Tomas Bata University in Zlín
Faculty of Management and Economics

Doctoral Thesis

Nurturing inbound open innovation: exploring the interplay of High-Performance Work Systems, Innovative Work Behaviour and Innovative Culture

Podpora příchozích otevřených inovací: zkoumání vzájemného působení vysoce výkonných pracovních systémů, inovativního pracovního chování a inovativní kultury

Author: **Elona Çera**

Degree Program: P0413D050013 Economics and Management

Supervisor: doc. PhDr. Ing. Aleš Gregar, CSc.

Consultant: doc. Ing. Jana Matošková, Ph.D.

Zlín, April 2024

Published by **Tomas Bata University in Zlín** in the Edition **Doctoral Thesis.**

This publication was issued in the year 2024

Key words: *HPWS, open innovation, innovative work behaviour, innovative culture, SMEs, collaboration*

Klíčová slova: HPWS, otevřené inovace, inovativní pracovní chování, inovativní kultura, malé a střední podniky, spolupráce

AKNOWLEGMENT

Attaining success is not an individual achievement, but rather a culmination of the collective efforts of numerous individuals, both directly and indirectly. Therefore, I would like to express my deepest appreciation to my supervisor, doc. PhD. Ing. Aleš Gregar, CSc. and my consultant, doc. Ing. Jana Matošková, Ph.D. for their extensive support and guidance in helping me achieve my academic objectives. Their help has not been limited solely to work-related matters. They have provided me with valuable mental support and motivation throughout my PhD journey, helping me to overcome challenging obstacles, boost my confidence, and enhance my productivity.

I would also like to thank all of the PhD course lectures who taught me how to conduct effective research. I would like to thank Dr. Lubor Homolka and prof. Drahomíra Pavelková in particular for sharing their experience and assisting me in developing a better understanding of research methodology and obtaining well-defined research outcomes. Additionnaly, I express my gratitude to prof. Boris Popesko for his assistance in facilitating my research publication process and data collection for my thesis.

Particular appreciation is extended to my mentors Dr. Gentjan Çera and Dr. Nhat Tan Pham. Their ongoing encouragement, motivation, and cooperation helped me to accomplish my study objectives and grow as a researcher. In addition, I would want to express my gratitude to my friend and collaborator on this journey, Dr. Zuhair Abbas. I also like to thank Prof. assoc. Valentina Ndou for her supervision at the University of Salento in Italy during the Erasmus+ program. This opportunity helped to gain new knowledge and expand my research network.

Further, I would like to acknowledge the assistance provided by the administrative personnel at Tomas Bata University. I am particularly thankful for the assistance of Ms. Martina Drábková and Ms. Pavla Bartošová in handling all administrative matters throughout my entire doctoral studies. In addition, I would like to extend my thanks to Hana Toncrová and Ms. Eva Chmelařová for their assistance with my Erasmus+ program in Italy. Moreover, I appreciate the assistance that Lucie Smolková and Simona Pekařová provided with regard to the implementation of the IGA project.

Having strong friendships and strong social support is of paramount importance. Therefore, I would like to express my gratitude to all my friends for their invaluable assistance in making this journey easier to handle. Additionally, I would like to express my gratitude to Metropolitan Tirana University, and the owner, Arjan Cukaj for its support. Moreover, I would like to thank my colleagues at Metropolitan Tirana University. Their assistance facilitated the attainment of my objectives and enhanced my productivity.

Ultimately, the blessings and great support of parents, my brothers, my sister and my sisters in low played a crucial role helping me navigate through the most challenging phase of my Ph.D. journey. A heartfelt gratitude extends to my nephews and nieces, who make this journey better with their unconditional love. The achievement of significant dreams often hinges on the strength drawn from people who support and believe in you. This dream turned reality is a prove to the collective support and faith vested in me by all of you. <*Dashuria mban emrin familje!*>

ABSTRACT

The increasing interest of companies in innovation matters has influenced research on open innovation strategies, namely in the field of human resources management strategy referred to as the “human side of open innovation". Despite the studies focused on the influence of human resource management practices in open innovation, the exisitng research remains nascent, with several notable research gaps: 1) mediating effects of innovate work behavior toward the connections between High Perfomance Working Systems (HPWS) and inbound open innovation; 2) the interactive influences of among HPWS practices (additive, combinative and multiplicative model) on inbound open innovation; 3) moderating effects of innovative culture in the relations between HPWS and inbound open innovation; 4) HPWS applied for fostering inbound open innovation in the SMEs industry. Drawing on Ability-Motivation-Opportunity theory (AMO theory), social exchange theory, and social context theory, this thesis seeks to address such research gaps through the development of a new conceptual framework that explores the direct, indirect, and interactive roles of HPWS practices on SMEs inbound open innovation.

Survey was the research approach that is used in this thesis. The sample for this thesis consisted on Czech SMEs operating in high-tech manufacturing and knowledge intensive service sector according NACE (Nomenclature of Economic Activities) classification. A quantitative method has been employed to evaluate the formulated hypothesis. A total of 252 responses are used for the purposes of data analysis and hypothesis testing. The SmartPLS 4.0 software with the PROCESS along with SPSS, is used for data processing and analysis.

The main results of this study state that: a) opportunity-enhancing practices directly influence innovative work behavior. Also, the results confirm the direct effects of ability-enhancing practices on inbound open innovation; b) the indirect role of innovative work behavior towards effects of opportunity-enhancing on inbound open innovation is found; c) an essential two-way interaction between ability-enhancing and opportunity-enhancing concerning inbound open innovation is found significant; d) the positive significant effect of innovative culture on motivation-enhancing practices toward inbound open innovation. Nevertheless, the results show some unexpected results such as): a negative significant three-way interaction between ability-, motivation- and opportunity-enhancing.

ABSTRAKT

Rostoucí zájem firem o problematiku inovací ovlivnil výzkum otevřených inovačních strategií, konkrétně v oblasti strategie řízení lidských zdrojů označované jako „lidská stránka otevřených inovací“. I když existují studie zaměřené na vliv postupů a praktik řízení lidských zdrojů na otevřené inovace, je tento výzkum stále v počátcích a přetrvává několik významných mezer ve výzkumu: 1) zprostředkující vliv inovativního pracovního chování na vazbu mezi vysoce výkonnými pracovními systémy (HPWS) a příchozími otevřenými inovacemi; 2) interaktivní vlivy mezi praktikami HPWS (přídavný, kombinovaný a multiplikativní model) na příchozí otevřené inovace; 3) moderující vliv inovační kultury ve vztahu mezi HPWS a příchozími otevřenými inovacemi; 4) HPWS aplikované pro podporu příchozích otevřených inovací v malých a středních podnicích. Na základě teorie schopností, motivace a příležitostí (teorie AMO), teorie sociální výměny a teorie sociálního kontextu tato práce řeší zmíněné nedostatky ve výzkumu vytvořením nového koncepčního rámce, který zkoumá přímou, nepřímou a interaktivní roli praktik HPWS na příchozí otevřené inovace malých a středních podniků.

Pro sběr dat bylo využito dotazníkové šetření. Výzkumný vzorek tvořily české malé a střední podniky působící v oblasti high-tech výroby a znalostně intenzivních služeb podle klasifikace CZ-NACE. K vyhodnocení hypotéz byl použit kvantitativní přístup. Pro analýzu a testování hypotéz bylo použito celkem 252 odpovědí. Pro zpracování a analýzu dat byl použitý software SmartPLS 4.0 s PROCESS a SPSS.

Hlavní výsledky této studie ukazují, že: a) Praktiky zaměřené na podporu příležitostí přímo ovlivňují inovativní pracovní chování. Výsledky také potvrzují přímé účinky postupů zlepšujících schopnosti na příchozí otevřené inovace; b) byla zjištěna nepřímá role inovativního pracovního chování vůči účinkům podporujících příležitosti na příchozí otevřené inovace; c) byla zjištěna významná obousměrná interakce mezi postupy podporujícími schopnosti a postupy podporujícími příležitosti týkajícími se příchozích otevřených inovací; d) byl zjištěn pozitivní významný vliv inovační kultury na postupy podporující motivaci k příchozím otevřeným inovacím. Nicméně některé výsledky jsou neočekávané, jako například významná negativní trojstranná interakce mezi praktikami podporujícími schopnosti, motivaci a příležitosti

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVATIONS

Open Innovation = OI

Inbound Open Innovation = INOI

Outbound Open Innovation = OBOI

High-Performance Working Systems = HPWS

Ability-Motivation-Opportunity = AMO

Innovative Work Behaviour = IWB

Innovative Culture = IC

Ability-enhancing =AE

Motivation-enhancing = ME

Opportunity-enhancing = OE

Human Resource Management = HRM

Human Resource = HR

Strategic Human Resource Management = SHRM

Small and Medium Enterprises = SME

Social Exchange Theory = SET

Social Context Theory = SCT

Not Invented Here = NIH

Not Sold Here = NSH

Research Questions = RQ

Research Objectives = RO

1. INTRODUCTION

Open innovation (OI) plays a critical role in fostering the distinctiveness and expansion of a company (Bogers, Chesbrough, *et al.*, 2018; Chesbrough, 2003; Majchrzak *et al.*, 2023). Chesbrough *et al.* (2006) characterizes open innovation as the deliberate utilization of both inflows and outflows of knowledge to hasten internal innovation and broaden the markets for external application of innovation. Hence, it's imperative for companies to embrace open innovation as a fresh approach that enables them to adapt to changes and maintain competitiveness (Lichtenthaler, 2009, 2011; West and Gallagher, 2006). Traditionally, firms have prioritized internal resources, as noted by Calantone and Stanko (2007). However, relying solely on internal organizational knowledge poses challenges in developing comprehensive solutions due to limitations in knowledge and resources (Lichtenthaler, 2009). Consequently, contemporary businesses are shifting from conventional innovation strategies, which heavily rely on internal resources, towards methods that emphasize external knowledge and collaborations among organizations (Engelsberger *et al.*, 2022; Naqshbandi *et al.*, 2023; Popa *et al.*, 2017). Indeed, the strategic implementation of inbound open innovation (INOI) and outbound open innovation (OBOI) is crucial for organizations, as it facilitates the adoption of new solutions, the development of products and services, enhances innovation outcomes, promotes corporate social responsibility (Camilleri *et al.*, 2023), and strengthens the competitive position in the market (Bogers, Foss, *et al.*, 2018; Dahlander and Gann, 2010).

Whereas it is acknowledged that open innovation exhibits the capacity that enables firms to enhance competitiveness, it is imperative to further explore the influence of human resource management (HRM) as a precursor to firm openness (Ahn *et al.*, 2017; Bogers, Foss, *et al.*, 2018). In this context, practices falling under the High-Performance Work Systems (HPWS) open innovation approach that drive organizational innovation outcomes, have garnered increased attention (Engelsberger *et al.*, 2022; Zheng *et al.*, 2020). Although existing literature highlights the relevance of HRM practices in open innovation contexts, several research gaps remain unresolved:

Primarily, even though the immediate impacts of HRM practices on innovative work behaviour (IWB) and innovation outcomes are well-established (Fu *et al.*, 2015; Sanz-Valle and Jiménez-Jiménez, 2018), there remains a gap in exploring the mediating role of IWB in the relationship between HPWS and open innovation (Sanz-Valle and Jiménez-Jiménez, 2018) . *Secondly*, the interactive effects of HRM practices within the Ability-Motivation-Opportunity (AMO) framework on open innovation outcomes warrant further investigation. Although models like additive, combinative, and multiplicative have been scrutinized in organizational performance and innovation contexts, their application in the domain of open innovation necessitates additional empirical scrutiny (Remneland Wikhamn *et al.*, 2023). *Thirdly*, despite recognizing the effect of organizational culture on HRM practices and innovation, empirical inquiries into the moderating effect of an innovative culture on the relationship between HPWS and inbound open innovation require deeper exploration (Barjak and Heimsch, 2023; Kaushik and Mukherjee, 2021). *Fourthly*, within the small and medium enterprises (SME) context, which confronts distinctive challenges and opportunities in innovation, the impact of HRM practices, particularly HPWS, on open innovation remains insufficiently examined (Martinez-Conesa *et al.*, 2017; Podmetina *et al.*, 2013; Van De Vrande *et al.*, 2009). Despite resource limitations, SMEs can exploit inbound open innovation to bolster competitiveness; however, empirical substantiation concerning the effects of HPWS on SMEs' inbound open innovation is scarce (Kaushik and Mukherjee, 2021) (Kaushik and Mukherjee, 2021). *Lastly*, the Czech Republic presents an intriguing context for investigating HRM practices and innovation within SMEs. With a substantial proportion of SMEs contributing to the nation's economy, comprehending the intricacies of HRM practices and innovation within Czech SMEs can furnish valuable insights for nurturing innovation and fostering long-term economic growth.

Utilizing a quantitative approach, this investigation collected and analysed data from a representative sample of SMEs comprising sectors with high-tech manufacturing operations and generating knowledge-intensive services in the Czech Republic. Employing a cross-sectional study design facilitated the examination of the research inquiry within a specified timeframe. The focal unit of analysis comprised deputy managers, general managers, CEOs, or proprietors of SMEs, chosen purposefully for their expertise in strategic decision-making and innovation performance. The

sampling methodology adopted a randomized probability sampling technique, resulting in a dataset comprising 252 valid responses, thereby attaining a response rate of 14.8%.

This dissertation is organization in the following parts: 1) introduction, 2) literature review, 3) methodology and results, 4) discussions, 5) theoretical and practical implications,6) conclusions and future directions

2. LITERATURE REVIEW: CONCEPTS, THEORITICAL APLICATION, HYPOTHES

2.1 Concepts development

2.1.1 Inbound open innovation

In the current business ecosystem, innovation is a guarantor of competitive edge (Weerakoon *et al.*, 2020). The significance of embracing and fostering innovation is well acknowledged in contemporary discourse (Eisenhardt and Martin, 2000), with a growing awareness of the imperative for firms to perpetually cultivate innovation(Quintane *et al.*, 2011). In addressing this imperative, the concept of open innovation has gained recognition as an organizational strategy capable of nurturing innovation within firms, thereby enhancing their long-term competitiveness (Laursen and Salter, 2006; West and Bogers, 2014)The concept of open innovation was presented first by Chesbrough (2003), who defines open innovation as "*purposive inflows and outflows of knowledge to accelerate innovation and to expand the markets for external use of innovation*". Notwithstanding, a transition from closed innovation defined as in-house creation where innovation is financed, developed and promoted internally (El Maalouf and Bahemia, 2023), to an open innovation model that integrates internal and external knowledge, and techniques to develop and commercialize innovative product and services, Gassmann (2006) argues that open innovation is a concept which includes processes such as the globalization of innovation, outsourcing, supplier and customer integration, commercialization and technology application, that are all examples of how to open up the innovation process. Thus, open innovation represents a shift from the traditional notion of innovation where the focus is on in-house creation, to a more

broad and innovative business model that emphasizes inter-organizational collaboration (Gassmann, 2006; West and Bogers, 2014).

Open innovation falls under two categories: inbound open innovation and outbound open innovation (Chesbrough and Crowther, 2006). *Inbound open innovation* refers to how companies exploit others' discoveries and integrate external information within the firm (Brunswicker and Vanhaverbeke, 2015; Dahlander and Gann, 2010; Parida *et al.*, 2012). On the other hand, *outbound open innovation* is defined as a practice of using internally created information, technology, and ideas for exploitation by external companies (Brunswicker and Vanhaverbeke, 2015; Chesbrough and Crowther, 2006). Dahlander and Gann (2010) further divided inbound and outbound open innovation in the so-called pecuniary and nonpecuniary modes. In non-pecuniary inbound open innovation focused on sourcing external knowledge based on collaborations with customers, competitors, universities, and other stakeholders in the market, there is no immediate or direct reward included regarding knowledge flow. Contrarily, in the pecuniary mode, focused on the acquisition of external information and inputs from formal and informal relationships, money related to the knowledge flow is immediately involved. Similarly, in the outbound open innovation setting, money is directly involved in the pecuniary mode, which is related to commercialization and selling products to external parties, even though there is no immediate or direct reward included regarding knowledge flow focused on revealing internal resources externally.

In an open innovation setting, Chesbrough and Crowther (2006) argues that companies can implement both, inbound and outbound open innovation to drive growth and innovation. In most cases, however, compared to outbound open innovation, inbound open innovation is more widespread (Enkel *et al.*, 2009), especially in the SMEs context (Parida *et al.*, 2012). Parida *et al.* (2012) asserts that outbound open innovation is more challenging to be implemented by SMEs because they lack internal resources to exploit and actively outsource knowledge and information. Hence, they should focus first on inbound open innovation, compensate their lack of knowledge, gain experience, and then engage in outbound open innovation. Implementing inbound open innovation will support SMEs to fight the problems regarding “liability of smallness” (Parida *et al.*, 2012), boost innovation processes (Carrasco-Carvajal *et al.*, 2023; Gentile-Lüdecke *et al.*, 2020), and after

this, their possibilities to participate outbound open innovation activities and externally commercialize knowledge and technologies will be increased (Brunswicker and Vanhaverbeke, 2015; Parida *et al.*, 2012). Given this reason, this thesis focuses in inbound open innovation as this strategy give the opportunity to SMEs to embrace the concept of openness gradually and more effectively.

Inbound OI is usually recognised as an outside-in approach where the knowledge is externally absorbed and internally used to generate innovation (Pinarello *et al.*, 2022). The debate what types of inbound open innovation strategies SMEs are under continues debate (Rhaiem and Doloreux, 2024). However, some of the most common types of inbound OI approaches are collaboration with different external partners such as universities, competitors, customers etc, (Laursen and Salter, 2006), external technology acquision (Chesbrough, 2006), IP in-licensing (Chesbrough and Crowther, 2006b), generating knowledge throw idea and start up competitions (Van De Vrande *et al.*, 2009), crowdsourcing (El Maalouf and Bahemia, 2023) ect. While the importance of openness is recognised, there is always important to considers firms internal resources to implement open innovation (Bogers, Foss, *et al.*, 2018). As a result, this study focuses on analyzing SMEs' human resource management practices, organizational culture, and inventive work behaviour as critical internal ascendants that encourage inbound open innovation.

2.1.2 High-Performance Working Systems (ability-enhancing, motivation-enhancing, opportunity-enhancing)

In the literature, various human resource management practices are used to study innovation. However, Jackson *et al.*, (2014) contend that in order to adapt to new realities, changes, or innovations influenced by external business factors, we have to shift from traditional HRM practices to innovative HRM practices. Hence, the high-performance work system is based on strategic HRM, with a particular emphasis on performance and innovation enhancement (Huselid, 1995). According to Huselid (1995), HPWS are HR practices that have a reciprocal effect: he organization invests in enhancing the skills and motivation of its employees, while also providing opportunities for their active involvement, hence increasing employee engagement. Consequently, this leads to an enhanced organizational performance. In the same vain, Datta *et al.*, (2005) defines high-performance work systems as HR practices "designed to enhance employees' skills, commitment, and productivity" that

promotes organizational flexibility and innovation. These practices are considered as a collection of innovative practices that managers can employ to manage people, considered as the best practices that fit the interests of all corporate stakeholders (Jackson *et al.*, 2014) and foster organizational innovation (Zhou *et al.*, 2019).

HPWS is thought to be a combination of bundles such as specific and rigorous hiring practices; high-quality training; a clear relationship between performance and compensation; and empowering people through participation and well-designed work practices (Combs *et al.*, 2006; Datta *et al.*, 2005; Rhee *et al.*, 2018). For instance, organizations that want to foster innovation consider it of utmost importance to recruit and choose individuals based on their capacity to engage in creative and innovative activities. Extensive training that addresses the needs of individuals and companies, equips employees with the knowledge they need to perform their tasks, engage in innovative activities, and be more creative (Jiang, Lepak, *et al.*, 2012; Zhou *et al.*, 2019). Moreover, job rotation, work design and participation elicits employees' extrinsic motivation to invest more in innovation and creativity (Zhou *et al.*, 2019)

Pursuant to Ability-Motivation-Opportunity (AMO) theory, employees will be more likely to serve effectively when they have the abilities to do the jobs successfully and the motivation to engage in such activities. Also, along with abilities and motivation incentives, they need opportunities to participate and express themselves in important decisions (Appelbaum, 2000). Thus, the AMO model suggests that HPWS enhances the three main components of the model: ability-enhancing practices (*e.g., staffing and training*); motivation-enhancing practices (*e.g., compensation and performance appraisal*); and opportunity-enhancing practices (*e.g., work design and participation*) (Appelbaum, 2000; Bos-Nehles *et al.*, 2013). By implementing all of these HR practices in a complementary manner, the organization's potential of enhancing innovation can be increased (Laursen, 2002; Laursen and Foss, 2003). Therefore, firms should carefully select the HR strategy that is in harmony with their organizational objectives. The successful implementation of appropriate HR policies significantly impacts a firm's ability to achieve its innovation objectives and gain a competitive edge (Huselid, 1995b; Jiang, Wang, *et al.*, 2012; Laursen, 2002).

In the *ability-motivation-opportunity* setting, Weerakoon *et al.* (2020), defines *ability* as the skills or competences of an individual that can be used and coordinated with all organizational stakeholders. Employing qualified and knowledgeable staff promotes the execution of routine tasks and innovative activities by employees (Zhang and Edgar, 2022), leading to organizational innovation (Alkhalaf and Al-Tabbaa, 2024). In addition to the employees' existing skills, continuous training and learning are necessary for employees to effectively carry out their duties. Therefore, ongoing training and development are crucial for enhancing competency, since they improve employees' knowledge and abilities, enabling them to effectively carry out their tasks and participate in innovative activities that contribute to overall organizational innovation (Alkhalaf and Al-Tabbaa, 2024). Furthermore, *motivation* is an important factor that drives employees behaviour and eagerness to perform their tasks (Bos-Nehles *et al.*, 2023). Having said that, it can be argued that motivation-enhancing practices shape and influence employees' behaviour toward organizations objectives (Sels *et al.*, 2006).

Extending this reasoning to open innovation, the firms can embrace and benefit form open innovation, only if they have their resources and competence to absorb the knowledge and innovation that is externally generated (Dahlander *et al.*, 2016; Dahlander and Gann, 2010). In this context, the application of HPWS practices in open innovation has been increasingly concerned by researchers (Engelsberger *et al.*, 2022; Zheng *et al.*, 2020), and AMO framework is considered as an appropriate approach to analyze this relationship (Ferrarini and Curzi, 2022). Engelsberger *et al.* (2022) argues that in order to create a business environment that encourages open innovation, companies should invest in HR practices that pay special attention in selecting, training, rewarding, job design and offering employees opportunities that shape their attitude and behaviors toward knowledge sharing and sourcing, avoid uncertainty, collaborate, and foster an open innovation mindset.

For instance, ability-enhancing practices, such as recruiting and training, attempt to develop a workforce that possesses the necessary competencies and knowledge to foster a favorable attitude towards collaborating with external partners and assimilating external knowledge (Ferrarini and Curzi, 2022; Naqshbandi *et al.*, 2023). Recruiting and selecting practices are very important in enhancing open innovation (Hong *et al.*, 2019; Remneland Wikhamn *et al.*, 2023). In order for

companies to implement open innovation strategies, it is necessary to have a highly qualified workforce with all technical and social abilities to handle internal and external sources of knowledge and innovation (Bello-Pintado and Bianchi, 2020). Hiring knowledgeable and talented employees will enable firms to amalgamate their internal and external innovation and knowledge, consequently boosting the firms' external absorptive ability (Bello-Pintado and Bianchi, 2020; Bogers, Foss, *et al.*, 2018; Remneland Wikhamn *et al.*, 2023). In addition, if employees lack the required skills for managing external knowledge, their willingness to cooperate with external parties would be decreased (Hong *et al.*, 2019). Hence, training programs will equip them with the skills they need to be more proactive toward knowledge exchange and partnering and collaborating with external partners (Ferrarini and Curzi, 2022; Hong *et al.*, 2019).

In addition, along with ability-enhancing practices, organizations require motivation-enhancing practices, such as performance based-reward (including both tangible and intangible rewards), in order to inspire employees to innovate and engage in open innovation (Ferrarini and Curzi, 2022; Naqshbandi *et al.*, 2023). *Motivation* is defined by Van Iddekinge *et al.* (2018) as " an unobservable force that initiates work-related behavior and determines its direction, intensity, and duration". Subramony (2009) argues that motivation-enhancing incentives such as monetary reward, bonuses, profit-sharing and gain-sharing plans, healthcare support, career promotion have significant influence in both employees level and overall organizational performance. Notably, the adoption of motivation-enhancing practices improves employee satisfaction and engagement, which in turn promotes creativity in both, large organizations (Subramony, 2009) and small and medium-sized enterprises (Alkhalaf and Al-Tabbaa, 2024). Therefore, it is argued that motivated employees are more willing to generate new ideas and participate in knowledge sharing behaviors that boost firms inbound open innovation engagement (Naqshbandi *et al.*, 2023).

Lastly, implementing opportunity-enhancing practices will enable employees to actively participate and share their knowledge, hence fostering open innovation (Ferrarini and Curzi, 2022; Naqshbandi *et al.*, 2023). Lepak *et al.* (2006) asserts that *opportunity* implies workplace structure and the extent of employees' involvement and empowerment to apply their skills and collaborate with others. Hence, job design

and job rotations create opportunity for employees to collaborate and foster knowledge flow among all parties (Naqshbandi *et al.*, 2023). Giving employees the opportunity to be more creative, work in teams, and collaborate, as well as giving them autonomy to make decisions, will enhance their willingness to collaborate with external parties and reduce the fear of absorbing and integrating external knowledge (e., inbound innovation) (Hong *et al.*, 2019)

2.1.3 Innovative Work Behaviour

Gould-Williams (2003), claim that the relation between human resource practices and organizational performance is founded upon mediation mechanism such as employees' behaviour. The AMO model states that HRM practices have the potential to enhance organizational performance (e., inbound open innovation), with employee behaviors (e.g., innovative work behavior) serving as a mediating factor in this relationship. *Innovative work behaviour* is referred as individuals' purposeful behaviours to generate and implement new and beneficial ideas explicitly meant to benefit the person, group, or organization (Bos-Nehles *et al.*, 2017; Farr and Ford, 1990; Leong and Rasli, 2014). The terms "creativity" and "innovation" have been used interchangeably according to Scott and Bruce (1994), but there is a difference between the concepts (Farr and Ford, 1990). Creativity is considered as the creation of new knowledge. On the other hand, innovation is a process of producing or adopting an idea, and implementing it. Thus, Scott and Bruce (1994) highlight that innovation is a multi-stage process, including idea generation (either novel or adopted), finding support to build this idea, and the third stage, implementation. Additionally, other scholars summarize innovative working behaviour as a bundle of different behaviours such as problem or opportunity identification, generating ideas to solve identified problems or benefit from identified advantages, and then evaluation of these ideas/solutions, asking for support towards their implementation and idea commercialization (Sanz-Valle and Jiménez-Jiménez, 2018). Researchers suggest that the behaviour of individuals who are able to do things beyond job requirements, through innovative incentives**,** leads to innovation (Fu *et al.*, 2015).

2.1.4 Innovative culture

Harrison and Corley (2011) define organizational culture as the "*long-lasting set of shared attitudes, values and meanings that influence the thinking and behaviour of*

the members of a company". Organizational culture has been analysed as related to performance and innovation (Botelho, 2020; Bysted and Jespersen, 2014; Seeck and Diehl, 2017). Hogan, & Coote (2014) emphasize that it is important to establish an organizational culture that encourages innovation. To the aid of this purpose, management's work on fostering employee support for innovative behaviours is required. Schein (2010) defines organizational culture as *"a pattern of basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems"*. This definition emphasises the importance internal integration and external adaptation focused on of five values: "*employee development, harmony, customer orientation, social responsibility and innovation*" (Tsui *et al.*, 2006). Following these arguments, Naqshbandi *et al.* (2015) assert that organizations that are focused on developing and implementing a highly integrative culture that integrates all five values together have higher chances of embracing inbound open innovation.

In the open innovation setting, organizational culture is recognized as crucial driving force in embracing the strategy of openness (Cricelli *et al.*, 2023; Naqshbandi *et al.*, 2015). The malfunction of organizational culture, which inhibits organizations from changing and evolving, is the primary cause of most organizational issues and failures (Farazmand, 2004), thus, businesses have a greater risk of failing to implement open innovation (Cricelli *et al.*, 2023). Consequently, organizations with a special focus on open innovation purposefully adapt to an innovative culture (Herzog, 2011).

Innovative culture refers to "a set of shared assumptions, values, beliefs, attitudes, and behaviors of organizational members that could facilitate the creation and development of new product, services, or process innovation" (Ali and Park, 2016). Hence, organizations are presented with increased prospects to attain their desired outcomes and objectives, while also being afforded enhanced capabilities to efficiently manage their innovation efforts, due to the emergence of an innovative culture (Naranjo-Valencia *et al.*, 2016).

2.2 Theoretical application

2.2.1 AMO theory

The theory named "Ability – Motivation – Opportunity" encapsulates HRM practices aimed at revitalizing organizational performance by bolstering employees' ability through measures such as apt selection and training, amplifying employees' motivation via methods like performance appraisal and compensation, and furnishing employees with opportunities, including avenues for participation and conducive work design (Appelbaum, 2000; Boxall, 2003). Superior organizational performance necessitates the implementation of integrated and coherent "bundles" of HR practices, rather than relying on isolated practices (Appelbaum, 2000; Macky and Boxall, 2007). The entirety of such practices generate the HPWS approach that is otherwise referred to as "AMO theory"(Appelbaum, 2000; Boxall and Purcell, 2003). HPWS are derived from the field of strategic human resource management (SHRM) and are characterized as a collection of HR practices that aim to enhance employee empowerment and foster greater commitment towards their work (Huselid, 1995b). In accordance with the AMO theory, employees are inclined to perform effectively when they have the requisite skills to accomplish their tasks proficiently and are motivated to actively participate and contribute to the latter (Macky and Boxall, 2007). Hence, this will directly or indirectly boost organizational performance by three interrelated "bundles": a) hiring the right people and developing their abilities and skills through training and development programs – *ability-enhancing*; b) enhancing employee motivation through decent rewarding systems and performance appraisal – *motivation-enhancing*; and c) offering employees the opportunities to make the best use of their skills and abilities – *opportunity-enhancing* (Cooke, 2001; Macky and Boxall, 2007).

Furthermore, the AMO framework serves to explore the synergistic impacts of HRM practices on organizational performance. Blumberg and Pringle (1982) introduce the multiplicative or fully interactive model denoted as "$P = f(A \times M \times O)$". In accordance with their perspective, performance sees an elevation solely when all three components, namely Ability, Motivation, and Opportunity, are concurrently present; the absence of any of these components renders performance unattainable. The implication is that ability, motivation, and opportunity cannot guarantee performance on their own (Schwab and Cummings, 1976). Hence, it is imperative

to avoid analysing AMO antecedents in isolation, but rather to approach them in a coordinated and integrated manner (Siemsen *et al.*, 2008).

Furthermore, apart from the multiplicative HR model analysed by the work of Blumberg and Pringle (1982) and Siemsen *et al. (*2008), the association between AMO and organizational performance has been thoroughly scrutinized by Boxall and Purcell (2003) through a fully additive effect represented as $P = f(A + M + O)$. The authors assert that each facet of AMO is anticipated to exert a distinct impact on performance autonomously, irrespective of other underlying factors. Enhancing any single AMO dimension is expected to yield higher levels of performance. Moreover, Bos-Nehles *et al.* (2013) bring another perspective to the literature for analysing the effects of AMO dimensions in organizational performance. Researchers present a combinative model using the equation $P = fA\ (1 + M + O)$. Accordingly, they argue that ability is an essential condition for performance to be achieved. Hence, opportunities and motivation only have an impact when paired with skills. Therefore, it is hypothesized that ability will exert a direct influence on performance, while motivation and opportunity will only modulate the magnitude of this effect.

The effects of the AMO framework are recognized for their impact in closed and open organization innovation throughout different context (Bhatti *et al.*, 2020; Ferrarini and Curzi, 2022; Mehralian *et al.*, 2021; Naqshbandi *et al.*, 2023), including SMEs (Shahzad *et al.*, 2019). Therefore, the AMO theory can be used effectively to investigate the execution of HPWS in SMEs, and to analyse the impact of HPWS on enhancing SMEs' inbound open innovation capabilities.

