both characteristics to be a distinctive advantage of the SROI method as a methodological ground for identifying and measuring social impacts. In the previous literature, the difficulty of assigning a financial value to "soft outcomes" has been identified as a major problem (e.g., Banke-Thomas et al., 2015).

In our paper, we highlighted the importance of identifying the relevant stakeholders [and not necessarily all of them (e.g., Antonaras et al., 2011; Banke-Thomas et al., 2015)] and demonstrated how to address the critical decisions regarding the selection and collection of data. Trade-offs between having more or having the relevant data are to be expected, and a sensible compromise must be reached to finalize the analysis. Similar to previous SROI studies, we focused only on the impacts on those stakeholders for whom the program's effects are most substantial (Antonaras et al., 2011) and for which data were available: children, parents, preschool and primary education institutions, healthcare institutions, and society. The program also has impacts in other areas, which we assessed only qualitatively and not monetarily; for example, effects on parents and families, delinquency and crime, unemployment, and chronic physical and mental illness in adulthood.

Recent SROI guidance does not recommend comparing SROI metrics across different activities, whereas the CBA is designed to be comparable in such a way. The emphasis on stakeholder involvement leads to diverse sets of indicators, and therefore to difficulties in comparing like with like. This is the limitation of the SROI method, which Maier et al. (2015) referred to as commensuration, in which different entities are compared according to a common metric. Comparability between social investments is limited. However, in Maier et al.'s opinion, comparability could be increased if calculation procedures such as discount rates, deadweights, and proxies were standardized further, and the same scale or environment could be ensured.

Another critical part of the analysis is the choice of the period analyzed, as noted by Banke-Thomas et al. (2015). In this study, we used a 10-year period after the implementation because the most relevant effects were expected to occur within this time frame. However, a longer or shorter analytic horizon might lead to different conclusions. Therefore, as a contribution of our study, we highlight two principles that should be followed when selecting the time frame for the analysis: (1) choose the period conservatively, i.e., estimate the minimum time frame in which most, but not all, effects can be expected to occur; and (2) conduct a sensitivity analysis, i.e., use calculations to determine the critical assumptions that considerably affect the conclusions if the time frame is changed to be shorter or longer than the baseline.

Related to the preceding points is the decision about how thoroughly the negative vs. positive effects (or costs and benefits) should be included. Namely, implementing measures such as SROI is relatively feasible when information about program outcomes, cost, and revenue already is being collected by an organization (Cordes, 2017). In many situations, the information about the costs of activities is more familiar, available, and predictable than information about expected benefits. Thus, it is advisable that costs (or negative effects) are included fully in the analysis and caution is exerted in terms of expected positive effects. Such a conservative approach leads to an underestimated SROI value and safeguards against enthusiastic or overrated expectations of positive social returns. Of course, such a conservative stance may prevent some socially desirable activities from being implemented; therefore, a balance between both views is needed. The decision about how thoroughly the effects should be included is illustrated in our example, in which the

calculated total impact value comprised only a part of the program's actual positive effects, whereas program implementation costs were included in full.

Finally, the process and results of the SROI analysis can be exploited beyond the mere (one-time) demonstration or reporting of the organizational aggregate social impact to (potential) investors, funders, or other stakeholders (Flockhart, 2005). When the impact model is well understood, good groundwork has been set up for socially responsible management (Then et al., 2017). Through this analysis, organizations can identify, for example, which activities and issues could be problematic from the ESG perspective, or, conversely, where new opportunities might open up. The information gathered and processed in the SROI analysis also can feed into the organizational strategy development process and eventually also be incorporated into strategy implementation or performance management tools. SROI reduces complexity by condensing the difficult task of communicating value to one figure. This figure can be used as a tool to shape public opinion about distributive justice or to legitimize NPOs by communicating their impact to audiences who are less receptive to qualitative evidence (Maier et al., 2015).

Our experience shows that the scope of available data limits the quality of social impact analyses. This implies that organizations may need to increase the availability and range of available data to measure the outputs, outcomes, and impacts of programs (Meng & Shi, 2017). Therefore, future research in this area could focus on improving the availability of external data, such as shared databases of proxy data. However, because there is a significant deficit of existing examples of social impact analysis (benchmarks), many organizations often will discover the type and scope of data they need only ex post—after their first attempt to conduct such an analysis. Therefore, further research in this area could provide valuable examples of the type and range of data needed for SROI analysis in specific contexts. Furthermore, as is evident from our case, a longitudinal approach to data collection may be required to measure accurately the long-term effects and monitor the evolution of social impacts over time for different stakeholders.

Despite the aforementioned limitations, we believe that our study makes an important contribution to the literature in this area and provides a practical reference example for practitioners and researchers. The activities of many different organizations can be analyzed in a similar way whenever they are characterized by a broad range of indirect individual and social effects in addition to the intended direct effects for the target population. In particular, our account of measuring effects by estimating avoided costs can be generalized to other organizations and sectors whose activities aim to prevent adverse outcomes in society, such as education, sport and recreation, and social work.

EXTENDED SUMMARY/IZVLEČEK

Vse večje zahteve glede obvladovanja okoljskih in družbenih dejavnikov ter dejavnikov korporacijskega upravljanja (ang. Environmental, Social and Governance; ESG) spodbujajo podjetja in neprofitne organizacije k razmisleku glede njihove pripravljenosti na izpolnjevanje takšnih pričakovanj. Spodbude za merjenje in poročanje o družbenem vplivu podjetij prihajajo tako s trga, od kupcev kot konkurentov, kot tudi s strani regulatorjev. Namen tega prispevka je pomagati organizacijam, ki se soočajo z izzivom merjenja družbenega učinka svojih dejavnosti. V članku na primeru ponazorimo, kako je mogoče s pristopom SROI identificirati, izmeriti in denarju izraziti družbene učinke. Metoda SROI se osredotoča na obsežen nabor deležnikov, kot učinek pa šteje samo razlika med učinki, ki bi se pojavili brez analizirane aktivnosti in z njo. Za študijo primera uporabljamo program starševstva, katerega cilj je izboljšati starševske spretnosti in s tem zmanjšati čustvene in vedenjske težave otrok. Program vodi neprofitna organizacija, vendar je mogoče na podoben način analizirati tudi dejavnosti znotraj profitnega sektorja, kadar je zanje poleg predvidenih neposrednih učinkov značilen širok spekter posrednih individualnih in družbenih učinkov. V študiji smo ovrednotili družbene učinke v desetletnem obdobju po izvedbi programa, saj so bili v tem časovnem okviru pričakovani najpomembnejši učinki. V članku poudarjamo vlogo izbire dolžine obdobja merjenja učinkov ter natančnosti vključevanja stroškov izvedbe analizirane aktivnosti in njenih učinkov. Pri tem izpostavljamo pomen razpoložljivosti in obsega učinkov, ki jih zajamemo s podatki. Poudarjamo tudi, da so rezultati analize SROI uporabni ne le za poročanje o družbenem učinku organizacije vlagateljem in drugim deležnikom, temveč tudi kot dobro podlaga za družbeno odgovorno upravljanje preko vključevanja ugotovitev analize SROI v proces razvoja organizacijske strategije ter sčasoma tudi v orodja za obvladovanje uspešnosti.

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GOING BACK TO THE ROOTS: A BIBLIOMETRIC AND THEMATIC ANALYSIS OF WOMEN ENTREPRENEURSHIP

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Abstract

We used bibliometric methods to examine studies related to women entrepreneurship. Specifically, we focused on understanding the recent trends, the most influential publications and journals, topics on which women entrepreneurship studies are conducted, and deciphering the future direction of women entrepreneurship studies. We used the Scopus database to extract 1,554 documents published from 1982 to 2022 and analyzed the scientific publications per year, the most cited articles, sources of publications, keyword co-occurrence, thematic structure (topic modeling), and bibliographic coupling. We found that the scientific publications related to women entrepreneurship are increasing significantly each year, and the most consistent keyword is "gender." Citation analysis identified Ahl (2006) as the most cited article, which demonstrates Ahl's notable influence, as well as the success of the gender turn influenced by feminist theory. Co-word analysis found seven clusters showing the thematic structure of women entrepreneurship research. Bibliographic coupling analysis found four clusters, encompassing various aspects associated with women entrepreneurship. The clusters are "Role of gender in an entrepreneur's performance," "Challenges and upcoming issues faced by women entrepreneurs," "Impact of geographic location on women entrepreneurship," and "Financial struggles of women entrepreneurs." Topic modeling using the latent Dirchlet allocation algorithm (LDA) identified seven areas of interest in the women entrepreneurship literature. We conclude with implications and suggestions for future research.

