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# Innovation Methodologies to Activate Inclusive Growth in the Organization

*Garazi Carranza Ruiz de Loizaga  
and Begoña Sanchez Gonzalez*

## Abstract

Digitalization is transforming the way we move and produce, encouraging the industry to use the best available technologies focusing on people. Non technological innovations, especially, Workplace Innovation (WI) will play a key role in the digital revolution and acceleration of the technological advances, improving the competitiveness of the companies. This draws attention to the importance of the innovation culture and employee engagement focused on improving employee motivation and working conditions, thereby improving labor productivity, organizational efficiency, innovation capacity, market reactivity, and, as a result, business competitiveness. WI is a combination of structural and cultural practices that boosts employees' participation, improving the quality of work and organizational performance. These strategies aim to promote innovative work behavior to create, introduce and apply new ideas, processes and products. To address these issues this chapter analyses WI in rail sector and defines WI Scheme for rail sector. A theoretical background is presented based on a sample of 203 railway entities across European Union (EU). Then, data analysis and results are examined and the guide to implement WI scheme is defined. Finally, the results of the research, including limitations and concluding remarks are discussed.

**Keywords:** workplace innovation, business management, decision management, innovation, organizational innovation, open culture

## 1. Introduction

In recent years, the transformation of the organizational culture has become a disruptive way for companies to grow and innovate. Business practitioners, researchers and leaders are paying attention to innovation in the workplace to improve the organizational performance. Additionally, the COVID-19 crisis has highlighted the importance of digitalization and the need to fast-track the progress in technological innovations developed up to date. Consequently, the industry, no matters from which sector, needs to engage in the process of continuous improvement for being prepared to the new revolution in order to maintain their competitive advantage. In this situation, the role of Workplace Innovation (WI) is considered as an engine to improve organizations' ability to continuously generate innovations.

Rail is synonymous of technology, efficiency and sustainability. The railway industry is an important sector for Europe, with a turnover of 492 billion of euros. Since 2017, the industry's annual growth has been 3,6 and is expected to grow further at a rate of 2,3% until 2025 [1]. However, due to COVID-19 crisis the transport demand has been reduced by approximately 90% affecting the railway sector. The decrease of passenger and freight volumes results in postponements and cancelations of orders, as well as a lower services volume [1]. Although the railway sector has been affected by the consequences of the pandemic, there is a need to highlight rail transport plays a vital role in preserving the environment due to the low CO<sub>2</sub> emissions, as well as supporting European society and its economy [2]. In this sense, the competitiveness and productivity growth of the railway industry depends, among other factors, on the company's ability to innovate, and rail research is a key driving force for Europe to maintain its competitiveness in technological development.

Social, economic and technological changes have driven the railway's sector migration towards the Open Innovation model. In spite of the great pressure from the business environment trends, stakeholders from the rail industry are still reluctant to open up their innovation strategy. WI has not been the sector's priority up to date, as it has been focused primarily on technological innovation to adapt to market demands. Therefore, the biggest challenge has been focused on providing innovative products offering quickness and flexibility to respond the changing customer's demands.

Technological innovation needs to be implemented together with non-technological innovation and WI presents an opportunity for this. This chapter develops and tests a research model based on WI concept on railway's companies by considering the literature and research related to the employees' personal innovation behavior, organizational practices, process practices as well as the impact on company performance. WI scheme developed for rail sector, is an overview of the results obtained by RailActivation project, which has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 861887. The chapter analyses the key competences and skills that presently characterize the rail industry, and to draw a general picture of how these are developed, in which context, and through which particular mentoring process. Then, data analysis and results are examined to develop the WI scheme and a guide to implement it is defined. Finally, the research findings are discussed, including the limitations and concluding remarks.

## **2. Theoretical background**

Workplace Innovation (WI) is a relatively new concept [3], being a combination of structural and cultural practices that enable employees to participate in the organizational change and renewal. Hence, improving the quality of working life and organizational performance [3]. According to the European Commission (EC) to stay at the competitive edge, companies need to invest not only in technological innovation but also in non-technological practices. Workplace Innovation can mean many things such as a change in business structure, human resources management, relationships with clients and suppliers, or in the work environment itself. It improves motivation and working conditions for employees, which leads to increased labor productivity, innovation capability, market resilience and overall business competitiveness. All enterprises, no matter their size, can benefit from WI.

The EC, by means of the European Workplace Innovation Network-EUWIN, launched in 2013, has also published a guide-to-guide companies on the implementation of WI. The network is quite active and connects nowadays more than 10,000 companies and other stakeholders. The guide refers to high performance jobs when:

1. Jobs are empowered and self-managed teams.
2. Flexible organizational structures, people-centered management practices and streamlined systems and procedures are based on trust.
3. Systematic opportunities for employee-driven improvement and innovation are available.
4. Leadership is co-created and distributed combined with 'employee voice' in strategic decision-making.
5. The enterprising behavior, the culture of innovation, the high levels of employee engagement, and the organizational and individual resilience, which flourish only when the other four combines to shape experience and practice across the whole organization.

WI focuses on work organization as a means of innovation and employee involvement, which aims to improve work quality and organizational performance. These techniques are designed to encourage employees to deliberately develop, implement and apply new ideas, process and products [4]. WI lies at the intersection of skills, technology and human resources management [5]. According to the literature, we can see the European workers percentage involved in improving work organization or processes is not really high (47%) [6].

The drivers for WI implementation are divided into two main groups [7]. On the one hand, the improvement of the organization economic goals and performance quality (e.g., increase of productivity, manufacturing quality, customer service, financial performance and profitability etc.). On the other hand, the quality of working life and employee engagement (e.g., increases employee motivation and well-being, playing a particularly important role in reducing stress, enhancing job satisfaction and mental health, and improving retention etc.).