2.2.2 Social exchange theory

Cropanzano and Mitchell (2005) define social exchange theory (SET) as the most influential theory which explains workplace behaviour. This theory emphasizes that when employees perceive high organizational commitment, they offer positive support to their organization. Reciprocity is at the core of the social exchange theory (Blau, 1964). Cropanzano and Mitchell (2005) further argue that reciprocity could be understood as an: 1) *"interdependent exchange"* – the concept of interdependence is characterized by reciprocal arrangements widely recognized as fundamental attributes of social exchange. Reciprocal interdependence is a concept

that highlights the importance of mutual exchange, where all parties are expected to contribute and anticipate reciprocation. It entails that the actions performed by one party elicit a corresponding reaction from the other party involved; 2) *"Folk belief"* – which emphasizes that people believe that they will receive what they deserve based on their actions and merits; 3) *"Moral norms and individual orientation"* – this concept argues that individuals who fail to conform are subjected to harsh consequences.

In line with the social exchange theory, employees who perceive high commitment and continue positive support of their organization through specific training and development programs, combined with fair rewarding systems (e.g., HPWS), will pay back with innovative behaviour (Bos-Nehles and Veenendaal, 2019). Therefore, employees will be more committed to the company. Additionally, this leads to higher performance and enhances key behaviours (e.g., IWB) in the workplace (Fu *et al.*, 2015; Karin *et al.*, 2010; Ma Prieto and Pilar Pérez-Santana, 2014; MacKenzie *et al.*, 2022; Sanz-Valle and Jiménez-Jiménez, 2018). Hence, the implementation of HPWS has been found to positively influence employees' inclination towards innovative work behaviour, thereby subsequently affecting the overall innovation capabilities of organizations (Fu *et al.*, 2015).

This study aims to assess the impact of HPWS on IWB, as well as examine the mediating role of IWB in the association between HPWS and open innovation. By extending this theory within the framework of open innovation, it is anticipated that the implementation of HPWS will have a significant impact on employee perceptions, fostering their motivation to reciprocate innovative behaviour towards their organization. In the context of innovation, the study of innovative work behaviour, which entails reciprocal behaviour, has emerged as an intriguing area of research within the field of management. Therefore, the application of social exchange theory is suitable for analysing the inter-linkages between HPWS, innovative work behaviour, and open innovation.

2.2.3 Social context theory

Social context theory (SCT) is a conceptualization context presented by Ferris *et al.* (1998). According to the social context theory, organizational culture is a "social context" factor that influences not only people's attitudes, values, behaviours, and

perceptions of their organization, but also organizational management systems (i.e., HRM systems) (Ferris *et al.*, 1998, 1999). Therefore, "culture, climate, and political considerations" are interlinking factors between human resource management and organizational effectiveness (Ferris *et al.*, 1998). Organizational culture defines beliefs and organizational rules that serve as behavioural guidelines for employees. This set of values and organizational operating rules are integrated with other management systems that drive the development of HRM systems (Ferris *et al.*, 1998, 1999; Wei *et al.*, 2011), and shapes organizational effectiveness through change and transformation (Lau and Ngo, 2004; Lei *et al.*, 2021). Ozcelik and Uyargil (2015) assert that all executives and senior members of the organization are more engaged to properly execute HRM practices and policies when organizational culture is stronger and supportive. A culture with a focus on change, development and innovation, influences effective implementation of human resource management practices. Therefore, employees operating within a culture that prioritizes innovation and change are expected to show higher degrees of motivation in acquiring new resources, enhancing problem-solving skills and abilities, and actively engaging in organizational objectives related to innovation, such as the development of new products (Wei *et al.*, 2011), exploitative and exploratory innovation (Lei *et al.*, 2021), and open innovation (Scaliza *et al.*, 2022).

Regarding research objectives, this study needs to analyse the impact of innovative culture in the relations between HPWS and open innovation. Open innovation is a concept that involves the exchange of knowledge both within and outside organizational boundaries (Martín-de Castro, 2015; Scaliza *et al.*, 2022). Thus, it necessitates the presence of a culture that is oriented towards change and innovation in order to effectively operate (Martín-de Castro, 2015). By extending social context theory to open innovation research, the application of an innovative culture is expected to positively impact effective implementation of HPWS with regards to open innovation within SMEs context.

2.3 Hypotheses development

2.3.1 Direct relationship

Innovative work behaviour is defined as an "*individual's behaviour that intentionally seeks to create, introduce and apply new and useful ideas, processes,*

products or procedures" (De Jong and Den Hartog, 2010; Farr and Ford, 1990; Janssen, 2000, 2005). Based on the social exchange theory, high-commitment HRM practices (i.e., HPWS) assist in positively enhancing innovative work behaviour (Bos-Nehles *et al.*, 2013; Bos-Nehles and Veenendaal, 2019; Datta *et al.*, 2023; Karin *et al.*, 2010; Obeidat, 2021; Prieto and Pérez-Santana, 2014; Sanz-Valle and Jiménez-Jiménez, 2018). Adaptation and implementation of HPWS are perceived as proof of the organization's commitment to employees, according to which, employees will be more committed and respond reciprocally through innovative behaviours. According to Karin *et al.* (2010) when employees believe that firms are committed to them, they engage in practices that improve their abilities (ability-enhancing), such as training and development. Consequently, they perceive that they ought to compensate through good behaviour and actions that are not formally recognized or bound by contractual terms. Specifically, selection procedures, training and development practices enhance employees' abilities, such as skills and knowledge to engage in innovation activities (Bos-Nehles *et al.*, 2017; Pratoom and Savatsomboon, 2012; Sanz-Valle and Jiménez-Jiménez, 2018). Therefore, when employees are better prepared and trained, they demonstrate increased awareness regarding innovation issues (Bos-Nehles *et al.*, 2017; Fu *et al.*, 2015; Jiménez-Jiménez and Sanz-Valle, 2005) and behave more proactively to create and implement new ideas, as well as actively participating in organizational innovation objectives (Fu *et al.*, 2015; Shipton *et al.*, 2006) .

The role that HRM practices play in fostering innovative behaviour has received attention from other authors focusing on motivation-enhancing practices (i.e., reward and performance appraisal) (Bos-Nehles and Veenendaal, 2019; Datta *et al.*, 2023; Laursen and Foss, 2003; Xu *et al.*, 2023). Having good reward systems contributes to the development of a positive organizational image, thereby influencing employees' behaviours and motivation to engage in innovative activities (Thneibat and Sweis, 2022). Janssen (2000), and Zhang and Begley (2011) argue that when employees have been treated and rewarded fairly, they feel compelled to reciprocate and respond by engaging in innovative work behaviour. According to Ramamoorthy *et al.* (2005), a positive perception by employees about organization rewarding practices might influence their sense of responsibility to reciprocate with creative solutions pertaining to organizational needs and problems. Indeed, performance appraisal systems have a favourable impact on innovative behaviour

since it exclusively rewards innovative activity and discourages non-innovative behaviour (Chandler *et al.*, 2000; Curzi *et al.*, 2020; De Spiegelaere *et al.*, 2014). Similarly, in agreement with arguments concerning opportunity-enhancing factors (i.e., job design and participation), job design has a positive influence in IWB (De Spiegelaere *et al.*, 2014). Job resources variables concerning job autonomy, organizing tasks and learning opportunities have a strong positive impact on IWB. On the other hand, routine tasks have been found to have a significant negative effect on IWB. Hence, job autonomy (Bos-Nehles and Veenendaal, 2019) and task composition (Spiegelaere *et al.*, 2012) have been noticed as triggering factors for an innovative behaviour. In the light of the above studies and arguments, the study hypothesizes that:

H1: *Ability-enhancing (H1a), motivation-enhancing (H1b), and opportunity-enhancing (H1c) have a positive influence on innovative work behaviour.*

Chesbrough (2003), argues that it is imperative for organizations to implement an "open innovation" framework, which entails leveraging diverse external actors and resources to establish a viable innovation environment. The ability of firms to access external knowledge and information plays a pivotal role in determining their level of innovation performance (Bogers, Chesbrough, *et al.*, 2018). According to Barney (1991) and Peteraf (1993), organizations ought to invest in resources that are valuable, rare and unique (e.g., human resource) to compete in the industry, create value and enhance business performance. Specifically, there is a notable emphasis placed on the critical role that human resource plays in strengthening firm capacity for innovation (e.g., product, process or open innovation) (Bogers, Chesbrough, *et al.*, 2018; Çera *et al.*, 2023; Do and Shipton, 2019; Farjam *et al.*, 2023; Haar *et al.*, 2022; Huizingh, 2011; Majchrzak *et al.*, 2023; Naqshbandi *et al.*, 2023).

HRM practices are known for their positive influence on organizational performance (Becker and Gerhart, 1996; Collins and Smith, 2006; Otoo, 2019), internal organizational innovation (Do and Shipton, 2019; Fu *et al.*, 2015; Haar *et al.*, 2022; Harney *et al.*, 2022; Lau and Ngo, 2004; Sanz-Valle and Jiménez-Jiménez, 2018; Seeck and Diehl, 2017; Shahzad *et al.*, 2019; Shipton *et al.*, 2006) and open innovation (Bogers, Chesbrough, *et al.*, 2018; Bogers, Foss, *et al.*, 2018; Engelsberger *et al.*, 2022, 2023; Hong *et al.*, 2019; Majchrzak *et al.*, 2023;

Naqshbandi *et al.*, 2023; Podmetina *et al.*, 2013; Remneland Wikhamn *et al.*, 2022; Zheng *et al.*, 2020) in both, large companies and SMEs. Huselid (1995), Messersmith and Guthrie (2010), and Jackson *et al. (*2014) assert that HPWS practices play an important role in organizational performance, in particular organizational innovation (e.g., product, process or other innovation activities), because such practices focus on selective hiring and talent acquisition, training and developing employee capabilities, and rewarding employees for their contribution. Hence, employers are more likely to increase employee innovative behaviour in the workplace, embrace change and innovation. According to Bertello *et al. (*2023), despite SMEs possessing limited resources to invest in employee skills and development, it is imperative that they strive to implement "human-centred innovation" strategies in order to embrace and benefit from open innovation strategies. Open innovation is influenced by an employee's attitude to collaborate (Engelsberger *et al.*, 2023; Hong *et al.*, 2019) and engage in the process of learning and sharing knowledge with external partners (Ferrarini and Curzi, 2022; Naqshbandi *et al.*, 2023). Consequently, human resource skills, abilities and knowledge, play an important role in organization capabilities to be involved in external activities (Albats *et al.*, 2020; Naqshbandi *et al.*, 2023; Podmetina *et al.*, 2013; Popa *et al.*, 2017). Regarding the adoption of external knowledge, when it comes to inter-organizational learning (e.g., open innovation), human resources play a central role (Alerasoul *et al.*, 2022; Cabrales *et al.*, 2011). The types of human capital that an organization possesses, their skills and abilities, employees' behaviour and how the firm's strategy and institutional policies manage and support effective HRM strategy development and implementation create the right environment for organizational outcomes (Wright and McMahan, 1992) and organizational learning (Alerasoul *et al.*, 2022). Having said that, Do and Shipton (2019) maintain that HPWS plays an essential role in establishing, implementing and sustaining organizational core competencies, as well as the execution of organizational strategy. Firms ought to hire people based on their skills and competencies, motivation for leaning, acquiring knowledge and adapting to dynamic circumstances, as well as their capacity to cope with high levels of uncertainty (Cabrales *et al.*, 2011). Consequently, high-performance HR (e.g., HPWS) practices influence internal organizational resources and shape employee behaviour to embrace change and organizational learning (Alerasoul *et al.*, 2022), and

successfully fulfil SMEs' goals for innovation capabilities (Do and Shipton, 2019; Heidary Dahooie *et al.*, 2022; Sun and Mamman, 2022).

In accordance with the AMO theory, Haar *et al.* (2022) claim that HPWS are designed HR practices that shape employee commitment, motivation and behaviour, hence fostering innovation in SMEs. Strategic HRM practices encourage knowledge sharing and sourcing within and outside companies, therefore encouraging the external collaboration of companies and enhancing open innovation (Engelsberger *et al.*, 2022; Naqshbandi *et al.*, 2023; Zheng *et al.*, 2020). Naqshbandi *et al.* (2023) argue that ability-enhancing practices (e.g., selective recruitment and training and development) increase the ability of employees to assimilate external knowledge and integrate it at an organizational level. By increasing their learning motivation, these behaviours may increase the chance for employees to participate in internal and external knowledge flows, strengthening the bonds between them and external organizational sources (Engelsberger *et al.*, 2022; Hansen *et al.*, 2019; Lepak and Snell, 2002; Naqshbandi *et al.*, 2023; Remneland Wikhamn *et al.*, 2022; Zheng *et al.*, 2020). Focusing in employee competencies is crucial for innovation (Naqshbandi *et al.*, 2023; Scarbrough, 2003). The presence of employees who possess the appropriate mind-set, skills, and abilities, coupled with their training and development, creates a skilled workforce and enhances employees motivation to acquire and apply new knowledge, thus fostering an organizational mind-set for open innovation (Burcharth *et al.*, 2014; Engelsberger *et al.*, 2022; Naqshbandi *et al.*, 2023).

Podmetina *et al.* (2013) and Podmetina *et al.* (2018) argue that expanding both internal and external openness requires employee skill development through training and development, internal motivator mechanisms to support open innovation, and acknowledgement of employees' contributions to the business. Consequently, motivation-enhancing methods in the context of organizational open innovation should encourage staff members to explore both internal and external knowledge in order to strengthen the organization's capacity for innovation. This could help the organization's knowledge management processes and open innovation (Podmetina *et al.*, 2018). As such, motivation-enhancing practices such as performance appraisal, tangible and intangible reward-based practices, boost employee motivation to engage in innovation (Laursen and Foss, 2003). Hence, employees'

perception of the organization's commitment influence them to engage in external knowledge acquisition and implementation of innovative ideas (Engelsberger *et al.*, 2022; Ferrarini and Curzi, 2022; Naqshbandi *et al.*, 2023; Zheng *et al.*, 2020).

Additionally, opportunity-enhancing practices have been discussed for their impact in organizational closed and open innovation (Haar *et al.*, 2022; Naqshbandi *et al.*, 2023; Podmetina *et al.*, 2018; Popa *et al.*, 2017; Zheng *et al.*, 2020). In dealing with the open innovation, the incorporation of job design, work flexibility, and job participation can enhance the facilitation of knowledge flow and foster a greater willingness to engage in both internal and external collaboration. When employees are provided with the opportunity to take advantage of autonomy and flexibility in decision-making, it enhances their ability to critically assess the surrounding context and facilitate the exchange of knowledge (Burcharth *et al.*, 2017, 2014; Ferrarini and Curzi, 2022). Therefore, this line of discussion leads to the following hypotheses:

H2: *Ability-enhancing (H2a), motivation-enhancing (H2b), and opportunity-enhancing (H2c) have a positive influence on inbound open innovation.*

Innovative work behaviour is recognised as the employees behaviour to generate new ideas, promote them into the organization, and implement them within the firm (De Spiegelaere *et al.*, 2014; Janssen, 2000). IWB involves proactive engagement with organizational environment to solve problems, generate resources, and opportunities to innovative and drive positive change (Sanz-Valle and Jiménez-Jiménez, 2018). Scholars such as Escribá-Carda *et al.* (2017) and Park *et al.* (2014) have related the concept with learning. Therefore, companies that prioritize knowledge development, experimentation, and interaction among employees are very favorable to encouraging innovative work behavior (Thneibat *et al.*, 2022).

Farrukh *et al. (*2022) claims that existing research mostly concentrates on the antecedents of innovative behavior, neglecting its outcomes. Therefore, examining and investigating the implications of innovative work behavior may be important. Jankelová *et al.* (2021) conducted a study on 211 managers working in Slovak enterprises and discovered that innovative work behavior has a crucial role in improving business performance. The study posits that firms derive benefits not just from technology innovation but also from the production capability of their

employees. (e.g., innovative work behavior). Positive effects of IWB can accrue to both the organization and its employees. Companies can achieve superior results and remain competitive as a result of the innovative, creative, and risk-taking behavior of their employees, in turn, employees enjoy greater job satisfaction. In a similar vein, Shanker *et al.* (2017) asserts that the innovative activity of employees contributes to the improvement of organizational performance. Companies rely on continuous progress, knowledge, and innovation, which are contingent upon internal processes and behaviors. Therefore, the combined efforts and innovativeness of employees enhance the profitability and success of organizations through innovation (Fu *et al.*, 2015; García-Morales *et al.*, 2008; Shanker *et al.*, 2017).

High commitment and involvement of employees in IWB, such as information sharing and interaction, will lead to the generation of new knowledge, hence enhancing the innovation capability of organizations (Fu *et al.*, 2015). According to Escribá-Carda *et al.* (2017) exploratory learning is considered a process associated with innovative work behavior in which employees acquire new knowledge and skills, thereby, improving their innovation behavior. Similarly, inbound open innovation entails collaboration with external partners and knowledge acquisition to enhance firms overall innovation capacity (Chesbrough, 2003; Majchrzak *et al.*, 2023). By grounding in these arguments, it can be argued that employees need to generate knowledge and use that knowledge as a solution to their daily job demands and need for productivity, which would increase their participation in networking and external collaboration. Simply stated, employees' involvement in the innovation goals of the company relies on their innovative behaviors (Fu *et al.*, 2015; Thneibat *et al.*, 2022). Hence, IWB can be understood as a designed to nurture employees' competitiveness empowering them to the introduction of inbound open innovation ((Thneibat *et al.*, 2022). Considering the above arguments, it is logical to predict that innovative work behavior can boost inbound open innovation, as posited in the following hypothesis:

H3: *Innovative work behaviour positively influence inbound open innovation.*

2.3.2 Indirect relationship

Although the role of AMO theory (e.g., HPWS) in organizational performance is largely acknowledged, there has been ongoing discussion regarding the direct impact of AMO bundles in organizational outcomes (Bos-Nehles *et al.*, 2023; Jiang, Lepak, *et al.*, 2012; Katou *et al.*, 2014). Pursuant to the behavioural perspective, Jackson et al. (1989) assert that organizations achieve performance through HR management systems that cultivate productive behaviours among employees, facilitating the attainment of desired outcomes. Drawing from the AMO theory, employee behaviours, such as innovative work behaviour, are proposed to act as mediators in the relationship between HPWS practices and organizational performance, such as inbound open innovation (Jiang, Lepak, *et al.*, 2012; Katou *et al.*, 2014; Seeck and Diehl, 2017). Gould-Williams (2003), Whitener (2001), and Kehoe and Wright (2013) argue that the linkage between HR practices and organizational performance hinges on mediation mechanisms such as employees' behaviour. AMO theory aims to develop workers' abilities using training and development programs, motivate them through the implementation of thoughtfully designed performance-based reward systems and provide them with opportunities to participate in decision-making processes, all with the main goal of boosting organizational performance. However, in line with social exchange theory, HRM practices derived from the AMO framework assume a crucial function in molding and influencing workers' behaviour, consequently eliciting reciprocal actions in social exchange, wherein individuals exhibit a more positive attitude and behavior towards change and innovation (Al-Ajlouni, 2020; Fu *et al.*, 2015).

In terms of inbound open innovation, even though no studies have been published regarding the mediating roles of innovative work behaviour on the relationships between HPWS practices and inbound open innovation; HPWS may positively promote employees' innovative work behaviour to embrace open innovation (Sanz-Valle and Jiménez-Jiménez, 2018). Innovative work behaviour is considered as one of the most intriguing mediators suggested by several authors as a factor that influences innovation (Bos-Nehles *et al.*, 2017; Bos-Nehles and Veenendaal, 2019; Fu *et al.*, 2015; Sanz-Valle and Jiménez-Jiménez, 2018). According to Paauwe and Boselie (2005), Kehoe and Wright (2013) and Alikaj *et al.* (2021), HRM practices have a significant impact not only on the knowledge and skill set of employees, but also on employee behaviour, notably in terms of innovative behaviour. Likewise,

this conduct has an impact on business innovation (Escribá-Carda *et al.*, 2017a; Fu *et al.*, 2015; Prieto and Pérez-Santana, 2014; Sanz-Valle and Jiménez-Jiménez, 2018). With innovative work behaviour acting as a mediator, Sanz-Valle and Jiménez-Jiménez (2018) have explored the relationship between HPWS and product innovation. The findings contribute to the theory by indicating that the interaction between HPWS and production is positively mediated by an employee's IWB. Similarly, Fu *et al. (*2015) asserts that IWB positively promotes the relation between HPWS and organizational innovation in professional service organizations.

Extending IWB in the HRM and open innovation context, HPWS practices (ability-enhancing, motivation-enhancing and opportunity-enhancing) equip employees with the needed knowledge, abilities, and skills required to foster creativity, generate and develop new ideas, explore innovative solutions, collaborate, and generate new knowledge. Hence, it can be argued that when employees actively participate in innovative behaviours, organizations are able to generate and enhance their capacity for innovation (e.g., open innovation) (Fu *et al.*, 2015; Prieto and Pérez-Santana, 2014; Sanz-Valle and Jiménez-Jiménez, 2018). Additionally, performance-based rewards (motivation-enhancing) are recognized as of critical importance in promoting learning, creativity and organizational innovation (Jiang, Lepak, *et al.*, 2012; Thneibat and Sweis, 2022). Organizations tend to offer different incentives and rewards to motivate workers and foster innovation (Laursen and Foss, 2003), promote innovative ideas and positive outcomes (Sanders *et al.*, 2018), and foster organizational engagement towards organizational innovation (Thneibat and Sweis, 2022; Xu *et al.*, 2023). Having said that, HRM practices aimed at employee-driven innovation assist employees in being trained and qualified concerning exploratory learning and engagement in knowledge exchange and collaboration. Furthermore, employees will be encouraged and incentivized to generate novel solutions and innovative ideas pertaining to organizational challenges and innovation. Moreover, they will be granted the opportunity to actively engage in the decision-making process, wherein they can discuss, evaluate, and execute their ideas (Renkema *et al.*, 2022). Consequently, workers will perceive a positive exchange relationship with their organization as a result of the implementation of HPWS practices within the organization. Hence, they are more willing to respond with innovative behaviour, which in turn boosts the innovation capabilities of the organization (Fu *et al.*, 2015; Sanz-Valle and Jiménez-Jiménez, 2018; Thneibat and Sweis, 2022; Xu *et al.*, 2023).

As previously stated by Fu *et al. (*2015) and Sanz-Valle and Jiménez-Jiménez (2018), innovative work behaviour mediates the relation between HRM practices and innovation (e.g., product or process innovation). However, the mediation role of HPWS and open innovation is missing. IWB is defined in accordance with exploratory learning, knowledge management and the ability of individuals to generate new ideas and transform them into innovation capabilities (Escribá-Carda *et al.*, 2017; Park *et al.*, 2014). As a result, the correct implementation of HPWS has the potential to stimulate IWB that may enhance open innovation. From the arguments stated above, the author expects IWB to play a mediating role in the HPWS practices and open innovation relationship:

H4: *Innovative work behaviour mediates the relation between ability-enhancing (H4a), motivation-enhancing (H4b), and opportunity-enhancing (H4c) and inbound open innovation.*

Innovative culture

According to Barney (1986), Fitzgerald (1988), and Barney and Clark (2007), organizational culture and human resource are rare and unique resources, very difficult to be imitated, that have high potential to enhance organizational competitiveness and sustained competitive advantage. Thus, if organizations employ organizational culture and HRM effectively, and keep a focus on long-term profitability, they will have the chance to improve their business outcomes (Jackson *et al.*, 2014), and positively influence sustainable competitive advantage (Barney and Clark, 2007). Accordingly, when a corporate culture and business strategy are synchronized, the effective implementation of HRM practices and business performance are enhanced (Harrison and Bazzy, 2017). As pertains to explanations regarding organizational culture, HRM and organizational outcomes, (Ferris *et al.* (1998) have proposed the social context theory and its effects on the HRM system and organizational performance. According to their proposed social context model, an organization's culture influences human resource management systems and the way of their development and implementation process. Considering the social context theory and components like corporate culture, beliefs, values, and political issues, Ferris *et al.* (1998) asserted that organizational culture impacts HRM

implementation and its effect on organizational performance. Organizational culture defines the set of "values and orientations" within an organization that influence the attitudes, mind-set, and behaviour of its employees (Wei *et al.*, 2011). Having said that, it can be argued that organizational beliefs, values, and orientations are transmitted through HRM practices, thus influencing the behaviour of employees (Lei *et al.*, 2021b; Wei *et al.*, 2011), and organizational innovation performance (Aman *et al.*, 2018; Lei *et al.*, 2021b; Martín-de Castro, 2015; Wei *et al.*, 2011). Following this logic, Martín-de Castro *et al.* (2013) claim that innovative culture is a significant contextual factor that drives organizations' innovation performance. HRM practices and policies are affected by the influence of employees' mind-set and behaviour, which are per se shaped by organizational culture. The presence of an innovative culture within a firm influences the attitudes and mind-set of its employees with regards to change, creativity, learning, risk-taking, and open-mindedness (Herzog, 2011; Tian *et al.*, 2018; Wang *et al.*, 2012). Employees who adopt this mind-set are motivated to acquire new resource, be more creative, engage in collaboration, as well as participate in knowledge exchange (Engelsberger *et al.*, 2022; Herzog, 2011; Mehralian *et al.*, 2021). For instance, Wei *et al.* (2011), in line with the social context theory, argue that organization product innovation is positively influenced by strategic HRM practices, and this relationship is strengthened under the moderating effect of organizational developmental culture. Management systems, including HRM procedures and practices, must align with an "adequate" culture of people management in order to be successfully implemented (Chan *et al.*, 2004; Panayotopoulou *et al.*, 2003). As a result, it can be argued that the development and effective implementation of consistent HRM policies might be influenced by an organization's innovation- and change-oriented culture (Lei *et al.*, 2021b; Tian *et al.*, 2018; Wei *et al.*, 2011).

Extending this theory to open innovation settings, Kirschbaum (2005) states that open innovation is a matter of culture rather than simply developing internal processes (e.g., HPWS). Lack of internal capabilities such as organizational structure and organizational culture increase people's resistance to "Not-Invented-Here (NIH)" and "Not-Sold-Here (NSH)" syndromes, thereby disabling the shift to an open innovation approach (Cricelli *et al.*, 2023). Hence, open innovation requires changes to organizational culture (Antons and Piller, 2015; Pinarello *et al.*, 2022), and adoption of an innovative culture that is different from internal/closed

innovation (Herzog, 2011; Herzog and Leker, 2010; Kratzer *et al.*, 2017). Lazzarotti *et al.* (2015) claim that organizations are influenced by the external environment (e.g., industry), as well as by internal contextual factors, such as HRM and organizational culture. Therefore, people and processes inside an organization are influenced by the organizational context with an impact on their performance. As a result, the connection between social context theory, HPWS and innovative culture, can be understood based on how the components of a social context and the dynamics of a culture that fosters organizational learning, intra-organizational knowledge exchange, collaboration and innovation, affect HRM implementation. Thus, the relationship between HPWS and IC contributes to a reinforcement of each, and strengthens firms' inbound open innovation.

To clarify the interplay between IC and HPWS, this study analyses how innovative culture interacts with HPWS practices such as ability-enhancing, motivation-enhancing and opportunity-enhancing to influence open innovation. Wang *et al.* (2012) and Çetin Gürkan and Aydın Tükeltürk (2017) argue that an innovative culture is one that encourages new idea experimentation, information exchange, and openness, which in turn enhances open innovation. In the context of open innovation, it is essential to possess an organizational culture that supports training and development practices and programs (e.g., ability-enhancing) with an emphasis on developing employees' skills and abilities to use external information and collaborate (El Maalouf and Bahemia, 2023). In addition, effortful adaptation to innovation, performance and reward systems should be implemented. Hence, organizations should develop organizational cultures that support fair reward systems regarding knowledge gaining based on performance and work results (e.g., motivation-enhancing) (Lei *et al.*, 2021b). Furthermore, having a culture that emphasizes work flexibility and participation (e.g., opportunity enhancement) increases employee responsibility, decreases fear of expressing new ideas, and increases engagement in innovation activities (Ahmed, 1998; Martins and Terblanche, 2003). Consequently, based on such considerations, the subsequent hypothesis is proposed:

H5: *Innovative culture moderates the relation between ability-enhancing (H5a), motivation-enhancing (H5b), and opportunity-enhancing (H5c) with inbound open innovation.*

2.3.3 The interactive effects

In accordance with the AMO theory, Bos-Nehles *et al.* (2013) propose that organizational performance operates on a combinative model represented by the formula: P = fA (1+M+O). This model suggests that organizational performance hinges on the reciprocal interplay between ability-enhancing (AE) and motivation-enhancing (ME) factors (Bello-Pintado, 2015), as well as between ability-enhancing (AE) and opportunity-enhancing (OE) bundles (Bello-Pintado and Garcés-Galdeano, 2019). According to Bos-Nehles *et al.* (2013), the presence of ability-enhancing practices holds paramount importance in achieving desired performance compared to initiatives focusing solely on motivation-enhancing and opportunity-enhancing practices. Consequently, it is argued that the effects of motivation and opportunity in isolation are insufficient to enhance performance, and it is only when these practices are integrated with ability-enhancing practices that a significant impact is observed. Aligning with this perspective, Remneland Wikhamn *et al.* (2023) contend that managing open innovation effectively cannot rely solely on the implementation of individual HRM bundles. Therefore, future quantitative investigations into open innovation should adopt an integrated HRM framework where diverse HRM practices interact synergistically to reinforce one-another (Remneland Wikhamn *et al.*, 2023). Through this lens, it is anticipated to observe interactive influences of AMO bundles pertaining to HPWS practices on inbound open innovation. In the context of AE and OE, these HRM bundles are expected to mutually bolster each other, generating a positive synergy (Bello-Pintado, 2015). Attracting talented individuals with the appropriate mind-set, attitudes, and motivation for knowledge exchange and collaboration is essential for embracing open innovation (Remneland Wikhamn *et al.*, 2023). Furthermore, the presence of highly skilled, qualified, and competent employees, combined with the implementation of performance-based rewards, has been shown to positively impact employee satisfaction levels (Bello-Pintado, 2015). Consequently, it is anticipated that they will exhibit higher levels of productivity and indirectly enhance overall organizational outcomes (e.g., inbound open innovation) (Bos-Nehles *et al.*, 2013; Nadeem and Rahat, 2021). Concurrently, providing opportunities for employees to engage in knowledge exchange, creativity, and innovation activities assists them in

generating and developing new ideas concerning inbound open innovation (Engelsberger *et al.*, 2022; Naqshbandi *et al.*, 2023; Zheng *et al.*, 2020).

Blumberg and Pringle (1982) explain that the complete absence of at least one of the HR bundles, or the presence of one at lower levels, diminishes overall performance levels. Therefore, a multiplicative (three-way) interaction integrating ability-enhancing, motivation-enhancing, and opportunity-enhancing bundles is crucial for enhancing organizational performance ($P = f(A \times M \times O)$ (Alkhalaf and Al-Tabbaa, 2024; Kim *et al.*, 2015). Utilizing HPWS within the AMO framework, it is expected that these HR practices will cultivate a highly skilled workforce and enhance their motivation, thereby aiding SMEs in focusing on and embracing innovation (Do and Shipton, 2019). According to Combs *et al.* (2006), HPWS represents a collection of practices that, when combined, foster organizational performance significantly greater than that achieved by the implementation of individual practices in isolation. For example, the presence of highly competent employees in terms of abilities and skills, coupled with the provision of appropriate rewards for their efforts and opportunities for them to demonstrate their capabilities, establishes an interconnected human resource system that positively shapes organizational outcomes (Bello-Pintado, 2015; Jiang, Lepak, *et al.*, 2012). Consequently, from the perspective of open innovation, it is expected that recruiting individuals with a suitable mindset and attitude toward developmental change and innovation (Engelsberger *et al.*, 2022) and providing them with training opportunities that equip them with the necessary capabilities to collaborate and participate in knowledge exchange practices (Cera *et al.*, 2023a; Zheng *et al.*, 2020) will enable them to better understand open innovation issues, leading to adjustments in open innovation actions (Hong *et al.*, 2019a). Additionally, performance appraisal and rewards act as catalysts for encouraging employees to apply skills acquired through innovation training programs, collaborate, and exchange knowledge, thereby enhancing their ability to innovate (e.g., inbound open innovation) (Engelsberger *et al.*, 2023; Hong *et al.*, 2019). Concurrently, providing opportunities for employees to engage in activities related to open innovation, such as sharing and developing new ideas, as well as collaborating with external experts to acquire new knowledge, creates a supportive business environment that encourages staff members to utilize their skills and, consequently, embrace open innovation (Naqshbandi *et al.*, 2023).