Keywords: *women entrepreneurship, female entrepreneurship, bibliometric analysis, bibliographic coupling, co-word analysis, topic modeling*

1 INTRODUCTION

Increased scholarly and political attention has been invested in women entrepreneurship in recent years (Henry, Foss, & Ahl, 2016; Jennings & Brush, 2013). Globally, there are an estimated 274 million women involved in business startups. This does not include 139 million women owners/managers of established businesses and 144 million women who are informal investors (GEM, 2020–21, p.14). It is now well accepted that women contribute significantly to entrepreneurial activity (Noguera, Álvarez, & Urbano, 2013) and economic development (Kelley et al., 2017, Hechevarría, Bullough, Brush, & Edleman, 2019) by creating new jobs and thus leading to an increase in the gross domestic product (GDP) (Bahmani-Oskooee, Kutan, & Xi, 2013; Ayogu & Agu, 2015). This has had a cascading effect on reducing poverty and social exclusion (Langowitz & Minniti, 2007; Rae, 2015).

The number of studies and the attention being paid to the realm of women entrepreneurship has increased strongly in recent years. This includes several reviews of women's entrepreneurship which furnish an understanding of the field. Brush (1992) reviewed 57 studies of women entrepreneurship published during the period 1975–1991 and proposed a new "integrated perspective for future research." After reviewing 81 research articles published during 1982–2000 in leading entrepreneurship and management journals, Ahl (2006) criticized a few shortcomings of women entrepreneurship research, revealed a trend of recreating the idea of women as being subordinate to men, and suggested new research directions. In addition to these studies, the contributions of studies of women entrepreneurship to general entrepreneurship theories over the last 30 years was evaluated by Jennings & Brush (2013). More recently, the developmental trajectory of women entrepreneurship research, detecting new research horizons, and developing trends in the literature was studied by Deng, Liang, Li, and Wang (2020). A comprehensive literature review and bibliometric analysis by Aggarwal and Johal (2021) attempted to identify a link between rural women and entrepreneurship.

However, the significant growth of women entrepreneurship globally calls for a more thorough and comprehensive review and analysis of studies on the topic. Existing reviews, with the exception of that by Deng et al. (2020), focused on a small number of studies published in management and business journals. Hence, a major shortcoming that exists today is the lack of a more comprehensive understanding of the development trajectory and recent and future trends in the domain of women entrepreneurship.

Taking these shortcomings into consideration, this study answers the following questions:

1. What are the most influential studies and outlets for women entrepreneurship?
2. What is the thematic structure of women entrepreneurship literature?
3. What is the intellectual structure of studies on women entrepreneurship?
4. What are the recent trends in the field of women entrepreneurship research?
5. How will the existing research shape the future direction of women entrepreneurship studies?

We bring clarity to the cumulative knowledge of women entrepreneurship through a bibliometric analysis using bibliographic coupling, citation analysis, co-word analysis, and topic modeling. By answering the research questions, this bibliometric review makes the following contributions. First, this paper provides a comprehensive, systematic, and objective review of women entrepreneurship. Our study further complements existing reviews by conducting a co-word analysis, topic modeling, and bibliographic coupling, and visualizing them comprehensively. Second, we identify the areas of women entrepreneurship which demand increasing attention, including an increasing focus on work–life balance and the significance and imperative of networking to business. Thirdly, our study highlights a burgeoning interest in women entrepreneurs from developing countries

Future research needs to focus on the women entrepreneurship ecosystem to study the institutional environment embedded within it and work on improving it, because it is important to increase the percentage of women in entrepreneurship because of the possible economic benefits that could be derived from this.

2 LITERATURE REVIEW

Entrepreneurship as a topic of research gained significance in the 1930s (Yadav & Unni, 2016). It took almost 50 years for the sub-domain of "women entrepreneurship" to emerge as a topic of research (Jennings & Brush, 2013). According to Schwartz (1976), Yadav and Unni's (2016) review study of "female entrepreneurship" was the first "academic research paper," Hisrich and O'Brien (1981) was the first "academic conference presentation," and Goffee and Scase (1985) was the first book on the topic. According to Jennings and Brush (2013), the late 1990s and early 2000s were pivotal years in the study of women entrepreneurs, during which two conferences paved the way for women entrepreneurship as a research area. The first was a "policy-oriented Organization for Economic Cooperation and Development (OECD) Conference on women entrepreneurs in small and medium-sized enterprises" in 1998, and the second occurred in 2003 when Diana International hosted an academic conference.

A few studies have explored women entrepreneurship through qualitative and/or bibliometric analysis. Cardella, Hernández-Sánchez, & Sánchez-García (2020) examined 2,848 articles relating to women entrepreneurship and discovered that it was a relatively new area of investigation that has gained continual attention from scholars, with increasingly more articles published in the last 20 years. According to Cardella et al.'s (2020) study, women entrepreneurship as a research subject is shifting focus from the investigation of political and economic problems to the examination of beneficial factors that allow for the bridging of the gender gap. Deng et al. (2020) reported consistent observations, stating that the literature on women entrepreneurship has increased exponentially since 2014, with as many as of 150 articles annually, and certain clusters have received enhanced attention. These clusters include "entrepreneurial intention," "initiating force," and "social network." Bastian, Sidani, & El Amine, (2018) highlighted the significance of developing a theoretical framework that can aid in gaining a comprehensive understanding of women entrepreneurship. The framework can aid in assessing the uniqueness of the geographical area as well as some of the motivators or hurdles in women entrepreneurship. A comprehensive view of women entrepreneurs is necessary to identify new research directions (Paoloni, Secundo, Ndou, & Modaffari, 2018). Paoloni et al. (2018) highlights digital women entrepreneurship. They emphasize that a pertinent socioeconomic and technological phenomenon can reshape existing businesses and create opportunities for developing innovative solutions for society. Adom & Anambane (2019) examined the involvement of culture and gender stereotypes in the entrepreneurial journey of women. They further highlight that culture, which encapsulates gender stereotypes, helps drive women's entrepreneurial behavior. This is because of a desire to escape these stereotypes, as well as gender inequality, which has hampered women's living standards.

An increasing number of studies pertaining to women entrepreneurship are being published. However, a qualitative review can include only a limited number of studies. This paper fills this gap by presenting a large-scale systemic analysis of trends in women entrepreneurship studies, co-authorship networks, recent topics of women entrepreneurship studies, and what the future holds for studies in women entrepreneurship.

3 METHODOLOGY

We performed a bibliometric analysis to gain a better understanding of the most important influences on women's entrepreneurship and how the available literature on women's entrepreneurship is structured. We employed the Scopus database, which is well-known in the research community and contains over 27 million abstracts, making it the largest database (Burnham, 2006). The search criteria for articles included keywords such as "women entrepreneurship," "female entrepreneurship," "women entrepreneurs" or "female entrepreneurs." The bibliographic search returned 3,228 results for the period 1982–2022. The article selection thereafter was refined using four criteria. First, the article had to be written in English (Cardella et al., 2020); second, it had to be a scientific paper published in a peer-reviewed journal, because these are considered to be reliable sources of information (Podsakoff, MacKenzie, Bachrach, and Podsakoff, 2005), Third, the article had to be related to "business, management, and accounting." Finally, the

research article must not have been published in a book as a chapter or in a conference proceeding.

The criteria further narrowed the selection to 1,584 articles. This approach is based on the PRISMA method guidelines (Liberati et al., 2009) used by Cardella et al. (2020). The present study analyses the temporal evolution of research publications, the most prominent authors on the topic, the most productive journals in terms of total quantity of published articles, and the nations with the maximum number of research contributions using a series of bibliometric indicators.

