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Review article

WORKPLACE INNOVATION: A SEARCH FOR ITS DETERMINANTS THROUGH A SYSTEMATIC LITERATURE REVIEW

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Abstract. Workplace innovation (WPI) plays an important role at the institutional level, enabling firms to improve their competitive advantage. However, it remains an under-researched theme. The purpose of this paper is to extend current knowledge of the mechanisms that facilitate innovations in the workplace, identifying the main determinants that leverage WPI, based on a systematic literature review (SLR). An SLR has been carried out in order to determine the main determinants of WPI. The main topics are analyzed, and then the determinants derived inductively. WPI is depicted as a wide array of topics (38) that may be clustered around five different determinants that are transverse and intertwined. This research contributes by filling the gap regarding WPI. It combines five main determinants and provides important insights into possible avenues for the research of WPI.

Keywords: workplace innovation, systematic literature review, organization, human resources management, collaboration, employee participation.

JEL Classification: M10, O31.

Introduction

According to the Oslo Manual (OECD Statistical Office of the European Communities, 2005, p. 46) innovation is: "The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations." This definition is widely accepted in both academia and industry. However, although innovation takes place in organizations, Workplace Innovation (WPI) is not explicitly referred in this definition. This omission of WPI has also been recognized as a subject of scientific research that requires further investigation (Dhondt & Hootegem, 2015; Jilcha et al., 2016). Moreover, there is not a commonly accepted definition of WPI as the term induces organizational performance, quality of working life, innovative culture, motivated and empowered individuals, knowledge shaming activities, organizational justice entrepreneurial leaders, among others. It is necessary a closer integration between policy, research and practical approaches so that WPI emerges as something adopted through all organizations (Rus et al., 2019).

WPI it is defined as "the implementation of new and combined interventions in the fields of work organization, human resource management and supportive technologies" (Pot, 2011, pp. 404–405), which can be considered as complementing technological innovation. WPI represents a fundamental transformation of work and of organizational operations that focus on organizational initiatives, in order to improve both business performance and employee satisfaction (Isa & Tsuru, 2002). It may also improve organizational performance and improved quality of life, through changes in the firm's strategies and organizational practices (Bartram et al., 2020; Wipulanusat et al., 2018). It can take also into account the type of management philosophy and consider different approaches to organizational structures (Howaldt et al., 2016; Khan & Mohiya, 2020; Muenjohn et al., 2020). This represents a broad spectrum of interrelated organizational approaches, which is clearly expressed on the definition of WPI put forward by Kesselring et al. (2014) who refer that WPI

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involves many things such as human resources management, relationships with clients and suppliers, changes in business structure, knowledge sharing, innovative culture, organizational commitment, among others. WPI is expected to result in better working conditions for employees, improved motivation and increased organizational performance. As such, it is possible that WPI covers too many topics that are not yet understood.

WPI plays an important role in improving motivation and working conditions that lead to increased labor productivity, enhance innovation capability, and may improve organizational performance. For example, Martins and Terblanche (2003) identified five determinants of organizational culture that are likely to influence creativity and innovation: strategy, structure, support mechanisms, behavior that encourages innovation, and open communication. Kim and Bae (2005) presented a model to improve organizational performance and the way people interact with each other in the WPI environment. Their study was based on two South Korean companies competing in price- and quality-conscious markets, where trade unions play a decisive role, as they can block innovations. Finally, Totterdill and Exton (2014b) argue that employee involvement and participation at all levels of the organization are important drivers of WPI. However, despite its importance, there is no explicit framework covering the determinants leveraging WPI.

The importance of transformational leadership is well known for: the implementation of an innovative culture, which enhances, team-based innovation and performance (Wipulanusat et al., 2020); the satisfaction of employees, as they feel more motivated and empowered, with positive consequences for their performance and career (Wipulanusat et al., 2018); the positive relationship between employee engagement and innovative behavior (Gemeda & Lee, 2020); and the way employees feel within the organization. Knowledge sharing is an important driver aspect that needs to be taken into account for organizations to excel (Muenjohn et al., 2020) as it drives major changes when dynamic, entrepreneurial leaders are capable of disseminating it across the organization with important consequences for organizational performance. Another important aspect that needs to be addressed in WI is the interaction of harmonious passion and auto-efficacy of individuals in terms of organizational justice (Schenkel et al., 2019), as the manager's attitude differentiating among employees may generate a poor workplace environment.

When comparing the definitions of innovation and WPI, one can conclude they target different angles of innovation. The definition of innovation, based on the Oslo Manual (OECD & Statistical Office of the European Communities, 2005, p. 46), takes a more conceptual approach, clustering the different types of innovation. Pot's (2011) definition of WPI emphasizes ways to increase innovation at lower cost, involve the firm's stakeholders, and achieve innovation in the workplace.

Rus et al. (2019) presented an overview of WPI covering four different strands – innovation policy, theory, research and practice – and concluded that a greater convergence in terms of policy, theory, research and practice is mandatory. Finally, although Prus et al. (2017) studied WPI and the dimensions along which it was explored, they did not propose a model or framework. Consequently, their study does not provide a basis to identify the determinants that leverage WPI. The main conclusion of their work was the proposal of a new definition of WPI as a process of renovation altering structural, cultural, organizational and experiential characteristics of workplaces that create social value.

It is clear that organizational and human resource management (HRM) aspects are common to all the current definitions of WPI (Howaldt et al., 2016; Isa & Tsuru, 2002; Pot, 2011). However, there are important aspects that positively influence WPI, and are important drivers of organizational performance that are not covered by WPI definition, as just referred (Gemeda & Lee, 2020; Muenjohn et al., 2020; Schenkel et al., 2019; Wipulanusat et al., 2018; 2020). Moreover, there is no consensus on the definition or on the determinants that leverage WPI. The literature shows that WPI is beneficial and may enhance the capability to innovate; however, the literature does not put together the different practices or topics that make up the determinants of WPI or their interdependencies. Taking into account this gap, the following research question was defined: What are the determinants leveraging WPI and what are their interdependencies? The objective of this paper is to extend current knowledge of the mechanisms that facilitate innovations in the workplace. For that, a systematic literature review (SLR) on the determinants leveraging WPI is conducted to identify their main determinants.

This document is structured in the following way. It starts with an introduction, followed by the theoretical background of WPI. The methodology section describes the research methodology adopted in the SLR. The results are then presented, followed by discussion, implications and conclusions.