Expanding on this arguments, other authors (Bos-Nehles *et al.*, 2013; Naqshbandi *et al.*, 2023) state that HR professionals should actively collaborate with other organizational stakeholders to embed open innovation principles into the organization's "DNA". This involves fostering cross-functional teams and interdisciplinary collaboration to break down larger operations and facilitate the exchange of ideas and expertise across different departments. By promoting a culture of inclusivity and collaboration, HR professionals can create an environment where innovation thrives organically, enabling the organization to capitalize on diverse perspectives and insights, thus enabling the different directions supported by the AMO theory (Remneland Wikhamn *et al.*, 2023; Seeck and Diehl, 2017). In line with this, the study leads to the development of the following hypotheses:

H6: *There is a two-way positive interaction relationship between ability-enhancing and motivation-enhancing (H6a) and opportunity-enhancing (H6b) with inbound open innovation.*

H7: *There is a three-way positive interaction relationship between ability-enhancing, motivation-enhancing, and opportunity-enhancing with inbound open innovation.*

3. MOTIVATION AND NEED FOR STUDY, RESEARCH GAP, RESEARCH QUESTIONS AND OBJECTIVES

3.1 Motivation and need for study

With regard to addressing firms' innovation challenges, Jackson *et al.* (2014) assert that HRM play a significant role in internal organizational performance outcomes and external stakeholders (customers, organizations, etc). Among the strategies adopted by organizations to deal with open innovation approaches (e.g., inbound open innovation), HRM is an emergent field of research (Engelsberger *et al.*, 2023; Remneland Wikhamn *et al.*, 2023). The reason this research field is receiving more attention is because HRM practices play a critical part in influencing firms' open innovation objectives (Bogers, Foss, *et al.*, 2018; Engelsberger *et al.*, 2023; Naqshbandi *et al.*, 2023; Zheng *et al.*, 2020). Open innovation is an applicable innovation strategy that requires new approaches to implement HRM practices

(Engelsberger *et al.*, 2023; Remneland Wikhamn *et al.*, 2023). Therefore, it is necessary to adapt and establish an HRM strategy that aligns with the objectives of collaborative innovation (Greer and Stevens, 2015; Hong *et al.*, 2019).

Existing research discusses various HRM practices on organizational innovation outcomes, however Jackson *et al.* (2014) and Do and Shipton (2019) argue the implementation of high-performance working systems (HPWS) is a necessary requirement for organizations that aspire to foster innovation. These practices have a significant impact on shaping employees' innovative behaviour, thereby enabling organizations to effectively achieve their innovation goals. For instance, human resource systems that emphasize employees' abilities, motivation, and opportunities have been found to enhance employee innovative behaviour, hence fostering the innovation capabilities of organizations (Toh *et al.*, 2008). Expanding upon this line of reasoning within the context of open innovation, commitment HR systems are necessary to embrace collaborative innovation (Greer and Stevens, 2015). Hence, in support of this approach, Zheng *et al. (*2020) state that HPWS are fundamental practices used to impact knowledge exchange and organizational learning, such as inbound open innovation.

To date, publications pertaining to HRM and organizational innovation outcomes have garnered increasing interest among management scholars, offering valuable insights into this domain. Numerous theoretical and empirical studies have looked into the effects of HRM practices on inbound and outbound open innovation at either the individual, or organizational level. For instance, Remneland Wikhamn *et al.* (2023) developed a case study that examines the impact of HRM practices on open innovation in the pharmaceutical corporation "AstraZeneca". Furthermore, Hong *et al.* (2019) and Engelsberger *et al.* (2023) have conducted conceptual research that emphasizes the significance of collaborative human resource management practices on firm open innovation. Additionally, the topic associated open innovation as consequences of HPWS practices has been investigated by prior researchers, such as Zheng *et al.* (2020) and Engelsberger *et al.* (2022). Following the same logic, Naqshbandi *et al.* (2023) have analysed the effect of HRM practices based on the "Competency – Motivation – Opportunity" model on inbound open innovation under the mediating effect of organizational learning and knowledge sharing. Moreover, some other empirical research has been conducted by Popa *et al.* (2017) and

Martinez-Conesa *et al.* (2017) to analyse the indirect effect of commitment-based HRM practices in SME inbound and outbound open innovation. However, published research has uncovered the following research gaps:

First, drawing on the Ability – Motivation – Opportunity (AMO) theoretical framework developed by Appelbaum (2000), Jiang *et al.* (2012) examine the effects of HPWS on different organizational outcomes. Based on the behavioural perspective of HRM, Jiang *et al.* (2012) argue the critical role of different sub-dimensions of HPWS, such as ability-enhancing (e.g., staffing and training – AE), motivation-enhancing (e.g., compensation and performance appraisal – ME), and opportunity-enhancing (work design and participation – OE), on organizational outcomes (e.g., inbound open innovation) through the mediating role of employee behaviour (e.g., innovative work behaviour - IWB). Admittedly, the success of a firm's innovation relies heavily on its employees' innovative behaviour, because such a behaviour can lead to an increased organizational innovation performance. Whereas, the direct effect of HRM practices under the AMO approach on IWB (Bos-Nehles *et al.*, 2017; Yasir and Majid, 2020), and the mediating influence of IWB on innovation (Sanz-Valle and Jiménez-Jiménez, 2018) have been established, the mediating role of IWB between HWPS and open innovation should be explored further (Sanz-Valle and Jiménez-Jiménez, 2018). Hence, to the best of the author's knowledge, this is the first study that will shed light on the mediating effect of IWB in the relation between HPWS and INOI.

Second, the motivation for this study derives from the growing awareness of the importance of interaction between HPWS practices under the lenses of AMO "bundles" and inbound open innovation. Pursuant to AMO theory, HPWS has the potential to positively impact organizational performance (Jiang, Lepak, *et al.*, 2012) and firm innovation (Mehralian *et al.*, 2021). This impact can be attributed to the implementation of practices that enhance employee abilities, such as effective staffing and comprehensive training and development programs. Additionally, motivation-enhancing practices, such as compensation and performance appraisal systems, can further contribute to improved organizational performance and innovation. Furthermore, the implementation of opportunity-enhancing practices, such as well-designed work processes and increased employee participation, can also play a role in enhancing organizational performance and organizational

innovation. While the effect of ability-enhancing, motivation-enhancing, and opportunity-enhancing practices on firms' open innovation appears to be developed (Ferrarini and Curzi, 2022; Naqshbandi *et al.*, 2023; Zheng *et al.*, 2020), scholars Remneland Wikhamn *et al.* (2023) argue that there is a need to further develop an integrated HRM framework to study the interactive effects of HRM practices on open innovation (e.g., inbound open innovation).

Pertaining to arguments regarding the interactive effects of AMO theory bundles, researchers have identified different models to address the interactions between ability-enhancing, motivation-enhancing, and opportunity-enhancing practices. These models include the additive model (Boxall and Purcell, 2003), the combinative model (Bos-Nehles *et al.*, 2013), and the multiplicative model (Blumberg and Pringle, 1982). The additive model suggested by Boxall and Purcell (2003) asserts that, AMO practices can independently influence organizational performance. On the other hand, Bos-Nehles *et al.* (2013) asserts that AMO components alone will not improve performance, hence, a combinative model is suggested (two-way interaction). The combinative model states that while ability-enhancing is a necessary condition for performance, opportunity-enhancing and motivation-enhancing are additional factors that should be combined with ability-enhancing in order to improve organizational performance. Therefore, a combination of ability-enhancing with motivation-enhancing (Nadeem and Rahat, 2021), as well as ability-enhancing and opportunity-enhancing (Bello-Pintado, 2015; Bello-Pintado and Garcés-Galdeano, 2019) impacts performance. Moreover, Blumberg and Pringle (1982), assert that organizational performance requires the presence of three HRM bundles, such as ability-enhancing, motivation-enhancing, and opportunity-enhancing, which is defined in the literature as multiplicative model (three ways of interaction). The latter three are seen as complimentary to one-another and work together to improve organizational performance. In this respect, all three components must be present. Organizational performance declines if one of the components is missing or has a lower value (Macduffie, 1995). In the context of AMO practices and organizational outcomes, the interactive effects of these practices have attracted the attention of several authors (Bos-Nehles *et al.*, 2023). Nonetheless, literature on how interactive effects of AMO bundles channel innovation in general (Seeck and Diehl, 2017), and open innovation in particular, require future attention (Remneland Wikhamn *et al.*, 2023).

Third, drawing on the Social-Context Theory (SET), established by Ferris *et al.* (1998), employee perceptions regarding their organization are influenced by the social context of the environment within the firm. SET theory states that corporate culture is a crucial component of the "social context" that retains the ability to shape the implementation of HRM practices within the organization (Ferris *et al.*, 1999). Based on "contextual perspective", Bowen and Ostroff (2004) and Panayotopoulou *et al.* (2003) emphasize the importance of aligning and harmonizing HRM practices with organizational contexts, such as organizational culture, for achieving effective organizational performance. Having said that, the authors assert that having an organizational culture that influences the effective execution of HRM practices and policies will improve organizational effectiveness. Wei *et al.* (2011) argues in favour of this, stating that strategic HRM (SHRM) practices will be more effective under the moderation effect of developmental culture in fostering organizational effectiveness, such as product innovation. Similarly, Lei *et al.* (2021) confirm that a knowledge-centred culture strengthens the impact of HRM practices on a company's capacity for both exploratory and exploitative innovation.

Extending this reasoning to the open innovation context, Lichtenthaler (2011) asserts that every company needs a degree of openness; hence, organizational culture is imperative in firm openness processes. Organizational culture stimulates innovative behaviours that boost open innovation within organizational contexts (Chaudhary *et al.*, 2022; Kratzer *et al.*, 2017; Oduro, 2020; Scaliza *et al.*, 2022). Chesbrough (2003) stresses the significance of organizational culture in addressing the Not-Invented-Here (NIH) syndrome and acknowledging the importance of external knowledge in fostering innovation. Open innovation is considered as a shift from the traditional modes of innovating; therefore, requiring changes to organizational culture (Pinarello *et al.*, 2022), and dictating the adoption of an innovative culture that is different from closed innovation (Herzog, 2011; Kratzer *et al.*, 2017). Accordingly, innovative culture encourages open innovation (Herzog, 2011), whereas hierarchical cultures retard open innovation (Naqshbandi *et al.*, 2015). Nevertheless, existing investigations have often overlooked the moderating effect of organizational culture (e.g., innovative culture-IC) in the relation between HRM and open innovation. Therefore, it is uncertain whether the findings derived from previous research on HRM, organizational culture and other forms of innovation can be generalized to the

relation between HPWS and SMEs' inbound open innovation. Podmetina *et al.* (2013) and Naqshbandi *et al.* (2023) argue that to better understand the impact of HRM practices on organizations' open innovation, it is essential to analyse the effects of new organizational components as moderators in the HRM process and open innovation. Hence, drawing on social context theory, this thesis proposes innovative culture as a possible moderator between HWPS (AMO practices) and inbound open innovation. Chaudhary et al. (2022), state that culture is an internal organizational factor that needs greater consideration in the open innovation process. To this regard, future research should examine culture as a moderator within the aforementioned context. In order to determine if an innovative culture will enhance the benefits of HPWS practices on inbound open innovation, this thesis will investigate the possible moderating effect of IC in the relationship between HPWS practices and inbound open innovation.

Fourth, in the SMEs context, innovation performance has raised their need to adopt open innovation approaches (Albats *et al.*, 2023; Popa *et al.*, 2017; Van De Vrande *et al.*, 2009). Gassmann *et al.* (2010) assert that SMEs are at a disadvantage compared to large companies in terms of OI. Nevertheless, the adoption of this innovation strategy is crucial for their competitive edge (El Maalouf and Bahemia, 2023; Usman *et al.*, 2018). SMEs encounter challenges in generating the necessary resources for innovation due to the inherent limitations in human and financial capacities, knowledge and capabilities commonly referred to as the "liability of smallness" (Albats *et al.*, 2023; Knol and Stroeken, 2001; Van De Vrande *et al.*, 2009). Conversely, SMEs exhibit greater adaptability, a quicker acceptance of changes, and a higher willingness to take risks (Spithoven *et al.*, 2013). These qualities make them highly ideal for leveraging the advantages of open innovation (Parida *et al.*, 2012) and if they embrace open innovation, they can overcome their limited internal resources and knowledge (Lichtenthaler, 2008; Popa *et al.*, 2017). Therefore, the adoption of an open innovation strategy (e.g., inbound open innovation) could potentially enable them to overcome resource constraints (Albats *et al.*, 2023; Lee *et al.*, 2010; Marzi *et al.*, 2023).

Open innovation in SMEs requires changes in culture, having the right reward and supporting mechanisms for employees (e.g., HRM practices), adjusting structures and formalizing changes (Barjak and Heimsch, 2023). Thus, the strategic

significance of the HRM system (Barjak and Heimsch, 2023; Podmetina *et al.*, 2013; Popa *et al.*, 2017) and organizational culture (Barjak and Heimsch, 2023) in open innovation for SMEs cannot be underestimated. Although SMEs have limited resources, the influence of HPWS under the AMO bundles on their employees' behaviour and organizational innovation have a significant importance (Heidary Dahooie *et al.*, 2022). However, studies demonstrating the effects of HRM practices applied to SMEs open innovation are very limited (Martinez-Conesa *et al.*, 2017; Podmetina *et al.*, 2013; Popa *et al.*, 2017). According to Kaushik and Mukherjee (2021), it is important to perform additional research with the purpose of exploring the best possible design and implementation of HPWS in the context of SMEs. Additionally, the authors assert that employing mediators and moderators to analyse the impacts of HPWS in SME outcomes may yield different results, perhaps leading to differences in the findings. Thus, based on the current research arguments, it is necessary to implement a study that seeks to better understand the implementation of HPWS and provide an in-depth overview of their application within the context of an innovative culture and the mediation of innovative work behaviour in SMEs' inbound open innovation.

Last, SMEs in the Czech Republic play a crucial role in fostering economic growth, generating employment opportunities, and promoting innovation within the country. According to Statista (2023), a total of 38,179 SMEs are active and operational in the Czech Republic. Micro and SMEs operating in Czech Republic employ around 67% of the labour-age population and provide about 56% of the country's total added value, while the average in the EU is about 59% (OECD, 2021). Furthermore, as indicated by the Global Innovation Index 2023, the Czech Republic is positioned at the 30th place within the World Bank-designated high-income group of 50 countries, thereby classifying the nation as having a moderate level of innovation. With that being stated, the Czech economy has demonstrated commendable performance in various aspects such as innovation outputs, infrastructure, business sophistication, knowledge and technology outputs, human capital, and research. However, it is lagging behind at the regional level when compared to countries such as Germany and Austria. One significant challenge that small and medium-sized enterprises encounter in terms of innovation diffusion is the absence of a professional and qualified workforce capable of carrying out tasks necessary for innovation (OECD, 2021). The Czech Republic is now struggling with issues of labour scarcity, skill

mismatches, and brain drain. Therefore, firms, particularly small and medium-sized enterprises, struggle to locate qualified workers capable of fulfilling task and job requirements in order to generate innovation. In addition, SMEs provide less appealing compensation packages compared to large companies and international corporations. As a result, they struggle to attract and retain talented individuals. additional steps ought to be taken, to improve business growth, innovation diffusion, and long-term economic development (Boschmans and Potter, 2021). In this regard, the country should invest in skilled workers to reduce labour shortages, increase access to finance and international markets, and increase digitalization to promote SMEs' innovation diffusion (OECD, 2021). Thereby, following the above arguments, examining the interplay between HPWS practices, innovative work behaviour, innovative culture, and inbound open innovation, is of particular importance in the case of Czech SMEs.

3.2 Research questions and research objectives

The ***main goal*** of this thesis is to develop and empirically evaluate a model that examines the impact of HPWS inbound open innovation in the SMEs sector, including the mediating effects of innovative work behavior and the moderating effect of innovative culture.

The ***research problem*** of this thesis is to investigate the effect of HPWS practices on inbound open innovation with meditation effect of innovative working behavior and moderation effect of innovative culture, in high-performing manufacturing and knowledge acquisition SMEs related to both theoretical and practical perspectives.

The partial research questions (RQ) and research objectives (RO) are given as follows:

- **RQ1:** Do HPWS practices affect innovative work behaviour and SMEs' inbound open innovation?
- **RO1:** To identify direct effects of HPWS on innovative work behaviour and SMEs' inbound open innovation;

• **RQ2:** Does innovative work behaviour mediate the relation between HPWS and SMEs' inbound open innovation? • **RO2:** To analyse the mediating role of innovative work behaviour on the connection between HPWS and SMEs' inbound open innovation;
• **RQ3:** Does an innovative culture moderate the relation between HPWS and SMEs' inbound open innovation? • **RO3**: To analyse the moderating effect of innovative culture in the connection between HPWS and SMEs' inbound open innovation;
• **RQ4:** Are there interactive effects among HPWS practices and SMEs' inbound open innovation? • **RO4:** To study the interactive effects of HPWS practices on SMEs' inbound open innovation.

3.3 Conceptual framework

In short, while there has been a growing interest among researchers in the implementation of HRM practices in inbound open innovation, there is still need for research to better explain relations between HPWS and inbound open innovation. Therefore, this study combines three theories to explain possible relations between HPWS and open innovation. Reasons for proposing these hypotheses are based on: 1) AMO framework to explore direct, indirect and interactive effects of HPWS practices on inbound open innovation, and the mediating influences of innovative work behaviour towards the linkages between HPWS and inbound open innovation; (2) social exchange theory to measure the direct effects of HPWS on innovative work behaviour; and (3) social context theory to analyse the moderating effects of innovative culture in the relation between HPWS and inbound open innovation. Hence, grounded in these theories, the theoretical framework is illustrated in Figure 1:

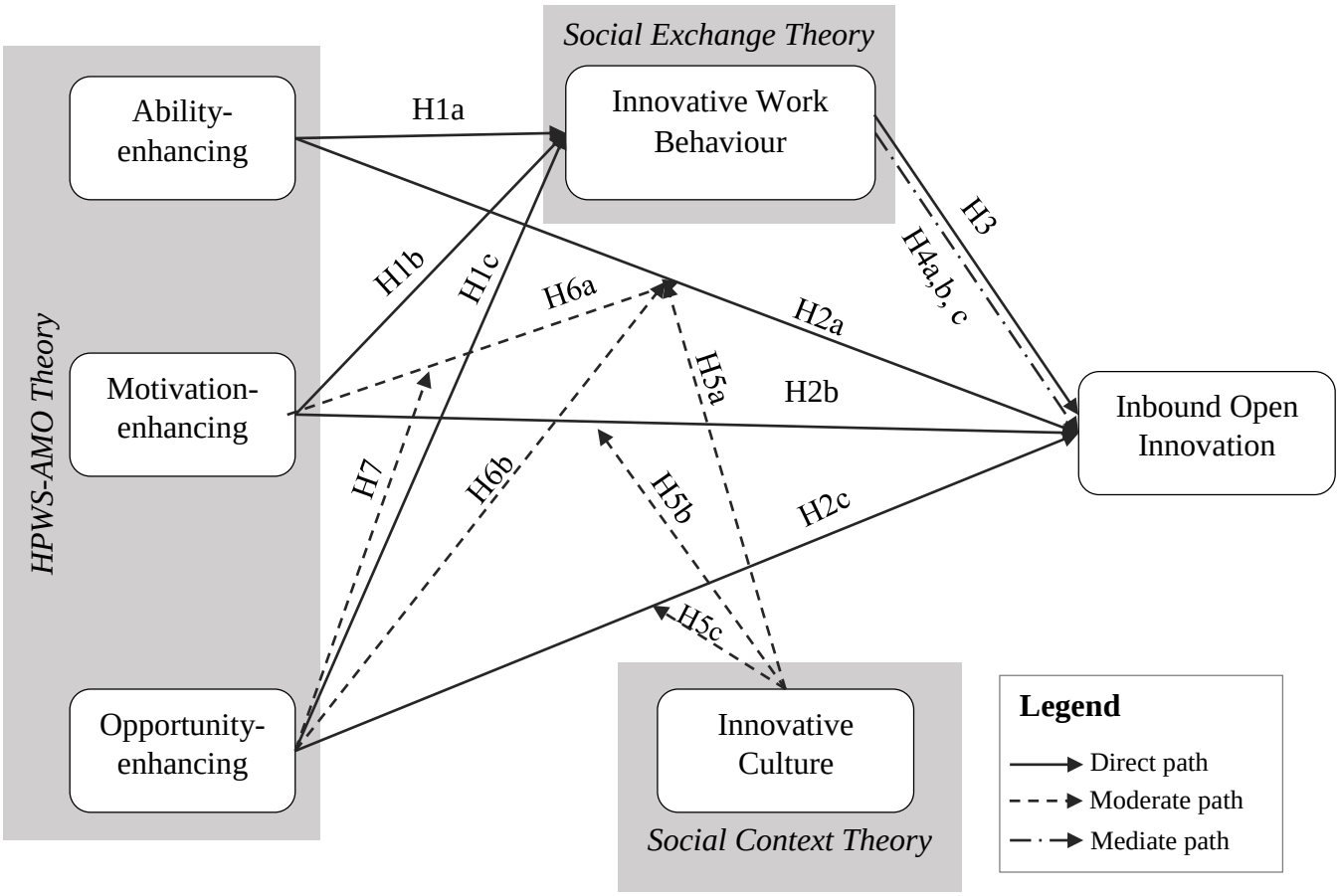


Figure 1: *The conceptual framework* (***Source:*** *author's own)*

4. METHODOLOGY

4.1 Research design

The research objective of this thesis is to develop and validate a comprehensive model to investigate the effects of HPWS practices, innovative work behaviour and innovative culture on open innovation in SMEs. According to Creswell and Creswell (2017), a quantitative approach can make the inference about the characteristic, attitudes and behaviours of the population from a representative sample of the same population. Consequently, a quantitative approach was used to conduct this research in accordance with methodological considerations and characteristics.

The quantitative tool employed by this thesis was the survey, tailored in the form of a questionnaire through which data was collected and prepared for analysis. According to Saunders *et al.* (2009), the survey method is more appropriate for measuring the relations between various variables of a proposed model for a better understanding of the nature of the problem. Additionally, this approach enables to effectively manage and control research procedures in order to identify and present results that accurately represent the entire population. Moreover, cross-sectional design is implemented in this thesis. The chosen research design is suitable for conducting quantitative research and investigating a specific research problem within a specific period of time (Saunders, M. *et al.*, 2009).

In order to determine the research gap, research problem, and design, as well as the suggested conceptual framework, this thesis has reviewed previous literature and research theories, mostly based on the Scopus and Web of Science databases. The review of existing literature helped the identification of a research gap and research problem that are relevant to the objective of this study. Additionally, the literature that has already been published contributed to the development of the conceptual framework and hypotheses in response to the identified research problem. Consequently, by combining three theories – AMO theory, social exchange theory, and social context theory – the suggested conceptual framework investigates the effects of HPWS practices, innovative work behaviour, and innovative culture on inbound open innovation in SMEs.

4.2 Unit of analysis

This thesis concentrates on examining high-performing SMEs engaged in high-tech manufacturing and knowledge-intensive services within the Czech Republic. The data collection process specifically targets deputy managers, general managers, CEOs, or business owners of these SMEs, as they are presumed to possess the most comprehensive knowledge regarding strategic decision-making, company operations, and innovation performance (Rasheed *et al.*, 2017). Following established research methodologies regarding HPWS and innovation within SMEs, this study adopts managers as respondents and utilizes firm-level data to scrutinize the relationships between the variables under investigation (Alkhalaf and Al-Tabbaa, 2024; Chen and Huang, 2009; Popa *et al.*, 2017; Rasheed *et al.*, 2017).

Additionally, this study surveyed one respondent per SME. Using one response per unit is similar to other studies conducted in the field of HRM and organizational innovation outcomes (Popa *et al.*, 2017). Additionally, the self-reported questionnaire method was used to gather the responses. However, utilizing self-reported questionnaires and a single respondent may encourage common method bias to occur (Podsakoff *et al.*, 2003; Podsakoff and Organ, 1986). On the other side, using multiple respondents per each organization (e.g., SME) might negatively influence the successful implementation of the questionnaire, yielding negative results (Podsakoff *et al.*, 2003; Slater, 1995). According to Huber and Power (1985) and Harris (2001), in studies focused on strategic levels, the most appropriate thing is to use single respondents and secure information consistency. Hence, given the advantages of single respondent research designs, this thesis employed the singe-respondent approach.

4.3 Questionnaire

The research instrument devised for this thesis was the questionnaire. After reviewing the body of existing literature, the thesis's questionnaire was crafted. The questionnaire was initially formulated in the English language and then translated into the Czech language. Two native-speaking, bilingual professors translated the English questionnaire into Czech and double-checked the translated versions to make sure there was semantic similarity between the English and Czech versions.

After the final version of the translated survey, pilot testing was conducted. According to Saunders et al. (2009), the piloting phase has significance in ensuring that all respondents possess a comprehensive understanding of the survey questions. This phase also aids in preventing any potential misunderstandings that may arise during the process of responding to the questions and collecting data. The piloting phases involved a total of 33 participants who were employed in various companies within the Czech business sector. This step was crucial for comprehending issues pertaining to the questionnaire, minimizing errors, recognizing the length of the questionnaire and ease of navigation, and developing the final version of the instrument. The feedback received highlighted several issues: a) inadequate translation of certain questions into Czech, b) grammatical errors, and c) an average completion time for the questionnaires ranging from 12 to 15 minutes.

The questionnaire was distributed to the sample of this thesis after the final version had been developed. Participants were briefed about the nature of the research, who needed to participate, the selection process, how long it would take to complete the questionnaire, and any ethical considerations that needed to be made. Additionally, participants were notified that upon completion of the data collection process, a lottery would be conducted, wherein two bottles of champagne would have been awarded. Participants who wished to participate in this lottery as respondents of the data collection process were required to provide their contact information. Therefore, during the lottery activity, two participants were selected at random as the winners of the lottery prize.

4.4 Sampling

The sample is stratified in terms of business sector (hi-tech), business size (min 20 workers), and firms' age (3 years of operating on the market). The firms selected for this study are Czech SMEs operating in high-tech manufacturing and knowledge-intensive service sector, according to the NACE (Nomenclature of Economic Activities) classification. Additionally, the sample consisted of SMEs having at least 20 employees. Company size is an important factor to be considered in studies pertaining to firm complexity (Lubatkin et al., 2006); hence, it is considered to be relevant to HRM and OI studies (Martinez-Conesa et al., 2017; Popa et al., 2017). Furthermore, it has been observed that the age of companies has an impact on their

human capital and the outcomes of both closed and open innovation in the context of SMEs (Parida et al., 2012; Shahzad et al., 2019); therefore, the sample of this study was composed of companies that have been operating in the market for a minimum of three years.

Due to the nature of this study, the sampling technique chosen was randomized probability sampling. As the size of the target population was already known, respondents (SMEs) were chosen at random from using Microsoft Excel by using the Randbetween function first, followed by the sort command. Company rosters have been assessed using the CRIBIS database in the Czech Republic. Consequently, the study employed a sample size of 1,700 SMEs that were randomly selected from a comprehensive list containing 2,491 SMEs. Data collection has lasted for almost a year, starting from March 2023. The CRIBIS database list of firms was used in defending the sample of this research. Two data collection strategies were used to collected the required data. First, a data collection company located in the Czech Republic was hired to collect 135 valid responses using CAT (Computer Assisted Telephone Interviewing) and CAWI (Computer Assisted Web Interviewing). When contacting the respondents, the company was given all the necessary information. They were instructed to inform the respondents about the type of research and its significance, where their contacts could be found, why they were chosen to be a part of this research, who could participate, ethical concerns, and the lottery prize. In addition, the rest of the questionnaires were collected by students who had been trained on how to conduct interviews and were provided with the information required to be presented to companies beforehand, regarding this research's purpose. The instructions given to students were the same as those of the research agency. In the end of the process, 117 valid responses were gathered. Consequently, from both data collection strategies, a total of 252 valid responses were obtained, resulting in a response rate of 14.8%, which it is consistent with previous studies conducted in this field. The sample size met the minimum requirements, as outlined by Hair *et al.* (2011), minimum sample size of 10 times the maximum number of formative indicators. In addition, the sample size met the minimum requirement according to the inverse square root approach recommended by Kock and Hadaya (2018).

4.5 Measure and concepts definitions

High-Performance Work System (ability-enhancing, motivation-enhancing, opportunity-enhancing)

High-Performance Work System can be defined as "*a system of HRM practices designed to enhance employees' skills, commitment and productivity in such a way that employees become a source of sustainable competitive advantage*" (Datta *et al.*, 2005; Fu *et al.*, 2015).

HPWS construct - Items ***For each item, indicate the extent of your agreement or disagreement*** ***1-totally disagree to 5-totally agree***	***Adapted from authors:***
Ability-enhancing: Staffing & Training	(Mehralian *et al.*, 2021; Sun *et al.*, 2007)
Staffing *The company puts significant attempts in selection of the suitable individual for each position* *The company employs substantial processes to recruit and select, such as different tests and interviews* *During recruitment, the company focuses on the new staff capabilities of learning and growing with the company* *The company is careful about its image when it recruits and selects employees* *The staff is chosen according to the total fitness with the organization*	
Training	
Training staff will typically undergo continuous training programs *The organization offers trainings with focus on team building and teamwork competencies*	

Managers supply the staff with specialized training and development *Managers are initiators and providers of different types of training and development for their staff* *The company possesses an acceptable mentoring system which supports new hires*	
Motivation-enhancing: Compensation & Performance appraisal	(Mehralian *et al.*, 2021; Sun *et al.*, 2007)
Compensation	
Organizational staff receives financial incentives according to their individual performance *Organizational staff receives financial incentives according to their team performance* *Organizational staff receives financial incentives according to the organizational performance* *The pay system of the company indicates the staff organizational*	
Performance appraisal	
Appraisal of the staff performance takes place according to individual behaviours and perspectives at work *Appraisal of the staff performance is directed at their advancement and promotion at work* *Appraisal of the staff performance focuses on collaborative as well as long-term-based outcomes* *Employees are provided with routine performance feedback*	

Appraisal of performance is according to objective quantifiable results	
Opportunity-enhancing: Work design & Participation	(Mehralian *et al.*, 2021; Sun *et al.*, 2007)
Work design	
The company focuses on the staff job rotation along with flexibility in work assignments in a variety of work contexts *The company allocates a wide scope of various tasks and responsibilities to employees* *The company focuses on the staff cooperative work and network collaboration* *Organizational staff has widely designed jobs which require different skills*	
Participation	
The staff of the company can participate in decision-making *Staff is encouraged to take part in an extensive scope of issues, such as performance standards, quality improvements, benefits and so on* *Staff is encouraged to take part in solving problem and decision-making* *Supervisors seek to have open communications across the company* *The staff receives information regarding the related concerns of the company (objectives, performance and so on)*	

Innovative Work Behaviour

Individuals' purposeful behaviours to generate and implement new and beneficial ideas explicitly meant to benefit the person, group, or organization are referred to as innovative work behaviours (Bos-Nehles *et al.*, 2017; Farr and Ford, 1990; Leong and Rasli, 2014).

Innovative Work Behaviour construct - Items	***Authors:***
In your organization, how often do your employees show the following behaviours*: 1-never to 5- always*	
Look for opportunities to improve an existing process, technology, product, service or work relationship	(Kleysen and Street, 2001)
Recognize opportunities to make positive difference in your work, department, organization or with customers	
Pay attention to non-routine issues in your work, department, organization, or the market place	
Generate ideas or solutions to address problems	
Define problems more broadly in order to gain greater insight into them	
Experiment with new ideas or solutions	
Test-out ideas or solutions to address unset needs	
Push ideas forward so that they have a chance to become implemented	
Take the risk to support new ideas	
Implement changes that seem to be beneficial	
Work the bugs out of a new approaches when applying them to existing process, technology, product or service	
Incorporate new ideas for improving an existing process, technology, product or service in daily routine	

Innovative culture

Innovative culture refers to a "*set of shared assumptions, values, beliefs, attitudes, and behaviors of organizational members that could facilitate the creation and development of new product, services, or process innovation*" (Ali and Park, 2016).

Innovative culture construct - Items	***Adapted from authors:***
Innovative culture	(Martín-de Castro *et al.*, 2013)
My company encourages creativity, innovation and/or the development of new ideas, as cultural values.	
A common system of values, beliefs and objectives exists in my company, directed towards innovation	
My company encourages experimentation and innovation in order to improve work processes	

Inbound Open Innovation

Inbound open innovation refers to how companies exploit others' discoveries and integrate external information within the firm (Brunswicker and Vanhaverbeke, 2015; Dahlander and Gann, 2010; Parida et al., 2012).

Inbound Open Innovation construct - items: ***For each item, indicate the extent of your agreement or disagreement*** ***1-totally disagree to 5-totally agree***	***Adapted from authors:***
Inbound open innovation	(Jaworski and Kohli, 1993; Naqshbandi and
Our organization constantly scans the external environment for inputs such as technology, information, ideas, knowledge, etc.	
Our organization actively seeks out external sources of knowledge and technology	

Our organization believes it is good to use external sources (e. g., research groups, universities, suppliers, customers, competitors, etc.) to complement its own R&D.	Jasimuddin, 2018)
Our organization often brings in externally developed knowledge and technology to use in conjunction with our own R&D.	
Our organization seeks out technologies and patents from other firms, research groups, or universities.	
Our organization purchases external intellectual property to use in our own R&D.	