At the final stage of filtration, all 1,584 articles were read by the researchers to shortlist the articles that were not related directly to women entrepreneurship. Such articles (*n* = 29) were removed from the data set. For example, if an article had a keyword "women entrepreneurship" but did not discuss entrepreneurship per se, the article was eliminated. A consensus among the researchers was reached after this step, and the final number of articles used in the analysis was 1,554.

VOS viewer software version 1.6.10 was used for the analysis. Because it uses a bibliometric technique, it enables graphic illustration, identification, and classification of groups in a strategic matrix predicated on commonalities and contrasts. The graphic creation of maps leads to deeper examination of the relationships between variables, which aids in a better understanding of the nature of a research area and makes it an indisputable analysis instrument (Vallaster, Kraus, Merigo Lindahl, and Nielsen, 2019).

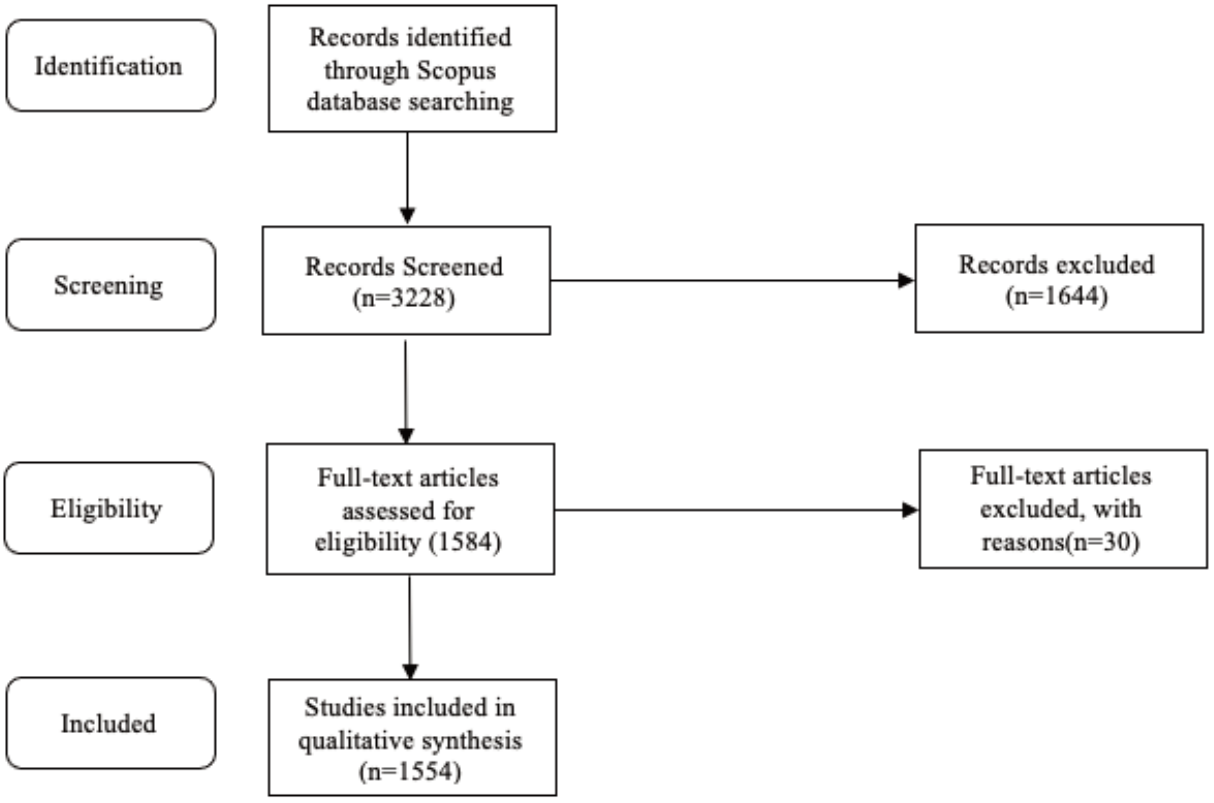
4 RESULTS

4.1 Scientific Publications per Year[1]

Women are among the fastest-growing groups of entrepreneurs, contributing significantly to global advancement, employment generation, and eco-

[1] Publications in 2022 were not taken into account for this analysis because the data were available for only 4 months.

Figure 1: PRISMA method—process of sample selection



nomic systems (Brush, 2006). As shown in Figure 2, the number of scientific publications on the subject is increasing each year. Scientific publications on topics related to women entrepreneurship have been available for quite some time; the first published article dates back to 1950 (Cardella et al., 2020). Figure 2 highlights the increasing trend in publications on the topic during the period 1982–2022. The earliest publication on women entrepreneurship in our data set extracted from Scopus was from 1982. The progress in the chosen field of study remained low until 1997, when 10 publications were reported. However, the number of publications decreased again until 2005, after which scientific publications increased and remained in double digits (e.g., 11 in 2005, 24 in 2006, 25 in 2007, and 30 in 2008). Apart from 2010 and 2015, all other years exhibited a significantly positive increase in the number of publications related to women entrepreneurship. The maximum number of publications was reported in 2021, 242 publications.

4.2 Article Citations

Table 1 lists the 20 most cited articles. The articles were sorted on the basis of citations received and link strength, extracted through VOS viewer. Ahl's (2006) research paper "Why Research on Women Entrepreneurs Needs New Directions" is the most cited (*n* = 966). The link strength of Ahl's article is 307, which indicates its significance. Fischer, Reuber, and Dyke's (1993) research article is the second most cited article in the study's database, with 528 citations. Despite being significantly new compared with other publications, Ahl (2006) is still the most cited paper. The list of other publications is presented in Table 1.

4.3 Source of Publications

A list of journals which publish articles pertaining to women entrepreneurship was prepared using VOS viewer. The threshold used for shortlisting the sources was five published articles. Of a total of 336