1. Literature review

The way employees work and relate to each other in a firm context is one of the main contributors to WPI (Pot, 2011) and to firms' competitive advantage (Oeij et al., 2011). A firm's organization and strategy, workers' attitudes, and organizational culture play an important role in innovation (Gemeda & Lee, 2020; Humphreys et al., 2005; Martins & Terblanche, 2003; Totterdill & Exton, 2014b; Wipulanusat et al., 2018; 2020). WPI involves the way people work and the level of autonomy employees have (Dhondt et al., 2014; Khan & Mohiya, 2020).

Existing research shows that WPI is, to a large extent, the improvement of people's working environments and working life (Oeij et al., 2011). Addison (2005) claims that combinations of innovative practices and worker representation can yield substantial productivity gains. Employee participation and involvement are a common object of

research, and it is suggested that employee involvement in the decision making process increases organizational effectiveness (Ang, 2002). Khan and Mohiya (2020) conclude that the autonomy of employees generates job satisfaction and benefits for organizations. Dhondt et al. (2014) provide recommendations on how to create job control opportunities and increase employees' direct participation, in order to improve organizational performance and the quality of life, contributing to more innovative workplaces. This position is supported by Hammond et al. (2011), who show that individual factors, the characteristics of the job, and factors in the environment are moderately associated with innovations produced at the individual level in the workplace. Leaders were also identified as playing an important role as shapers of the work environment, influencing innovative behaviors of employees, especially in challenging situations. This is also a result found by Bryson et al. (2005) who concluded that high-involvement management practices have a positive impact on labor productivity.

The importance of a "silent game", played by the employees who ignore work changes, needs to be taken into account to increase employee involvement and participation as well as cooperation among all personnel (Koski & Jarvensivu, 2010) in order not to underestimate employees' informal power. In the work context, job security is also highlighted (Rees, 2001).

Although knowledge sharing within organizations is always beneficial for employees, Arsawan et al. (2020) recognizes that employees do not feel the need to share their knowledge, as they consider it a short-term competitive advantage that must be maintained if they wanted to achieve individual productivity gains. In order to deal with these situations, transformational leadership is required (Wipulanusat et al., 2018).

Team work, as well as job autonomy, allowing employees to increase their influence over decisions that affect them in their jobs, also contributes to a more innovative workplace (McCartney & Teague, 2004a; Xerri et al., 2015). Creativity stimulation, innovation unblocking and problem solving can also be stimulated through the participation of both managers and employees as mechanisms to solve problems and engage people (Totterdill & Exton, 2014c). Creativity, as part of program development among business school graduates, is also conductive to WPI (Ghosh, 2014).

Ghosh (2015, p. 1132) states that, "workplace innovative activity can be assessed by the number of innovations, the speed of implementation of innovations and the newness of an innovation as well as by relative innovative activity in comparison to competitors," which is also expressed by Pomares (2019). The level of creativity and innovation in organizations, as studied by Martins and Terblanche (2003), is determined by its organizational culture and how both creativity and innovation are stimulated, suggesting that there might be what could be called an innovation culture.

Martins and Terblanche's (2003) model identified the determinants of organizational culture most likely to influence creativity and innovation. After analyzing several existing models, they found that that there is no agreement on what organizational culture is needed to improve innovation and creativity. Al-Asfour et al. (2020) defend that the most prominent method for motivating employees is through financial incentives. However, in order to minimize barriers to creativity, it is necessary to provide the necessary resources for employees to generate and implement creative ideas.

In their framework they define seven dimensions of organizational culture (Martins & Terblanche, 2003) and identify the following five determinants related to organizational culture that support innovation and creativity: strategy, structure, support mechanisms, behavior that encourages innovation, and open communication. They conclude that those determinants play a role as they can inhibit or support innovation and creativity, depending on how they influence the behavior of each individual.

Disoska and Toshevska-Trpchevska (2019) defend that although the regional environment is not an independent determinant of firms' innovation activity, the characteristics of the firms do shape firms' innovation activities. In the same line, Bartram et al. (2020) claim that organizational change needs to be fueled by industry, as the strategy and the environment play an important role in supporting innovation (Silva & Moreira, 2021) as technological and organizational support reinforce the interactions between customers and employees, the firms and their partners.

The contribution of individual creativity to organizational innovation depends on employees' capabilities but also on how the organization accommodates them (Patricio et al., 2020; Wipulanusat et al., 2017), through gamified co-creation practices.

Kim and Bae (2005) put forward a second model in the context of discussion of shop-floor employees being part of the improvement of organizational performance (formal aspects) and the way people interact with each other (informal aspects), which seem to be important factors for WPI (Kim & Bae, 2005). The framework is composed by three main components: input (external and internal environments affecting the organizational systems), the organizational system (organizational design and employee representative (ER) systems/HRM systems) and output (organizational performance). Although Kim and Bae (2005) conclude that WPI produced desirable organizational outcomes, they also claim that organizations may be prepared for small changes but not for fundamental changes.

Some empirical studies conclude that there is a positive correlation between innovation practices and the productivity of the firm (Alamayreh et al., 2019; Dhondt et al., 2014; Pot, 2011), complementing Kim and Bae's (2005) research, and suggesting that the way firms are formally organized contributes to organizational commitment and wellbeing.

WPI is sometimes defined as a joint intelligence, the fifth element, or a form of culture and employee engagement (Totterdill & Exton, 2014b) resulting from the combination of four elements: job design and work organization, structures and systems, learning, reflection and

innovation, and workplace partnership. Employee involvement and participation at all levels of the organization can create a tangible effect in workplaces and WPI can be implemented only if those practices are introduced at every level of the organization (Khan & Mohiya, 2020; Patricio et al., 2020; Totterdill & Exton, 2014b; Wipulanusat et al., 2020). These elements raise some important aspects that are related to employee empowerment / engagement and employee involvement and work organization (Dhondt et al., 2014; Pot, 2011). They also raise the need to establish partnerships, increasing workers' communications and openness to embrace change.

There is no holistic framework that explicitly covers the determinants leveraging WPI in the literature. Comparing the three frameworks above, there are certain features that they have in common: organizational aspects in Kim and Bae (2005), Martins and Terblanche (2003) and Totterdill and Exton (2014b); HRM in Kim and Bae (2005) and Totterdill and Exton (2014b); and collaboration in Totterdill and Exton (2014b). The most recently proposed framework (Totterdill & Exton, 2014b) is the most complete of the three.

2. Methodology

This article follows the SLR method as presented by Denyer and Tranfield (2009). One of the main characteristics that differentiates a SLR from a traditional narrative review is that it is a replicable, transparent and a scientific process, aiming to minimize bias (Tranfield et al., 2003). The scientific papers used as the basis for the research should be independent of the researcher, once the circumstances of the research are documented.

This study follows the five steps proposed by Denyer and Tranfield (2009): definition of the research question, location of studies, selection and evaluation of studies, analysis and synthesis, and presentation of results.