4.6 Data analysis

Following data acquisition, an analysis was conducted utilizing SmartPLS 4.0, aiming to fulfill the study goals and assess the hypotheses. The research model encompasses both mediation and moderation effects. In instances where such effects are present, the utilization of PROCESS is warranted to examine the proposed hypotheses (Hayes, 2022). PROCESS serves as a statistical and computational tool integrated within version 4 of SmartPLS (Sarstedt et al., 2020). The measurement model, executed in SmartPLS version 4, is completed utilizing the partial least squares (PLS) approach (Ringle et al., 2022). A variance-based structural equation modelling (SEM) technique is the PLS approach. The selection of PLS-SEM is based on multiple reasons. Firstly, testing structural models and measurements simultaneously is possible with the PLS technique (Hair et al., 2017). Secondly, PLS can measure reflective and formative constructs, including higher-order constructs. In this thesis, three variables were measured in a formative way. Thirdly, the mediation and moderation effects (PROCESS) can be investigated by performing PLS. Moreover, the PLS-SEM technique does not require that the normality of the latent variables be met, which is another argument in favour.

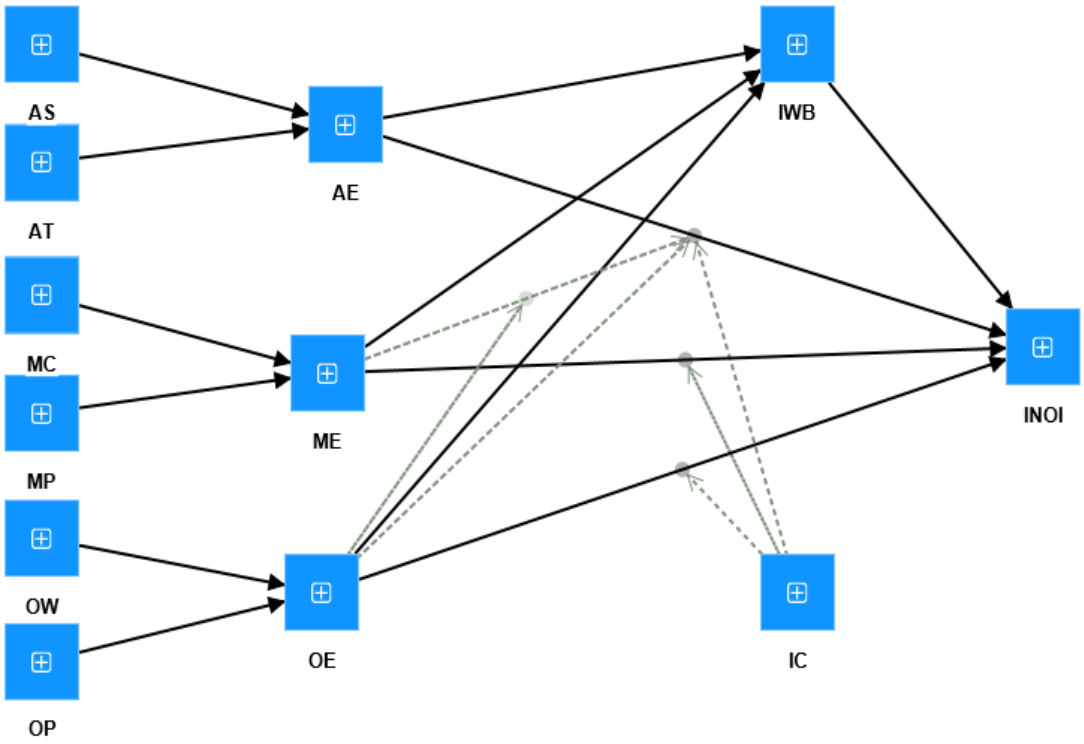


***Figure 2**: Research model (second-order constructs) in SmartPLS 4, PROCESS view (**Source:** SmartPLS 4)*

The steps that were followed in this thesis regarding the method are as described below:

1. Firstly, the structural model was formulated to measure latent variables and their relationships.
2. Secondly, the measurement model of the constructs was assessed with the aim of measuring item and scale reliabilities, to perform validity analysis along with discriminant validity.
3. Thirdly, latent variables that were measured in PLS-SEM, were used in PROCESS model to test the conceptual framework that this thesis proposes. Thus, the linkages in PROCESS were examined to explore the significance of proposed relationships, direct, indirect and interactive effects, simultaneously). The bootstrap procedure of a 5000 iterations of resampling is performed in order to calculate path coefficients (Hair *et al.*, 2019).

Many measures, such as R-square value, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE), can be used to evaluate model fit, item and scale reliabilities, and validity of the study model. The dependent construct(s)'s R-square value indicates how much of the variance can be explained by all of the independent factors.

4.7 Checking the assumptions

4.7.1 Item and Scale Reliabilities

Item reliability was the first aspect of the measurement model assessment to be examined. It is investigated by observing item loadings. According to Hair et al. (2019), these loadings ought to be more than 0.708. Indicator reliability is supported when the construct explains more than half of the indicator's variation, as demonstrated by a value of indicator loadings over this level.

The outcomes of the indicator loadings for the first-order constructs are compiled in Table 1. The items for which loadings stood below 0.708 were removed from the analysis. Therefore, the following items make up the list of the indicators that were deemed unqualified: AS2 from the Staffing scale; OW1 and OW2 from Work design scale, IWB9 from the Innovative Work Behaviour scale, and INOI6 from the Inbound Open Innovation scale.

Table 1 displays the item loadings of the chosen indicators, which range from 0.6927 to 0.9178. Apart from INOI5 = 0.6927, this finding indicates that the criterion of loadings greater than 0.708 is met, demonstrating adequate indicator reliability. As the loading was close to the threshold, it was decided to keep the INOI5 indicator. Furthermore, evaluating further for multicollinearity concerns, none of the items have variance inflation factor (VIF) scores below 0.20 and above 5 (Hair *et al.*, 2017). These loadings have VIF values associated with them, all of which are less than 5. The VIF values demonstrate that there is no multicollinearity issue in the measured constructs.

Table 1: *Item loadings and outer VIF values (first-order constructs only)*

Construct	Item	First-order	VIF
Staffing	AS1	0.8413	1.9801
	AS3	0.8294	2.0356
	AS4	0.8458	2.0266
	AS5	0.7656	1.5305
Training	AT1	0.7529	1.8193
	AT2	0.8180	2.1076
	AT3	0.7835	1.7432
	AT4	0.8191	2.0751
	AT5	0.7997	1.8511
Compensation	MC1	0.7091	1.2022
	MC2	0.7338	1.4520
	MC3	0.7443	1.3310
	MC4	0.7589	1.5077
Performance appraisal	MP1	0.7035	1.5432
	MP2	0.8507	2.3407
	MP3	0.7863	1.8423
	MP4	0.7945	2.0777
	MP5	0.7667	1.9385
Participation	OP1	0.7134	1.7026
	OP2	0.8072	1.9593
	OP3	0.8488	2.4983
	OP4	0.8239	2.5118
	OP5	0.7213	2.0090
Work design	OW3	0.8712	1.2488
	OW4	0.8282	1.2488
Innovative culture	IC1	0.9178	2.9017
	IC2	0.8855	2.4644
	IC3	0.8820	2.1207
Innovative Work Behaviour	IWB1	0.7780	2.6087

Construct	Item	First-order	VIF
	IWB2	0.8442	3.8001
	IWB3	0.7782	2.4148
	IWB4	0.7770	2.3129
	IWB5	0.7258	2.0352
	IWB6	0.7383	2.3585
	IWB7	0.8070	3.5961
	IWB8	0.8119	3.3878
	IWB10	0.7363	2.2802
	IWB12	0.7795	2.2436
Inbound Open Innovation	INOI1	0.8393	3.2429
	INOI2	0.8865	3.6720
	INOI3	0.8058	2.2700
	INOI4	0.8237	2.5278
	INOI5	0.6927	1.7540

*(**Source:** author's own)*

The outcomes of the indicator loadings for the second-order constructs are compiled in Table 2. The items that exhibited loadings below 0.708 were removed from the analysis. Therefore, the following items make up the list of the indicators that were deemed unqualified: AS2 from the Ability-enhancing scale, MC3 from the Motivation-enhancing scale; OW1 and OW2 from the Opportunity-enhancing scale.

Table 2 informs about the item loadings of the chosen indicators, which range from 0.708 to 0.786. This finding implies that the criterion of loadings greater than 0.708 is met, demonstrating adequate indicator reliability. Furthermore, these loadings have VIF values associated with them, all of which are less than 5 (Hair *et al.*, 2017). VIF values show that there is no multicollinearity issue in the measured constructs.

Table 2: *Item loadings and outer VIF values (second-order constructs only)*

Construct	Item	Second-order	VIF
Ability-enhancing	AS1	0.752	2.2035
	AS3	0.708	1.9961
	AS4	0.759	2.1631
	AS5	0.725	1.7552
	AT1	0.711	1.8278
	AT2	0.717	2.1846
	AT3	0.786	2.0532
	AT4	0.748	1.9946
	AT5	0.709	1.9002
Motivation-enhancing	MC1	0.708	1.6441
	MC2	0.720	1.3107
	MC4	0.710	1.3310
	MP1	0.707	1.4181
	MP2	0.784	1.8538
	MP3	0.752	2.4344
	MP4	0.728	1.9171
	MP5	0.736	2.0932
Opportunity-enhancing	OP1	0.734	2.1786
	OP2	0.739	1.7532
	OP3	0.763	2.0544
	OP4	0.762	2.4945
	OP5	0.711	2.3584
	OW3	0.792	1.9460
	OW4	0.713	1.6863

*(**Source:** author's own)*

4.7.2 Internal consistency reliability and Convergent validity

Assessing internal consistency reliability is the next phase in the examination of the reflective measurement model. The values of each scale's composite reliability and

Cronbach's alpha can be examined to complete this stage. There is a range within which these statistics' values should fall, but generally speaking, larger values denote more reliability. In exploratory research, for example, reliability scores between 0.60 and 0.70 are acceptable; values between 0.70 and 0.90 imply satisfactory to good fit. While values close to 0.95 are ideal, those above it is seen as troublesome because they signal redundant indications, which weaken the construct's validity (Hair et al., 2019). Cronbach's alpha and composite reliability are the two statistics that are discussed; composite reliability is thought to be more reliable.

The composite reliability and Cronbach's alpha scores for the measured scales for each construct is compiled in Table 3. The measure of opportunity-enhancing, specifically work design (OW) construct has the lowest Cronbach's alpha (0.717), whereas the Innovative Work Behaviour construct has the greatest (0.939). Composite reliability values fall between 0.801 and 0.939. Based on these values, internal consistency reliability of the measured scales is rated as good-to-excellent. According to this finding, internal consistency reliability is not a problem for this study.

Table 3: *Internal consistency reliability and Convergent validity*

Construct	**Cronbach's alpha**	**Composite reliability**	**Average variance extracted (AVE)**
AS	0.838	0.892	0.674
AT	0.855	0.896	0.632
MC	0.720	0.811	0.518
MP	0.840	0.887	0.611
OP	0.842	0.889	0.616
OW	0.717	0.839	0.722
IWB	0.928	0.939	0.606
IC	0.876	0.924	0.801
INOI	0.866	0.902	0.649

Note: AE (AS + AT), Ability-enhancing; ME (MC + MP), Motivation-enhancing; OE (OP + OW), Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation. (***Source:*** *author's own*)

Convergent validity is the degree to which a scale converges to explain the variance of its constituents and it should be examined before testing the hypotheses. The average variance extracted (AVE) for all indicators on a latent variable is the statistic used to evaluate it. A construct is considered to explain at least half of the variation across its elements if its value is 0.50 or higher (Hair et al., 2019).

For each set of construct elements, the AVE metric is calculated, and the results are displayed in Table 3. It was found that all AVE values are greater than 0.50, indicating that all constructs account for more than half of the variation observed in its indicators, satisfying the respective rule.

4.7.3 Discriminant validity

The next step in assessing a PLS model is to check for discriminant validity. The degree to which a construct differs empirically from other items in the structural model is known as discriminant validity. According to Henseler et al. (2015), the heterotrait-monotrait (HTMT) ratio of the correlations is the most appropriate metric for it. "*The (geometric) mean of the average correlations for the items measuring the same construct divided by the mean value of the item correlations across constructs*" is the definition of the HTMT (Hair *et al.*, 2019). The literature claims that when HTMT levels are high, the model has problems with discriminant validity. The 0.85 threshold is the one that is advised.

Table 4: *Discriminant validity: Heterotrait-monotrait ratio (HTMT) – Matrix*

	AS	AT	MC	MP	OP	OW	IC	INOI
AT	**0.738**							
MC	0.566	**0.797**						
MP	0.741	0.769	**0.841**					
OP	0.530	0.592	0.686	**0.670**				
OW	0.507	0.438	0.471	0.491	**0.846**			
IC	0.467	0.363	0.404	0.499	0.779	**0.736**		
INOI	0.255	0.277	0.203	0.260	0.465	0.524	**0.746**	
IWB	0.278	0.254	0.312	0.432	0.560	0.505	0.737	**0.721**

Note: AE (AS + AT), Ability-enhancing; ME (MC + MP), Motivation-enhancing; OE (OP + OW), Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation. (***Source:*** *author's own*)

Table 4 displays the computed HTMT values. The threshold of 0.85 was not exceeded by any of the HTMT coefficients. This result led to the deduction that discriminant validity in this model is not problematic. As a result, every measured construct in the structural model is empirically unique from every other construct.

5. RESULTS

5.1 Profile of the respondents

The aim of this sub-section is to give a view of the profile of respondents that took part in this research. Knowledge of respondent profile provides insights into the research prior to testing the research model.

Figure 3 illustrates the distribution of the respondents' age, plotted in a Box and Whisker chart. The age of respondents ranges from 26 to 71 years old. There are three respondents older than 71, which in Figure 2 are classified as outliers. Although these three records are considered as outliers, they are not removed from the analysis. The average age of respondents was 47.88 years old, with a median age of 47 years old. The median of the first quartile of the respondent age is 41 years old, while the median of the third quartile is 53 years old.

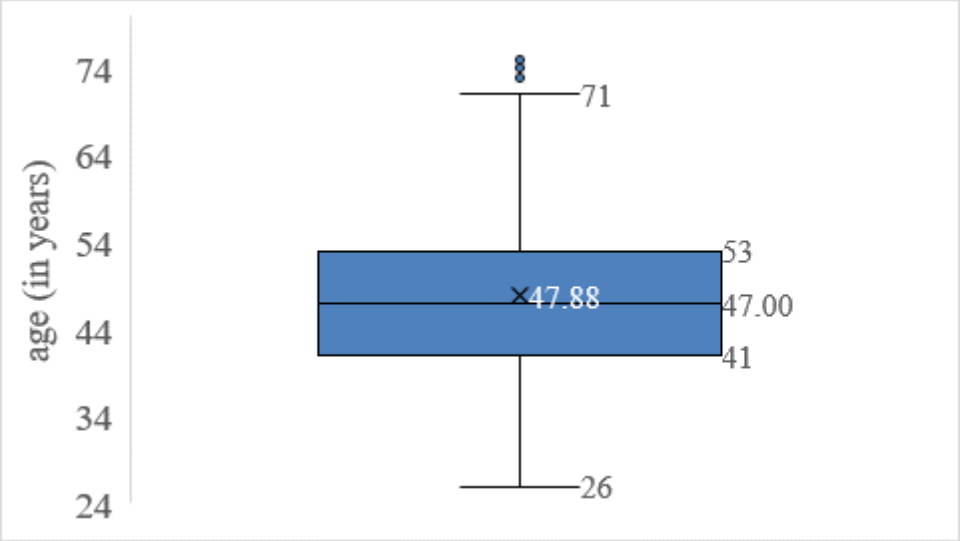


Figure 3: *Age of the respondent (n=252);* ***(Source:*** *author's own)*

The distribution of respondents by gender is plotted in figure 4. As shown in the graph below, the share of female respondents represents almost half of them. Hence, 48% respondents were female.

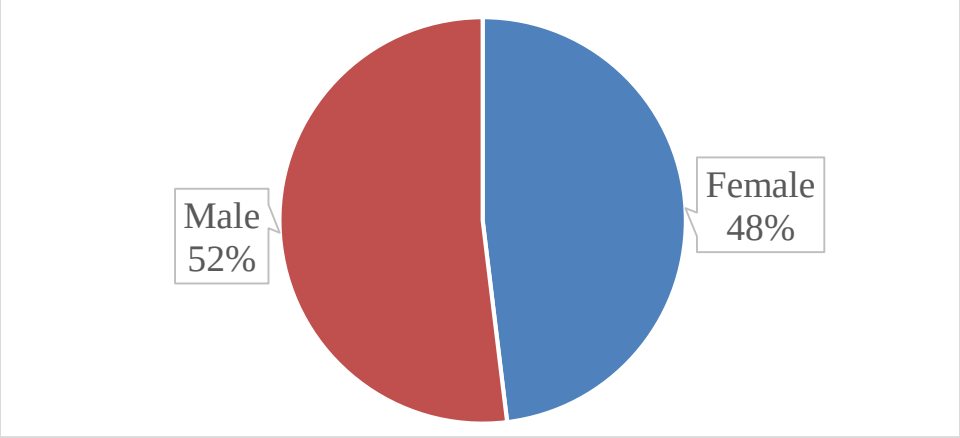


Figure 4: *Distribution of respondents by gender (n=252); (**Source:** author's own)*

The distribution of respondents by the highest level of education obtained is illustrated in Figure 5. The majority of respondents (67%) reported that they had obtained a higher education degree (University), as the highest level of education completed. The share of the respondents with high school as the highest level of education completed was 32%, meaning that one in three respondents belonged to this group. Only 1% of the respondents said that their highest level of education obtained was primary school.

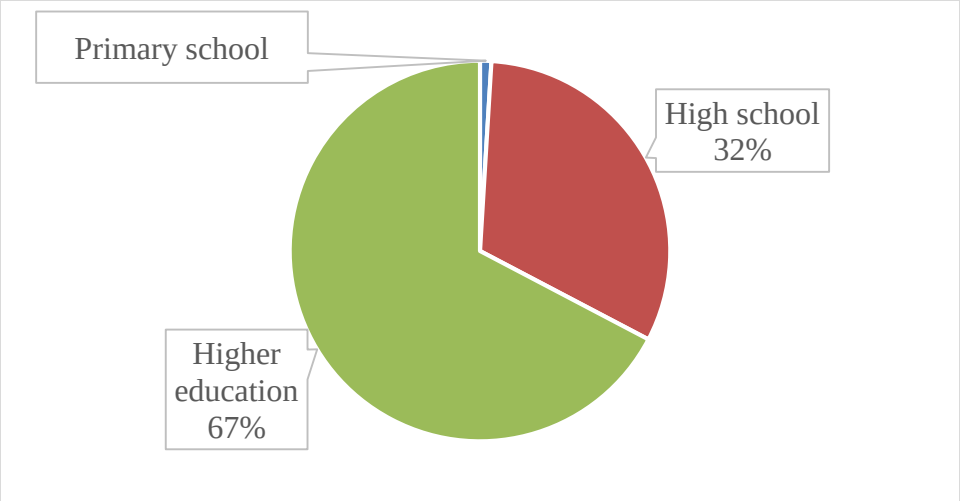


Figure 5: *Distribution of respondents by education level (n=252);* ***(Source:*** *author's own)*

There might be some interest in reviewing the distribution of respondents by gender and the highest level of education attained. Such information is summarized in Table 5. Correspondingly, 21% of the respondents were females with high school as the highest level of education, which is a bigger share than males with the same level of education.

Table 5*: Distribution of respondents by gender and education (n=252)*

		Gender		**Total**
		Female	**Male**	
Education	**Primary school**	1%		1%
	High school	21%	11%	32%
	Higher education	26%	41%	67%
Total		48%	52%	100%

Note: Percentage refers to the grand total (n=252); ***(Source:*** *author's own)*

Another facet of interest pertains to the distribution of respondents by firm size (number of employees). Figure 6 graphically illustrates this distribution. One in three

respondents (34%) works for a firm with more than 100 employees. Less than 10% of the respondents work in firms with 24 employees or less.

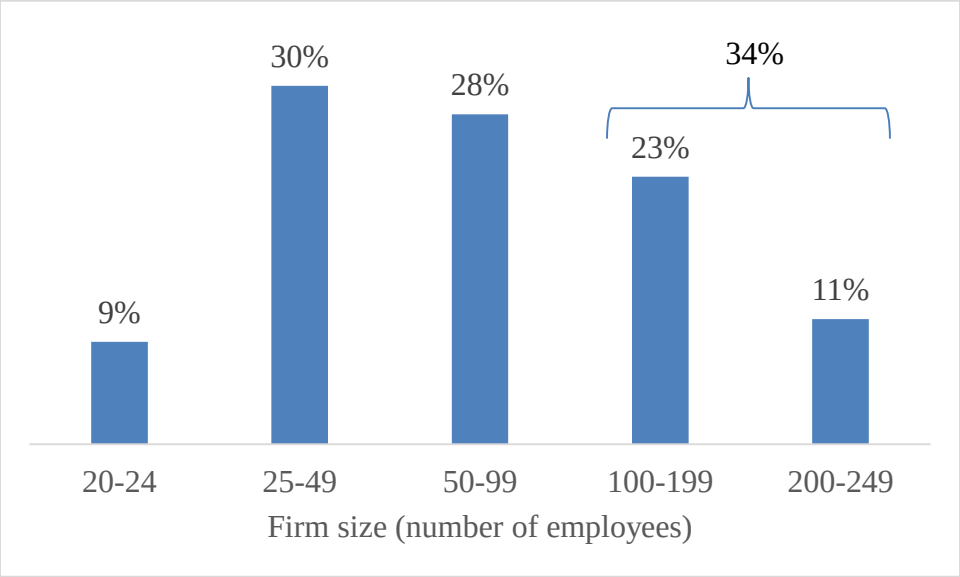


***Figure 6**:Distribution of respondents by firm size (n=252); (**Source:** author's own)*

Table 6 summarize the profile of respondents by firm size (number of employees) and gender. Almost 10 percent of respondents were females working in firms with 200 employees or more, while the share of males working in this group of firms was 1%. Compared to females, males had a higher concentration in firms with 25-49 employees.

***Table 6:** Distribution of the respondents by firm size and gender (n=252)*

Firm size (number of employees)	**Female**	**Male**	**Total**
20-24	5%	3%	9%
25-49	10%	21%	30%
50-99	13%	15%	28%

100-199	12%	11%	23%
200-249	9%	1%	11%
Total	**48%**	**52%**	**100%**

Note: Percentage refers to the grand total (n=252); (***Source:*** *author's own)*

The share of respondents by level of education obtained and firm size (measured by number of employees) is reported in Table 7. Of those, 7% were people with higher education working in firms with 200 employees or more, while the share of those with high school working in this group of firms was just 3%.

Table 7*: Distribution of the respondents by firm size and level of education (n=252)*

Firm size (number of employees)	**Level of education**			**Total**
	Primary school	**High school**	**Higher education**	
20-24		2%	7%	9%
25-49		9%	22%	30%
50-99	1%	9%	18%	28%
100-199		9%	14%	23%
200-249		3%	7%	11%
Total	**1%**	**32%**	**67%**	**100%**

Note*: Percentage refers to the grand total (n=252);* (***Source:*** *author's own)*

5.2 Descriptive statistics

Descriptive statistics on the measured constructs are presented below. Table 8 shows the mean, median, minimum, maximum, and standard deviation of the latent variables used in the proposed research model. A more comprehensive list of the

descriptive statistics can be found in the Annex. As expected, the mean and standard deviation are 0 and 1, respectively.

Table 8: *Descriptive statistics of the measured constructs*

Construct	Min	Mean	Median	Max	Standard Deviation	Range
AS	-2.686	0.000	0.159	1.691	1.000	4.377
AT	-2.870	0.000	0.007	1.445	1.000	4.315
AE	-3.026	0.000	0.338	1.010	1.000	4.037
MC	-2.944	0.000	0.063	1.920	1.000	4.864
MP	-2.500	0.000	0.168	1.798	1.000	4.298
ME	-2.569	0.000	-0.013	1.776	1.000	4.346
OP	-2.576	0.000	-0.166	1.761	1.000	4.337
OW	-1.255	0.000	0.300	4.211	1.000	5.466
OE	-2.637	0.000	-0.031	1.865	1.000	4.502
IC	-2.526	0.000	0.187	2.614	1.000	5.140
IWB	-3.090	0.000	0.118	1.722	1.000	4.812
INOI	-2.009	0.000	0.040	1.832	1.000	3.841

Note: AE (AS + AT), Ability-enhancing; ME (MC + MP), Motivation-enhancing; OE (OP + OW), Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation. (***Source*****:** author's own)

5.3 Hypothesis testing

As described under *Method* sub-section of the *Methodology* chapter of the thesis, the proposed hypotheses were examined through PROCESS in SmartPLS 4.0 (Hayes, 2022; Ringle *et al.*, 2022). The output of the analysis is organized into three groups:

1. Direct effects
2. Indirect effects
3. Interactive effects

To decide whether a hypothesis is statistically significant or not, the standardized path is investigated, leading to its acceptance or rejection. As mentioned earlier, standardized paths are calculated in 5,000 iterations of resampling, indicating that a bootstrapping procedure is applied while testing the hypotheses.

R-squared and R-squared adjusted are measures that quantify the extent to which the independent variables explain the variation of inbound open innovation. In theory, their values span from 0 to 1. A higher value of this variable corresponds to a greater degree of variability explained in the dependent variable. The research model accounts 54.5% for R-square and 52.6% for R-squared adjusted of the variation in inbound open innovation. According to the guideline established by Hair *et al.* (2017), these statistics demonstrate a moderate explanation power of the selected model. The statistics related to the R squares of the assessed model are shown in Table 9.

Table 9: *R squares of the assessed model*

	R-square	**R-square adjusted**
IWB	0.248	0.239
INOI	0.545	0.526

Note: IWB, Innovative Work Behaviour; INOI, Inbound Open Innovation; (***Source*****:** author's own)

5.3.1 Direct effect

Table 10 summarizes the results of the PROCESS method for surveyed businesses as regards direct effects only, implying seven formulated hypotheses (H1a, b, c; H2a, b, c; H3). The table informs on the coefficient, standard deviation, t-statistic, p-value for each examined path. In addition, the first column of the table indicates the formulated hypothesis, whereas the last column shows whether the respective hypothesis is supported by data or not.

The results of PROCESS show that three out of seven paths are statistically significant in predicting IWB and INOI. Thus, innovative work behaviour is positively affected by opportunity-enhancing (β = 0. 446, t = 6.388, $p < 0.001$, f^2 = 0.189). Moreover, the effect size of this influence is found to be moderate, according to Cohen (1988). Given this result, one can conclude that the relationship is not just statistically significant, but the size of the effect of opportunity-enhancing on innovative work behaviour is moderate. The other statistically significant path is the one that links the influence of ability-enhancing to inbound open innovation (β = 0. 192, t = 2.909, $p < 0.01$, f^2 = 0.033). So, a positive impact of ability-enhancing on INOI is found. In addition, the direct positive effect of IWB toward INOI is found (β = 0. 421, t = 7.550, $p < 0.01$, f^2 = 0.212). Given this result, it is concluded that the relationship is statistically significant and the size of the effect of IWB on INOI is moderate. Based on these findings, it can be concluded that the other direct effects (hypotheses) are rejected.

***Table 10**: Hypothesis testing – direct effects*

Hypothesis	**Path**	**Coefficient**	**T statistic**	**P value**	**F square**	**Supported?**
H1a	AE → IWB	-0.062	0.769	0.442	0.007	No
H1b	ME → IWB	0.142	1.686	0.092	0.017	No
H1c	OE → IWB	0.446	6.388	0.000	0.189	Yes
H2a	AE → INOI	0.192	2.909	0.004	0.033	Yes
H2b	ME → INOI	-0.159	2.163	0.031	0.025	No
H2c	OE → INOI	0.023	0.363	0.717	0.004	No
H3	IWB → INOI	0.421	7.550	0.000	0.212	Yes

Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; INOI, Inbound Open Innovation. ***(Source:** author's own*)

The influence of ability-enhancing (β = -0.062, t = 0.769, p > 0.05) and motivation-enhancing (β = 0.142, t = 1.686, p > 0.05) on innovative work behaviour is found to yield insignificant relationships. Thus, H1a and H1b are rejected. On the other hand, the relation between motivation-enhancing to inbound open innovation is statistically significant but not positive (β = -0.159, t = 2.163, p<0.05). This results show that as motivation-enhancing efforts increase, the level of INOI tends to decrease. Hence, the results do not support H2b. In addition, the relation between opportunity-enhancing and inbound open innovation (β = 0.023, t = 0.363, p > 0.05) is not significant. Therefore, the data does not support H2c.

5.3.2 Indirect effects

The examined indirect effects that are driven from the conceptual framework of this thesis are summarized in Table 11. There are three hypotheses (H4a, b, c) that shed light on these proposed relationships. In this table, for each hypothesis, the path, coefficient, standard deviation, t-statistic, p-value and the conclusion whether it is supported or not, is depicted.

Data analysis informs that one out of the three hypotheses that point to indirect influences of the proposed conceptual framework are statistically significant, while two are not. Therefore, based on the analysis of the path's significance, IWB mediates the relationship between OE and INOI (β = 0.188, t = 5.263, p < 0.05).

Table 11: *Hypothesis testing – indirect effects*

Hypothesis	**Path**	**Coefficient**	**T statistic**	**P value**	**Supported?**
H4a	AE → IWB → INOI	-0.026	0.775	0.438	No
H4b	ME → IWB → INOI	0.060	1.619	0.105	No
H4c	OE → IWB → INOI	0.188	5.263	0.000	Yes

Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; INOI, Inbound Open Innovation. (***Source*****:** author's own)

Even though literature review concluded with a hypothesis that states that the effect of AE and ME on INOI is mediated by innovative work behaviour, the data fails to

support it. In fact, the tested paths are found to be not statistically significant, meaning that does not mediate the influence of ability-enhancing (β = -0.026, t = 0.775, p > 0.05) and motivation-enhancing (β = 0.060, t = 0.619, p > 0.05) on inbound open innovation.

5.3.3 Interactive effects

The third set of proposed relationships based on the conceptual framework of this thesis deals with interactive influences. As per the logic behind hypothesis development, these hypotheses can be grouped into three sub-groups:

1. Hypotheses that point to the moderating role of innovative culture on the influences of ability-, motivation-, and opportunity-enhancing on inbound open innovation (H5a, b, c);
2. Two-way effects that are stated in H6a and H6b;
3. Three-way effect that is formulated as H7.

The abovementioned interactive effects are tested in the research model and the result of the analysis is summarized in Table 12, grouped as indicated above. Similar to the Table 10 and Table 11, in Table 12, for each path, the coefficient, standard deviation, t-statistic, p-value, is shown. Moreover, its first and last columns inform on the respective hypothesis and the conclusion of the analysis, as to whether the hypothesis is supported or not.

***Table 12**: Hypothesis testing – interactive effects*

Hypo-thesis	**Path**	**Coef-ficient**	**T statistic**	**P value**	**F square**	**Supported?**
H5a	IC x AE → INOI	-0.065	0.891	0.373	0.007	No
H5b	IC x ME → INOI	0.115	2.567	0.010	0.019	Yes
H5c	IC x OE → INOI	-0.072	1.529	0.126	0.010	No
H6a	ME x AE → INOI	-0.018	0.347	0.729	0.005	No
H6b	OE x AE → INOI	0.122	2.018	0.044	0.017	Yes
H7	OE x ME x AE → INOI	-0.095	2.541	0.011	0.029	No

Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation. (***Source*:** author's own)

Regarding the moderating role of innovative culture on the effects of ability-, motivation-, and opportunity-enhancing on inbound open innovation, the data shows that only one relationship is statistically significant. Based on the analysis, innovative culture does matter in strengthening the effect of opportunity-enhancing on inbound open innovation ($\beta = 0.115$, $t = 2.567$, $p < 0.05$, $f^2 = 0.019$). In addition, the size of the effect of this moderation on INOI is medium, according to Hair *et al.* (2022) proposed benchmarks (effect sizes of 0.005, 0.010, and 0.025 indicate small, medium, and large effects, respectively). Hence, given these thresholds, one can observe that this effect size moderate. In addition, regardless of the development of the hypothesis from the literature review, the data fails to support the moderating role of innovative culture on the influences of ability-enhancing ($\beta = -0.065$, $t = 0.891$, $p > 0.05$) and opportunity-enhancing ($\beta = -0.072$, $t = 1.529$, $p > 0.05$) on inbound open innovation (see Table 12). Based on these findings, it can be concluded that H5b is supported by the data, whereas H5a and H5c is not.