Figure 2: Publications from 1982 to 2022

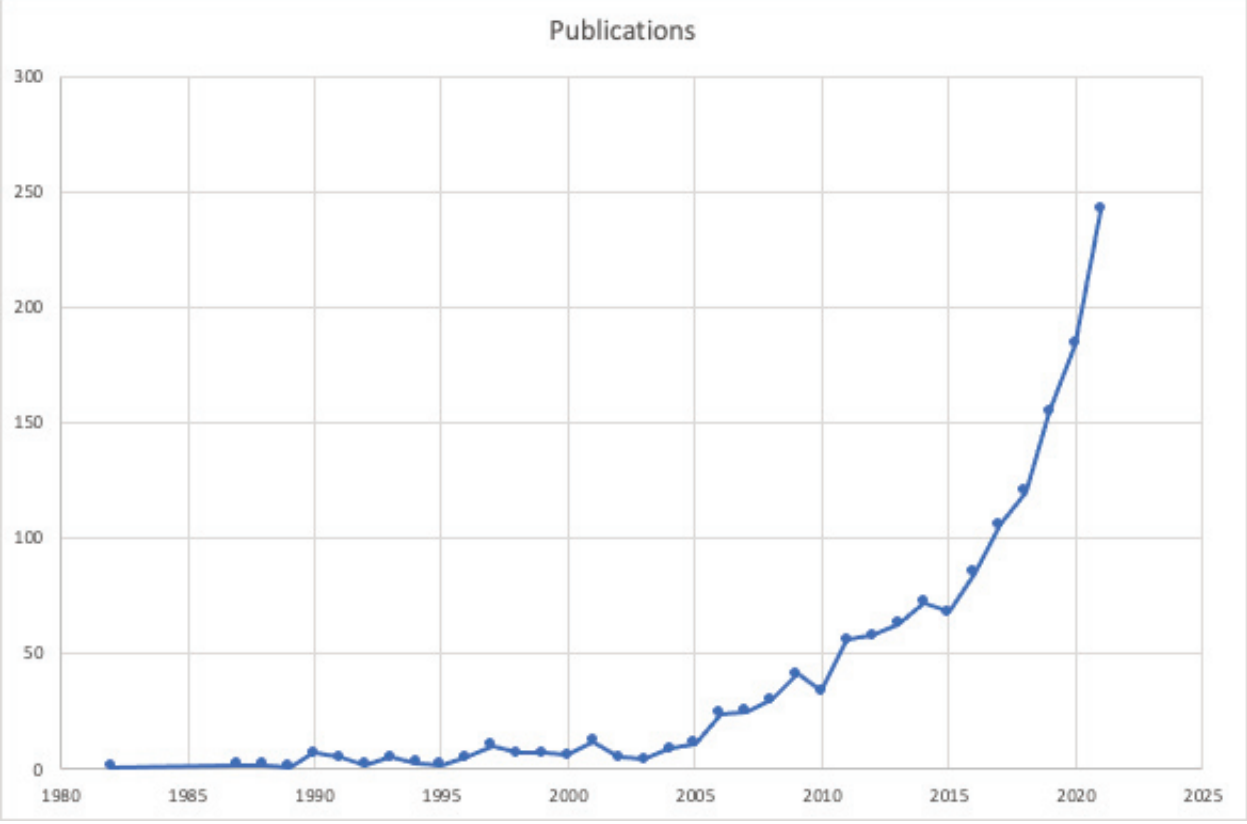


Table 1: Most cited articles

No.	First author	Title	Year	Citations	DOI
1	Ahl, H.	Why Research on Women Entrepreneurs Needs New Directions	2006	966	https://doi.org/10.1111/j.1540-6520.2006.00138.x
2	Fischer, E. M.	A theoretical overview and extension of research on sex, gender, and entrepreneurship	1993	528	https://doi.org/10.1016/0883-9026(93)90017-Y
3	Cliff, J. E.	Does one size fit all? exploring the relationship between attitudes towards growth, gender, and business size	1998	486	https://doi.org/10.1016/S0883-9026(97)00071-2
4	Parasuraman, S.	Work and Family Variables, Entrepreneurial Career Success, and Psychological Well-Being	1996	482	https://doi.org/10.1006/jvbe.1996.0025
5	Brush, C. G.	A gender-aware framework for women's entrepreneurship	2009	468	https://doi.org/10.1108/17566260910942318
6	Du Rietz, A.	Testing the Female Underperformance Hypothesis	2000	362	https://doi.org/10.1023/A:1008106215480
7	Verheul, I.	Start-Up Capital: "Does Gender Matter?"	2001	361	https://doi.org/10.1023/A:1011178629240
8	Baughn, C. C.	The Normative Context for Women's Participation in Entrepreneurship: A Multicounty Study	2006	333	https://doi.org/10.1111/j.1540-6520.2006.00142.x
9	Fairlie, R. W.	Gender differences in business performance: evidence from the Characteristics of Business Owners survey	2009	333	https://doi.org/10.1007/s11187-009-9207-5
10	Boden, Jr., R. J	On the survival prospects of men's and women's new business ventures	2000	317	https://doi.org/10.1016/S0883-9026(98)00004-4
11	Mirchandani, K.	Feminist insight on gendered work: New directions in research on women and entrepreneurship	1999	312	https://doi.org/10.1111/1468-0432.00085
12	Verheul, I.	Explaining female and male entrepreneurship at the country level	2006	305	https://doi.org/10.1080/08985620500532053
13	Gundry, L. K.	The ambitious entrepreneur: High growth strategies of women-owned enterprises	2001	294	https://doi.org/10.1016/S0883-9026(99)00059-2
14	Sexton, D. L.	Female and male entrepreneurs: Psychological characteristics and their role in gender-related discrimination	1990	293	https://doi.org/10.1016/0883-9026(90)90024-N
15	Minniti, M.	Being in Someone Else's Shoes: the Role of Gender in Nascent Entrepreneurship	2007	289	https://doi.org/10.1007/s11187-006-9017-y
16	Anna, A. L.	Women business owners in traditional and non-traditional industries	2000	282	https://doi.org/10.1016/S0883-9026(98)00012-3
17	Orhan, M.	Why women enter into entrepreneurship: an explanatory model	2001	278	https://doi.org/10.1108/09649420110395719
18	Demartino, R.	Differences between women and men MBA entrepreneurs: exploring family flexibility and wealth creation as career motivators	2003	273	https://doi.org/10.1016/S0883-9026(03)00003-X
19	Lewis, P.	The quest for invisibility: Female entrepreneurs and the masculine norm of entrepreneurship	2006	272	https://doi.org/10.1111/j.1468-0432.2006.00317.x
20	Hughes. K. D.	Extending Women's Entrepreneurship Research in New Directions	2012	266	https://doi.org/10.1111/j.1540-6520.2012.00504.x

sources, 60 met the designated criteria. Table 2 indicates the top 10 sources or journals publishing articles related to the topic of research. Women entrepreneurship articles are published most frequently in the *International Journal of Gender and Entrepreneurship*. The total number of articles published in this journal was 143. The second journal is the *International Journal of Entrepreneurship and Small Business*. The difference in the number of articles published in the first and second journals is in itself significant, and shows the dominance of the former journal in this field of study. However, during the analysis, we found that the *International Journal of Gender and Entrepreneurship* is not the most cited. The most cited is the *Journal of Business Venturing*, which is ninth on the list of sources, with a total of citations of 4,819. Thus the *Journal of Business Venturing* is the most influential source in women entrepreneurship literature.

4.4 Co-Occurrence (Keywords)

Based on 1,555 studies of women entrepreneurs, we applied VOS viewer to create a network of keyword co-occurrence. This network was effective in gaining insight into the articles' linked content. "Author keywords show the core of the study and the focal point of an investigation that are carefully selected by the authors," according to Oraee, Hosseini, Papadonikolaki, Palliyaguru, and Arashpour (2017). The type and strength of the relationship between various fields of knowledge is highlighted by keyword co-occurrence analysis. Only 220 keywords of a total of 3,337 passed the threshold. With a total link strength of 796, the keyword "gender" occurred most often (290 times), followed by "entrepreneurship," which occurred 297 times and had a link strength of 757. "Women" (occurrence = 213, link strength = 631), "women entrepreneurs" (occurrence = 244, link strength = 469), "entrepreneur" (occurrence = 89, link strength = 374), and "female entrepreneurship" (occurrence = 140, link strength = 278) also were among the top keywords. Figure 3 presents the keywords graphically.

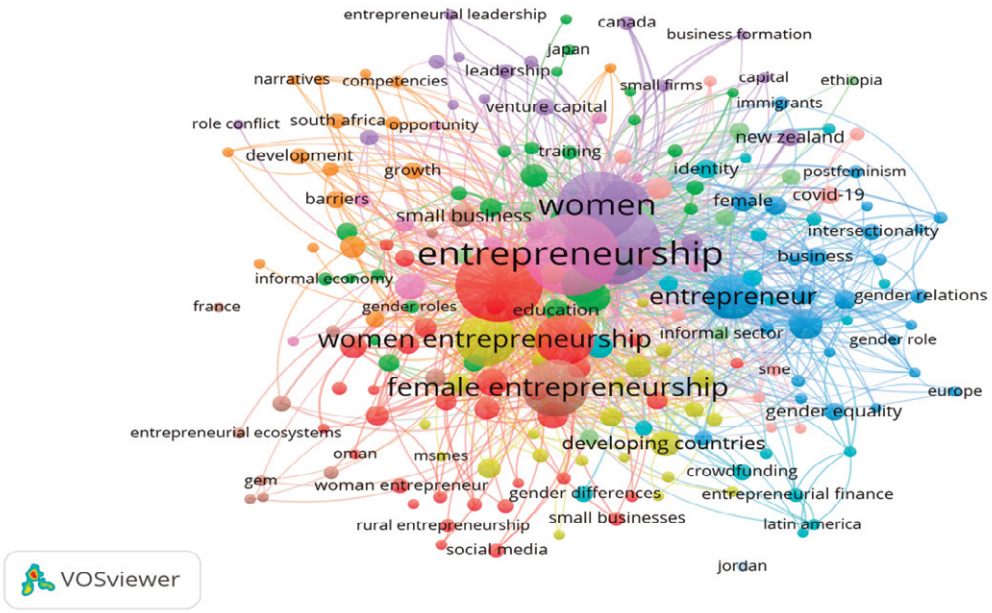
A further analysis of keyword co-occurrence in VOS viewer indicated seven clusters comprising 96 items, after filtering for a minimum of 10 occurrences of a keyword. Cluster 1 and Cluster 2 are the largest, with 22 and 19 items, respectively, in each cluster. The most common keyword (n = 297) in Cluster 1 is "entrepreneurship," and "female entrepreneurs" (n = 117) is the most common in Cluster 2. Prima facie, Cluster 1 highlights aspects pertaining to the entrepreneurial side of women's enterprises, focusing on entrepreneurial intentions, entrepreneurial orientation, entrepreneurship, and entrepreneurship education. In addition, the cluster contains keywords focusing on women empowerment, gender gap, and opportunity recognition.