Next follows a description of the five steps.

Taking into account the importance of innovation and the lack of clear understanding of the determinants and topics of WPI it was decided to put forward the following research question, that constitutes the first step: What are the determinants leveraging workplace innovation and what are their interdependencies?

The location of the studies was carried out based on an electronic search in academic journals and the sources of information selected were extracted from five databases: EBSCO, Emerald Insight, Science Direct, Scopus and Web of Science. These five databases are well-established, reliable academic databases and are comprehensive enough to include the most relevant research contributions. The keywords "Workplace Innovation" were used to delimit the subject area. Only scientific journal articles were included, as those are considered to have the highest impact in the management field with the most validated knowledge (Podsakoff et al., 2005). To ensure transparency and reliability in the search, it was decided to define the end of 2020 as the final date for the academic search.

The third step – selection and evaluation of studies – involved reading the abstracts and the selected papers to identify the relevant topics and look for patterns or categories to aggregate them at a higher level.

The fourth step – analysis and synthesis – was assured by detailed content analysis. For that, a matrix with the following content was prepared: author, year, reference, name of the journal, relevant topics identified, type of research study, methodology used, and context in which the research was carried out. The content analysis involved an interpretative synthesis, based on the article's content, core ideas and arguments, from which the topics and determinants of workplace innovation were inductively derived, following Jones et al. (2011). Topics are the fundamental concepts and subjects under consideration in each paper, according to the best interpretation of the research team. Table 1A, in the Appendix, presents the information gathered in the SLR, based on the following content: (a) selected published paper; (b) main topic covered; (c) main WPI determinant; (d) methodology used; and (e) context in which the paper was developed. Additional numbering of the topics, as well as some statistics, is included to enable a better understanding of the results. This review applied a systematic process involving inductive thematic analysis of search results (Braun & Clarke, 2006), and sought to organize the literature into patterns of topics and determinants.

Finally, the fifth step of the SLR is reporting and disseminating the results (Denyer & Tranfield, 2009), which is one of the aims of this paper. This involves presenting and discussing the findings, and proposing, if possible, paths leading to further research.

Through all the stages of this SLR, the research team discussed the selection criteria, and the articles were evaluated and discussed in terms of contents, conclusions and propositions, until a common understanding was achieved.

The initial search resulted in 384 papers. As several databases were used, duplicate papers (87) were removed. Based on the large number of articles retrieved (297), it was decided to screen and analyze the abstract to make sure that the articles selected were tuned to the object of this research. After a close scrutiny of the abstracts, the research team decided to exclude 206 papers as their content – trade unions, employee negotiations rights, gender, race, discrimination of workers, public policies, politics, government, non-for-profit organizations, social organizations, outsourcing, environment, psychology, facility management, workplace layout, etc. – did not relate our WPI research aim. The decision to remove the articles involved an interactive process among the research team, in order to reach a consensus. We looked for results that clearly represent the reality of WPI in order to bring a broad contribution not affected by any kind of discrimination or too much specificity. The final dataset of 91 selected articles was identified and selected for full-text review as the primary source of data for the analyses.

The articles were published in 65 different journals, which gives an indication that WPI has a crosswise importance in business/economics. Table 1 lists all the journals in which more than two articles were published, representing 23 articles in 6 journals. This means that 25% of the articles were published in 9% of the outlets.

Table 1. Main sources of publication

Journal	No of articles
World Review of Entrepreneurship, Management and Sustainable Development	5
The International Journal of Human Resource Management	5
Economic and Industry Democracy	4
Strategic Direction	3
Industrial Relations: A Journal of Economy and Society	3
Personnel Review	3

3. Results

Based on the outcome of the selected SLR papers (listed in Table 1A in the Appendix), the main objective of this section is to articulate and present the results about the determinants (and the underlying topics), the methods used and the contexts of the research studies. 38 topics emerged as a result of the detailed content analysis carried out on the 91 papers, which are addressed 301 times in the research overall (see Table A1).

This section seeks to confront the topics that resulted from the SLR with Pot's (2011) definition, as presented in the introductory section:

- Work organization (Al-Asfour et al., 2020; Alasoini et al., 2010; Bartram et al., 2020; Carranza et al., 2020; Geary, 1999; Gemeda & Lee, 2020; Howaldt et al., 2016; Khan & Mohiya, 2020; Kalmi & Kauhanen, 2008; Friedrich et al., 2016; Lapointe & Cucumel, 2016; Lorenz, 2015; McCartney & Teague, 1997; Oeij & Vaas, 2016; Oeij et al., 2014; Payne, 2004; Pot et al., 2016; Totterdill & Exton, 2014a; Urbach et al., 2016; Wipulanusat et al., 2018; 2020).
- HRM (Bernier, 1999; Brown et al., 2007; Lee & Kang, 2012; Camuffo & Volpato, 1995; Dokko et al., 2013; Furmańska-Maruszak & Sudolska, 2016; Isa & Tsuru, 2002; Montani et al., 2020; Muenjohn & McMurray, 2016; Muenjohn et al., 2020; Oeij et al., 2011; Pettine et al., 2011; Plijter et al., 2014; Pot, 2011; Preenen et al., 2016; Rees, 2001; Lee, 2004; Totterdill & Exton, 2014c; Walsworth & Verma, 2007; Zheng et al., 2007).
- Support technologies (Black & Lynch, 2004; Humphreys et al., 2005; Pettine et al., 2011; Pomares, 2019; 2020; Williams & LaBrie, 2015).

The SLR on WPI also covers topics that are not covered by Pot's (2011) definition:

- Knowledge sharing (Arsawan et al., 2020; Andersson, 2013; Brown & Dearnaley, 2016; Dokko et al., 2013; Hamilton & Davison, 2018; Svare, 2016; Totterdill & Exton, 2014c). This topic might be an addition to the initial definition as a collaboration initiative, which is directly relevant to innovation, as combining different knowledge might lead to combined ideas and new products and innovations.
- Change management (Badham & Ehn, 2000; Bamber et al., 2017; Erickson & Jacoby, 2003; Hammond et al., 2011; Kim & Bae, 2005; Koski & Jarvensivu, 2010; Teague, 2005). This topic appears to be relevant and an add-on to the initial definition as through the papers it was recognised that overcoming barriers might be a factor that could enable innovation.
- WPI implementation support (Alasoini, 2009; Badham & Ehn, 2000; Erickson & Jacoby, 2003; Simmers & McMurray, 2019; Walsworth & Verma, 2007). This is a topic that recognises that having dedicated resources with knowledge and a mandate to implement WPI will add value. This is something we need to add to the initial definition.
- External factors (Han et al., 2020; Khan & Mohiya, 2020).
- Governance (Bartram et al., 2020).
- Influence/informal power (Simmers & McMurray, 2019).
- Real job training environment (Brown & Dearnaley, 2016).
- Regional innovation (Andersson, 2013; Svare, 2016)
- Communities of practice (CoP) (Macpherson & Antonacopoulou, 2013).