The moderating effect of innovative culture on the relationship between motivation-enhancing and inbound open innovation is illustrated in Figure 7. As expected, in an environment with high innovative culture, the effect of motivation-enhancing on inbound open innovation is higher than in the case of a low-innovative culture

environment. This logic is depicted in Figure 7 with a steeper line in the case of high innovative culture compared to a flatter line for low innovative culture.

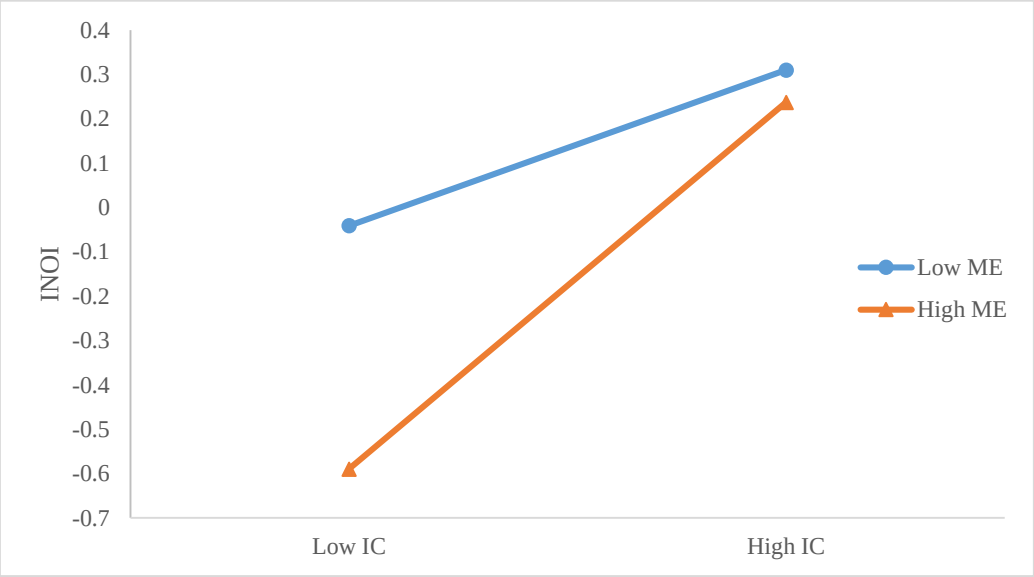


Figure 7: *Conditional effect of IC on the influence of ME on INOI (**Source:** author's own)*

Data reveals that the two-way interaction relationship between ability-enhancing and motivation-enhancing on INOI is not statistically significant (β = -0.018, t = 0.347, $p > 0.05$), while the two-way interaction relationship between ability-enhancing and opportunity-enhancing on INOI is statistically significant (β = 0.122, t = 2.018, $p < 0.05$, f^2 = 0.017). The size of the effect of this two-way AE x OE interaction on INOI is moderate, according to Hair *et al.* (2022) proposed thresholds. Moreover, the later linkage is found to be a positive interaction relationship (see Table 12). Given these results, one can state that there is evidence that supports H6b, but not H6a.

The conditional effect of opportunity-enhancing on the linkage between ability-enhancing and inbound open innovation is plotted in Figure 8. As assumed, in an environment with high opportunity-enhancing, the effect of ability-enhancing on inbound open innovation is higher than in the case of low opportunity-enhancing

environment. This logic is represented in Figure 8 by showing a steeper line in the case of high opportunity-enhancing compared to a flatter line for low opportunity-enhancing.

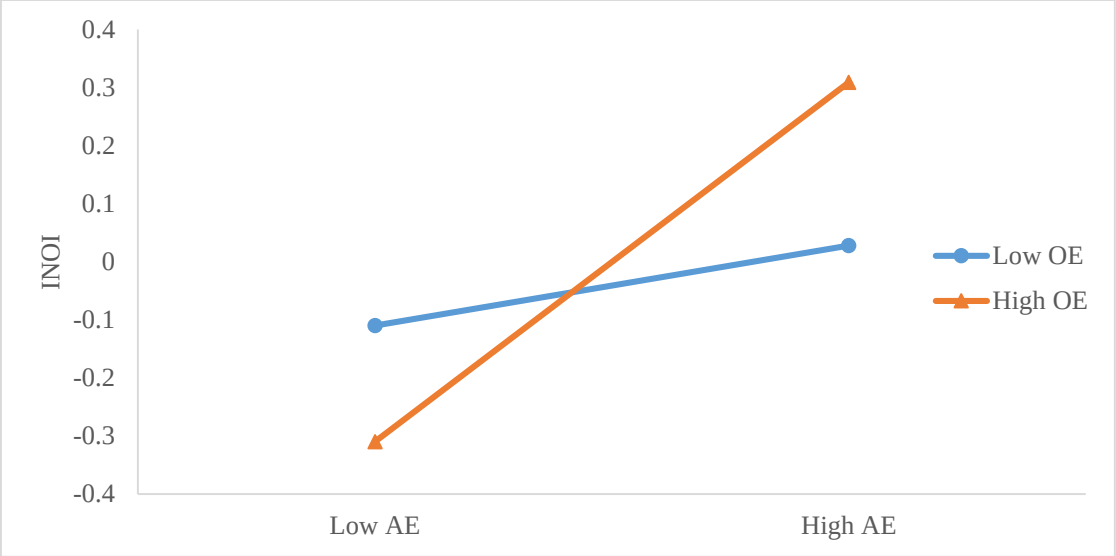


Figure 8: *Conditional effect of OE on the influence of AE on INOI; (**Source:** author's own)*

The last row of Table 12 informs about the result of the test of the three-way interaction relationship between AE x ME x OE and INOI. As can be examined from the statistical significance of the path, the data shows that the three-way is negative interaction linkage (β = -0.095, t = 2.018, $p < 0.05$, f^2 = 0.029). Therefore, the results reject H7.

5.3.4 Summary of the tested hypotheses

After testing the direct, indirect, and interacting impacts, all the hypotheses are analysed and interpreted. Table 13 presents a summary of the conclusions reached for each hypothesis that was formed.

Table 13: *Summary of the tested hypotheses*

Hypothesis		**Conclusion**
Code	**Formulation**	
H1a	*Ability-enhancing have a positive influence on innovative work behaviour*	Not supported
H1b	*Motivation-enhancing have a positive influence on innovative work behaviour*	Not supported
H1c	*Opportunity-enhancing have a positive influence on innovative work behaviour*	Supported
H2a	*Ability-enhancing have a positive influence on inbound open innovation*	Supported
H2b	*Motivation-enhancing have a positive influence on inbound open innovation*	Not supported
H2c	*Opportunity-enhancing have a positive influence on inbound open innovation*	Not supported
H3	*Innovative work behaviour have a positive influence on inbound open innovation*	Supported
H4a	*Innovative work behaviour mediates the relation between ability-enhancing and inbound open innovation*	Not supported
H4b	*Innovative work behaviour mediates the relation between motivation-enhancing and inbound open innovation*	Not supported
H4c	*Innovative work behaviour mediates the relation between opportunity-enhancing and inbound open innovation.*	Supported
H5a	*Innovative culture moderates the relation between ability-enhancing and inbound open innovation*	Not supported
H5b	*Innovative culture moderates the relation between motivation-enhancing and inbound open innovation*	Supported

H5c	*Innovative culture moderates the relation between opportunity-enhancing and inbound open innovation.*	Not supported
H6a	*There is a two-way interaction relationship between ability-enhancing and motivation-enhancing with inbound open innovation*	Not supported
H6b	*There is a two-way interaction relationship between ability-enhancing and opportunity-enhancing with inbound open innovation*	Supported
H7	*There is a three-way interaction relationship between ability-enhancing, motivation-enhancing, and opportunity-enhancing with inbound open innovation.*	Not supported

(***Source*:** author's own)

6. DISCUSSIONS

The main contribution of this thesis is to understand the relationships between HPWS practices (ability-enhancing, motivation-enhancing and opportunity-enhancing) and inbound open innovation of SMEs in the Czech Republic. These results are emphasized and explored with respect to the developed research questions:

- RQ1: Do HPWS practices affect innovative work behaviour and SMEs' inbound open innovation?
- RQ2: Does innovative work behaviour mediate the relation between HPWS practices and SMEs' inbound open innovation?
- RQ3: Does innovative culture moderate the relation between HPWS and SMEs' inbound open innovation?
- RQ4: Are there interactive effects among HPWS practices and SMEs' inbound open innovation?

6.1 Direct effect

The direct effects of HPWS practices on innovative work behaviour and inbound open innovation.

Regarding the first research question of this study, this thesis analysed the direct effects of ability-enhancing *(staffing and training)-**H1a**,* motivation-enhancing *(compensation and performance appraisal)-**H1b**,* and opportunity-enhancing *(work design and participation)-**H1c*** on innovative work behaviour. Based on social exchange theory arguments, it was excepted that ability-enhancing practices (Prieto and Pérez-Santana, 2014) and motivation-enhancing practices (Janssen, 2000), will affect innovative work behaviour. However, contrary to the author's expectations, the results show that ***H1a*** (β = -0.062, t = 0.769, $p > 0.05$) *and* ***H1b*** (β = 0.142, t = 1.686, $p > 0.05$) has an insignificant effect on IWB. According to Bos-Nehles and Veenendaal (2019), it is important to establish an innovative climate within the organization that signals the value of training and development activities in order for employees to see the benefits of training and development practices. Employee perceptions of training and development with IWB will therefore not be reciprocated unless an innovative clime exists that evidences the importance of such a behaviour. Additionally, Prieto and Pérez-Santana (2014) and Bos-Nehles and Veenendaal (2019), similarly to this thesis, have found that motivation-enhancing practices do not support innovative behaviour. An explanation might be that in order for reward practices to be converted to innovative behaviour, they should be acknowledged (Prieto and Pérez-Santana, 2014). Another argument comes from Bos-Nehles and Veenendaal (2019). The authors argue that compensation systems motivate only works that are extrinsically motivated. When it comes to performance appraisal, Prieto and Pérez-Santana (2014) argue that these procedures might discourage innovative behaviour because they might be viewed as a form of control and judgment over an individual's actions. On the other side, this study confirms hypothesis ***H1c***-opportunity-enhancing positively influence IWB (β = 0. 446, t = 6.388, $p < 0.001$, f^2 = 0.189). The results are consistent with other studies (Bos-Nehles *et al.*, 2017; Bos-Nehles and Veenendaal, 2019). Drawing on social exchange theory, investment in HRM practices is perceived as a positive investment of the company towards employees; hence, they will reciprocate with an improved innovative behaviour (Bos-Nehles *et al.*, 2017). Work design that emphasizes flexibility, working in team, and job enrichment fosters a sense of responsibility for a successful outcome, and employees are more likely to engage in proactive problem solving and other required tasks and behaviours that go above and beyond what is required. Similarly, participation in decision-making raises levels of engagement at

work, collaboration, and increases innovative work behaviours (Prieto and Pérez-Santana, 2014).

Drawing from AMO theory, the results of ***H2a*** revealed that ability-enhancing practices have a significant effect on SMEs' inbound open innovation (β = 0. 192, t = 2.909, $p < 0.01$, $f^2 = 0.033$). The results appear to fit with what had been previously investigated (Naqshbandi *et al.*, 2023). Open innovation is enhanced by hiring the right personnel for the job and concentrating on creating a work environment that offers employees training and development to encourage knowledge generation and adoption. Therefore, ability-enhancing methods support the development of a skilled workforce and make it easier for staff members to take part in the exchange of knowledge across organizations (Naqshbandi *et al.*, 2023; Remneland Wikhamn *et al.*, 2023). On the other side, contrary to the authors' expectations, the results do not support hypotheses ***H2b*** (β = -0.159, t = 2.163, p<0.05) and ***H2c*** (β = 0.023, t = 0.363, $p > 0.05$). The relation between ME and INOI -***H2b***, is expected to be positive and significant. However, the results show that as motivation-enhancing efforts increase, the level of INOI tends to decrease claims, thus, this thesis rejects the hypothesis. Although rewarding and appraising employee's innovative performance may foster employee willingness to engage in open innovation activities (Ferrarini and Curzi, 2022; Malik *et al.*, 2020), this study's results do not support this argument. Indeed, this conclusion may be explained by the fact that performance appraisal generally has a higher effect on people extrinsically motivated (Bos-Nehles and Veenendaal, 2019), and that occasionally, these practices could be perceived more as controlling rather than managing performance and rewarding employees (Prieto and Pérez-Santana, 2014). Therefore, the implementation of HR policies such as performance-related remuneration can lead to negative effects for employees, including increased stress and burnout, ultimately resulting in a negative influence on performance (Vermeeren, 2017). Han *et al.* (2020) argues that, concerning the AMO framework, motivation-enhancing practices imply that employee motivation can be stimulated by management practices such as performance appraisal and reward systems focused on extrinsic motivation. Having said that, HPWS incentivizes and reinforces extrinsic motivation and neglects intrinsic motivation (Georgellis *et al.*, 2011). Consequently, HPWS overstimulates the extrinsic motivation of employees, which diminishes their performance (e.g., inbound open innovation) (Han *et al.*, 2020). In addition, this thesis failure to prove

the influence of OE practices such work design and participation practices on SMEs' inbound open innovation (***H2c***), is not in line with previous works. For instance, Naqshbandi *et al.* (2023) have proved the direct effect of opportunity-enhancing HR practices on inbound open innovation.

Lastly, the results support the positive significant effect of IWB on SME's inbound open innovation -***H3*** (β = 0. 421, t = 7.550, $p < 0.01$, f^2 = 0.212), which is in line with other studies (Fu *et al.*, 2015; Sanz-Valle and Jiménez-Jiménez, 2018; Thneibat *et al.*, 2022). Innovative work behavior encompasses a series of complex stages, ranging from the generation of ideas to their execution and promotion. These stages play a crucial role in enhancing a firm's innovation. Conversely, inbound open innovation is a source of competitive advantage that relies on outside cooperation and the diffusion of innovation. According to the study, innovation necessitates the enhancement of employees' IWB, which can be achieved through the implementation of HPWS.

6.2 Indirect effects

The mediating effect of innovative work behaviour towards the connections between HPWS practices and SMEs' inbound open innovation.

Regarding the second research question of this study, the mediating effect of innovative work behaviour in the relation between HPWS practices under AMO enhancing bundles and SMEs' inbound open innovation was analysed. This study aims to address the existing research gaps and answer the research queries raised by Sanz-Valle and Jiménez-Jiménez (2018) and Naqshbandi *et al.* (2023). Contrary to the authors' expectations, hypothesis ***H4a*** (β = -0. 026, t = 0.775, $p > 0.01$), does not support the idea that IWB mediates the relationship between ability-enhancing practices and inbound open innovation. There is a scarcity of empirical research that specifically examines the connections between each bundle of HPWS and inbound open innovation through the mediation of IWB. However, the findings contradict the claims made by Fu *et al.* (2015) which state that organizational innovation in service firms depends on the application of HPWS, through the mediating role of IWB. From the social exchange theory, it is expected that training and development can be perceived as investment in employees and they will reciprocate with something that will be valuable for the company (Bos-Nehles *et al.*, 2017).

Nonetheless, it is argued that employees may not respond in this regard unless employers explicitly communicate the significance of reciprocating with innovative behavior. Therefore, in order for employees to recognize the significance of training and development with regard to innovative work behavior, an innovative climate should be established (Bos-Nehles *et al.*, 2017)

In a similar fashion, the result of ***H4b*** ($\beta = 0.060$, $t = 1.619$, $p > 0.05$), demonstrates that IWB has not a mediating effect between opportunity-enhancing and SMEs' inbound open innovation. According to Bos-Nehles *et al.* (2017), motivation-enhancing methods are centered on the extrinsic motivation of employees, which may reduce inventive behavior, resulting in a lack of organizational innovation (e.g., open innovation). Bos-Nehles and Veenendaal (2019) claims that *"discretionary efforts, such as IWB, are usually neither anticipated nor rewarded, and thus cannot be assured through compensation systems".* Therefore, rewarding practices that focuses on external reward techniques might motivate only people who are extrinsically motivated. Having said that, these compensation techniques might reduce or negatively affect innovative behavior, which in turn will decrease innovation (e.g., inbound open innovation) (Bos-Nehles *et al.*, 2017; Bos-Nehles and Veenendaal, 2019). In such situations, other motivation-enhancing practices that can foster intrinsic motivation, such as autonomy, personal development, and acknowledgement, can be employed (Bos-Nehles *et al.*, 2017; Li *et al.*, 2006). On the other side, the results of this study confirm hypothesis ***H3c:*** IWB mediates the relation between the OE bundle of HPWS practices and INOI ($\beta = 0.188$, $t = 5.263$, $p < 0.01$). This result is aligned with previous works (Sanz-Valle and Jiménez-Jiménez, 2018). They revealed that HPWS affects IWB and, in turn, IWB boosts product innovation.

The moderating effect of innovative culture towards the connections between HPWS practices and SMEs' inbound open innovation.

The results partially support the suggested hypothesis in response to the highlighted research gap and addressing the research question regarding the moderating effect of innovative culture in the relationship between HPWS and SMEs' inbound open innovation. The results show a positive significant effect of innovative culture pertaining to the relation between motivation-enhancing and SMEs' inbound open innovation – ***H5b*** ($\beta = 0.115$, $t = 2.567$, $p < 0.05$, $f^2 = 0.019$). The results are similar

to the work developed by Cera *et al.* (2023), where the authors argue that a culture focused on change, innovation and development, moderate and reinforces the relation between commitment-based HRM practices and inbound open innovation in SMEs context. Contrary to the author's expectations, the results of ***H5a*** (β = -0.065, t = 0.891, $p > 0.05$, f^2 = 0.007) and ***H5c*** (β = -0.072, t = 1.529, $p > 0.05$, f^2 = 0.010) are not supported. There is a lack of empirical research that specifically examines the moderation effect of innovative culture in the relation between each AMO bundle of HPWS (e.g., ability-enhancing, motivation-enhancing and opportunity-enhancing) and inbound open innovation. Nevertheless, findings contradict with arguments brought by the social context theory established by Ferris *et al.* (1998), which states that social context components, such as organizational culture, shape the effects HR management systems exercise on organizational performance. However, these results are in the same line with the study conducted by Lau and Ngo (2004). The authors did not find interactive effects between organizational culture and different bundles of SHRM practices on product innovation. The results shown above appear to provide partial support for the developed hypothesis. According to Lau and Ngo (2004), culture is a collective construct that requires involvement and aggregation from many individuals inside the organization. As a result, evaluating culture with a single responder (as in this thesis) may be ineffective. Thus, future study should consider using more than one responder per firm to examine the effects of culture. Furthermore, the country's cultural context influences the design of human resource management practices, company culture, and their interactions on organizational outcomes (Lau and Ngo, 2004, 2001). Hence, further research it is suggested.

6.3 Interactive effects

The interactive effects of HPWS practices on SME's inbound open innovation.

By analysing the interactive effects of HPWS on inbound open innovation, this study responds to existing literature research gaps, as raised by Seeck and Diehl (2017) and Remneland Wikhamn *et al.* (2023). Contrary to the author's expectations, the results of hypothesis **H6a** (β = -0.018, t = 0.347, $p > 0.05$, f^2 = 0.005), the two-way interaction between ability-enhancing and motivation-enhancing practices towards inbound open innovation, are not significant. The reason why two-way interactions between ability-enhancing and motivation-enhancing practices and SMEs' inbound

open innovation is not significant, it is speculative. However, an answer could be derived from the arguments brought up by Bos-Nehles *et al.* (2023), which suggest that ability-enhancing practices very rarely are used as a moderator in the relationship between AMO-enhancing practices and organizational performance. Conversely, motivation-enhancing practices can act as mediator or moderator, and are inextricably linked to the climate or culture of the organization, its norms, values, and objectives. Having said that, it might be argued that for optimal application of motivation-enhancing practices, a suitable culture must be present, and employees should show an affective commitment towards firms' value and goals. Having an innovative climate and a proper organizational culture is crucial for SMEs' open innovation (Popa *et al.*, 2017). On the other side, positive significant results have been found; for instance, in the relation to the two-way interaction of ability-enhancing and opportunity-enhancing practices with inbound open innovation -***H6b*** (β = 0.122, t = 2.018, $p < 0.05$, f^2 = 0.017), Staffing, training, work design, and participation policies should all be implemented simultaneously; thus, organizations must ensure that not only hiring practices and training programs regarding external innovation acquisition are implemented, but also that policies to encourage employees to participate in open innovation activities at work are in place. Regarding the three-way interaction effects and INOI, the hypothesis ***H7*** is not supported (β = -0.095, t = 2.018, $p < 0.05$, f^2 = 0.029). The results show that three-way interactive effects of AMO HPWS on INOI is a significant negative relation, hence do not aligns with this thesis proposed hypothesis. Consequently, the findings are not in line with Blumberg and Pringle (1982), that argues that organizational performance is based on a multiplicative model where all HRM bundles should be present: P = f(A x M x O). This conclusion may be explained by the fact that, according to Han *et al.* (2020) when HPWS procedures are misaligned, negative synergies may develop. For example, firms might motivate employees to collaborate but reward them based on individual achievement. This lowers overall level outcomes (individual-unit-firm) and increases conflict (Banks and Kepes, 2015), leading to negative impact of different HPWS practices in organizational outcomes (Han *et al.*, 2020). According to Buller and McEvoy (2012), it is essential to not only ensure that HRM practices are in line with each other and the business strategy, but also that their execution by managers and workers is effective. Inadequate implementation of HRM strategies that involve more than two-way interactive HRM

practices can cause confusion and have a negative impact on organizational outcomes (Bello-Pintado, 2015).

Overall, research examining the relationship between AMO and organizational performance has yielded varied outcomes. Additive and combinative models have been shown to produce positive and significant results in the majority of cases, but multiplicative models have only been proved to be significant in a few. According to Bos-Nehles *et al.* (2023), the design and measurement of AMO enhancing bundles pose significant challenges for researchers in consolidating their conclusions. Therefore, researchers may obtain varying outcomes when doing their analysis. Additionally, argues that HPWS have different effect based on the context (Boon *et al.*, 2018). For instance, some organizations might be oriented toward innovation, whereas others are focused on cost reduction. Also, some companies need to align their HR strategy with legislation in order to avoid losses because of a bad image. Hence, the results of HPWS might be different based on the context in which the companies are operating. Consequently, it is important to note that this thesis impact and limitations on the research area are dependent on the measurement of the constructs employed to analyze the phenomenon and the context that firms are operating.

7. THEORITICAL AND PRACTICAL CONTRIBUTIONS

7.1 Theoretical contributions

This thesis addresses various research gaps regarding the impact of AMO HPWS practices on SMEs' inbound open innovation and makes numerous significant theoretical contributions to this ongoing debate. First, drawing on the AMO theory and inter-linkages with the social context theory, this thesis explores the role of HPWS on SMEs' inbound open innovation through the mediation influence of innovative work behaviour. Existing research has been focused on the direct effects of HPWS and innovative work behaviour (Fu *et al.*, 2015; Sanz-Valle and Jiménez-Jiménez, 2018) on open innovation (Engelsberger *et al.*, 2022; Zheng *et al.*, 2020). Despite this, research examining the indirect effects of AMO HPWS practices on inbound open innovation through the mediating effect of innovative work behaviour remains scant. In particular, the results show that opportunity-enhancing practices are important in predicting innovative work behaviour, while the effects of ability-

enhancing and motivation-enhancing in innovative work behaviour are not confirmed. Additionally, the results show partial support for the direct effect of HWPS on inbound open innovation. For instance, ability-enhancing practices have a significant effect on inbound open innovation. However, hypotheses H2b and H2c are not supported. The results also indicate partial support for IWB on the connection between HPWS AMO and inbound open innovation. The results show that IWB plays a mediating role between opportunity-enhancing practices and inbound open innovation.

Second, this study contributes to the HPWS literature by highlighting the AMO theory in exploring the interactions of HPWS practices and their roles in INOI. The research gaps that have been raised by Seeck and Diehl (2017) and Remneland Wikhamn *et al.* (2023) about the interaction between HRM practices and their influence on open innovation have been addressed by this thesis. The study confirms that the simultaneous application of ability-enhancing and opportunity-enhancing practices is an important element for the success of the relation HPWS – inbound open innovation. On the other side, the results do not confirm the multiplicative model (three-way interaction) between three AMO HPWS bundles and INOI, contradicting performance model proposed by Blumberg and Pringle (1982). In addition, the results show that there is no significant effect between ability-enhancing and motivation-enhancing (two-way of interaction) and INOI in high-tech manufacturing and knowledge intensive service SMEs in the Czech Republic.

Third, drawing on SET, this study answered existing research gaps addressing the contextual effect of innovative culture and its moderating effect on HPWS (e.g., Chaudhary *et al.*, 2022). The results show that IC moderates the connection between motivation-enhancing practices and inbound open innovation. However, there was no significant moderating effect of IC on the relationship between ability-enhancing and inbound open innovation, and opportunity-enhancing and inbound open innovation. Despite the presence of predicted and unexpected outcomes, this research contributes to the body of knowledge on HPWS-open innovation, and highlights the effects of IC's moderating influence when investigating the relationship between HPWS and SMEs' inbound open innovation. Finally, by examining the SME industry in the Czech Republic, this study offers an alternative perspective. The purpose of this thesis was to examine the impact of HPWS practices

in connection with open innovation within the specific context of SMEs, which stands in stark contrast to that of very large companies. The results are very important to better understand the implementation of AMO HPWS practices in the SME context, and their effects in boosting inbound open innovation.

7.2 Practical contribution

This thesis extends the role of HPWS practices in SMEs, which has a number of practical suggestions for owners and decision-makers in the high-performing SME industry within the Czech Republic. The findings of this thesis can be employed to reinforce firms' implementation of HPWS in their human resource management practices, with the aim of enhancing inbound open innovation. According to Van De Vrande *et al.* (2009) and Albats *et al.* (2023), SMEs suffer from the "liability of smallness"; hence, focusing on HRM practices to support the implementation of an open innovation strategy to innovate it is of a paramount importance (Cera *et al.*, 2023).

Fostering inbound open innovation is a practical strategy to help SMEs achieve their organizational goals in this knowledge-driven era. Previous research shows that HPWS is important to human resource practices that boost open innovation (Engelsberger *et al.*, 2022; Zheng *et al.*, 2020). Additionally, innovative work behaviour (Fu *et al.*, 2015) and organizational culture (e.g innovative culture) (Cera *et al.*, 2023) are recognized to have an impact on a firm's ability to innovate. Hence, focusing on HPWS practices, IWB and IC to foster inbound open innovation, comes as the most effective approach for Czech SMEs.

SMEs ought to focus on the recruitment of suitable individuals and provide them with training programs to enhance their understanding of open innovation and the implementation of inter-organizational initiatives. Furthermore, it is crucial to provide them with chances to use their acquired knowledge and abilities. These advancements enhance an individual's knowledge, competence, and awareness in open innovation, hence fostering the organization's innovation objectives. Finally, the analysis of interaction suggests that it is advisable to use both ability-enhancing and opportunity-enhancing strategies simultaneously, creating a two-way interaction. This advice is crucial for significantly increasing the success of inbound

open innovation management. Recruiting talents and training programs play a major role in enabling employees to gain a comprehensive understanding of how to effectively boost inbound open innovation in SMEs. Performance can potentially be increased by providing employees with opportunities to apply their newly acquired information, abilities, and awareness in their daily activities.

On the other hand, small business managers should be careful when putting in place practices that boost motivation, since focusing only on external motivation can hurt inbound open innovation. People may be driven by reward and compensation systems up to a point, but over time, they may lead to burnout and lack of commitment, which lowers their performance and desire to be better. Intrinsic motivation practices (non-material) such autonomy, flexibility, recognition should be considered in order to get the best use of motivation-enhancing practices. Moreover, the findings of this thesis indicate that the deployment of all AMO HPWS bundles, which involve a three-way interaction, has an adverse impact on bound open innovation. That being said, just because there are more HRM practices doesn't necessarily mean they are better. Managers should be careful to select HRM practices that are consistent with one another and with their business strategy, as well as to be careful when implementing these practices. Misalignment might harm adoption and benefits of inbound open innovation.

8. CONCLUSIONS, LIMITATIONS AND FUTURE DIRECTION

8.1 Conclusions

Based on an extensive literature review and consulting with AMO theory, SET and SCT, a conceptual framework analysing the effects of HPWS practices on inbound open innovation was developed. In addition, hypotheses were developed to test the direct, indirect and interactive effects of HPWS practices on inbound open innovation. For instance, this thesis analyses both the direct effects of HPWS on INOI, and the indirect effects of HPWS on INOI, under the mediation influence of IWB and the moderation of IC. Furthermore, the thesis analysed the interactive effects (two-way and three-way effects) of AMO HPWS practices on INOI.

In order to test the formulated hypotheses for this thesis, a survey approach has been used as the research design. The instrument – a questionnaire – was designed using

information from existing literature. The variables were carefully adjusted, and then the questionnaire was filled out by owners or managers of Czech SMEs. The SMEs selected operate in the high-tech manufacturing and knowledge-intensive service sector, according to the NACE categorization. Overall, a total of 252 responses were collected and computed for final analysis.

To analyse the results this thesis used SMART-PLS 4.0 with PROCESS and SPSS. The thesis assessed item and scale reliabilities, internal consistency reliability and convergent validity, discriminant validity and then tested the developed hypothesis.

The results point out that innovative work behaviour is enhanced positively by opportunity-enhancing. Nevertheless, there are no significant ability-enhancing or motivation-enhancing effects on IWB. In addition, ability-enhancing practices have a significant and positive effect on INOI. However, the effects of motivation-enhancing and opportunity-enhancing were not found to be significant towards INOI. Regarding the mediation effect, while the IWB mediates the relationship between OE and INOI; the mediation effects of the IWB between AE – INOI and ME-INOI were not found to be significant. Furthermore, innovative culture moderates the connection between motivation-enhancing and INOI. The remaining moderating influences were not found to be significant. With regard to interactive influences, the combination between ability-enhancing and opportunity-enhancing can be able to significantly and positively influence inbound open innovation. Furthermore, the three-way interaction between AE-ME-OE and INOI was found not to be significant.

8.2 Limitations and future directions

This thesis has met with few limitations and brings recommendations for prospective research quests by future field authors. Foremost, HPWS practices pursuant to AMO theory were utilized for conducting analyses of inbound open innovation. Nevertheless, in alignment with suggestions provided by Hong et al. (2019) and Engelsberger et al. (2023), HRM approaches and practices that are based on collaboration-intensive models should be taken into account by further studies examining open innovation. Accordingly, additional research has the potential to extend this scientific quest path by navigating the implications of commitment-based HRM practices and open innovation. On another note, this thesis has analysed the

only the impact of HPWS on inbound open innovation. Despite, additional research is recommended to further scrutinize the effect of SMEs sector HPWS practices on inbound and outbound open innovation. Thirdly, this research is based on a quantitative research framework. This confines the scope of the study to emphasizing the underlying rationales and operational methodologies governing firms' practices within HRM and OI realms. Consequently, scholars might contemplate undertaking a qualitative inquiry within this domain to dig further into these constructs. Moreover, leadership assumes a pivotal role in "orchestrating" open innovation approaches, with numerous studies examining its impact on such initiatives (e.g., Naqshbandi and Jasimuddin, 2018; Naqshbandi and Tabche, 2018). However, further investigation into relational leadership remains warranted (Engelsberger et al., 2023), prompting future research to scrutinize this phenomenon more comprehensively. Furthermore, the sample size for this thesis is 252 records. Future studies might increase the sample size, which may affect the generalizability of the results. Lastly, these findings underscore the critical importance of implementing AMO HPWS and its efficacy in augmenting performance within the manufacturing and knowledge-intensive SME sector. While the research methodology was carefully crafted to ensure the generalizability of findings within this specific sector, it is imperative to acknowledge that the results may not be universally applicable to other small and medium-sized enterprises manifesting moderate or low levels of innovation.

REFERENCES

Ahmed, P.K. (1998), "Culture and climate for innovation", *European Journal of Innovation Management*, MCB UP Ltd, Vol. 1 No. 1, pp. 30–43.

Ahn, J.M., Minshall, T. and Mortara, L. (2017), "Understanding the human side of openness: the fit between open innovation modes and CEO characteristics", *R&D Management*, Vol. 47 No. 5, pp. 727–740, doi: 10.1111/radm.12264.

Al-Ajlouni, M.I. (2020), "Can high-performance work systems (HPWS) promote organisational innovation? Employee perspective-taking, engagement and creativity in a moderated mediation model", *Employee Relations: The International Journal*, Emerald Publishing Limited, Vol. 43 No. 2, pp. 373–397, doi: 10.1108/ER-09-2019-0369.