Cluster 2 contains keywords focusing on business development, growth, and performance. This cluster essentially focuses on developing or emerg-

Table 2: Journals publishing articles related to women entrepreneurship

No.	Journal	Publications	Citations
1	*International Journal of Gender and Entrepreneurship*	143	2,835
2	*International Journal of Entrepreneurship and Small Business*	92	1,003
3	*Small Business Economics*	51	2,847
4	*Gender in Management*	51	727
5	*Journal of Developmental Entrepreneurship*	45	487
6	*International Journal of Entrepreneurial Behaviour and Research*	43	1,279
7	*Journal of Small Business and Entrepreneurship*	41	453
8	*International Entrepreneurship and Management Journal*	33	1,046
9	*Journal of Business Venturing*	32	4,819
10	*Journal of Small Business Management*	31	744

Figure 3: Keyword co-occurrence



ing nations such as India and Nigeria, among others. Cluster 3 contains 17 items and highlights gender issues, equality, and relations, particularly in the face of the global pandemic. A significant keyword in Cluster 3 is "covid-19." Cluster 4 contains 12 items, and this cluster essentially highlights theories such as the gender theory, feminist theory, and institutional theory. Gender differences and gender stereotypes appear in Cluster 5. Cluster 6, with eight items, highlights the challenges and barriers encountered by women entrepreneurs. Cluster 7 deals with aspects pertaining to work–life balance and venture capital, in addition to gender and leadership.

4.5 Topic Modeling

We further analyzed the abstracts of our documents using the latent Dirichlet allocation (Blei, Ng, & Jordan, 2003) algorithm (LDA). Our analysis found twelve topics summarized in Table 4.

The identified topics helped in narrowing the trends and/or patterns being followed in the area of interest. Upon analyzing the topics, it was found that few of these topics are similar; e.g., Topics 1 and 11. Whereas the former concerns the general perspective of women entrepreneurship, the latter concerns the gender disparity in raising funds and capital for

Table 3: Co-word clusters

Cluster	Cluster title	Items	Keywords
1	Entrepreneurial aspect	22	Entrepreneurship, entrepreneurial intentions, entrepreneurial orientation
2	Commercial aspect	19	Business development, business growth, business performance
3	Gender-based aspect	17	Covid-19, economic development, gender equality, gender issue, gender relations
4	Theoretical aspect	12	Feminist theory, gender theory, institutional theory
5	Gender-differences aspect	10	Gender differences, gender stereotype, UAE, Middle East
6	Challenges and barriers	08	Barriers, challenges, Malaysia, South Africa
7	Managing finances and work–life balance	08	Work–life balance, venture capital

business. Topics 5 and 6 also are similar. Whereas Topic 6 contains articles pertaining to how to manage the business owned by women or how female entrepreneurs are managing them, Topic 5 contains articles highlighting the significance of networking and socializing. Topics 7 and 10 include articles in which significance is accorded to soft-skill enhancement and management. Training, development, and motivation are crucial for the success of any business, irrespective of the gender of the owner.

From a theoretical perspective, Topic 3 includes terms and articles considered important for theoretical advancement and understanding of various techniques and methodologies for conducting research on women entrepreneurship. There is increasing focus on women entrepreneurs and work–life balance, in addition to substantial interest in women entrepreneurs from developing countries. An area attracting significant attention is the significance of socialization and networking for women entrepreneurs.

Table 4: Topic modeling analysis

Topic	Description	Top terms
1	A gender-based perspective of entrepreneurship	Gender, entrepreneurship, women, entrepreneurial, context, social, gendered, experiences, identity, institutional, cultural, practices, contexts, culture, values, norms, theory, explores, change, feminist
2	Women entrepreneurs and work-life balance	Family, entrepreneurs, business, women, work, role, support, life, personal, experience, career, roles, influence, balance, entrepreneur, related, members, conflict, present, job
3	Theoretical approach to entrepreneurship	Purpose, limited, entrepreneurship, literature, originality, design methodology approach, practical, studies, understanding, group, future, framework, limitations, implications, approach, qualitative, review, aims, context, insights
4	Entrepreneurship in a global context	Entrepreneurship, countries, female, economic, activity, springer, nature, global, international, policy, chapter, part, developing, region, institutions, economies, country, emerging, cultural, level
5	Significance of socialization and networking for women entrepreneurs	Social, case, networks, process, media, venture, network, learning, creation, networking, entrepreneur, opportunities, entrepreneurs, community, woman, opportunity, area, immigrant, digital, business
6	Management of business venture by a women entrepreneur	Development, women, management, innovation, leadership, studies, developed, model, focus, enterprise, role, companies, organizations, order, aim, innovative, sustainable, dimensions, start-ups, tourism
7	Skill enhancement through training and development	Business, entrepreneurs, women, support, training, government, skills, level, programs, questionnaire, identify, survey, start, lack, develop, education, group, groups, collected, respondents
8	Women entrepreneurial scenario at a global level	Business, businesses, growth, performance, capital, small, financial, firms, entrepreneurs, enterprises, access, owners, firm, women owned, impact, human, SMEs, micro, significant, survey
9	Women entrepreneurs of developing markets	Employment, sector, economy, informal, market, knowledge, activities, participation, marketing, number, industry, income, increase, working, employed, sources, general, due, formal, people
10	Motivational factors for entrepreneurship	Entrepreneurial, factors, success, relationship, influence, education, significant, positive, model, motivation, factor, intention, perceived, orientation, variables, role, university, intentions, students, structural
11	Gender disparity in raising capital for a venture	Female, entrepreneurs, gender, male, men, differences, ventures, gap, compared, risk, start, characteristics, venture, females, financing, interest, higher, examine, greater, funding
12	Challenges and prospects faced by women entrepreneurs	Women, entrepreneurs, challenges, interviews, rural, barriers, economic, empowerment, enterprises, India, face, potential, society, faced, activities, conducted, motivations, developing, depth, country

4.6 Bibliographic Coupling

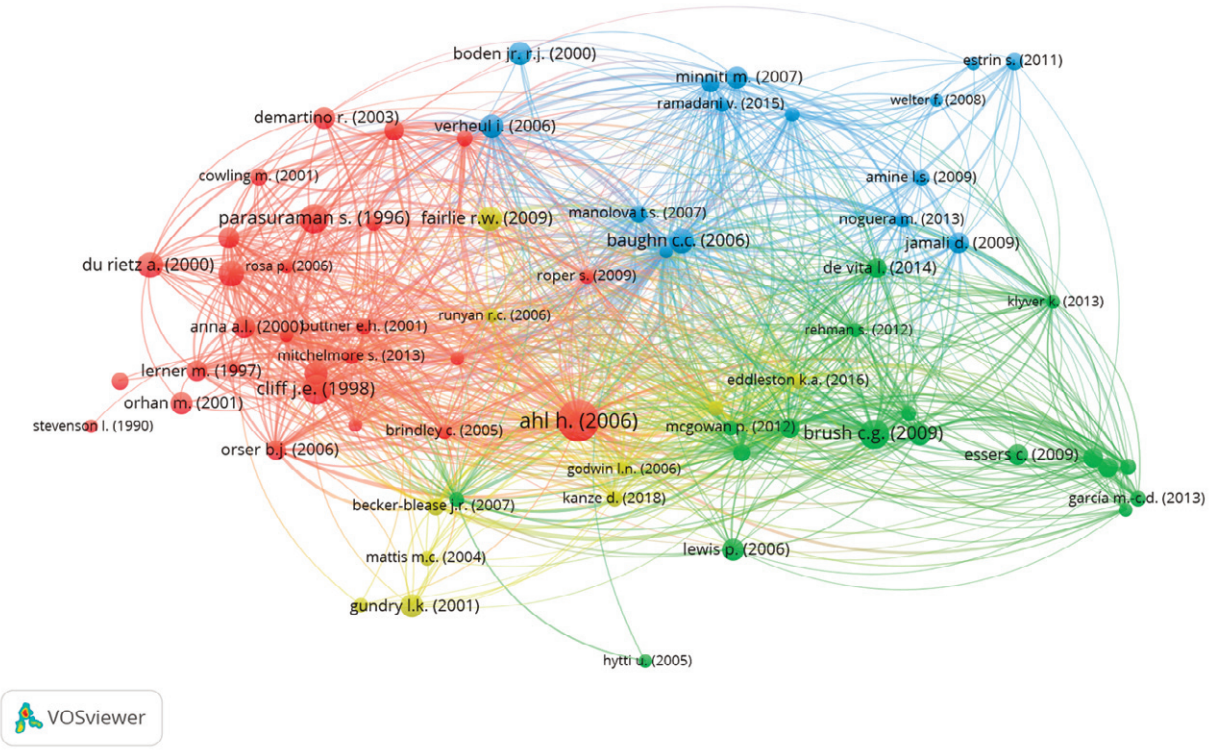
Bibliographic coupling employs citation analysis to ascertain a similarity relationship between publications. This happens when two works refer to the same third work in their respective bibliographies. The "coupling strength" of two documents increases as the number of shared citations of other publications increases (Martyn, 1964). Collating the connections between all the publications in a field of research aids in the creation of a map of the research field and the identification of sub-groups (clusters) of research using quantitative network analysis methods (Zupic & Čater, 2015).