The two last topics in particular are about collaboration, which is a determinant that is not explicitly referenced in Pot's (2011) definition. The only collaboration we can identify is at work organization level among employees, and these topics describe collaboration at a level which could be external to the firm when there is a region that is known for being very innovative in one industry (Andersson, 2013; Svare, 2016) or when a group of firms form a community to share best practice and cooperate (Macpherson & Antonacopoulou, 2013).

Existing research shows that WPI is, to a large extent, the improvement of people's working environments and working life (Oeij et al., 2011). Work organization, employee empowerment/job autonomy, competence/skill development and human resource work practices are the four main topics that are the object of research contributing to WPI.

Work organization and employee empowerment/job autonomy are related to the way firms are organized. Skill development and human resource work practices are related to the way human resources are treated in the firms' practices. In addition to these four main topics, other topics related to organization and human resources were identified in fewer studies, as leadership, organization type, governance, new training practices and pay and incentive systems.

WPI is achieved through approaches that revolve around employees. However, other topics were identified,

such as WPI implementation support, where some research points to the need for specific professionals dedicated to WPI implementation tailored to each organization, planning action, overcoming barriers, adding context-specific detail to the implementation of WPI in each organization (Badham & Ehn, 2000; Marks et al., 1997). Another topic identified is change management, where it is suggested that more emphasis needs to be put on divergent strategies and interests within and between organizational actors (Koski & Jarvensivu, 2010). It is also suggested that HR could play a different role in WPI, acting as change agents (Bamber et al., 2017). The topic called "external factors", influencing WPI from outside the firm, includes aspects such as the ability to adopt innovations, institutional and legal factors, contextual influences inherent to each country and a level of education that builds innovation and creativity competencies in professionals. The topic "external factors" includes aspects external to the firm that can impact the way the workplace can be shaped and its ability to impact innovation.

A different approach to creating knowledge and consequent innovation is through "other topics", including regional innovation (Andersson, 2013), bringing productivity and competitiveness to a region, CoP, team work and knowledge sharing. Research also indicates that the topic "information and technology usage" is relevant to the leverage of WPI.

In summary 38 topics emerged from the SLR, which were combined in five higher hierarchical classes, that we call determinants. These determinants were inductively derived from the similarities among the 38 topics. These five determinants are Organizational Dynamics, HRM, Collaboration, Information Technology (IT) Infrastructures and Other Facilitators.

Taking into account the 38 topics, the percentage of topics involved in each determinant are the following: Organizational Dynamics – 45%; HRM – 18%; Collaboration – 18%; IT Infrastructures – 11%; and Other Facilitators – 8%. The weights are calculated based on the total number of topics, which are addressed under each determinant. This can be observed in Table 1A in the Appendix. As referred in the discussion section the relative percentages are slightly different.

Research on WPI is mainly performed in Industry (31%), based on secondary databases (24%), and only 10% is performed in small and medium-sized enterprises (SMEs). There are practically no studies addressing research and development (R&D) and only 6% deal with services. 26% of the studies deal with areas such as healthcare, medicine, nursery, the municipal sector and business schools.

Quantitative research (51%) outnumbers qualitative research (CS, Eql, LR, Conc: 49%), although they are very close. However, empirical research (62%) is more prominent than Case Study (12%) and Conceptual (26%) studies, which suggests that there is prevalence of studies reflecting reality and field expertise.

The five determinants found in the SLR are analyzed in the following sections.

Organizational dynamics determinant

This determinant emerges as a combination of the following topics: the way work is organized, the amount of autonomy and empowerment given to employees, leadership capability within the organization, the type of organization put in place, the organizational culture, organizational governance, knowledge management and the employee engagement. The number of topics addressed by the research under this determinant (123 of 301) indicates this is the most important determinant.

At the organizational level the topics identify the relationship between WPI and the organization (Bjornali & Støren, 2012), the importance of organizational governance (Dhondt et al., 2014), appropriate approaches to leadership (Muenjohn & McMurray, 2016, 2017), and establishing longitudinal development programs to support non-technological innovation (Humphreys et al., 2005). Organizational dynamics define how the work is organized and the level of autonomy given to the employees; the type of organization can hinder or support WPI.

The topic work organization is related to policies and strategies of the organization, the way work is distributed among employees, the way jobs are conceived, work practices, the processes, procedures, and guidelines in place and team work dynamics (Al-Asfour et al., 2020). Some of those studies also discuss job autonomy and employee empowerment. A more knowledge based distribution of work, leading to higher quality, could potentially produce more innovation, by generating a more innovative workplace.

Organizational strategies that support job autonomy and co-worker cohesion are conducive to WPI (Von Treuer & McMurray, 2012), may foster innovation and creativity, and can also contribute to company performance (Preenen et al., 2016). Team work and job autonomy (Beirne, 2013; Long, 1989; Subramaniam & Moslehi, 2013), allow employees to increase their influence, and may contribute to more innovative workplaces (Xerri et al., 2015) where employees are more engaged (Ang, 2002). There is research pointing to the contribution of creativity to WPI (Yeh-Yun & Liu, 2012).

HRM determinant

The two main topics leveraging WPI identified under this determinant are Competence/Skill development and HR/Work practices, which are complemented by other topics: pay and incentive systems; new training practices; and information flow.

Acquiring more skills and being better trained pays off for WPI (Zwanikken et al., 2016). HRM has a role in forecasting the skills that will be needed in the near future (Bamber et al., 2017). Innovation cannot depend only on the current knowledge of employees; it is essential to have competence and skill development mechanisms in place to ensure that knowledge grows in the firm and also that the employees have a development path for his/her career. Optimized use of human talents contributes to WPI

(Oeij & Vaas, 2016). The identification of competencies fostering innovation and professionals who can generate innovation are key to the firm, in a WPI context (Bjornali & Støren, 2012). Other relevant practices are competence development plans to foster employees' capabilities (Furmańska-Maruszak & Sudolska, 2016), skill-creation systems (Finegold & Wagner, 1998) and employees autonomy in choosing training methods (Walsworth & Verma, 2007).

The topic HR/Work Practices must be supported by the organization. It is a topic involving several aspects, including the motivation of the employees (Hammond et al., 2011), employee management/involvement/relationships and role (Bartram, 2011), human factors (Badham & Ehn, 2000) and job design/redesign (Beirne, 2013).