Albats, E., Bogers, M. and Podmetina, D. (2020), "Companies' human capital for university partnerships: A micro-foundational perspective", *Technological Forecasting and Social Change*, Vol. 157, p. 120085, doi: 10.1016/j.techfore.2020.120085.

Albats, E., Podmetina, D. and Vanhaverbeke, W. (2023), "Open innovation in SMEs: A process view towards business model innovation", *Journal of Small Business Management*, Vol. 61 No. 6, pp. 2519–2560, doi: 10.1080/00472778.2021.1913595.

Alerasoul, S.A., Afeltra, G., Hakala, H., Minelli, E. and Strozzi, F. (2022), "Organisational learning, learning organisation, and learning orientation: An integrative review and framework", *Human Resource Management Review*, Vol. 32 No. 3, p. 100854, doi: 10.1016/j.hrmr.2021.100854.

Ali, M. and Park, K. (2016), "The mediating role of an innovative culture in the relationship between absorptive capacity and technical and non-technical innovation", *Journal of Business Research*, Vol. 69 No. 5, pp. 1669–1675, doi: 10.1016/j.jbusres.2015.10.036.

Alikaj, A., Ning, W. and Wu, B. (2021), "Proactive personality and creative behavior: examining the role of thriving at work and high-involvement HR practices", *Journal of Business and Psychology*, Springer, Vol. 36, pp. 857–869.

Alkhalaf, T. and Al-Tabbaa, O. (2024), "The effect of ability, motivation and opportunity (AMO) on SMEs' innovation performance", *Creativity and Innovation Management*, Vol. 33 No. 1, pp. 21–38, doi: 10.1111/caim.12578.

Aman, Q., Noreen, T., Khan, I., Ali, R. and Yasin, A. (2018), "The impact of human resource management practices on innovative ability of employees moderated by organizational culture", *International Journal of Organizational Leadership*, Vol. 7, pp. 426–439.

Antons, D. and Piller, F.T. (2015), "Opening the black box of 'not invented here': Attitudes, decision biases, and behavioral consequences", *Academy of Management Perspectives*, Academy of Management Briarcliff Manor, NY, Vol. 29 No. 2, pp. 193–217.

Appelbaum, E. (2000), *Manufacturing Advantage: Why High-Performance Work Systems Pay Off*, Cornell University Press.

Banks, G.C. and Kepes, S. (2015), "The influence of internal HRM activity fit on the dynamics within the 'black box'", *Human Resource Management Review*, Vol. 25 No. 4, pp. 352–367, doi: 10.1016/j.hrmr.2015.02.002.

Barjak, F. and Heimsch, F. (2023), "Understanding the relationship between organizational culture and inbound open innovation", *European Journal of Innovation Management*, Emerald Publishing Limited, Vol. 26 No. 3, pp. 773–797.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Sage Publications Sage CA: Thousand Oaks, CA, Vol. 17 No. 1, pp. 99–120.

Barney, J.B. (1986), "Organizational Culture: Can It Be a Source of Sustained Competitive Advantage?", *The Academy of Management Review*, Vol. 11 No. 3, p. 656, doi: 10.2307/258317.

Barney, J.B. and Clark, D.N. (2007), *Resource-Based Theory: Creating and Sustaining Competitive Advantage*, Oup Oxford.

Becker, B. and Gerhart, B. (1996), "THE IMPACT OF HUMAN RESOURCE MANAGEMENT ON ORGANIZATIONAL PERFORMANCE: PROGRESS AND PROSPECTS.", *Academy of Management Journal*, Vol. 39 No. 4, pp. 779–801, doi: 10.2307/256712.

Bello-Pintado, A. (2015), "Bundles of HRM practices and performance: empirical evidence from a Latin American context", *Human Resource Management Journal*, Vol. 25 No. 3, pp. 311–330, doi: 10.1111/1748-8583.12067.

Bello-Pintado, A. and Bianchi, C. (2020), "Consequences of open innovation: effects on skill-driven recruitment", *Journal of Knowledge Management*, Emerald Publishing Limited, Vol. 24 No. 2, pp. 258–278, doi: 10.1108/JKM-08-2019-0437.

Bello-Pintado, A. and Garcés-Galdeano, L. (2019), "Bundles of HRM practices in family and non-family firms: the impact on enhancing performance", *The International Journal of Human Resource Management*, Vol. 30 No. 21, pp. 2971–2992, doi: 10.1080/09585192.2017.1391311.

Bertello, A., De Bernardi, P. and Ricciardi, F. (2023), "Open innovation: status quo and quo vadis - an analysis of a research field", *Review of Managerial Science*, doi: 10.1007/s11846-023-00655-8.

Bhatti, S.H., Zakariya, R., Vrontis, D., Santoro, G. and Christofi, M. (2020), "High-performance work systems, innovation and knowledge sharing: An empirical analysis in the context of project-based organizations", *Employee Relations: The International Journal*, Emerald Publishing Limited, Vol. 43 No. 2, pp. 438–458, doi: 10.1108/ER-10-2019-0403.

Blau, P.M. (1964), “Justice in social exchange”, *Sociological Inquiry*, Wiley Online Library, Vol. 34 No. 2, pp. 193–206.

Blumberg, M. and Pringle, C.D. (1982), “The Missing Opportunity in Organizational Research: Some Implications for a Theory of Work Performance”, *The Academy of Management Review*, Vol. 7 No. 4, p. 560, doi: 10.2307/257222.

Bogers, M., Chesbrough, H. and Moedas, C. (2018), “Open innovation: Research, practices, and policies”, *California Management Review*, SAGE Publications Sage CA: Los Angeles, CA, Vol. 60 No. 2, pp. 5–16.

Bogers, M., Foss, N.J. and Lyngsie, J. (2018), “The ‘human side’ of open innovation: The role of employee diversity in firm-level openness”, *Research Policy*, Elsevier, Vol. 47 No. 1, pp. 218–231.

Boon, C., Eckardt, R., Lepak, D.P. and Boselie, P. (2018), “Integrating strategic human capital and strategic human resource management”, *The International Journal of Human Resource Management*, Routledge, Vol. 29 No. 1, pp. 34–67, doi: 10.1080/09585192.2017.1380063.

Boschmans, K. and Potter, J. (2021), “INNOVATION DIFFUSION IN THE CZECH REPUBLIC A REGIONAL APPROACH”, OECD: Organisation for Economic Co-operation and Development.

Bos-Nehles, A., Renkema, M. and Janssen, M. (2017), “HRM and innovative work behaviour: A systematic literature review”, *Personnel Review*, Emerald Publishing Limited, Vol. 46 No. 7, pp. 1228–1253.

Bos-Nehles, A., Townsend, K., Cafferkey, K. and Trullen, J. (2023), “Examining the Ability, Motivation and Opportunity (AMO) framework in HRM research: Conceptualization, measurement and interactions”, *International Journal of Management Reviews*, Vol. 25 No. 4, pp. 725–739, doi: 10.1111/ijmr.12332.

Bos-Nehles, A.C., Van Riemsdijk, M.J. and Kees Looise, J. (2013), “Employee Perceptions of Line Management Performance: Applying the AMO Theory to Explain the Effectiveness of Line Managers’ HRM Implementation”, *Human Resource Management*, Vol. 52 No. 6, pp. 861–877, doi: 10.1002/hrm.21578.

Bos-Nehles, A.C., Van Riemsdijk, M.J. and Kees Looise, J. (2013), “Employee Perceptions of Line Management Performance: Applying the AMO Theory to Explain the Effectiveness of Line Managers’ HRM Implementation”, *Human Resource Management*, Vol. 52 No. 6, pp. 861–877, doi: 10.1002/hrm.21578.

Bos-Nehles, Anna.C. and Veenendaal, A.A.R. (2019), “Perceptions of HR practices and innovative work behavior: the moderating effect of an innovative

climate", *The International Journal of Human Resource Management*, Vol. 30 No. 18, pp. 2661–2683, doi: 10.1080/09585192.2017.1380680.

Botelho, C. (2020), "The influence of organizational culture and HRM on building innovative capability", *International Journal of Productivity and Performance Management*, Emerald Publishing Limited, Vol. 69 No. 7, pp. 1373–1393.

Bowen, D.E. and Ostroff, C. (2004), "Understanding HRM-Firm Performance Linkages: The Role of the 'Strength' of the HRM System", *The Academy of Management Review*, Academy of Management, Vol. 29 No. 2, pp. 203–221, doi: 10.2307/20159029.

Boxall, P. (2003), "HR strategy and competitive advantage in the service sector", *Human Resource Management Journal*, Vol. 13 No. 3, pp. 5–20, doi: 10.1111/j.1748-8583.2003.tb00095.x.

Boxall, P. and Purcell, J. (2003), *Strategy and Human Resource Management*, Oxford, UK: Blackwell.

Brunswicker, S. and Vanhaverbeke, W. (2015), "Open Innovation in Small and Medium-Sized Enterprises (SMEs): External Knowledge Sourcing Strategies and Internal Organizational Facilitators", *Journal of Small Business Management*, Routledge, Vol. 53 No. 4, pp. 1241–1263, doi: 10.1111/jsbm.12120.

Buller, P.F. and McEvoy, G.M. (2012), "Strategy, human resource management and performance: Sharpening line of sight", *Human Resource Management Review*, Vol. 22 No. 1, pp. 43–56, doi: 10.1016/j.hrmr.2011.11.002.

Burcharth, A., Knudsen, M.P. and Søndergaard, H.A. (2017), "The role of employee autonomy for open innovation performance", *Business Process Management Journal*, Emerald Publishing Limited, Vol. 23 No. 6, pp. 1245–1269.

Burcharth, A.L. de A., Knudsen, M.P. and Søndergaard, H.A. (2014), "Neither invented nor shared here: The impact and management of attitudes for the adoption of open innovation practices", *Technovation*, Vol. 34 No. 3, pp. 149–161, doi: 10.1016/j.technovation.2013.11.007.

Bysted, R. and Jespersen, K.R. (2014), "Exploring managerial mechanisms that influence innovative work behaviour: Comparing private and public employees", *Public Management Review*, Taylor & Francis, Vol. 16 No. 2, pp. 217–241.

Cabrales, A., Real, J. and Valle, R. (2011), "Relationships between human resource management practices and organizational learning capability: The mediating

role of human capital", *Personnel Review*, Vol. 40, pp. 344–363, doi: 10.1108/00483481111118658.

Calantone, R.J. and Stanko, M.A. (2007), "Drivers of outsourced innovation: an exploratory study", *Journal of Product Innovation Management*, Wiley Online Library, Vol. 24 No. 3, pp. 230–241.

Camilleri, M.A., Troise, C., Strazzullo, S. and Bresciani, S. (2023), "Creating shared value through open innovation approaches: Opportunities and challenges for corporate sustainability", *Business Strategy and the Environment*, Vol. 32 No. 7, pp. 4485–4502, doi: 10.1002/bse.3377.

Carrasco-Carvajal, O., Castillo-Vergara, M. and García-Pérez-de-Lema, D. (2023), "Measuring open innovation in SMEs: an overview of current research", *Review of Managerial Science*, Vol. 17 No. 2, pp. 397–442, doi: 10.1007/s11846-022-00533-9.

Cera, E., Cera, G. and Elezi, E. (2023), "Commitment-based HRM and inbound open innovation in SMEs: the role of organizational trust and developmental culture", *Journal of Organizational Effectiveness: People and Performance*, doi: 10.1108/JOEPP-05-2023-0203.

Çera, E., Kusaku, A., Matošková, J. and Gregar, A. (2023), "Determining Approaches to Human Resource Management in Start-ups that Foster Innovation and Boost Organizational Performance.", *Quality-Access to Success*, Vol. 24 No. 193.

Çetin Gürkan, G. and Aydın Tükeltürk, Ş. (2017), "Strategies for Innovative Organization Structure: Innovative Culture and Open Innovation", in Hacioğlu, Ü., Dinçer, H. and Alayoğlu, N. (Eds.), *Global Business Strategies in Crisis: Strategic Thinking and Development*, Springer International Publishing, Cham, pp. 185–199, doi: 10.1007/978-3-319-44591-5_13.

Chan, L.L.M., Shaffer, M.A. and Snape, E. (2004), "In search of sustained competitive advantage: the impact of organizational culture, competitive strategy and human resource management practices on firm performance", *The International Journal of Human Resource Management*, Vol. 15 No. 1, pp. 17–35, doi: 10.1080/0958519032000157320.

Chandler, G.N., Keller, C. and Lyon, D.W. (2000), "Unraveling the Determinants and Consequences of an Innovation-Supportive Organizational Culture", *Entrepreneurship Theory and Practice*, Vol. 25 No. 1, pp. 59–76, doi: 10.1177/104225870002500106.

Chaudhary, S., Kaur, P., Talwar, S., Islam, N. and Dhir, A. (2022), "Way off the mark? Open innovation failures: Decoding what really matters to chart the future course of action", *Journal of Business Research*, Elsevier, Vol. 142, pp. 1010–1025.

Chen, C.-J. and Huang, J.-W. (2009), "Strategic human resource practices and innovation performance — The mediating role of knowledge management capacity", *Journal of Business Research*, Vol. 62 No. 1, pp. 104–114, doi: 10.1016/j.jbusres.2007.11.016.

Chesbrough, H. (2006), "Open innovation: a new paradigm for understanding industrial innovation", *Open Innovation: Researching a New Paradigm*, Oxford University Press Oxford, Vol. 400, pp. 0–19.

Chesbrough, H. and Crowther, A.K. (2006), "Beyond high tech: early adopters of open innovation in other industries", *R&d Management*, Wiley Online Library, Vol. 36 No. 3, pp. 229–236.

Chesbrough, H., Vanhaverbeke, W. and West, J. (2006), *Open Innovation: Researching a New Paradigm*, OUP Oxford.

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

Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Routledge, New York, doi: 10.4324/9780203771587.

Collins, C.J. and Smith, K.G. (2006), "Knowledge Exchange and Combination: The Role of Human Resource Practices in the Performance of High-Technology Firms", *Academy of Management Journal*, Vol. 49 No. 3, pp. 544–560, doi: 10.5465/amj.2006.21794671.

Combs, J., Liu, Y., Hall, A. and Ketchen, D. (2006), "How Much Do High-Performance Work Practices Matter? A Meta-Analysis of Their Effects on Organizational Performance", *Personnel Psychology*, Vol. 59 No. 3, pp. 501–528, doi: 10.1111/j.1744-6570.2006.00045.x.

Cooke, F.L. (2001), "Human resource strategy to improve organizational performance: a route for firms in Britain?", *International Journal of Management Reviews*, Vol. 3 No. 4, pp. 321–339, doi: 10.1111/1468-2370.00071.

Creswell, J.W. and Creswell, J.D. (2017), *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Sage publications.

Cricelli, L., Mauriello, R. and Strazzullo, S. (2023), "Preventing open innovation failures: A managerial framework", *Technovation*, Elsevier, Vol. 127, p. 102833.

Cropanzano, R. and Mitchell, M.S. (2005), "Social exchange theory: An interdisciplinary review", *Journal of Management*, Sage Publications Sage CA: Thousand Oaks, CA, Vol. 31 No. 6, pp. 874–900.

Curzi, Y., Fabbri, T. and Pistoresi, B. (2020), "Performance Appraisal Criteria and Innovative Work Behaviour: The Mediating Role of Employees' Appraisal Satisfaction", in Addabbo, T., Ales, E., Curzi, Y., Fabbri, T., Rymkevich, O. and Senatori, I. (Eds.), *Performance Appraisal in Modern Employment Relations: An Interdisciplinary Approach*, Springer International Publishing, Cham, pp. 11–34, doi: 10.1007/978-3-030-26538-0_2.

Dahlander, L. and Gann, D.M. (2010), "How open is innovation?", *Research Policy*, Elsevier, Vol. 39 No. 6, pp. 699–709.

Dahlander, L., O'Mahony, S. and Gann, D.M. (2016), "One foot in, one foot out: how does individuals' external search breadth affect innovation outcomes?", *Strategic Management Journal*, Vol. 37 No. 2, pp. 280–302, doi: 10.1002/smj.2342.

Datta, D.K., Guthrie, J.P. and Wright, P.M. (2005), "Human Resource Management and Labor Productivity: Does Industry Matter?", *Academy of Management Journal*, Academy of Management Briarcliff Manor, NY 10510, doi: 10.5465/amj.2005.15993158.

Datta, S., Budhwar, P., Agarwal, U.A. and Bhargava, S. (2023), "Impact of HRM practices on innovative behaviour: mediating role of talent development climate in Indian firms", *The International Journal of Human Resource Management*, Vol. 34 No. 6, pp. 1071–1096, doi: 10.1080/09585192.2021.1973063.

De Jong, J. and Den Hartog, D. (2010), "Measuring Innovative Work Behaviour", *Creativity and Innovation Management*, Vol. 19 No. 1, pp. 23–36, doi: 10.1111/j.1467-8691.2010.00547.x.

De Spiegelaere, S., Van Gyes, G. and Van Hootegem, G. (2014), "Labour flexibility and innovation, complementary or concurrent strategies? A review of the literature", *Economic and Industrial Democracy*, Sage Publications Sage UK: London, England, Vol. 35 No. 4, pp. 653–666.

Do, H. and Shipton, H. (2019), "High-performance work systems and innovation in Vietnamese small firms", *International Small Business Journal*, SAGE Publications Sage UK: London, England, Vol. 37 No. 7, pp. 732–753.

Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21 No. 10–11, pp. 1105–1121, doi: 10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E.

El Maalouf, N. and Bahemia, H. (2023), "The implementation of inbound open innovation at the firm level: A dynamic capability perspective", *Technovation*, Vol. 122, p. 102659, doi: 10.1016/j.technovation.2022.102659.

Engelsberger, A., Bartram, T., Cavanagh, J., Halvorsen, B. and Bogers, M. (2023), "The role of collaborative human resource management in supporting open innovation: A multi-level model", *Human Resource Management Review*, Vol. 33 No. 2, p. 100942, doi: 10.1016/j.hrmr.2022.100942.

Engelsberger, A., Halvorsen, B., Cavanagh, J. and Bartram, T. (2022), "Human resources management and open innovation: the role of open innovation mindset", *Asia Pacific Journal of Human Resources*, Wiley Online Library, Vol. 60 No. 1, pp. 194–215.

Enkel, E., Gassmann, O. and Chesbrough, H. (2009), "Open R&D and open innovation: exploring the phenomenon", *R&D Management*, Vol. 39 No. 4, pp. 311–316, doi: 10.1111/j.1467-9310.2009.00570.x.

Escribá-Carda, N., Balbastre-Benavent, F. and Teresa Canet-Giner, M. (2017), "Employees' perceptions of high-performance work systems and innovative behaviour: The role of exploratory learning", *European Management Journal*, Vol. 35 No. 2, pp. 273–281, doi: 10.1016/j.emj.2016.11.002.

Farazmand, A. (2004), "Innovation in strategic human resource management: Building capacity in the age of globalization", *Public Organization Review*, Springer, Vol. 4, pp. 3–24.

Farjam, F., Shojaei, P. and Askarifar, K. (2023), "A conceptual model for open innovation risk management based on the capabilities of SMEs: A multi-level fuzzy MADM approach", *Technovation*, Vol. 127, p. 102844, doi: 10.1016/j.technovation.2023.102844.

Farr, J.L. and Ford, C.M. (1990), "Individual innovation", *Innovation and Creativity at Work: Psychological and Organizational Strategies*, John Wiley & Sons, Oxford, England, pp. 63–80.

Farrukh, M., Meng, F., Raza, A. and Wu, Y. (2022), "Innovative work behaviour: the what, where, who, how and when", *Personnel Review*, Emerald

Publishing Limited, Vol. 52 No. 1, pp. 74–98, doi: 10.1108/PR-11-2020-0854.

Ferrarini, F. and Curzi, Y. (2022), "AMO-enhancing practices, open innovation and organizations' innovation in the European context: testing a mediation model", *European Journal of Innovation Management*, Vol. ahead-of-print No. ahead-of-print, doi: 10.1108/EJIM-01-2022-0005.

Ferris, G.R., Arthur, M.M., Berkson, H.M., Kaplan, D.M., Harrell-Cook, G. and Frink, D.D. (1998), "Toward a social context theory of the human resource management-organization effectiveness relationship", *Human Resource Management Review*, Elsevier, Vol. 8 No. 3, pp. 235–264.

Ferris, G.R., Hochwarter, W.A., Buckley, M.R., Harrell-Cook, G. and Frink, D.D. (1999), "Human resources management: Some new directions", *Journal of Management*, Sage Publications Sage CA: Thousand Oaks, CA, Vol. 25 No. 3, pp. 385–415.

Fitzgerald, T.H. (1988), "Can change in organizational culture really be managed?", *Organizational Dynamics*, Elsevier, Vol. 17 No. 2, pp. 5–15.

Fu, N., Flood, P.C., Bosak, J., Morris, T. and O'Regan, P. (2015), "How do high performance work systems influence organizational innovation in professional service firms?", *Employee Relations*, Emerald Group Publishing Limited, Vol. 37 No. 2, pp. 209–231, doi: 10.1108/ER-10-2013-0155.

García-Morales, V.J., Matías-Reche, F. and Hurtado-Torres, N. (2008), "Influence of transformational leadership on organizational innovation and performance depending on the level of organizational learning in the pharmaceutical sector", *Journal of Organizational Change Management*, Emerald Group Publishing Limited, Vol. 21 No. 2, pp. 188–212.

Gassmann, O. (2006), "Opening up the innovation process: towards an agenda", *R&d Management*, Vol. 36 No. 3, pp. 223–228.

Gassmann, O., Enkel, E. and Chesbrough, H. (2010), "The future of open innovation", *R&d Management*, Wiley Online Library, Vol. 40 No. 3, pp. 213–221.

Gentile-Lüdecke, S., Torres De Oliveira, R. and Paul, J. (2020), "Does organizational structure facilitate inbound and outbound open innovation in SMEs?", *Small Business Economics*, Vol. 55 No. 4, pp. 1091–1112, doi: 10.1007/s11187-019-00175-4.

Georgellis, Y., Iossa, E. and Tabvuma, V. (2011), "Crowding Out Intrinsic Motivation in the Public Sector", *Journal of Public Administration Research and Theory*, Vol. 21 No. 3, pp. 473–493, doi: 10.1093/jopart/muq073.

Gould-Williams, J. (2003), "The importance of HR practices and workplace trust in achieving superior performance: A study of public-sector organizations", *The International Journal of Human Resource Management*, Vol. 14 No. 1, pp. 28–54, doi: 10.1080/09585190210158501.

Greer, C.R. and Stevens, C.D. (2015), "HR in collaborative innovation with customers: role, alignment and challenges", *The International Journal of Human Resource Management*, Vol. 26 No. 20, pp. 2569–2593, doi: 10.1080/09585192.2014.1003086.

Haar, J., O'Kane, C. and Daellenbach, U. (2022), "High performance work systems and innovation in New Zealand SMEs: testing firm size and competitive environment effects", *The International Journal of Human Resource Management*, Taylor & Francis, Vol. 33 No. 16, pp. 3324–3352.

Hair, J., Hult, G.T.M., Ringle, C. and Sarstedt, M. (2022), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: Indeed a Silver Bullet", *Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139–152, doi: 10.2753/MTP1069-6679190202.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2–24, doi: 10.1108/EBR-11-2018-0203.

Hair, J.F., Sarstedt, M., Ringle, C.M. and Gudergan, S.S. (2017), *Advanced Issues in Partial Least Squares Structural Equation Modeling*, SAGE, Los Angeles.

Han, J., Sun, J.-M. and Wang, H.-L. (2020), "Do high performance work systems generate negative effects? How and when?", *Human Resource Management Review*, Vol. 30 No. 2, p. 100699, doi: 10.1016/j.hrmr.2019.100699.

Hansen, N.K., Güttel, W.H. and Swart, J. (2019), "HRM in dynamic environments: Exploitative, exploratory, and ambidextrous HR architectures", *The International Journal of Human Resource Management*, Taylor & Francis, Vol. 30 No. 4, pp. 648–679.

Harney, B., Gilman, M., Mayson, S. and Raby, S. (2022), "Advancing understanding of HRM in small and medium-sized enterprises (SMEs): critical questions and future prospects", *The International Journal of Human Resource*

Management, Vol. 33 No. 16, pp. 3175–3196, doi: 10.1080/09585192.2022.2109375.

Harris, L.C. (2001), "Market Orientation and Performance: Objective and Subjective Empirical Evidence from UK Companies", *Journal of Management Studies*, Vol. 38 No. 1, pp. 17–43, doi: 10.1111/1467-6486.00226.

Harrison, S.H. and Corley, K.G. (2011), "Clean Climbing, Carabiners, and Cultural Cultivation: Developing an Open-Systems Perspective of Culture", *Organization Science*, Vol. 22 No. 2, pp. 391–412, doi: 10.1287/orsc.1100.0538.

Harrison, T. and Bazzy, J.D. (2017), "Aligning organizational culture and strategic human resource management", *Journal of Management Development*, Emerald Publishing Limited, Vol. 36 No. 10, pp. 1260–1269.

Hayes, A.F. (2022), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, Third edition., The Guilford Press, New York ; London.

Heidary Dahooie, J., Estiri, M., Zavadskas, E.K. and Xu, Z. (2022), "A Novel Hybrid Fuzzy DEA-Fuzzy ARAS Method for Prioritizing High-Performance Innovation-Oriented Human Resource Practices in High Tech SME's", *International Journal of Fuzzy Systems*, Vol. 24 No. 2, pp. 883–908, doi: 10.1007/s40815-021-01162-2.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115–135, doi: 10.1007/s11747-014-0403-8.

Herzog, P. (2011), *Open and Closed Innovation: Different Cultures for Different Strategies*, Springer Science & Business Media.

Herzog, P. and Leker, J. (2010), "Open and closed innovation – different innovation cultures for different strategies", *International Journal of Technology Management*, Vol. 52 No. 3/4, p. 322, doi: 10.1504/IJTM.2010.035979.

Hong, J.F.L., Zhao, X. and Stanley Snell, R. (2019), "Collaborative-based HRM practices and open innovation: a conceptual review", *The International Journal of Human Resource Management*, Routledge, Vol. 30 No. 1, pp. 31–62, doi: 10.1080/09585192.2018.1511616.

Huber, G.P. and Power, D.J. (1985), "Retrospective Reports of Strategic-Level Managers: Guidelines for Increasing Their Accuracy", *Strategic Management Journal*, Wiley, Vol. 6 No. 2, pp. 171–180.

Huizingh, E.K. (2011), "Open innovation: State of the art and future perspectives", *Technovation*, Elsevier, Vol. 31 No. 1, pp. 2–9.

Huselid, M.A. (1995), "The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance", *The Academy of Management Journal*, Academy of Management, Vol. 38 No. 3, pp. 635–672, doi: 10.2307/256741.

Jackson, S.E., Schuler, R.S. and Jiang, K. (2014), "An aspirational framework for strategic human resource management", *Academy of Management Annals*, Routledge, Vol. 8 No. 1, pp. 1–56.

Jankelová, N., Joniaková, Z. and Mišún, J. (2021), "Innovative Work Behavior—A Key Factor in Business Performance? The Role of Team Cognitive Diversity and Teamwork Climate in This Relationship", *Journal of Risk and Financial Management*, Multidisciplinary Digital Publishing Institute, Vol. 14 No. 4, p. 185, doi: 10.3390/jrfm14040185.

Janssen, O. (2000), "Job demands, perceptions of effort-reward fairness and innovative work behaviour", *Journal of Occupational and Organizational Psychology*, Vol. 73 No. 3, pp. 287–302, doi: 10.1348/096317900167038.

Janssen, O. (2005), "The joint impact of perceived influence and supervisor supportiveness on employee innovative behaviour", *Journal of Occupational and Organizational Psychology*, Vol. 78 No. 4, pp. 573–579, doi: 10.1348/096317905X25823.

Jaworski, B.J. and Kohli, A.K. (1993), "Market Orientation: Antecedents and Consequences", *Journal of Marketing*, American Marketing Association, Vol. 57 No. 3, pp. 53–70, doi: 10.2307/1251854.

Jiang, J., Wang, S. and Zhao, S. (2012), "Does HRM facilitate employee creativity and organizational innovation? A study of Chinese firms", *The International Journal of Human Resource Management*, Routledge, Vol. 23 No. 19, pp. 4025–4047, doi: 10.1080/09585192.2012.690567.

Jiang, K., Lepak, D.P., Hu, J. and Baer, J.C. (2012), "How Does Human Resource Management Influence Organizational Outcomes? A Meta-Analytic Investigation of Mediating Mechanisms", *The Academy of Management Journal*, Academy of Management, Vol. 55 No. 6, pp. 1264–1294.

Jiménez-Jiménez, D. and Sanz-Valle, R. (2005), "Innovation and human resource management fit: an empirical study", *International Journal of Manpower*, Emerald Group Publishing Limited, Vol. 26 No. 4, pp. 364–381, doi: 10.1108/01437720510609555.

Karin, S., Matthijs, M., Nicole, T., Sandra, G. and Claudia, G. (2010), "How to support innovative behaviour? The role of LMX and satisfaction with HR practices", *Technology and Investment*, Scientific Research Publishing, Vol. 2010.

Katou, A.A., Budhwar, P.S. and Patel, C. (2014), "Content vs. Process in the HRM-Performance Relationship: An Empirical Examination", *Human Resource Management*, Vol. 53 No. 4, pp. 527–544, doi: 10.1002/hrm.21606.

Kaushik, D. and Mukherjee, U. (2021), "High-performance work system: a systematic review of literature", *International Journal of Organizational Analysis*, Emerald Publishing Limited, Vol. 30 No. 6, pp. 1624–1643, doi: 10.1108/IJOA-07-2020-2282.

Kehoe, R.R. and Wright, P.M. (2013), "The Impact of High-Performance Human Resource Practices on Employees' Attitudes and Behaviors", *Journal of Management*, Vol. 39 No. 2, pp. 366–391, doi: 10.1177/0149206310365901.

Kim, K.Y., Pathak, S. and Werner, S. (2015), "When do international human capital enhancing practices benefit the bottom line? An ability, motivation, and opportunity perspective", *Journal of International Business Studies*, Vol. 46 No. 7, pp. 784–805, doi: 10.1057/jibs.2015.10.

Kirschbaum, R. (2005), "Open Innovation In Practice", *Research-Technology Management*, Vol. 48 No. 4, pp. 24–28, doi: 10.1080/08956308.2005.11657321.

Kleysen, R.F. and Street, C.T. (2001), "Toward a multi-dimensional measure of individual innovative behavior", *Journal of Intellectual Capital*, MCB UP Ltd, Vol. 2 No. 3, pp. 284–296.

Knol, W.H.C. and Stroeken, J.H.M. (2001), "The diffusion and adoption of information technology in small-and medium-sized enterprises through IT scenarios", *Technology Analysis & Strategic Management*, Taylor & Francis, Vol. 13 No. 2, pp. 227–246.

Kock, N. and Hadaya, P. (2018), "Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods", *Information Systems Journal*, Vol. 28 No. 1, pp. 227–261, doi: 10.1111/isj.12131.

Kratzer, J., Meissner, D. and Roud, V. (2017), "Open innovation and company culture: Internal openness makes the difference", *Technological Forecasting and Social Change*, Elsevier, Vol. 119, pp. 128–138.

Lau, C. and Ngo, H. (2004), "The HR system, organizational culture, and product innovation", *International Business Review*, Vol. 13 No. 6, pp. 685–703, doi: 10.1016/j.ibusrev.2004.08.001.

Lau, C.-M. and Ngo, H.-Y. (2001), "Organization Development and Firm Performance: A Comparison of Multinational and Local Firms", *Journal of International Business Studies*, Palgrave Macmillan Journals, Vol. 32 No. 1, pp. 95–114.

Laursen, K. (2002), "The Importance of Sectoral Differences in the Application of Complementary HRM Practices for Innovation Performance", *International Journal of the Economics of Business*, Vol. 9 No. 1, pp. 139–156, doi: 10.1080/13571510110103029.

Laursen, K. and Foss, N.J. (2003), "New human resource management practices, complementarities and the impact on innovation performance", *Cambridge Journal of Economics*, Oxford University Press, Vol. 27 No. 2, pp. 243–263.

Laursen, K. and Salter, A. (2006), "Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms", *Strategic Management Journal*, Wiley Online Library, Vol. 27 No. 2, pp. 131–150.

Lazzarotti, V., Manzini, R. and Pellegrini, L. (2015), "Is your open-innovation successful? The mediating role of a firm's organizational and social context", *The International Journal of Human Resource Management*, Taylor & Francis, Vol. 26 No. 19, pp. 2453–2485.

Lee, S., Park, G., Yoon, B. and Park, J. (2010), "Open innovation in SMEs—An intermediated network model", *Research Policy*, Elsevier, Vol. 39 No. 2, pp. 290–300.