The bibliographic coupling technique was applied to the entire data set of 1,554 documents, using a minimum of 100 citations per document, a resolution size of 1.25, and a minimum cluster size of 5. This gave us a visual representation of 70 documents fulfilling the aforementioned filters from five clusters. A graphic representation is provided in Figure 4.

Cluster 1 (Red): Role of Gender in an Entrepreneur's Performance

The first cluster is the largest, containing 27 documents. It contains some of the most cited articles, e.g., Ahl (2006), which is cited 966 times, and Cliff (1998), which is cited 486 times. This cluster's most dominant sub-theme is "gender-based studies." This topic is covered in 11 articles. For example, Roper and Scott (2009) discussed the difficulties that women entrepreneurs face in obtaining funds for their start-ups. Following Roper and Scott (2009), Fairlie and Robb (2009) investigated the role of prior work experience to explain why women's enterprises have relatively low survival rates, revenues, employment, and profits. However, in contrast, Orser, Riding, and Manley (2006) reported that women and men entrepreneurs are equally likely to seek external financing. However, women entrepreneurs refrain from seeking equity funding, because they primarily own small and medium enterprises. Similar work by authors such as Cromie (1987), Cowling and Taylor

Figure 4: Bibliographic coupling map with four clusters of the top 100 articles



(2001), Demartino and Barbato (2003), and Ahl (2006) appears in the cluster.

The other sub-theme on which authors are focusing is how performance of a venture run by women entrepreneurs is measured or impacted. Mitchelmore and Rowley (2013) developed a "Female Entrepreneur Competence" framework which provides a basis for an agenda focusing on education and overall development of women entrepreneurs. For years, authors have focused on how the performance of women's entrepreneurial ventures can be enhanced (Parasuraman, 1996; Orhan & Scott, 2001; Brindley, 2005; Mitchelmore, 2013). Cluster 1 highlights the importance of collating gender-based studies with performance-based studies (in relation to women entrepreneurs).

Cluster 2 (Green): Challenges and Upcoming Issues Faced by Women Entrepreneurs

This is the second largest cluster, with 18 items. This cluster contains publications which focus on issues that women entrepreneurs might encounter, not just in developing countries but also in developed nations such as the USA and Sweden. From a practical point of view, this cluster is significant. Publications in this cluster bring attention to certain issues that are universal, e.g., work–life balance and managing the domestic role. The most cited (n = 100) article in this cluster, Ahl and Nelson (2015), explains that even in countries with "family-friendly" welfare policies such as Sweden, women entrepreneurs face challenges in taking their venture to the next level. Interestingly, this cluster also contains certain articles which focus on gender awareness (Brush, 2009), gender identities (Garcia & Welter, 2013), and gender and technology-dependent ventures (Marlow & McAdam, 2012).

In addition, this cluster includes publications which associate religious identities with women entrepreneurs. Essers and Benschop (2009) explained how Moroccan and Turkish women entrepreneurs in the Netherlands craft their ethno-cultural identities in relation to their Muslim identity. A similar religious group was studied by Rehman and Roomi (2012), but in a different geographical location (Pakistan). According to the research, major hurdles women face in achieving balance in a patriarchal Islamic society are socio-cultural norms, meeting family commitments, and ensuring a healthy work-life balance (Kirkwood & Tootell, 2008; Eddleston & Powell, 2012), as well as masculinity (Lewis, 2006), which leads to hiding their gendered identity associated with the business.

Interestingly, a few studies have discussed the future of women entrepreneurship. Hughes, Jennings, Brush, Carter, and Welter (2012) argued that several studies focusing on women entrepreneurs highlight the problems faced by such entrepreneurs but do not indicate what the future holds for them. According to Hughes et al. (2012), describing precisely the new spheres for authors to investigate will not only address the arguments raised thus far, but will also result in a broader and deeper comprehension of women's entrepreneurship.

Cluster 3 (Blue): Impact of Geographic Location on Women Entrepreneurship

This cluster has 15 documents, in which the scientific publications shed light on how different geographical locations impact the performance of ventures owned by women. The study by Baughn, Chua, and Neupert (2006) encompasses a number of countries (n = 38) to investigate the impact of specific norms facilitating women's entrepreneurship and the relative rates of women to men involved in entrepreneurship in various countries. Another example is Jamali's (2009) study, which brought attention to the constraints faced and opportunities available to women entrepreneurs in developing nations.

The cluster also contains publications pertaining to specific nations. Cetindamar, Gupta, Karadeniz, and Egrican (2012) explored the impact of "human, family and financial capital" on women entrepreneurs in Turkey. Coad and Tamvada (2012) accentuated the barriers faced by women entrepreneurs in India, and Manolova, Carter, Manev, and Gyoshev (2007) called to attention the impact of the "human capital" of Bulgaria's women entrepreneurs. Ramadani (2013, 2015) indicated the work done by women entrepreneurs in developing nations such as Macedonia, Albania, and Kosovo. This cluster includes authors that have focused on developing nations only. This gives a posi-

tive outlook for nations such as India. Because actual women entrepreneurship is growing in India (IBEF, 2022), so should the academic research, and this cluster is proof that this is the case.

Cluster 4 (Yellow): Financial Struggles of Women Entrepreneurs

The final cluster is the smallest, including just 10 scientific publications. The major theme in this cluster is related to financing a business owned by women. Becker-Blease and Sohl (2007) discovered that although women entrepreneurs in the United States are more likely to receive angel investment for their ventures, they seek it at significantly lower rates than do men. In contrast, Eddleston, Ladge, Mitteness, and Balachandra (2016) found no difference in access to finance between women and men entrepreneurs. Eddleston et al. did not take into account any other source of finance other than bank loans, which could be the reason for this result. Woman-led ventures are less impactful than male-owned enterprises in terms of start-up financing, because women have less start-up capital, human resources, and prior work experience (Fairlie & Robb, 2009). Other studies in this cluster discussed the strategies to be applied in a woman-led business to make it successful (Gundry & Welsch, 2001), and women embarking upon an entrepreneurial journey after breaking the glass ceiling (Mattis, 2004).

5 DISCUSSION AND CONCLUSION

This research used bibliometric analysis to understand the trend in academic research related to women entrepreneurship. According to this study, the scientific publications related to women entrepreneurship are increasing significantly each year. Our study takes into account research papers published through 2021. This is significant because a large number of articles on women entrepreneurship were published after 2020. There were 242 publications in 2021. Our study extracted four clusters giving a broad picture of different areas of concern pertaining to women entrepreneurship.