Research also focuses on other HRM topics, including incentive payment, performance appraisal and suggestion systems (e.g. ideas for improvement) and information sharing meetings (Bayo-Moriones & Galdon-Sanchez, 2010). One of the possible practices associated to WPI is the link between rewards and objectives, compensation linked to performance or more generally variable pay (Bayo-Moriones & Galdon-Sanchez, 2010). This means that a percentage of the compensation could be associated with the level of achievement in a set of tasks.

Even though organizational culture is an important topic, which is part of the determinant Organizational Dynamics, the topic Country Culture was found to be an important contributor to the HRM determinant. Although research does not establish how country culture directly influences WPI, it provides some recommendations taking into account both national and corporate culture, as well as individual and organizational needs (Plijter et al., 2014).

Collaboration determinant

The main topics contributing to this determinant are co-operative actions, knowledge sharing, interface management, team work, CoP, regional innovation and internal marketing.

The topics co-operative actions and interface management cover partnerships (Totterdill & Exton, 2014b), the ability to connect with external sources to acquire new knowledge (Alasoini et al., 2010), the ability to establish relations in the workplace (Brown & Dearnaley, 2016; Dokko et al., 2013) and to co-operate with suppliers, competitors and customers (Svare, 2016), as a source of knowledge, market needs and innovation. The topic knowledge sharing focuses on bridging the theory-practice gap, using innovation to unblock techniques (Totterdill & Exton, 2014c), practical knowledge use, combining and transforming knowledge in the workplace in a more innovative way. Intra-firm collaboration is especially important in team work (McCartney & Teague, 2004a; Teague, 2005) and autonomous self-organized teams (Totterdill & Exton, 2014b). Team work is key for team innovation and especially important in rapidly changing industries. Besides team work, intra-firm collaboration also includes other labor management co-operations, such as knowledge sharing meetings among employees and cooperation between management and staff (Pot, 2011).

Another possible way to connect people is through CoP, which may foster the sharing of information and collaboration in order to overcome the firm's boundaries. A different approach to get knowledge and consequent innovation is through regional innovation, bringing productivity and competitiveness to a region, as in so called regional innovation systems, which facilitate collaboration among several players.

This determinant emphasizes the relevance of WPI in facilitating the gathering of knowledge and the absorption of knowledge from all possible sources outside the firm. It also highlights the relevance of connecting people, talking to peers, having self-managed teams, solving problems in the community, all of which may be supported by information and technology as part of the IT infrastructures determinant.

IT infrastructure determinant

The most important topic of the IT Infrastructure determinant is information and technology (IT) usage.

Lifestyle, the business environment (becoming more and more global) and the type of available resources are changing over time. Not only are new ways of working and behaving emerging every day, but organizations have at their disposal new capabilities and workplaces have access to new resources. Research confirms the importance of the topic 'information and technology usage' in the workplace (Black & Lynch, 2004). The use of new IT infrastructures is of high relevance, as it reduces information and communications costs, allowing the faster spread of information, reducing travel needs, increasing productivity, improving training capabilities at lower cost (Pomares, 2019; 2020; Williams & LaBrie, 2015), fostering online learning environments (Pettine et al., 2011) and using automation to improve job quality (Findlay et al., 2017). There are some obstacles or difficulties in the adoption of new technologies in some sectors where technology might not be used as a daily tool (Lee, 2004). This suggests that, even when available, technology may not be used effectively, indicating a possible problem in lack change management. Another advantage of using IT systems is reducing the number of errors, contributing to quality improvement, which is vital in healthcare (Avgar et al., 2011).

One important aspect of this determinant is that it has consequences across the organization. As such, one can claim that this determinant is transversal to all the other determinants with enabling workplace innovation capabilities.

Other facilitators determinant

The three main topics identified under this determinant were Change management, WPI implementation and External factors.

Professionals or facilitators dedicated to WPI implementation and able to adapt to each organization are

necessary. They should develop plans to overcome barriers, adding context-specific solutions to the implementation of WPI in each organization (Badham & Ehn, 2000). The decision to implement WPI must be part of the firm's governance and/or strategy. Management must also be committed to WPI implementation (Erickson & Jacoby, 2003), with dedicated people to create or improve new workplace processes (Walsworth & Verma, 2007) and to ensure replication of good practices of WPI implementation (Alasoini, 2009). A possible way to overcome resistance during WPI implementation and get support is to implement change management programs (Teague, 2005). Research shows differences between WPI implementation programs in different countries with different contexts (Payne, 2017). The need to establish change management programs to promote and support change is confirmed by examples from different behaviors in different firms (Marks et al., 1997) facing similar challenges.

The topic external factors covers the level of innovation adoption in the firm (Lee, 2004), contextual influences (Hammond et al., 2011), environmental/institutional factors and other structural factors (Jilcha & Kitaw, 2017; Lapointe & Cucumel, 2016), and the benefit for WPI of having professionals trained in creativity and innovation in higher education. This topic has not so much to do with the firm internally but can have an important external impact on the firm.

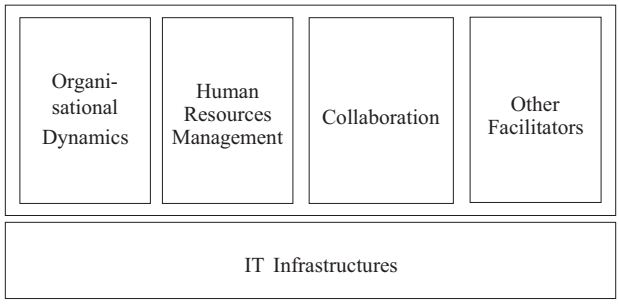

Figure 1. Main determinants of Workplace Innovation: proposed framework

This paper identified 38 different topics that were aggregated in five determinants, as shown in Figure 1: Organizational dynamics, HRM, Collaboration, IT infrastructures and Other Facilitators.

4. Discussion

Our proposal, as shown in Figure 1 and Table 2, which is more complete than the individual models presented in section 1, is based on a framework with five determinants, being IT Infrastructures transversal to the other four: Organizational Dynamics, HR Management, Collaboration and Other Facilitators.

It is important to stress that, according to the weight (%) of the total number of the topics addressed in each determinant, by the total number of 301 topics, as shown in Table 1A, some conclusions regarding the importance of each determinant can be drawn: organizational dynamics is the most important determinant with 41% of the total number of topics; the determinant HRM is the second most important determinant with 24% of the topics; Collaboration is the third most relevant determinant with 20% of the topics; Others Facilitators has 8% of relative importance; and Information Technology determinant has only 7% of the topics. The percentages just referred seek to provide information of the number of topics that were covered under a certain determinant. Moreover, as it is possible to conclude, the relative importance of information technology determinant goes well beyond the percentage obtained, as it is a transversal determinant supporting a faster widespread of information and knowledge share throughout the organization.