Lei, H., Khamkhoutlavong, M. and Le, P.B. (2021), "Fostering exploitative and exploratory innovation through HRM practices and knowledge management capability: the moderating effect of knowledge-centered culture", *Journal of Knowledge Management*, Emerald Publishing Limited, Vol. 25 No. 8, pp. 1926–1946.

Leong, C.T. and Rasli, A. (2014), "The Relationship between innovative work behavior on work role performance: An empirical study", *Procedia-Social and Behavioral Sciences*, Elsevier, Vol. 129, pp. 592–600.

Lepak, D.P., Liao, H., Chung, Y. and Harden, E.E. (2006), "A conceptual review of human resource management systems in strategic human resource management research", *Research in Personnel and Human Resources Management*, Emerald Group Publishing Limited, pp. 217–271.

Lepak, D.P. and Snell, S.A. (2002), "Examining the Human Resource Architecture: The Relationships Among Human Capital, Employment, and Human Resource Configurations", *Journal of Management*, Vol. 28 No. 4, pp. 517–543, doi: 10.1177/014920630202800403.

Li, Y., Zhao, Y. and Liu, Y. (2006), "The relationship between HRM, technology innovation and performance in China", *International Journal of Manpower*, Emerald Group Publishing Limited, Vol. 27 No. 7, pp. 679–697, doi: 10.1108/01437720610708284.

Lichtenthaler, U. (2008), "Open Innovation in Practice: An Analysis of Strategic Approaches to Technology Transactions", *IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT*, Vol. 55 No. 1.

Lichtenthaler, U. (2009), "Absorptive capacity, environmental turbulence, and the complementarity of organizational learning processes", *Academy of Management Journal*, Academy of Management Briarcliff Manor, NY, Vol. 52 No. 4, pp. 822–846.

Lichtenthaler, U. (2011), "Open innovation: Past research, current debates, and future directions", *Academy of Management Perspectives*, Academy of Management Briarcliff Manor, NY, Vol. 25 No. 1, pp. 75–93.

Lubatkin, M.H., Simsek, Z., Ling, Y. and Veiga, J.F. (2006), "Ambidexterity and Performance in Small-to Medium-Sized Firms: The Pivotal Role of Top Management Team Behavioral Integration", *Journal of Management*, SAGE Publications Inc, Vol. 32 No. 5, pp. 646–672, doi: 10.1177/0149206306290712.

Ma Prieto, I. and Pilar Pérez-Santana, M. (2014), "Managing innovative work behavior: the role of human resource practices", *Personnel Review*, Emerald Group Publishing Limited, Vol. 43 No. 2, pp. 184–208, doi: 10.1108/PR-11-2012-0199.

Macduffie, J.P. (1995), "Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry", *Industrial and Labor Relations Review*, Sage Publications, Inc., Vol. 48 No. 2, pp. 197–221, doi: 10.2307/2524483.

MacKenzie, C., McCarthy, A., Morley, M. and Garavan, T. (2022), "Human Resource Management, Innovative Work Behaviour, Incremental and Radical Innovation: Inspirational Vision or Aspirational Rhetoric", *The Emerald Handbook of Work, Workplaces and Disruptive Issues in HRM*, Emerald Publishing Limited, pp. 111–127.

Macky, K. and Boxall, P. (2007), "The relationship between 'high-performance work practices' and employee attitudes: an investigation of additive and interaction effects", *The International Journal of Human Resource Management*, Routledge, Vol. 18 No. 4, pp. 537–567, doi: 10.1080/09585190601178745.

Majchrzak, A., Bogers, M.L., Chesbrough, H. and Holgersson, M. (2023), "Creating and Capturing Value from Open Innovation: Humans, Firms, Platforms, and Ecosystems", *California Management Review*, SAGE Publications Sage CA: Los Angeles, CA, Vol. 65 No. 2, pp. 5–21.

Malik, A., Froese, F.J. and Sharma, P. (2020), "Role of HRM in knowledge integration: Towards a conceptual framework", *Journal of Business Research*, Elsevier, Vol. 109, pp. 524–535.

Martín-de Castro, G. (2015), "Knowledge management and innovation in knowledge-based and high-tech industrial markets: The role of openness and absorptive capacity", *Industrial Marketing Management*, Vol. 47, pp. 143–146, doi: 10.1016/j.indmarman.2015.02.032.

Martín-de Castro, G., Delgado-Verde, M., Navas-López, J.E. and Cruz-González, J. (2013), "The moderating role of innovation culture in the relationship between knowledge assets and product innovation", *Technological Forecasting and Social Change*, Elsevier, Vol. 80 No. 2, pp. 351–363.

Martinez-Conesa, I., Soto-Acosta, P. and Carayannis, E.G. (2017), "On the path towards open innovation: Assessing the role of knowledge management capability and environmental dynamism in SMEs", *Journal of Knowledge Management*, Emerald Publishing Limited, Vol. 21 No. 3, pp. 553–570.

Martins, E.-C. and Terblanche, F. (2003), "Building organisational culture that stimulates creativity and innovation", *European Journal of Innovation Management*, MCB UP Ltd, Vol. 6 No. 1, pp. 64–74.

Marzi, G., Fakhar Manesh, M., Caputo, A., Pellegrini, M.M. and Vlačić, B. (2023), "Do or do not. Cognitive configurations affecting open innovation adoption in SMEs", *Technovation*, Vol. 119, p. 102585, doi: 10.1016/j.technovation.2022.102585.

Mehralian, G., Moradi, M. and Babapour, J. (2021), "How do high-performance work systems affect innovation performance? The organizational learning perspective", *Personnel Review*, Emerald Publishing Limited, Vol. 51 No. 9, pp. 2081–2102, doi: 10.1108/PR-08-2020-0617.

Messersmith, J.G. and Guthrie, J.P. (2010), "High performance work systems in emergent organizations: Implications for firm performance", *Human Resource Management*, Vol. 49 No. 2, pp. 241–264, doi: 10.1002/hrm.20342.

Nadeem, S. and Rahat, H. (2021), "Examining the synergetic impact of ability-motivation-opportunity-enhancing high performance work practices", *Human Performance*, Vol. 34 No. 3, pp. 168–188, doi: 10.1080/08959285.2021.1920021.

Naqshbandi, M.M. and Jasimuddin, S.M. (2018), "Knowledge-oriented leadership and open innovation: Role of knowledge management capability in France-based multinationals", *International Business Review*, Elsevier, Vol. 27 No. 3, pp. 701–713.

Naqshbandi, M.M., Kaur, S. and Ma, P. (2015), "What organizational culture types enable and retard open innovation?", *Quality & Quantity*, Vol. 49 No. 5, pp. 2123–2144, doi: 10.1007/s11135-014-0097-5.

Naqshbandi, M.M., Meeran, S. and Wilkinson, A. (2023), "On the soft side of open innovation: the role of human resource practices, organizational learning culture and knowledge sharing", *R&D Management*, Wiley Online Library, Vol. 53 No. 2, pp. 279–297.

Naranjo-Valencia, J.C., Jiménez-Jiménez, D. and Sanz-Valle, R. (2016), "Studying the links between organizational culture, innovation, and performance in Spanish companies", *Revista Latinoamericana de Psicología*, Elsevier, Vol. 48 No. 1, pp. 30–41.

Obeidat, S.M. (2021), "DO HIGH-PERFORMANCE WORK PRACTICES INDUCE INNOVATIVE WORK BEHAVIOUR? THE CASE OF THE QATARI BANKING SECTOR", *International Journal of Innovation Management*, Vol. 25 No. 01, p. 2150003, doi: 10.1142/S1363919621500031.

Oduro, S. (2020), "Exploring the barriers to SMEs' open innovation adoption in Ghana: A mixed research approach", *International Journal of Innovation Science*, Emerald Publishing Limited, Vol. 12 No. 1, pp. 21–51, doi: 10.1108/IJIS-11-2018-0119.

OECD. (2021), “SME and Entrepreneurship Outlook”. Available: https://www.oecd.org/regional/Regional%20Innovation%20Diffusion%20-%20Czech%20Republic.pdf

Otoo, F.N.K. (2019), “Human resource management (HRM) practices and organizational performance: The mediating role of employee competencies”, *Employee Relations: The International Journal*, Emerald Publishing Limited, Vol. 41 No. 5, pp. 949–970.

Ozcelik, G. and Uyargil, C. (2015), “A CONCEPTUAL FRAMEWORK FOR LINE MANAGERS’HRM IMPLEMENTATION EFFECTIVENESS: INTEGRATING SOCIAL CONTEXT AND AMO THEORIES”, *Journal of Business Economics and Finance*, Vol. 4 No. 2.

Paauwe, J. and Boselie, P. (2005), “HRM and performance: what next?”, *Human Resource Management Journal*, Vol. 15 No. 4, pp. 68–83, doi: 10.1111/j.1748-8583.2005.tb00296.x.

Panayotopoulou, L., Bourantas, D. and Papalexandris, N. (2003), “Strategic human resource management and its effects on firm performance: an implementation of the competing values framework”, *The International Journal of Human Resource Management*, Vol. 14 No. 4, pp. 680–699, doi: 10.1080/0958519032000057781.

Parida, V., Westerberg, M. and Frishammar, J. (2012), “Inbound Open Innovation Activities in High-Tech SMEs: The Impact on Innovation Performance: JOURNAL OF SMALL BUSINESS MANAGEMENT”, *Journal of Small Business Management*, Vol. 50 No. 2, pp. 283–309, doi: 10.1111/j.1540-627X.2012.00354.x.

Park, Y.K., Song, J.H., Yoon, S.W. and Kim, J. (2014), “Learning organization and innovative behavior: The mediating effect of work engagement”, *European Journal of Training and Development*, Emerald Group Publishing Limited, Vol. 38 No. 1/2, pp. 75–94.

Peteraf, M.A. (1993), “The cornerstones of competitive advantage: a resource-based view”, *Strategic Management Journal*, Wiley Online Library, Vol. 14 No. 3, pp. 179–191.

Pinarello, G., Trabucchi, D., Frattini, F. and Manfredi Latilla, V. (2022), “How firms use inbound Open Innovation practices over time: evidence from an exploratory multiple case study analysis”, *R&D Management*, Vol. 52 No. 3, pp. 548–563, doi: 10.1111/radm.12500.

Podmetina, D., Soderquist, K.E., Petraite, M. and Teplov, R. (2018), "Developing a competency model for open innovation: From the individual to the organisational level", *Management Decision*, Vol. 56 No. 6, pp. 1306–1335, doi: 10.1108/MD-04-2017-0445.

Podmetina, D., Volchek, D., Dąbrowska, J. and Fiegenbaum, I. (2013), "Human resource practices and open innovation", *International Journal of Innovation Management*, World Scientific, Vol. 17 No. 06, p. 1340019.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: A critical review of the literature and recommended remedies.", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879–903, doi: 10.1037/0021-9010.88.5.879.

Podsakoff, P.M. and Organ, D.W. (1986), "Self-Reports in Organizational Research: Problems and Prospects", *Journal of Management*, Vol. 12 No. 4, pp. 531–544, doi: 10.1177/014920638601200408.

Popa, S., Soto-Acosta, P. and Martinez-Conesa, I. (2017), "Antecedents, moderators, and outcomes of innovation climate and open innovation: An empirical study in SMEs", *Technological Forecasting and Social Change*, Elsevier, Vol. 118, pp. 134–142.

Pratoom, K. and Savatsomboon, G. (2012), "Explaining factors affecting individual innovation: The case of producer group members in Thailand", *Asia Pacific Journal of Management*, Vol. 29 No. 4, pp. 1063–1087, doi: 10.1007/s10490-010-9246-0.

Prieto, I.M. and Pérez-Santana, M.P. (2014), "Managing innovative work behavior: the role of human resource practices", *Personnel Review*, Emerald Group Publishing Limited, Vol. 43 No. 2, pp. 184–208.

Quintane, E., Mitch Casselman, R., Sebastian Reiche, B. and Nylund, P.A. (2011), "Innovation as a knowledge-based outcome", edited by Martín-de Castro, G., López-Sáez, P. and Delgado-Verde, M.*Journal of Knowledge Management*, Emerald Group Publishing Limited, Vol. 15 No. 6, pp. 928–947, doi: 10.1108/13673271111179299.

Ramamoorthy, N., Flood, P.C., Slattery, T. and Sardessai, R. (2005), "Determinants of Innovative Work Behaviour: Development and Test of an Integrated Model", *Creativity and Innovation Management*, Vol. 14 No. 2, pp. 142–150, doi: 10.1111/j.1467-8691.2005.00334.x.

Rasheed, M.A., Shahzad, K., Conroy, C., Nadeem, S. and Siddique, M.U. (2017), "Exploring the role of employee voice between high-performance work

system and organizational innovation in small and medium enterprises", *Journal of Small Business and Enterprise Development*, Emerald Publishing Limited, Vol. 24 No. 4, pp. 670–688, doi: 10.1108/JSBED-11-2016-0185.

Remneland Wikhamn, B., Styhre, A. and Wikhamn, W. (2022), "HRM work and open innovation: evidence from a case study", *The International Journal of Human Resource Management*, Taylor & Francis, pp. 1–33.

Remneland Wikhamn, B., Styhre, A. and Wikhamn, W. (2023), "HRM work and open innovation: evidence from a case study", *The International Journal of Human Resource Management*, Vol. 34 No. 10, pp. 1940–1972, doi: 10.1080/09585192.2022.2054285.

Renkema, M., Meijerink, J. and Bondarouk, T. (2022), "Routes for employee-driven innovation: how HRM supports the emergence of innovation in a formalized context", *The International Journal of Human Resource Management*, Vol. 33 No. 17, pp. 3526–3559, doi: 10.1080/09585192.2021.1913625.

Rhaiem, K. and Doloreux, D. (2024), "Inbound open innovation in SMEs: A microfoundations perspective of dynamic capabilities", *Technological Forecasting and Social Change*, Vol. 199, p. 123048, doi: 10.1016/j.techfore.2023.123048.

Rhee, S.-Y., Oh, H.J. and Yu, G.J. (2018), "High-performance work systems and firm capabilities in Korea: a fit perspective with organizational culture", *Asia Pacific Journal of Human Resources*, Vol. 56 No. 3, pp. 317–340, doi: 10.1111/1744-7941.12134.

Ringle, C.M., Wende, S. and Becker, J.-M. (2022), "SmartPLS 4", SmartPLS GmbH, Oststeinbek.

Sanders, K., Jorgensen, F., Shipton, H., Van Rossenberg, Y., Cunha, R., Li, X., Rodrigues, R., *et al.* (2018), "Performance-based rewards and innovative behaviors", *Human Resource Management*, Vol. 57 No. 6, pp. 1455–1468, doi: 10.1002/hrm.21918.

Sanz-Valle, R. and Jiménez-Jiménez, D. (2018), "HRM and product innovation: does innovative work behaviour mediate that relationship?", *Management Decision*, Emerald Publishing Limited, Vol. 56 No. 6, pp. 1417–1429, doi: 10.1108/MD-04-2017-0404.

Saunders, M., Lewis, P. and Thornhill, A. (2009), *Research Methods for Business Students*, Pearson education.

Saunders, M., Philip L., and Adrian Th. (2009), *Research Methods for Business Students*, Pearson education.

Scaliza, J.A.A., Jugend, D., Chiappetta Jabbour, C.J., Latan, H., Armellini, F., Twigg, D. and Andrade, D.F. (2022), "Relationships among organizational culture, open innovation, innovative ecosystems, and performance of firms: Evidence from an emerging economy context", *Journal of Business Research*, Vol. 140, pp. 264–279, doi: 10.1016/j.jbusres.2021.10.065.

Scarbrough, H. (2003), "Knowledge management, HRM and the innovation process", *International Journal of Manpower*, MCB UP Ltd, Vol. 24 No. 5, pp. 501–516, doi: 10.1108/01437720310491053.

Schein, E.H. (2010), *Organizational Culture and Leadership*, Vol. 2, John Wiley & Sons.

Schwab, D.P. and Cummings, L.L. (1976), "A Theoretical Analysis of the Impact of Task Scope on Employee Performance", *Academy of Management Review*, Vol. 1 No. 2, pp. 23–35, doi: 10.5465/amr.1976.4408660.

Scott, S.G. and Bruce, R.A. (1994), "DETERMINANTS OF INNOVATIVE BEHAVIOR: A PATH MODEL OF INDIVIDUAL INNOVATION IN THE WORKPLACE.", *Academy of Management Journal*, Vol. 37 No. 3, pp. 580–607, doi: 10.2307/256701.

Seeck, H. and Diehl, M.-R. (2017), "A literature review on HRM and innovation – taking stock and future directions", *The International Journal of Human Resource Management*, Routledge, Vol. 28 No. 6, pp. 913–944, doi: 10.1080/09585192.2016.1143862.

Sels, L., De Winne, S., Delmotte, J., Maes, J., Faems, D. and Forrier, A. (2006), "Linking HRM and Small Business Performance: An Examination of the Impact of HRM Intensity on the Productivity and Financial Performance of Small Businesses", *Small Business Economics*, Vol. 26 No. 1, pp. 83–101, doi: 10.1007/s11187-004-6488-6.

Shahzad, K., Arenius, P., Muller, A., Rasheed, M.A. and Bajwa, S.U. (2019), "Unpacking the relationship between high-performance work systems and innovation performance in SMEs", *Personnel Review*, Emerald Publishing Limited, Vol. 48 No. 4, pp. 977–1000, doi: 10.1108/PR-10-2016-0271.

Shanker, R., Bhanugopan, R., van der Heijden, B.I.J.M. and Farrell, M. (2017), "Organizational climate for innovation and organizational performance: The mediating effect of innovative work behavior", *Journal of Vocational Behavior*, Vol. 100, pp. 67–77, doi: 10.1016/j.jvb.2017.02.004.

Shipton, H., West, M.A., Dawson, J., Birdi, K. and Patterson, M. (2006), "HRM as a predictor of innovation", *Human Resource Management Journal*, Vol. 16 No. 1, pp. 3–27, doi: 10.1111/j.1748-8583.2006.00002.x.

Siemsen, E., Roth, A.V. and Balasubramanian, S. (2008), "How motivation, opportunity, and ability drive knowledge sharing: The constraining-factor model", *Journal of Operations Management*, Vol. 26 No. 3, pp. 426–445, doi: 10.1016/j.jom.2007.09.001.

Slater, S.F. (1995), "Issues in conducting marketing strategy research", *Journal of Strategic Marketing*, Vol. 3 No. 4, pp. 257–270, doi: 10.1080/09652549500000016.

Spiegelaere, S.D., Gyes, G.V. and Hootegem, G.V. (2012), "Job design and innovative work behavior: One size does not fit all types of employees", *Journal of Entrepreneurship, Management and Innovation*, Fundacja Upowszechniająca Wiedzę i Naukę Cognitione, Vol. 8 No. 4, pp. 5–20.

Spithoven, A., Vanhaverbeke, W. and Roijakkers, N. (2013), "Open innovation practices in SMEs and large enterprises", *Small Business Economics*, Springer, Vol. 41, pp. 537–562.

Statista. (2023), "Number of small and medium-sized enterprises (SMEs) in Czechia from 2008 to 2022, by size".

Subramony, M. (2009), "A meta-analytic investigation of the relationship between HRM bundles and firm performance", *Human Resource Management*, Vol. 48 No. 5, pp. 745–768, doi: 10.1002/hrm.20315.

Sun, L.-Y., Aryee, S. and Law, K.S. (2007), "High-Performance Human Resource Practices, Citizenship Behavior, and Organizational Performance: A Relational Perspective", *Academy of Management Journal*, Vol. 50 No. 3, pp. 558–577, doi: 10.5465/amj.2007.25525821.

Sun, Y. and Mamman, A. (2022), "Adoption of high-performance work systems in small and medium-sized enterprises", *Asia Pacific Journal of Human Resources*, Vol. 60 No. 3, pp. 479–509, doi: 10.1111/1744-7941.12277.

Thneibat, M., Obeidat, A., Obeidat, Z., Al-dweeri, R. and Thneibat, M. (2022), "Promoting Radical Innovation Through Performance-Based Rewards: The Mediating Role of Knowledge Acquisition and Innovative Work Behavior", *International Journal of Innovation and Technology Management*, doi: 10.1142/S0219877022500055.

Thneibat, M.M. and Sweis, R.J. (2022), "The impact of performance-based rewards and developmental performance appraisal on innovation: the mediating role

of innovative work behaviour", *International Journal of Productivity and Performance Management*, Emerald Publishing Limited, Vol. 72 No. 6, pp. 1646–1666, doi: 10.1108/IJPPM-03-2021-0117.

Tian, M., Deng, P., Zhang, Y. and Salmador, M.P. (2018), "How does culture influence innovation? A systematic literature review", *Management Decision*, Emerald Publishing Limited, Vol. 56 No. 5, pp. 1088–1107, doi: 10.1108/MD-05-2017-0462.

Toh, S.M., Morgeson, F.P. and Campion, M.A. (2008), "Human resource configurations: Investigating fit with the organizational context.", *Journal of Applied Psychology*, American Psychological Association, Vol. 93 No. 4, p. 864.

Tsui, A.S., Wang, H. and Xin, K.R. (2006), "Organizational culture in China: An analysis of culture dimensions and culture types", *Management and Organization Review*, Cambridge University Press, Vol. 2 No. 3, pp. 345–376.

Usman, M., Roijakkers, N., Vanhaverbeke, W. and Frattini, F. (2018), "A systematic review of the literature on open innovation in SMEs", *Researching Open Innovation in SMEs*, World Scientific, pp. 3–35.

Van De Vrande, V., De Jong, J.P.J., Vanhaverbeke, W. and De Rochemont, M. (2009), "Open innovation in SMEs: Trends, motives and management challenges", *Technovation*, Vol. 29 No. 6–7, pp. 423–437, doi: 10.1016/j.technovation.2008.10.001.

Van Iddekinge, C.H., Aguinis, H., Mackey, J.D. and DeOrtentiis, P.S. (2018), "A Meta-Analysis of the Interactive, Additive, and Relative Effects of Cognitive Ability and Motivation on Performance", *Journal of Management*, SAGE Publications Inc, Vol. 44 No. 1, pp. 249–279, doi: 10.1177/0149206317702220.

Vermeeren, B. (2017), "Influencing public sector performance: studying the impact of ability-, motivation- and opportunity-enhancing human resources practices on various performance outcomes in the public sector", *International Review of Administrative Sciences*, SAGE Publications Ltd, Vol. 83 No. 4, pp. 717–737, doi: 10.1177/0020852315591642.

Wang, H., Begley, T., Hui, C. and Lee, C. (2012), "Are the effects of conscientiousness on contextual and innovative performance context specific? Organizational culture as a moderator", *The International Journal of Human Resource Management*, Vol. 23 No. 1, pp. 174–189, doi: 10.1080/09585192.2011.561246.

Weerakoon, C., McMurray, A.J., Rametse, N.M. and Arenius, P.M. (2020), "Social capital and innovativeness of social enterprises: opportunity-motivation-ability and knowledge creation as mediators", *Knowledge Management Research & Practice*, Vol. 18 No. 2, pp. 147–161, doi: 10.1080/14778238.2019.1590138.

Wei, L.-Q., Liu, J. and Herndon, N.C. (2011), "SHRM and product innovation: Testing the moderating effects of organizational culture and structure in Chinese firms", *The International Journal of Human Resource Management*, Taylor & Francis, Vol. 22 No. 01, pp. 19–33.

West, J. and Bogers, M. (2014), "Leveraging External Sources of Innovation: A Review of Research on Open Innovation", *Journal of Product Innovation Management*, Vol. 31 No. 4, pp. 814–831, doi: 10.1111/jpim.12125.

West, J. and Gallagher, S. (2006), "Challenges of open innovation: the paradox of firm investment in open-source software", *R&d Management*, Wiley Online Library, Vol. 36 No. 3, pp. 319–331.

Wright, P.M. and McMahan, G.C. (1992), "Theoretical perspectives for strategic human resource management", *Journal of Management*, Sage Publications Sage CA: Thousand Oaks, CA, Vol. 18 No. 2, pp. 295–320.

Xu, Z., Yang, F., Yuan, Y. and Jia, D. (2023), "Perceived innovation-oriented human resource system and innovative work behavior: the chain mediating role of innovative culture and intrinsic motivation", *Journal of Managerial Psychology*, Emerald Publishing Limited, Vol. 38 No. 6, pp. 434–448, doi: 10.1108/JMP-10-2021-0538.

Yasir, M. and Majid, A. (2020), "High-involvement HRM practices and innovative work behavior among production-line workers: mediating role of employee's functional flexibility", *Employee Relations: The International Journal*, Emerald Publishing Limited, Vol. 42 No. 4, pp. 883–902, doi: 10.1108/ER-02-2018-0061.

Zhang, J.A. and Edgar, F. (2022), "HRM systems, employee proactivity and capability in the SME context", *The International Journal of Human Resource Management*, Routledge, Vol. 33 No. 16, pp. 3298–3323, doi: 10.1080/09585192.2021.1905682.

Zhang, Y. and Begley, T.M. (2011), "Perceived organisational climate, knowledge transfer and innovation in China-based research and development companies", *The International Journal of Human Resource Management*, Vol. 22 No. 1, pp. 34–56, doi: 10.1080/09585192.2011.538967.

Zheng, J., Liu, H. and Zhou, J. (2020), "High-performance work systems and open innovation: moderating role of IT capability", *Industrial Management & Data Systems*, Emerald Publishing Limited, Vol. 120 No. 8, pp. 1441–1457, doi: 10.1108/IMDS-09-2019-0475.

Zhou, Y., Fan, X. and Son, J. (2019), "How and when matter: Exploring the interaction effects of high-performance work systems, employee participation, and human capital on organizational innovation", *Human Resource Management*, Vol. 58 No. 3, pp. 253–268, doi: 10.1002/hrm.21950.

LIST OF PUBLICATIONS

Peer-reviewed journal articles (SCOPUS or Web of Science)

Published articles:

1. **Cera,** E., Cera, G., & Elezi, E. (2023). Commitment-based HRM and inbound open innovation in SMEs: the role of organizational trust and developmental culture. *Journal of Organizational Effectiveness: People and Performance*. doi: https://doi.org/10.1108/JOEPP-05-2023-0203
2. **Çera, E**., Kusaku, A., Matošková, J., & Gregar, A. (2023). Determining Approaches to Human Resource Management in Start-ups that Foster Innovation and Boost Organizational Performance. *Quality-Access to Success*, *24*(193). doi: 10.47750/QAS/24.193.37
3. Abbas, Z., Smaliukienė, R., Zámečník, R., Kalsoom, G., & **Cera, E.** (2023). How does green HRM influence environmental and social sustainability in hotels? *Problems and Perspectives in Management*. doi: 10.21511/ppm.21(1).2023.22
4. **Çera, E**., Ndreca, P., Çera, G., Asamoah, C. A., & Matošková, J. (2023). Does Generation Cohort Matter for Teleworking? Diving into Challenges and Advantages of Teleworking Concerning Gen Y and Gen Z. *Journal of East-West Business*, 1-29.
5. Abbas, Z., Smaliukienė, R., Zámečník, R., Kalsoom, G., & **Cera, E**. (2023). How does green HRM influence environmental and social sustainability in hotels? *Problems and Perspectives in Management*.

Papers accepted for publishing:

1. Merkuri,A., **Cera, E.,** Youth labor market opportunities and challenges in Albania: successful transition from education to employment. ***Journal: Quality-Access to Success;***

Papers under review:

1. Risk Management System and Employee Knowledge Sharing: Unravelling the Role of Chosen Company Attributes for Organizational Resilience. ***Journal: Journal of Knowledge Management;***
2. Fostering Inbound Open Innovation in SMEs: The Crucial Role of High-Performance Working Systems and the mediating influence of Innovative Work Behaviour. ***Journal: Journal of Knowledge Management;***

<u>Conference papers (indexed in Web of Science or SCOPUS):</u>

1. **Cera, E.,** & Abbas, Z. (2023, November). Transformational Leadership Fostering Open Innovation: A Dynamic Capabilities Perspective. In *18th European Conference on Management, Leadership and Governance*. Academic Conferences and publishing limited.
2. Asad, A. I., **Çera, E.,** Pavelková, D., & Matošková, J. (2021). THE MANAGEMENT OF GREEN TECHNOLOGY INNOVATION: A COMPARATIVE ANALYSIS OF THE GLOBAL WEST AND THE V4 ECONOMIES. In *17 th Annual International Bata Conference for Ph. D. Students and Young Researchers* (p. 30).
3. **Çera, E**., Kusaku, A., Matošková, J., & Kapo, K. (2022). BENEFITS OF VIRTUAL WORK FROM THE PERSPECTIVE OF A DEVELOPING COUNTRY: CASE OF ALBANIA. In *Conference Proceedings DOKBAT 2022 18th International Bata Conference for Ph. D. Students and Young Researchers* (p. 54).
4. **ÇERA, E.,** GREGAR, A., MATOŠKOVÁ, J., & ABBAS, Z. Responsible Competitiveness Factors And Competitive Advantage: A Socially Responsible-Hrm Perspective. 15th INTERNATIONAL MANAGEMENT

CONFERENCE, “Managing People and Organizations in a Global Crisis” 4th-5th November, 2021, BUCHAREST, ROMANIA

5. **ÇERA, E.** “Collaborative HRM and open innovation" World Open Innovation Conference -WOIC2023: 10th Edition “Bringing Together Stakeholders for Joint Value Creation” Bilbao, Spain, 9-10 October 2023.

Conference papers accepted for participation:

1. **Elona Çera ,** Valentina Ndou, Jana Matošková, Comfort Adebi Asamoah, ***Role of developmental culture in inbound open innovation: mediation role of Commitment based HRM practices***, Translating Knowledge into Innovation Dynamics,14-14 June, Madrid, Spain: https://www.ifkad.org/

Authors’ CV

Elona Çera

Home : nám. T. G. Masaryka 1335, 760 01 Zlín, 760 01, Zlín, Czechia

Email: e1cera@utb.cz Phone: (+420) 607482363

Gender: Female Date of birth: 08/10/1993 Nationality: Albanian

ABOUT ME:

Advocate for the vital role of strategic HRM in fostering open innovation. Committed to collaborative, open models for sustainable innovation. Passionate about driving positive change and advancing knowledge in these domains.

WORK EXPERIENCE

14/06/2019 – 01/09/2021	Lecturer *Metropolitan Tirana University* City: Tirana Country: Albania

	I served as lecturer for the following courses: Human Resources Management Business Strategy Marketing Strategy Innovation management
14/06/2019 – 01/09/2021	Deputy Director of Metropolitan Incubator *Metroresearch, University of Metropolitan Tirana* City: Tirana In my current role, I perform a wide range of tasks, including: Leading strategic planning for the incubator and start-up programs. Managing and coordinating activities within the Metropolitan Incubator. Creating student-focused information sessions and programs on start-up-related topics. Cultivating mentoring relationships between advisors and start-ups. Advising established start-ups on funding and tax incentives. Shaping Metropolitan Incubator policies to enhance services, public outreach, and continuity. Promoting the Metropolitan Incubator, its programs, and team members. Overseeing project development, monitoring progress, and reporting outcomes.
08/10/2018 – 01/09/2021	Assistant Lecturer *University of Tirana, Faculty of Social Sciences* City: Tirana Country: Albania I served as an assistant lecturer for the following course: Project Management
08/10/2018 – 01/09/2021	Assistant Lecturer *University of Tirana, Faculty of Economics* City: Tirana

	Country: Albania I served as an assistant lecturer for the following course: Project Management
20/09/2017 – 30/04/2019	Consultant at "Skills for Jobs" Project *Swisscontact Albania* City: Tirana Country: Albania Conducting data analysis in accordance with Monitoring and Result Measurement (MRM) provisions. Coordinating and strategically planning the "Mentors' Training" product, including developing terms of reference and guidelines, and assessing its compatibility with legislation. Organizing, coordinating, and monitoring training activities. Conducting desk research and providing analytical support on the drop-out phenomenon in vocational and education training schools, under the project's supervision, as well as on the "Tracer" product. Analyzing data and interpreting statistics. Drafting contracts and overseeing the implementation of contractual proceedings.
Education	
01/09/2021 – ongoing	PhD candidate ***Tomas Bata University, Faculty of Economics and Management*** https://www.utb.cz/en/ Address: " nám. T. G. Masaryka 5555, 760 01 Zlín, Czechia"
01/10/2015 – 31/07/2017	Master of Sciences (MSc) in Public Administration ***University of Tirana, Faculty of Economics*** https://unitir.edu.al/ Address: "Arben Broci" st., 1 1001, Tirana, Albania, 1001, Tirana

01/10/2012 - 31/07/2015-	B.A. in Administration and Social Policy ***Faculty of Social Science, University of Tirana*** https://unitir.edu.al/ Address: Bulevardi Gjergj Fishta, Tirana, Albania, 1001, Tirana
Training	
02/02/2023 _ 08/03/2023	Training: Innovation Management- Level 1: Innovation Associate ***Global Innovation Management Institute*** https://www.giminstitute.org/ Country: United States
01/06/2020 _ 30/10/2020	Summer Academy of Young Professional ***Lund University, Sweden*** https://www.lunduniversity.lu.se/ Address: Lund, Sweden, Lund University Box 117, SE-221 00, Lund , Sweden Field(s) of study: Business, administration and law Thesis: Topic "Innovation Ecosystems and Entrepreneurship"
15/08/2017 – 28/08/2017	Summer School ***Bucharest University for Economic Studies*** http://bsu.ase.ro/ Address: Bulevardul Regina Elisabeta Nr. 4-12, București 030018, Romania, 062203, Bucharest, Romania

APENDICES

A1. Questionnaire

A1.1 English form

QUESTIONNAIRE

(Department manager/deputy, and supervisor)

INTRODUCTION LETTER

Mrs. Elona Çera

Tomas Bata University

E-mail: e1cera@utb.cz / elonacera@ymail.com

Phone: +420607482363

Dear Sir/Madam

I am Elona Çera, working on the human side of open innovation in the Czech manufacturing SME sector. The aim of this work is to understand human resource management and open innovation activities at the organizational level.