Among the four major clusters, the most significant theme preferred by researchers across the globe is the role of gender in a venture's performance. The study used co-citation analysis to examine the philosophical underpinnings of the most cited publications, and used bibliographic coupling to explore the similarity relationship of research articles. We distilled the insight of the academic scholars who articulated their viewpoints with citations using bibliometric methods. The most consistent keyword among the data set is "gender," which is in agreement with the largest cluster extracted from bibliographic coupling. This finding is consistent with that of the study by Deng et al. (2020).

The study also gives an overview of the trajectory of research articles written over the years. The number of publications grew significantly after 2005, and the maximum number of publications was reported in 2021. Publications prior to 2000 focused primarily on gender (Fischer, 1993; Cliff, 1998) and work and family balance (Parasuraman, 1996). The base set in the earlier years of research could be the reason for the similar themes in the later years as well. In the recent past there have been publications on similar themes or topics (Sarfaraz, Faghih, & Majd, 2014; Adom & Anambane, 2019). A major shift in studies related to women entrepreneurship occurred after 2010, with authors focusing more on challenges faced by (Deborah, Wilhelmina, Oyelana, & Ibrahim, 2015; Panda, 2018) and prospects available to (Garg & Agarwal, 2017) women entrepreneurs. This shift is visible because of women breaking the glass ceiling and the stereotype that women do not belong in the corporate world (Lathabhavan & Balasubramanian, 2017). The articles related to women entrepreneurship published in recent times (2021 onward) take a divergent route by focusing on specific industries (Ribeiro et al., 2021), developing nations (Ogundana, Simba, Dana, & Liguora, 2021), and sustainable development (Mahajan & Bandyopadhyay, 2021), to name a few.

The trends observed in the area of women's entrepreneurship were made more specific through the use of topic modeling. This analysis summarizes the topics under 12 headings, which contain content related to "a gender-based perspective of entrepreneurship," "skill enhancement through training and development," and "challenges and prospects faced by women entrepreneurs", to name a few.

This research resonates with the findings of Moreira, Marques, Braga, and Ratten (2019) to a certain extent; one cluster (role of gender) overlaps that of Moreira et al.'s "Epistemological position and gender." However, the present research also differs from Moreira et al. regarding the most cited article. The results of this study found Ahl (2006) to be the most cited article, whereas in Moreira et al. (2019), Ahl (2006) was not even among the six most cited articles. This demonstrates Ahl's (2006) notable influence, as well as the success of the gender turn influenced by feminist theory in recent times. Furthermore, because co-citation analyses evolve over time as additional studies are published with new citation patterns, it is logical to generate a co-citation analysis of the field on a regular basis. In addition to knowing which article is cited the most, it is equally important to know which source or journal is publishing the most articles on women entrepreneurship. The *International Journal of Gender and Entrepreneurship* is the most prominent journal among the list available in terms of publishing articles on women entrepreneurship. The publication count was 143, with 2,835 citations. Because the analysis found that "gender" is the most common keyword, the result for the source of publication is justifiable.

The bibliographic coupling analysis revealed four clusters encompassing various aspects of women entrepreneurship. Cluster 1 is the largest cluster, and clearly indicates that for a long period the role of gender in entrepreneurship has remained a topic of interest for various authors. The trend of gender-based studies is being associated with performance measurement (of ventures owned by women) studies, which is opening up new avenues for gender studies in general and women entrepreneurship in specific. Cluster 2 is the most promising cluster. Articles in this cluster are not only discussing challenges in financial terms (Panda, 2018), but also highlighting more-contemporary issues such as gender awareness and identities, gender and technology, and religious identities (Brush et al., 2009; Garcia & Welter, 2013; Marlow & McAdam, 2012; Essers and Benschop, 2009). The trend in this cluster is that authors are aligning "gender" with other variables to give a more holistic outlook of women entrepreneurship.

Bibliometric coupling also shows that much research on women entrepreneurship is being concentrated in developing nations (Baughn et al., 2006; Cetindamar et al., 2012) because it often is reported that women in these areas are forced into running a venture either because of financial problems (Baughn et al., 2006) or simply because they need to survive (Jamali, 2009). The pre-existing conditions of such entrepreneurs are poor, and the pressure of earning a living to support their family puts them in a worse situation. The final cluster of this research, although the smallest, still holds significance. This cluster predominantly concerns the problems faced by women entrepreneurs in raising financing for their ventures. Women entrepreneurs are not easily trusted by funding agencies, because they are perceived as lacking in experience (Fairlie & Robb, 2009; Wellalage & Locke, 2017) in managing a business. However, the cluster also incorporates articles which show that women are climbing the corporate ladder (Salahuddin et al., 2021), thus showcasing the latent potential of women.

5.1 Implications and Future Research

Female entrepreneurs highlight their contributions as a key tool for future economic, social, and sustainable growth (Sajjad, Kaleem, Chani, & Ahmed, 2020). In the future, businesswomen around the world will look up to successful female entrepreneurs as role models (Al Mamun, Fazal, & Muniady, 2019).

The present research establishes a base for academicians planning to conduct studies in a similar domain. Using bibliometric analysis, the research brings to attention certain visible areas which have potential for more research, including gender-based studies (Panda, 2018). The findings of this study suggest that authors should include performance measurement tools in gender-based studies. Mitchelmore and Rowley's (2013) "Female Entrepreneur Competence" framework provides a base for an action plan concentrating on education and overall development of women entrepreneurs. Although this framework has been used in recent studies (e.g., Iskamto, Ghazali, & Afthanorhan, 2020), there exists scope for more application.

This research summarizes approximately 1,500 articles in four clusters. This could help authors in conducting qualitative studies focusing on a specific cluster. Publications in Cluster 2 highlight the challenges faced by women entrepreneurs. The significance of this cluster is justified by number of recent publications (Isaga, 2018; Al-Kwifi, Tien Khoa, Ongsakul, & Ahmed, 2020). However, authors can narrow their focus to the challenges and issues faced by women in conflicted zones (political or economic) such as Kashmir in India, Iran, or Ukraine. A qualitative study conducted using in-depth interviews can bring to attention the harsh realities faced by women entrepreneurs in such politically unstable and war-torn areas.

The study concludes with articles focusing particularly on the troubles faced by women in securing additional funds or even seeking seed funding for their ventures. This is a point of concern at present, because businesses in general are facing financial difficulty (McLaughlin, 2022). The condition of women entrepreneurs is bound to worsen. The findings of this study can serve as a foundation for quantitative or qualitative studies focusing on what can be done to improve the financial condition of women entrepreneurs not just in developing nations, but also in developed nations. Studies focusing on the role of microfinance in entrepreneurship can benefit from the findings of Cluster 4.

The results of this study also provide some insights for policy makers and bureaucrats. Countries may establish policies that support women entrepreneurs in terms of financial assistance (subsidies and rebates). This research can help governments to understand the problems that are faced by women entrepreneurs, and the solutions they can provide to such entrepreneurs. Policy makers need to educate not only the women entrepreneurs, but their family members as well, in order to break the shackles. Using digital media or social media platforms, brands and governments can create a single platform for women entrepreneurs which can help them get in touch with other prospective entrepreneurs and impart to them necessary skills and knowledge.

5.2 Limitations and Conclusions

The sample for the study was restricted to peer-reviewed publications in English-language journals. As a result, a specific knowledge base was not taken into account. During the filtration process, 96 articles could not be taken into consideration because of this criterion. Future studies can be conducted in collaboration with authors comfortable in languages other than English. This can add depth future studies. By broadening the language horizon not only can more studies be included in future research, but authors also can explore the cross-cultural aspect of entrepreneurship.

The study is dependent on the data extracted from the Scopus database only. This is a limitation. Future studies can make use of other available databases such as the Web of Science for a more comprehensive study. In addition, citation analysis assigns a weight to a paper's citations, and these weights are biased toward older articles, because those articles have a significantly greater number of citations than do recent publications. As a result, the bibliographic analyses may be biased in favor of older articles. In future research, authors can limit the search result to the number of citations (preferably less than 10). This automatically will highlight the more recent articles.