Another important observation is that the three models originally analyzed focus mainly on organizational and HRM aspects. None included IT infrastructure. Although collaboration is addressed indirectly by Totterdill and Exton (2014b), none of the three models considers topics such as change management, support for WPI implementation, and online learning environments, among other topics. The framework that emerged from the SLR

Table 2. Framework of comparison

Article / Reference	Organizational Dynamics	Human Resources Management	Collaboration	IT Infrastructure	Other Facilitators	Observations
Figure 1 (proposed framework)	X	X	X	X	X	Under Other Facilitators: change management, Support to WPI implementation and External factors are considered
(Kim & Bae, 2005)	X	X	----	----	----	Also ER is considered which is out of scope of this research (Unions)
(Martins & Terblanche, 2003)	X	----	----	X*	----	*the structures proposed in the framework are not necessarily IT infrastructures. The model is overall about Innovation not specific at WPI.
(Totterdill & Exton, 2014b)	X	X	X	----	----	

combines several of the determinants partially identified in each model, providing a holistic view, and identifies new topics grouped under new determinants, such as IT infrastructure and Other Facilitators.

The models reviewed in the literature have some limitations that are corrected in the framework proposed. For example, the model proposed by Martins and Terblanche (2003) was based on three dimensions of organizational culture. As a result, HRM, Collaboration and the Other determinants are not covered by Martins and Terblanche (2003). The model proposed by Kim and Bae (2005) seeks to address organizational performance and covers HRM, change management and organizational design extensively, but does not cover collaboration or IT infrastructure. Finally, the model of Totterdill and Exton (2014b), although robust, does not include IT infrastructure.

The five determinants proposed complement the three analyzed models (Kim & Bae, 2005; Martins & Terblanche, 2003; Totterdill & Exton, 2014b). Moreover, it also extends Pot's (2011) definition, by introducing Collaboration and Other determinants, which were absent on Pot's definition.

5. Implications

The proposed model has implications for WPI as not only previous research has not covered all the determinants herewith proposed but also the relationship among the topics need to be addressed thoroughly.

As shown in Table A1, research covering the topics is quite sparse. As such, it is necessary not only to address how interrelated the topics within a determinant are, but also to uncover how topics of the different determinants influence each other. Similarly, topics such as competence/skill development, pay/incentive systems and training practices are typically analyzed within HRM practices. Although it is proposed that organizational culture is a topic under the determinant organizational dynamics, one can claim that is has also an important interaction with how collaborative/cooperative practices can enhance HRM practices with consequences in the way competences/skills development and training practices are implemented among firms. Another important aspect is how information technologies underpin knowledge share practices and facilitate the organization, exploration and implementation of new ideas anywhere in the firm network. Clearly, those topics, that belong to a certain predefined determinant according to the SLR carried out, may have important relational-enhancement effects that fully support WPI. As such, if change management is expected to occur and succeed in workplaces, more important than defining determinants and topics that are part of WPI environments is to define how open certain topics are, which contribute to boost innovation in workplaces.

Moreover, the SLR shows there are huge question marks regarding how differently WPI practices differ between SMEs and large firms, service and industrial firms, knowledge intensive and low-knowledge intensive service firms, hi-tech and low-tech firms, among others.

If WPI has a pervasive effect across workplaces, it is necessary to complement the definition proposed on the Oslo Manual. For that, constructivist-based research is necessary to construct new knowledge base on the different realities analyzed in order to address the inter-subjectivity of the topics and determinants that can be found when analyzing different realities.

An important implication for managers is that WPI can complement the traditional perspective of innovation centered on product, process, marketing and organizational boundaries when a new perspective on how to champion workplaces is needed in order to drive innovation forward.

Conclusions

This paper reports the SLR and analysis of 91 selected papers. Its major contribution is the identification of 38 different topics that were aggregated in five determinants: Organizational dynamics, HRM, Collaboration, IT infrastructures and Other Facilitators. Based on this contribution, the main novelty of the paper is that the determinants not only complement previous WPI-related frameworks (Kim & Bae, 2005; Martins & Terblanche, 2003; Totterdill & Exton, 2014b) and Pot's (2011) definition, but also uncovers the main topics that compose each determinant. Moreover, a framework with a holistic view of the determinants was proposed based on the SLR, as shown in Figure 1. WPI is a crosswise theme that has been under-researched in diverse contexts and the number of relevant topics addressed is relatively high (38), as well as the number of times the topics are the object of research in the papers (301). WPI has been analyzed mainly in industrial contexts.

As previously described, organizational dynamics addresses topics that are related to the internal way of working and dynamics of the firm. HRM has to do with work practices and policies, and how competences and skills are developed in the firm. Collaboration includes the aspects related to co-operation and knowledge sharing both inside and outside the firm. IT infrastructures support IT conditions (software, hardware, communications, the Internet, etc.) that people have in the workplace and how they are able to access information. Finally, the Other Facilitators determinant covers aspects which do not fit in the other determinants but that emerged as relevant. These include change management, support to implement WPI and external factors in the environment (e.g. country, industrial parks, influences of trade unions, etc.) where a firm is based.

Although five determinants were found, the boundaries between the determinants are blurred and it is not clear how independent they are from each other. In order to overcome this limitation, future studies need to address the question of how intertwined the determinants are and what the relationships among them are. Moreover, as organic innovation is strongly influenced by a strong innovation culture so that creative ideas are integrated within

the operational system, it is imperative to analyze, for example, how organizational culture can generate social capital to tap into the organization's expertise, innovative capabilities and diffusion of best practices that enable innovation to flow throughout the organization. Future research needs to test the new proposed framework and also to examine how organizational innovation is intertwined with WPI.

Although no limits were placed on the type of industry where the research was carried out, future research perspectives should cover R&D activities and services, as there is a lack of research in these specific areas, which are usually knowledge and labor intensive and have specific characteristics that need to be addressed as technology-intensive organizations are normally innovation-led organizations in which organizational culture supports innovation in the workplace and is well tunned to HRM activities. Moreover, future research may also uncover new knowledge on how differently small and large firms behave as well as how differently endowed industries and services differ in intertwining the topics across the five determinants.

As this paper is based on a SLR, the main limitation is that it needs to be complemented with empirical evidence. Thus, further research could explore a constructivist perspective to consolidate the proposed framework presented based on multiple case studies that are conceptually rich in terms of exploration new concepts.