During the conduct of this study, the treatment and analysis of data and information will be performed with strict confidentiality and adherence to ethical principles. Therefore, I would greatly appreciate if you could spare a few minutes of your valuable time to complete the following questionnaire.

In the aggregated form, we will share the anonymous results with the relevant agencies, professional organizations and other stakeholders, whom might benefit. The findings will also be published in scholarly journals listed in some of the most reputed databases in the world, including Web of Science and SCOPUS.

I, hereby strictly guarantee that the data shall only be used for research purposes, and shall not be disclosed to any third parties.

In case of any queries or additional information, please contact me through the email and phone number above.

Thank you in advance for your help!

Yours sincerely,

Section 1- General information

GI 1. Age

_____

GI 2. Gender

- Female
- Male
- Other

GI 3. The highest level of education:

- Primary school
- Secondary school
- Higher Education

GI 5. Which department are you working?

- R&D
- HR
- Production
- Marketing and Sales
- Other

GI 6. Number of employees in your company:

- Less than 10
- 10 - 49
- 50 - 249
- 250+

GI 7. How long has the company operated so far?

- Less 3 years
- 3 and more years

GI 8. How long have you been working on this company?

- Less than 3 years
- 3 and more years

GI 9. Sector in which your company operate:

- Manufacture of basic pharmaceutical products and pharmaceutical preparations
- Manufacture of computer, electronic and optical products
- Manufacture of chemicals and chemical products;
- Manufacture of electrical equipment;
- Manufacture of motor vehicles, trailers and semi-trailers
- Manufacture of machinery and equipment
- Manufacture of other transport equipment

- Manufacture of rubber and plastic products;
- Manufacture of other non-metallic mineral products;
- Manufacture of basic metals;
- Manufacture of fabricated metals products, excepts machinery and equipment;
- Repair and installation of machinery and equipment
- Other

High-Performance Work System - HPWS

Considering High-Performance Work System, to what extent do you agree with the following statements: [1=totally disagree] — [2] — [3] — [4] — [5=totally agree]

Ability-enhancing: Staffing & Training

AS1. The company puts significant attempts in selection of the suitable individual for each position

AS2. The company employs substantial processes to recruit and select, such as different tests and interviews

AS3. During recruitment, the company focuses on the new staff capabilities of learning and growing with the company

AS4. The company is careful about its image when it recruits and selects employees

AS5. The staff is chosen according to the total fitness with the organization

AT1. Training staff will typically undergo continuous training programs

AT2. The organization offers trainings with focus on team building and teamwork competencies

AT3. Managers supply the staff with specialized training and development

AT4. Managers are initiators and providers of different types of training and development for their staff

AT5. The company possesses an acceptable mentoring system which supports new hires

Motivation-enhancing: Compensation & Performance appraisal

MC1. Organizational staff receives financial incentives according to their individual performance

MC2. Organizational staff receives financial incentives according to their team performance

MC3. Organizational staff receives financial incentives according to the organizational performance

MC4. The pay system of the company indicates the staff organizational role

MP1. Appraisal of the staff performance takes place according to individual behaviours and perspectives at work

MP2. Appraisal of the staff performance is directed at their advancement and promotion at work

MP3. Appraisal of the staff performance focuses on collaborative as well as long-term-based outcomes

MP4. Employees are provided with routine performance feedback

MP5. Appraisal of performance is according to objective quantifiable results

Opportunity-enhancing: Work design & Participation

OW1. The company focuses on the staff job rotation along with flexibility in work assignments in a variety of work contexts

OW2. The company allocates a wide scope of various tasks and responsibilities to employees

OW3. The company focuses on the staff cooperative work and network collaboration

OW4. Organizational staff has widely designed jobs which require different skills

OP1. The staff of the company can participate in decision-making

OP2. Staff is encouraged to take part in an extensive scope of issues, such as performance standards, quality improvements, benefits and so on

OP3. Staff is encouraged to take part in solving problem and decision-making

OP4. Supervisors seek to have open communications across the company

OP5. The staff receives information regarding the related concerns of the company (objectives, performance and so on)

Innovative Working Behaviour - IWB

In your organization, how often do your employees show the following behaviours: [1=totally disagree] — [2] — [3] — [4] — [5=totally agree]

IWB1. Look for opportunities to improve an existing process, technology, product, service or work relationship

IWB2. Recognize opportunities to make positive difference in your work, department, organization or with customers

IWB3. Pay attention to non-routine issues in your work, department, organization, or the market place

IWB4. Generate ideas or solutions to address problems

IWB5. Define problems more broadly in order to gain greater insight into them

IWB6. Experiment with new ideas or solutions

IWB7. Test-out ideas or solutions to address unset needs

IWB8. Push ideas forward so that they have a chance to become implemented

IWB9. Take the risk to support new ideas

IWB10. Implement changes that seem to be beneficial

IWB11. Work the bugs out of a new approach when applying them to existing process, technology, product or service

IWB12. Incorporate new ideas for improving an existing process, technology, product or service in daily routine

Innovative Culture - IC

Considering the innovative culture, to what extent do you agree with the following statements: [1=totally disagree] — [2] — [3] — [4] — [5=totally agree]

IC1. My company encourages creativity, innovation and/or the development of new ideas, as cultural values.

IC.2 A common system of values, beliefs and objectives exists in my company, directed towards innovation

IC.3 My company encourages experimentation and innovation in order to improve work processes

Open Innovation– OI

Considering the open innovation, to what extent do you agree with the following statements: [1=totally disagree] — [2] — [3] — [4] — [5=totally agree]

Inbound Innovation

INOI 1**.** Our organization constantly scans the external environment for inputs such as technology, information, ideas, knowledge, etc.

INOI 2**.** Our organization actively seeks out external sources of knowledge and technology

INOI 3**.** Our organization believes it is good to use external sources (e. g., research groups, universities, suppliers, customers, competitors, etc.) to complement its own R&D.

INOI 4**.** Our organization often brings in externally developed knowledge and technology to use in conjunction with our own R&D.

INOI 5**.** Our organization seeks out technologies and patents from other firms, research groups, or universities.

INOI 6. Our organization purchases external intellectual property to use in our own R&D

Outbound Innovation

OI 7**.** Generally, in our organization all technologies are externally commercialized (i.e., sold to outside firms).

OI 8**.** In our organization, external technology commercialization is restricted to technologies that are not used internally.

OI 9**.** In our organization, external technology commercialization is restricted to relatively mature and proven technologies.

OI 10**.** In our organization, external technology commercialization is restricted to non-core technologies.

End of survey

Are you willing to offer more information to this topic? If so, please leave your contact information.

MANY THANKS FOR YOUR HELP
Wishing you good health, success, and happiness!

A1.2 Czech form

DOTAZNÍK

ÚVODNÍ DOPIS

Vážená paní, vážený pane,

zabývám se lidskou stránkou tzv. otevřených inovací v českém výrobním sektoru, se zaměřením na malé a střední firmy. Otevřená inovace je v podmínkách České republiky nový přístup, který předpokládá, že společnosti mohou, a dokonce by měly, používat jak externí, tak interní myšlenky a řešení problémů, stejně jako

interní a externí cesty na trhy. Cílem mé disertační práce je porozumět řízení lidských zdrojů a aktivitám v oblasti otevřených inovací v organizacích.

Prosím Vás, abyste věnovali několik minut svého drahocenného času na vyplnění následujícího dotazníku.

V souhrnné podobě budeme rádi anonymizované výsledky sdílet s profesními organizacemi a dalšími zúčastněnými stranami, pro které mohou být užitečné. Výsledky budou rovněž publikovány v odborných časopisech a renomovaných světových vědeckých databázích (Web of Science a SCOPUS).

Během realizace mého výzkumu dodržuji všechna pravidla zachování důvěrnosti a etického nakládání s daty a informacemi. Zaručuji Vám, že údaje budou použity pouze pro účely výzkumu a nebudou poskytnuty žádné další straně.

V případě dotazů nebo potřeby dalších informací o výzkumu mě prosím kontaktujte prostřednictvím níže uvedeného e-mailu a telefonního čísla.

Poznámka: V srpnu 2023 proběhne losování o tři lahve šampanského Moët Chandon. Do loterie budou zařazeni respondenti, kteří se zúčastnili této studie a na konci dotazníku uvedli svůj kontaktní údaj (e-mail nebo telefon). Výherci budou vybráni náhodně a výhry jim budou zaslány poštou. Pro transparentnost procesu bude všem, kteří uvedou na konci dotazníku kontaktní e-mail, zaslán link s odkazem na krátkou reportáž z losování.

Předem děkuji za vaši pomoc!

S pozdravem,

Elona Çera, PhD student

Univerzita Tomáše Bati ve Zlíně, Fakulta managementu a ekonomiky
E-mail: e1cera@utb.cz / elonacera@ymail.com
Telefon: +420 607 482 363

Oddíl 1 - Obecné informace

GI 1. Věk

_____

GI 2. Pohlaví

- Žena
- Muž
- Jiné

GI 3. Nejvyšší stupeň dosaženého vzdělání:

- Základní
- Středoškolské
- Vysokoškolské

GI4. V organizaci působíte jako:

- Vlastník organizace
- Vedoucí pracovník
- Na nevedoucí pozici

GI5. Na kterém oddělení/útvaru pracujete?

- Výzkum a vývoj
- Personální oddělení
- Výroba
- Marketing/obchod
- Other___

GI6. Počet zaměstnanců ve Vaší společnosti:

- 20-24
- 25-49
- 50-99
- 100-199
- 200-249
- Other___

GI7. Jak dlouho Vaše společnost existuje?

- Méně než 3 roky
- 3 a vice let

GI8. Jak dlouho v této společnosti pracujete?

- Méně než 3 roky
- 3 a vice let

GI9. Označte prosím hlavní sektor, ve kterém Vaše firma působí:

- Výroba farmaceutických výrobků a farmaceutických přípravků
- Výroba počítačů, elektronických a optických výrobků
- Výroba chemických látek a chemických přípravků
- Výroba elektrických zařízení
- Výroba motorových vozidel, přívěsů a návěsů
- Výroba strojů a zařízení
- Výroba dopravních prostředků a zařízení
- Výroba pryžových a plastových výrobků
- Výroba nekovových minerálních výrobků
- Výroba základních kovů
- Výroba kovových konstrukcí a kovodělných výrobků, kromě strojů a zařízení
- Opravy a instalace strojů a zařízení
- Ostatní
- Other___

Oddíl 2 - Informace o hlavních konstruktech studie

Vysoce výkonný systém práce – HPWS

Když zvážíte způsob práce ve Vaší firmě, do jaké míry souhlasíte s následujícími tvrzeními?

[1=zcela nesouhlasím] -- [2] -- [3] -- [4] -- [5=zcela souhlasím]Required to answer.

AS1. Firma věnuje značné úsilí výběru vhodných osob na každou pozici.

AS2. Firma používá při náboru a výběru zaměstnanců postupy, jako jsou různé testy a pohovory, aby prověřila, že kandidáti splňují hlavní požadavky.

AS3. Při náboru se firma zaměřuje na schopnosti a ochotu nových zaměstnanců učit se a růst s firmou.

AS4. Firma dbá na svou image při náboru a výběru zaměstnanců.

AS5. Zaměstnanci jsou vybíráni podle toho, zda zapadnou do organizační kultury firmy.

AT1. Interní lektoři procházejí programy průběžného vzdělávání.

AT2. Organizace nabízí školení zaměřená na budování týmu a na dovednosti pro týmovou práci.

AT3. Manažeři umožňují zaměstnancům specializované školení a rozvoj.

AT4. Manažeři jsou iniciátory a organizátory různých typů školení a rozvoje pro své zaměstnance.

AT5. Firma má zavedený systém mentoringu na podporu adaptace nových zaměstnanců.

Vysoce výkonný systém práce – HPWS

Když zvážíte způsob práce ve Vaší firmě, do jaké míry souhlasíte s následujícími tvrzeními?
[1=zcela nesouhlasím] -- [2] -- [3] -- [4] -- [5=zcela souhlasím]

Required to answer. Likert.

MC1. Zaměstnanci dostávají finanční odměny podle svého individuálního výkonu.

MC2. Zaměstnanci dostávají finanční odměny podle toho, jak výkonný je jejich tým.

MC3. Zaměstnanci dostávají finanční odměny podle toho, jak se firmě daří z hlediska jejího výkonu.

MC4. Systém odměňování ve firmě navazuje na organizační strukturu zaměstnanců.

MP1. Hodnocení výkonu zaměstnanců probíhá podle jejich individuálního chování a jejich možné perspektivy v práci.

MP2. Hodnocení výkonu zaměstnanců je zaměřeno na rozvoj jejich kariéry a možné povýšení.

MP3. Hodnocení výkonu zaměstnanců se zaměřuje na jejich výsledky založené na spolupráci s druhými a na jejich dlouhodobé výsledky

MP4. Zaměstnancům je poskytována průběžná zpětná vazba k jejich výkonu.

MP5. Hodnocení výkonu zaměstnanců se provádí podle objektivních kvantifikovatelných výsledků.

ysoce výkonný systém práce – HPWS

Když zvážíte způsob práce ve Vaší firmě, do jaké míry souhlasíte s následujícími tvrzeními?
[1=zcela nesouhlasím] -- [2] -- [3] -- [4] -- [5=zcela souhlasím]Required to answer. Likert.

OW1. Firma se zaměřuje na rotaci zaměstnanců a flexibilitu v pracovním zařazení.

OW2. Firma přiděluje zaměstnancům širokou škálu různých úkolů a odpovědností

OW3. Firma se zaměřuje na podporu spolupráce mezi zaměstnanci.

OW4. Pracovníci organizace potřebují pro efektivní výkon pracovních úkolů na daných pozicích různorodé dovednosti.

OP1. Zaměstnanci firmy se mohou podílet na rozhodování.

OP2. Zaměstnanci jsou povzbuzováni, aby se podíleli na řešení takových témat jako jsou výkonnostní normy, zlepšování kvality, benefity apod.

OP3. Zaměstnanci jsou vybízeni ke spolupodílení se na řešení problémů a rozhodování.

OP4. Nadřízení se snaží o otevřenou komunikaci napříč firmou.

OP5. Zaměstnanci dostávají informace týkající se zájmů firmy (cíle, výkonnost apod.).

Inovativní chování při práci – IWB

Jak často se ve Vaší organizaci zaměstnanci chovají níže popsaným způsobem?
1 = nikdy; 2 = zřídka; 3 = někdy; 4 = často; 5 = vždy Required to answer. Likert.

IWB1. Hledají příležitosti ke zlepšení stávajícího procesu, technologie, produktu, služby nebo pracovního vztahu.

IWB2. Identifikují příležitosti k pozitivním změnám v práci, na oddělení, v organizaci nebo u zákazníků.

IWB3. Věnují pozornost jiným než rutinním záležitostem ve své práci, oddělení, organizaci nebo na trhu.

IWB4. Přichází s nápady na řešení problémů.

IWB5. Definují problémy šířeji, aby jim lépe porozuměli.

IWB6. Experimentují s novými nápady nebo postupy.

IWB7. Zkouší nápady nebo postupy na řešení budoucích potřeb.

IWB8. Posouvají nápady dále tak, aby tyto měly šanci na realizaci.

IWB9. Podstupují riziko spojené s podporou nových nápadů.

IWB10. Provádějí změny, které se zdají být prospěšné.

IWB11. Vychytávají chyby nového přístupu při jeho aplikaci na stávající proces, technologii, produkt nebo službu.

IWB12. Běžně zavádí nové nápady na zlepšení stávajících procesů, technologií, produktů nebo služeb.

14.**Inovační kultura – IC**

Když zvážíte kulturu Vaší organizace, do jaké míry souhlasíte s následujícími tvrzeními?
[1=zcela nesouhlasím] -- [2] -- [3] -- [4] -- [5=zcela souhlasím]Required to answer. Likert.

IC1. Firma vnímá kreativitu, inovace a/nebo rozvoj nových nápadů jako své hodnoty.

IC2. Zaměstnanci firmy sdílí hodnoty, přesvědčení a cíle zaměřené na podporu a význam inovací.

IC3. Firma podporuje experimentování a inovace, neboť chce zlepšovat pracovní postupy a procesy.

15.**Otevřené inovace – OI**

Do jaké míry souhlasíte s následujícími tvrzeními?
[1=zcela nesouhlasím] -- [2] -- [3] -- [4] -- [5=zcela souhlasím]
Required to answer. Likert.

INOI1. Firma neustále vyhledává inspiraci ve vnějším prostředí, např. technologie, informace, nápady, znalosti atd.

INOI2. Firma aktivně vyhledává externí zdroje znalostí a technologií.

INOI3. Firma věří, že je užitečné využívat externí zdroje (např. výzkumné skupiny, univerzity, dodavatele, zákazníky, konkurenty atd.) k doplnění vlastního výzkumu a vývoje.

INOI4. Firma často využívá externě vyvinuté znalosti a technologie ve spojení s vlastním výzkumem a vývojem.

INOI5. Firma cíleně vyhledává technologie a patenty od jiných firem, výzkumných skupin nebo univerzit.

INOI6. Firma nakupuje externí duševní vlastnictví pro použití ve vlastním výzkumu a vývoji.

OI7. Obecně platí, že v naší firmě jsou všechny technologie externě komercializovány (tj. prodávány externím firmám).

OI8. V naší firmě je externí komercializace technologií omezena na technologie, které nejsou využívány interně.

OI9. V naší firmě je externí komercializace technologií omezena na relativně vyspělé a osvědčené technologie.

OI10. V naší organizaci je externí komercializace technologií omezena na technologie, které nejsou klíčové.

Section 3

Konec průzkumu

16. Pokud máte zájem o účast v loterii o 3 láhve šampanského Moët Chandon, která byla zmíněna na začátku dotazníku, uveďte zde prosím kontakt na Vás (e-mail nebo telefon).

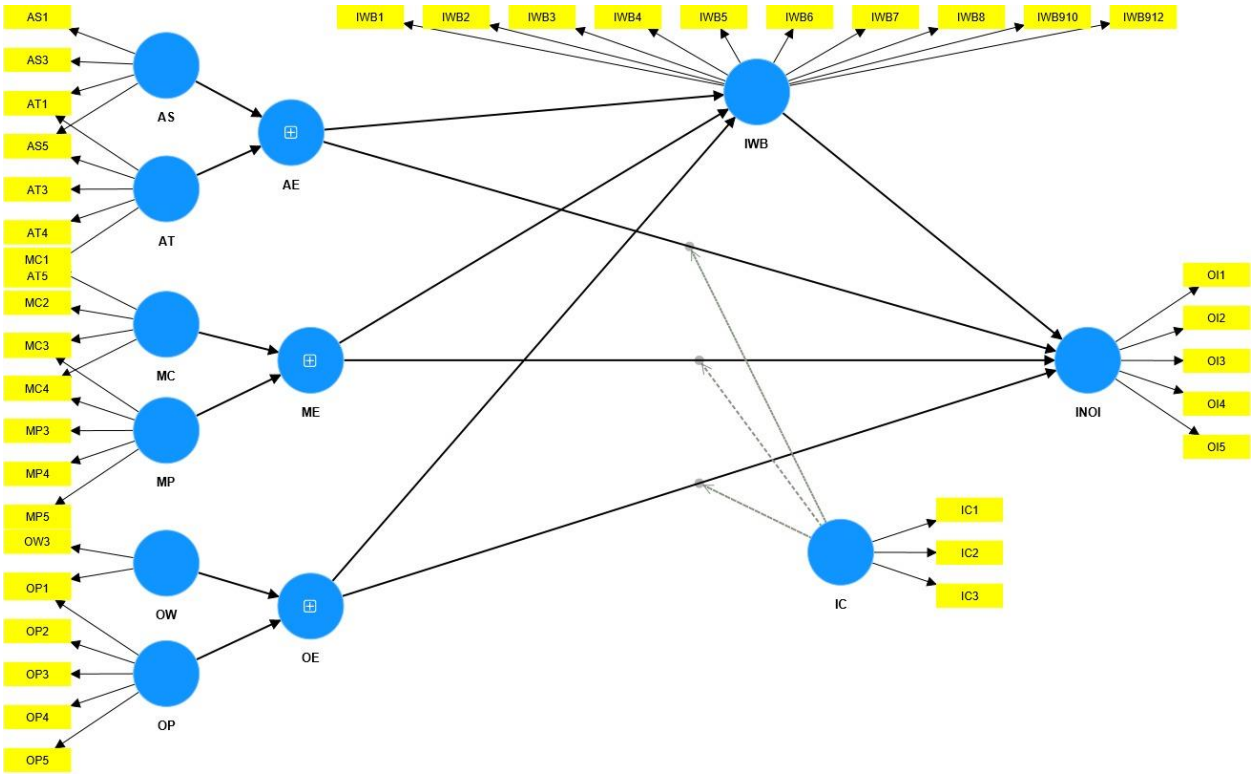
_____

17. Jste ochotní poskytnout další informace k tomuto tématu? Pokud ano, napište zde prosím kontakt na Vás.

_____

A2. Research model

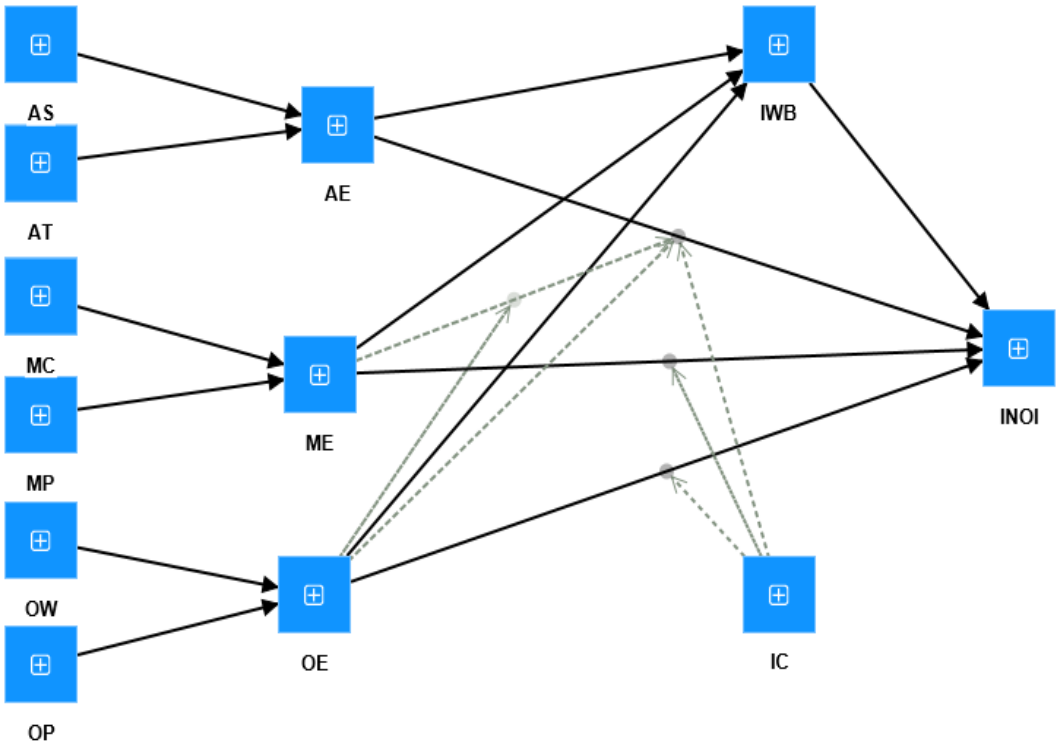
A2.1 Measurement model



Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation.

Figure 9: Measurement model – PLS-SEM in SmartPLS 4.0

A2.2 Research model in PROCESS



Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation.

Figure 10: Research model in PROCESS view in Smart PLS 4.0

A3. Data

A3.1 Descriptive statistics – Indicators

Table 14: *Descriptive statistics of the indicators (n=252)*

Indicator	Min	Mean	Median	Max	Standard deviation	Kurtosis	Skewness	Range
AS1	2.000	4.417	5.000	5.000	0.868	0.696	-1.324	3.000
AS3	2.000	4.282	5.000	5.000	0.881	0.186	-1.041	3.000
AS4	2.000	4.262	5.000	5.000	0.899	-0.290	-0.906	3.000
AS5	1.000	4.036	4.000	5.000	0.987	-0.333	-0.773	4.000
AT1	1.000	3.194	3.000	5.000	1.200	-0.931	-0.004	4.000
AT2	1.000	3.147	3.000	5.000	1.207	-1.183	0.126	4.000
AT3	1.000	4.123	4.000	5.000	1.043	-0.049	-0.970	4.000
AT4	1.000	3.655	4.000	5.000	1.054	-0.750	-0.362	4.000
AT5	1.000	3.155	3.000	5.000	1.248	-1.154	0.125	4.000
MC1	1.000	3.913	4.000	5.000	0.941	-0.646	-0.433	4.000
MC2	1.000	3.135	3.000	5.000	1.149	-0.745	0.083	4.000
MC3	1.000	3.964	4.000	5.000	1.105	-0.156	-0.892	4.000
MC4	1.000	3.619	4.000	5.000	1.121	-0.964	-0.318	4.000
MP1	1.000	3.690	4.000	5.000	1.025	-0.440	-0.490	4.000
MP2	1.000	3.349	3.000	5.000	0.956	-0.508	0.051	4.000
MP3	1.000	3.710	4.000	5.000	0.957	-0.618	-0.271	4.000
MP4	1.000	3.706	4.000	5.000	1.018	-0.977	-0.229	4.000
MP5	1.000	3.595	4.000	5.000	1.072	-0.871	-0.308	4.000
OP1	1.000	3.083	3.000	5.000	1.012	-0.671	0.134	4.000
OP2	1.000	3.333	3.000	5.000	1.022	-1.051	-0.028	4.000
OP3	1.000	3.393	3.000	5.000	0.990	-0.879	-0.034	4.000
OP4	2.000	4.028	4.000	5.000	0.959	-0.331	-0.766	3.000
OP5	1.000	4.008	4.000	5.000	1.018	-0.565	-0.702	4.000
OW2	1.000	3.417	3.000	5.000	0.993	-0.739	0.048	4.000
OW3	2.000	3.782	4.000	5.000	0.904	-0.806	-0.208	3.000
OW4	2.000	4.147	4.000	5.000	0.909	0.120	-0.936	3.000
IC1	1.000	3.881	4.000	5.000	1.068	-0.402	-0.670	4.000

Indicator	Min	Mean	Median	Max	Standard deviation	Kurtosis	Skewness	Range
IC2	1.000	3.417	3.000	5.000	1.024	-0.740	-0.121	4.000
IC3	1.000	3.683	4.000	5.000	1.019	-0.338	-0.470	4.000
IWB1	1.000	3.298	3.000	5.000	0.890	0.053	-0.177	4.000
IWB2	1.000	3.262	3.000	5.000	0.894	-0.173	-0.271	4.000
IWB3	1.000	3.071	3.000	5.000	0.908	-0.623	-0.142	4.000
IWB4	1.000	3.476	4.000	5.000	0.780	-0.160	-0.250	4.000
IWB5	1.000	3.111	3.000	5.000	0.903	-0.414	0.203	4.000
IWB6	1.000	3.151	3.000	5.000	1.003	-0.715	-0.259	4.000
IWB7	1.000	3.008	3.000	5.000	0.910	-0.444	-0.048	4.000
IWB8	1.000	3.194	3.000	5.000	0.909	-0.271	-0.202	4.000
IWB10	1.000	3.079	3.000	5.000	0.937	-0.360	-0.247	4.000
IWB12	1.000	3.040	3.000	5.000	0.887	-0.274	0.164	4.000
OI1	1.000	3.885	4.000	5.000	1.013	-0.102	-0.694	4.000
OI2	1.000	3.619	4.000	5.000	1.051	-0.572	-0.411	4.000
OI3	1.000	3.520	4.000	5.000	1.065	-0.524	-0.301	4.000
OI4	1.000	3.377	3.000	5.000	1.081	-0.643	-0.089	4.000
OI5	1.000	2.730	3.000	5.000	1.025	-0.507	0.382	4.000

Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation. (***Source*****:** author's own)

A3.2 Descriptive statistic – Latent variables

Table 15: Descriptive statistic of latent variables (N=252)

Construct	Min	Mean	Median	Max	Standard deviation	Kurtosis	Skewness
AE	-3.026	0.000	0.338	1.010	1.000	0.187	-0.953
AS	-2.686	0.000	0.159	1.691	1.000	-0.748	-0.102
AT	-2.870	0.000	0.007	1.445	1.000	-0.054	-0.574
MC	-2.944	0.000	0.063	1.920	1.000	-0.343	0.006
ME	-2.569	0.000	-0.013	1.776	1.000	-0.564	-0.133
MP	-2.500	0.000	0.168	1.798	1.000	-0.374	-0.456
OE	-2.637	0.000	-0.031	1.865	1.000	-0.172	-0.213
OP	-2.576	0.000	-0.166	1.761	1.000	-0.435	-0.173
OW	-1.255	0.680	0.300	4.211	1.000	1.708	1.419
IC	-2.526	0.000	0.187	2.614	1.000	-0.352	0.082
IWB	-3.090	0.000	0.118	1.722	1.000	-0.591	-0.146
INOI	-2.009	0.000	0.040	1.832	1.000	-0.806	-0.259

Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation. (***Source*:** author's own)

A3.3 Hypothesis testing

Table 16: Hypothesis testing

Hypo-thesis	Path	Coef-ficient	T statistics	P values	F square
H1a	AE → IWB	-0.062	0.769	0.442	0.007
H1b	ME → IWB	0.142	1.686	0.092	0.017
H1c	OE → IWB	0.446	6.388	0.000	0.189
H2a	AE → INOI	0.192	2.909	0.004	0.033
H2b	ME → INOI	-0.159	2.163	0.031	0.025
H2c	OE → INOI	0.023	0.363	0.717	0.004
H2d	IWB → INOI	0.421	7.550	0.000	0.212
H3a	AE → IWB → INOI	-0.026	0.775	0.438	
H3b	ME → IWB → INOI	0.060	1.619	0.105	
H3c	OE → IWB → INOI	0.188	5.263	0.000	
H4a	IC x AE → INOI	-0.065	0.891	0.373	0.007
H4b	IC x ME → INOI	0.115	2.567	0.010	0.019
H4c	IC x OE → INOI	-0.072	1.529	0.126	0.010
H5a	ME x AE → INOI	-0.018	0.347	0.729	0.005
H5b	OE x AE → INOI	0.122	2.018	0.044	0.017
H6	OE x ME x AE → INOI	-0.095	2.541	0.011	0.029
	AS → AE	0.550	37.341	0.000	
	AT → AE	0.558	32.574	0.000	
	IC → INOI	0.296	3.664	0.000	
	MC → ME	0.439	30.195	0.000	
	MP → ME	0.640	40.137	0.000	
	OP → OE	0.642	32.616	0.000	
	OW → OE	0.443	23.044	0.000	

Note: AE, Ability-enhancing; ME, Motivation-enhancing; OE, Opportunity-enhancing; IWB, Innovative Work Behaviour; IC, Innovative culture; INOI, Inbound Open Innovation.

Elona Çera

Nurturing inbound open innovation: exploring the interplay of High-Performance Work Systems, Innovative Work Behaviour and Innovative Culture

Podpora příchozích otevřených inovací: zkoumání vzájemného působení vysoce výkonných pracovních systémů, inovativního pracovního chování a inovativní kultury

Doctoral Thesis

Published by: Tomas Bata University in Zlín,

nám. T. G. Masaryka 5555, 760 01 Zlín.

Edition: 5pcs

Typesetting by: Elona Çera

Publication year: 2024