Our results also demonstrate that there has been limited scrutiny of the role of social network or networking theories (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998) to investigate the success of entrepreneurial firms. Future research could focus on how different types of networks play significant roles in different entrepreneurial behaviors.

EXTENDED SUMMARY/IZVLEČEK

Z bibliometričnimi metodami smo preučevali študije, povezane z ženskim podjetništvom. Posebej smo se osredotočili na razumevanje nedavnih trendov, najvplivnejših objav in revij, tematik, povezanih z raziskovanjem podjetništva žensk, ter dešifriranja prihodnjih usmeritev raziskovanja podjetništva žensk. S pomočjo baze podatkov Scopus smo pridobili 1554 dokumentov, objavljenih od leta 1982 do 2022, in analizirali znanstvene objave na leto, največkrat citirane članke, vire objav, sopojavljanje ključnih besed, tematsko strukturo (modeliranje teme) in bibliografsko sklopljenost (parčenje). Ugotovili smo, da se število znanstvenih publikacij, povezanih z ženskim podjetništvom, vsako leto znatno povečuje, najbolj dosledna ključna beseda pa je »spol«. Analiza citatov je Ahl (2006) prepoznala kot najbolj citiran članek, kar dokazuje opazen vpliv te objave, pa tudi uspešnost spolnega obrata pod vplivom feministične teorije. Analiza sosklicevanja je odkrila sedem skupin, ki prikazujejo tematsko strukturo raziskav ženskega podjetništva. Bibliografska analiza sklopljenosti je odkrila štiri skupine, ki zajemajo različne vidike, povezane z ženskim podjetništvom. Identificirani grozdi so »Vloga spola pri podjetniški uspešnosti«, »Izzivi in prihajajoče težave, s katerimi se srečujejo podjetnice«, »Vpliv geografske lokacije na podjetništvo žensk« in »Finančne težave podjetnic«. Modeliranje tem z uporabo latentnega Dirchletovega algoritma za dodeljevanje (angl. Dirchlet allocation algorithm; LDA) je prepoznalo sedem področij zanimanja v literaturi o ženskem podjetništvu. Na koncu članek poda tudi implikacije in predloge za nadaljnje raziskave.

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AUTHOR GUIDELINES

1. GENERAL INFORMATION

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Manuscripts must be written in English. Authors are responsible for the quality of written English and proof reading of the text is required.

Manuscripts should be double-spaced (including references) in 12 point font, with pages numbered consecutively throughout the entire paper. (The title page is page one.) Text alignment should be justified. Margins should be one inch (2.5 cm) at the top, bottom and sides of the page. Manuscripts inclusive of all text, references, tables, figures, appendices etc. should be no longer than 30 pages and should not exceed 60.000 characters including spaces. Authors should provide a summary, which will be published in Slovene (for foreign authors, translation will be provided by editors).

Manuscripts that report quantitative analyses of data should typically include descriptive statistics, correlation matrices, the results of statistical tests and so forth. If these items are not included in the manuscript, they should be reported in a separate technical appendix. Authors of manuscripts that report data dependent results also must make available, upon request, exact information regarding their procedures and stimuli (excluding data).

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The author(s) submitting the manuscript for review should clearly indicate to the editor the relation of the manuscript under review to any other manuscripts currently under review, in press or recently published by the authors. The editor may ask the authors to submit copies of such related papers to the Editorial Board.

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1. First page: Name of author(s) and title; author(s) footnote, including present positions, complete address, telephone number, fax number, email address, and any acknowledgment of financial or technical assistance.
2. Second page: Title of paper (without author's name) and an abstract of no more than 250 words substantively summarizing the article. Also include up to six keywords that describe your paper for indexing and for web searches in your manuscript.

3. Next: Text alignment justified with major headings and subheadings flush with the left margin. The introduction should state clearly the objective of the paper as well as the motivation and the context of the research. The literature review should be limited to the articles, books and other items that have a direct bearing on the topic being addressed. In empirical papers, details of the empirical section tests should not be included in the paper itself. The conclusion should summarize key findings and state their importance to the field. Footnotes should be kept to an absolute minimum and must be placed at the foot of the page to which they refer. They should not be used for citing references.
4. Then: Tables, numbered consecutively, each on a separate page. If tables appear in an appendix, they should be numbered separately and consecutively, as in Table A-1, A-2, and so on.
5. Next: Figures, numbered consecutively, each placed on a separate page. If tables appear in an appendix, they should be numbered separately, as in Figure A-1, A-2, etc.
6. After conclusion: Longer summary (1-2 pp, depending on length of article) in Slovenian language (for foreign authors, translation will be provided by editors).
7. Last: References, typed in alphabetical order by author's last name and in APA style.

3. TABLES

1. The table number and title should be centered and placed above the table.
2. Source(s) should also be provided and centered below the table: i.e. Mabey & Gooderham, The impact of management development on perceptions of organizational performance in European firms, 2005: 136.
3. Designate units (e.g., %, $) in column headings.
4. Align all decimals.
5. Refer to tables in the text by number only. Do not refer to tables by "above," "below," and "preceding."
6. If possible, combine closely related tables.
7. Clearly indicate positions of tables within the text on the page where they are introduced: e.g. Table 1 about here.
8. Measures of statistical significance should be reported within the table.

4. FIGURES, PHOTOGRAPHS AND CAMERA-READY ARTWORK

1. For graphs, label both vertical and horizontal axes. The ordinate label should be centered above the ordinate axis; the abscissa label should be placed beneath the abscissa.
2. Place all calibration tics inside the axis lines, with the values outside the axis lines.
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6. Once a manuscript has been accepted for publication, complex tables and all figures must be submitted both electronically and as camera-ready (hard) copy. Do not embed figures in the Word file; instead, submit them separately in the program in which they were created (i.e., PDF, PowerPoint, Excel).
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5. MATHEMATICAL NOTATION

1. Mathematical notation must be clear and understandable. Since not all journal readers are mathematically proficient, the authors should ensure that the text (i.e., words) also conveys the meaning expressed by the mathematical notation. We recommend that extensive mathematical notation (e.g., proofs) should be provided in a separate technical appendix.
2. Equations should be centered on the page. Equations should be numbered; type the number in parentheses flush with the left margin. If equations are too wide to fit in a single column, indicate appropriate breaks.

   Unusual symbols and Greek letters should be identified by a note.

6. REFERENCE CITATIONS WITHIN THE TEXT

Cite all references at the appropriate point in the text by the surname of the author(s), year of publication, and pagination where necessary. Pagination (without 'p.' or 'pp.') to give the source of a quotation or to indicate a passage of special relevance, follows the year of publication and is preceded by a colon, i.e. Parsons (1974: 238). Page numbers should be given full out, i.e. 212-230 not 212-30. When providing quotes, these should be in italics. In general, references to published works must be cited in text according to the guidelines for APA style (for more information see the DRMJ website).

7. REFERENCE LIST STYLE

1. **Single Author:** Last name first, followed by author initials.

   Berndt, T. J. (2002). Friendship quality and social development. *Current Directions in Psychological Science, 11*, 7-10.
2. **Two Authors:** List by their last names and initials. Use the ampersand instead of “and.”

   Wegener, D. T., & Petty, R. E. (1994). Mood management across affective states: The hedonic contingency hypothesis. *Journal of Personality & Social Psychology, 66*, 1034-1048.
3. **Three to Six Authors:** List by last names and initials; commas separate author names, while the last author name is preceded again by ampersand.

   Kernis, M. H., Cornell, D. P., Sun, C. R., Berry, A., & Harlow, T. (1993). There’s more to self-esteem than whether it is high or low: The importance of stability of self-esteem. *Journal of Personality and Social Psychology, 65*, 1190-1204.

4. **Organization as Author**

   American Psychological Association. (2003).

5. **Unknown Author**

   Merriam-Webster's collegiate dictionary (10th ed.).(1993). Springfield, MA: Merriam-Webster.

6. **Two or More Works by the Same Author:** Use the author's name for all entries and list the entries by the year (earliest comes first).

   Berndt, T. J. (1981).
   Berndt, T. J. (1999).

   References that have the same first author and different second and/or third authors are arranged alphabetically by the last name of the second author, or the last name of the third if the first and second authors are the same.

For other examples, see the DRMJ website.