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APPENDIX

Table A1. Articles analyzed in the SLR

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
Alasoini (2009)	WPI implementation support					X			X			X				
Alasoini et al. (2010)							X								X	
	Interfaces Management			X												
	Work Organization	X														
	Competence/Skill Development		X													
Al-Asfour et al. (2020)							X							X		
	Organization Type	X														
	Employee Training		X													
	Creativity	X														
	Integrated Technology				X											
	CoP			X												
	Leadership	X														
	(Organizational) Culture	X														
	Job Characteristics	X														
	Employee and Supervisors co-operation	X														
	Autonomy/ Empowerment		X													
	Job Design	X														
Andersson (2013)										X		X				
	Knowledge Share			X												
	Regional Innovation			X												
Ang (2002)	Employee Engagement	X								X		X				
Arsawan et al. (2020)							X								X	
	Integrated Technology				X											
	Information and Technology Usage				X											
	Knowledge Share			X												
	Internal Marketing			X												
Avgar et al. (2011)	Information and technology usage				X		X									X
Badham and Ehn (2000)										X		X				
	HR/ Work Practices		X													
	WPI implementation support					X										
	Job Design	X														
	Change Management					X										
	Information and technology usage				X											
Bamber et al. (2017)										X						X

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
	Corporate Strategy HR/ Work Practices Change Management Competence/ Skills Development	X	X X			X										
Bartram (2011)	HR/ Work Practices		X							X		X				
Bartram et al. (2020)									X					X		
	Work Organization	X														
	Team work			X												
	Employee Engagement	X														
	Competence / Skill Development		X													
	Governance	X														
	Job Design	X														
	(Organizational) Culture	X														
Bayo-Moriones and Galdon-Sanchez (2010)							X								X	
	Pay and Incentive Systems		X													
	Competence/Skill Development		X													
Beirne (2013)									X							X
	Autonomy/ Employee Empowerment	X														
	HR/ Work Practices		X													
Bernier (1999)	Competence/Skill Development		X							X		X				
Bjornali and Støren (2012)							X					X				
	Competence/Skill Development		X													
	External Factors					X										
	Organization type	X														
Black and Lynch (2004)							X								X	
	Information and technology usage				X											
	Employee Engagement	X														
	Pay and Incentive Systems		X													
Brown and Dearnaley (2016)										X						X
	Knowledge Management	X														
	Co-operation actions			X												
	Knowledge Share			X												
Brown et al. (2007)	New Training Practices		X							X						X
Camuffo and Volpato (1995)									X						X	
	Influence/Informal Power	X														
	Competence/Skill Development		X													

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
Carranza et al. (2020)							X								X	
	Employee Engagement	X														
	Employee and Supervisors co-operation	X														
	(Organizational) Culture	X														
	Work Organization	X														
	Team work			X												
Curington et al. (1986)	Pay and Incentive Systems		X				X					X				
Dhondt et al. (2014)							X					X				
	Job Characteristics	X														
	Autonomy/ Employee Empowerment	X														
	Leadership	X														
	Governance	X														
Dokko et al. (2013)							X						X			
	Knowledge Share			X												
	Information Flow		X													
	Co-operation actions			X												
Erickson and Jacoby (2003)							X								X	
	Change Management					X										
	WPI implementation support					X										
Findlay et al. (2017)										X						X
	Information and technology usage				X											
	Job Design	X														
Finegold and Wagner (1998)	Competence/Skill Development		X				X								X	
Furmańska-Maruszak and Sudolska (2016)							X									X
	HR/ Work Practices		X													
	Competence/Skill Development		X													
	(Organizational and Corporate) Culture	X														
	Organizational Performance	X														
	Leadership	X														
	Employee and supervisors co-operation	X														
Friedrich et al. (2016)							X								X	
	Work Organization	X														
	Job Characteristics	X														
	Competence/Skill Development		X													

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
Geary (1999)							X								X	
	Work Organization	X														
	Autonomy/ Employee Empowerment	X														
	Job Design	X														
Gemeda and Lee (2020)							X						X			
	Employee and Supervisors co-operation	X														
	Employee Engagement	X														
	(Country) Culture		X													
	Leadership	X														
	Organizational Performance	X														
	(Organizational) Culture	X														
Ghosh (2014)	External Factors					X				X						X
Ghosh (2015)	Autonomy/ Employee Empowerment	X					X								X	
Hamilton and Davison (2018)										X						X
	Knowledge Share			X												
	Information and Technology Usage				X											
	HR/ Work Practices		X													
Hammond et al. (2011)							X									X
	Job Characteristics	X														
	HR/ Work Practices		X													
	Change Management					X										
	External Factors					X										
Han et al. (2020)							X							X		
	External Factors					X										
	(Organizational) Culture	X														
	Employee Engagement		X													
	Job Design	X														
Howaldt et al. (2016)										X		X				
	Work Organization	X														
	Organization type	X														
	Knowledge Management	X														
	Interfaces Management			X												
	HR/ Work Practices		X													
	(Organizational and Corporate) Culture	X														
Humphreys et al. (2005)								X			X					
	Leadership	X														
	Autonomy/ Employee Empowerment	X														

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
	(Organizational) Culture	X														
	Information and technology usage				X											
	Competence/Skill Development		X													
	Organization type	X														
Isa and Tsuru (2002)							X	X							X	
	Employee responsibility with the customer	X														
	Pay and Incentive Systems		X													
Jilcha et al. (2016)										X						X
	Employee Engagement	X														
	Competence/Skill Development		X													
	Employee Training	X														
Jilcha and Kitaw (2017)	External Factors					X				X						X
Khan and Mohiya (2020)							X				X					
	Creativity	X														
	External Factors					X										
	HR/ Work Practices		X													
	Employee Engagement		X													
	Team work			X												
	(Organizational) Culture	X														
	Employee and Supervisors co-operation	X														
	Employee Training	X														
	Pay and Incentive Systems	X														
	Job Design	X														
	Autonomy/ Empowerment	X														
Kalmi and Kauhanen (2008)							X								X	
	Work Organization	X														
	Information Flow		X													
	Team Work			X												
	Competence/Skill Development		X													
	Employee Engagement	X														
Kim and Bae (2005)	Change Management					X		X							X	
Koski and Jarvensivu (2010)								X							X	
	Change Management					X										
	Influence/Informal Power	X														
	Information Flow		X													

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
Lapointe and Cucumel (2016)							X								X	
	Autonomy/ Employee Empowerment	X														
	Work Organization	X														
	External Factors					X										
	Corporate Strategy	X														
Lee and Kang (2012)	HR/ Work Practices		X					X							X	
Lee (2004)									X							X
	Information and technology usage				X											
	External Factors					X										
	Competence/Skill Development		X													
Long (1989)	Autonomy/ Employee Empowerment	X					X								X	
Lorenz (2015)	Work Organization	X					X					X				
Marks et al. (1997)	Change Management					X			X						X	
Macpherson and Antonacopoulou (2013)								X						X		
	CoP			X												
	(Organizational) Culture	X														
	Leadership	X														
	Governance	X														
McCartney and Teague (1997)							X								X	
	Work Organization	X														
	Pay and Incentive Systems		X													
	Governance	X														
	HR/ Work Practices		X													
	Competence/Skill Development		X													
McCartney and Teague (2004a)							X								X	
	Team Work			X												
	HR/ Work Practices		X													
McCartney and Teague (2004b)	HR/ Work Practices		X				X								X	
Montani et al. (2020)							X						X			
	Management		X													
	Job Characteristics		X													
	Employee Training		X													
	Employee Engagement		X													
Muenjohn and McMurray (2016)							X				X					
	Leadership	X														
	Management		X													
	New Training Practices		X													
	(Country) Culture		X													

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
Muenjohn and McMurray (2017)	Leadership	X					X				X					
Muenjohn et al. (2020)							X				X					
	Integrated Technology				X											
	(Country) Culture		X													
	Leadership	X														
	Management		X													
Oeij et al. (2011)	HR/ Work Practices		X					X		X					X	
Oeij and Vaas (2016)							X					X				
	Information and technology usage				X											
	Organizational Performance	X														
	Work Organization	X														
	Job Design	X														
	Competence/Skill Development		X													
Oeij et al. (2014)							X				X					
	Work Organization	X														
	HR/ Work Practices		X													
Payne (2004)	Work Organization	X						X	X							X
Payne (2017)	WPI implementation support					X				X						X
Pettine et al. (2011)							X					X				
	New Training Practices		X													
	Online learning environment				X											
	Computer-based simulations				X											
	Co-operation actions			X												
Plijter et al. (2014)	(Country) Culture		X					X	X	X					X	
Pomares (2019)										X						X
	Work Organization	X														
	(Country) Culture		X													
	Organization Type	X														
	WPI Implementation Support				X											
	Information and Technology Usage				X											
Pomares (2020)										X						X
	Information and Technology Usage				X											
	WPI Implementation Support				X											
	Integrated Technology				X											
	Knowledge Share			X												
	New Training Practices		X													

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
Pot (2011)										X		X				
	HR/ Work Practices		X													
	Pay and Incentive Systems		X													
	Co-operation actions			X												
	Knowledge Management	X														
	Competence/Skill Development		X													
Pot et al. (2016)										X		X				
	Work Organization	X														
	Organization type	X														
	Knowledge Management	X														
	Interfaces Management			X												
	Information and technology usage				X											
Preenen et al. (2016)							X					X				
	Autonomy/ Employee Empowerment	X														
	HR/ Work Practices		X													
Prus et al. (2017)	WPI implementation support					X		X	X	X						X
Rees (2001)							X							X	X	
	HR/ Work Practices		X													
	Governance	X														
Schenkel et al. (2019)							X				X					
	Employee Training	X														
	Autonomy/ Empowerment	X														
Simmers and McMurray (2019)							X								X	
	Employee Training	X														
	Employee responsibility with the customer		X													
	Influence/Informal Power	X				X										
	Leadership	X														
	(Transformational) leadership	X														
	Pay and Incentive Systems		X													
Subramaniam and Moslehi (2013)	Autonomy/ Employee Empowerment	X					X				X					
Svare (2016)								X			X					
	Interfaces Management			X												
	Knowledge Share			X												
	Employee Engagement	X														
Teague (2005)										X		X				
	Team Work			X												
	HR/ Work Practices		X													
	Change Management					X										

Continued Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
Totterdill and Exton (2014c)										X						X
	Creativity	X														
	Knowledge Share			X												
	HR/ Work Practices		X													
	Co-operation actions			X												
Totterdill and Exton (2014a)	Work Organization	X							X			X				
Totterdill and Exton (2014b)										X		X				
	Autonomy/ Employee Empowerment	X														
	Team Work			X												
	HR/ Work Practices		X													
	Employee Engagement	X														
	(Organizational) Culture	X														
	New Training Practices		X													
	Co-operation actions			X												
Urbach et al. (2016)							X					X				
	Work Organization	X														
	Internal "Marketing"			X												
Von Treuer and McMurray (2012)	Autonomy/ Employee Empowerment	X					X									X
Walsworth and Verma (2007)							X					X				
	Pay and Incentive Systems		X													
	Competence/Skill Development		X													
	WPI implementation support					X										
Williams and LaBrie (2015)	Integrated Technology				X			X							X	
Wipulanusat et al. (2017)							X									X
	Creativity	X														
	Team Work			X												
Wipulanusat et al. (2018)							X					X				
	Leadership	X														
	(Organizational) Culture	X														
	Pay and Incentive Systems	X														
Wipulanusat et al. (2020)							X							X		
	Leadership	X														
	Pay and Incentive Systems	X														
	Autonomy/ Empowerment	X														
	(Organizational) Culture	X														

End of Table A1

Article Reference	Topic	Determinants					Method				Context					
		OR	HRM	C	I	OT	Eqt	CS	Eql	Conc	SME	Data	R&D	Serv	Ind	Ot
	Organizational Performance	X														
	Knowledge Share			X												
Xerri et al. (2015)							X									X
	Employee and supervisors' co-operation	X														
	Autonomy/ Employee Empowerment	X														
	Information Flow		X													
Yeh-Yun and Liu (2012), Zheng et al. (2007)	Creativity	X					X								X	
							X								X	
	Competence/Skill Development		X													
	New Training Practices		X													
Zwanikken et al. (2016)									X							X
	Interfaces Management			X												
	External Factors					X										
	Co-operation actions			X												
	Leadership	X														
	Competence/Skill Development		X													
	Articles Method/ Context types Sum						50	12	11	25	9	22	3	5	28	23
	Articles Method/ Context types Weight %						51	12	11	26	10	24	3	6	31	26
	Topics Sum (38)	17	7	7	4	3										
	Weight % (Non-repeated topics: 38)	45	18	18	11	8										
	Topics Addressed overall Research (301)	123	74	59	21	24										
	Weight % (301)	41	24	20	7	8										

Abbreviations used in Table A1:
Determinants:
OR: Organizational Dynamics,
HRM: Human Resources Management,
C: Collaboration,
I: IT Infrastructures,
OT: Other Facilitators.
Method:
Eqt: Empirical Quantitative,
Eql: Empirical Qualitative,
CS: Case Study,
Conc: Conceptual.
Context:
SME: Small and Medium-sized Enterprise,
Data: Secondary database,
R&D: Research and Development,
Ser: Service,
Ind: Industry,
Ot: Other.