The Employee Participation and Organizational Change (EPOC) analysis evidenced direct employee participation impacts on productivity, innovation and quality. The EPOC analyzed 6000 workplaces in Europe, and confirmed organizations with semi-autonomous groups had 68% reductions in costs, 87% of these entities reduced production times, 98% improved their products/services, and 85% increased their sales [8]. Furthermore, Swedish study evidences flexible organizations were more productive (+20–60%), had a lower rate of staff turnover (–21%) and had a lower rate of absence due to illness (–24%) [9]. The benefits of WI and the effect on entity efficiency and performance is as well evidenced by a review of sixte American articles, with improvements of between 15% and 30% in the performance of those companies [8].

Therefore, WI not only aims at promoting innovation capacities but also allows the companies to remain innovative and adapt to changes quickly and smoothly. WI strengthens an organizations' capacity to innovate by fostering both high-quality employment and good organizational performance [10]. Only the 25% of innovation is related to technological research, while the remaining 75% is related to management organization and work practices at the business level [8, 11, 12]. According to the literature, leaders are those in charge of building an innovative climate and

motivate the team towards innovation [13]. This means, the innovative behaviors and attitudes that are conducive to innovative projects are boosted by leaders [14].

According to the research conducted among companies about WI, it can be seen there a positive relation between non-technological innovation and organizational performance, all resulting in more dynamism, innovation capacity and competitiveness. However, the influence of combined organizational factors and individual employee behavior adoption has not been thoroughly analyzed in the railway sector.

### 3. Analyzing workplace innovation in EU rail sector

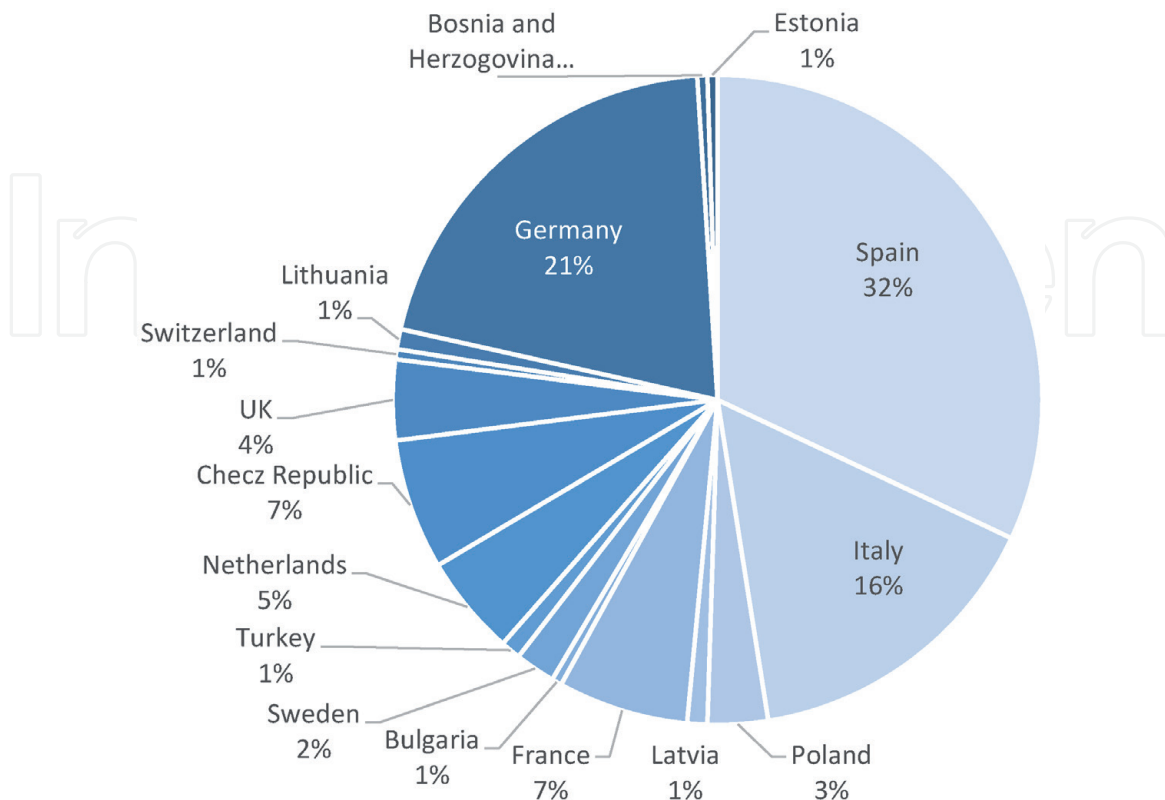
#### 3.1 Data and sample

The entities selected for this study belong to the European railway sector. The data used was collected randomly by an online survey drawn out based on the results of the benchmark and European WI concept and indicators [15]. The survey was divided into three sections: individual level, organizational level and process level. Furthermore, the effects of these three sections on the company's WI is also considered, in a results level.

The typology of questions used has been varied, using open answers, multiple-section, one-choice questions and Likert scale to measure the degree/disagree level.

Data was collected over 54-day period (between 02/12/2019 and 24/01/2020) and the final sample included 203 respondents from 16 European countries. This variety of countries enriches the sample of respondents shown in **Figure 1**.

Regarding the quantitative analysis, considering that European Rail Industry employs nearly 400,000 people [1] the study has a confidence level of 95% and a margin of error of 7%.



**Figure 1.**  
Sample description (countries).



### 3.2 Definition of the general trends of WI in the European railway sector

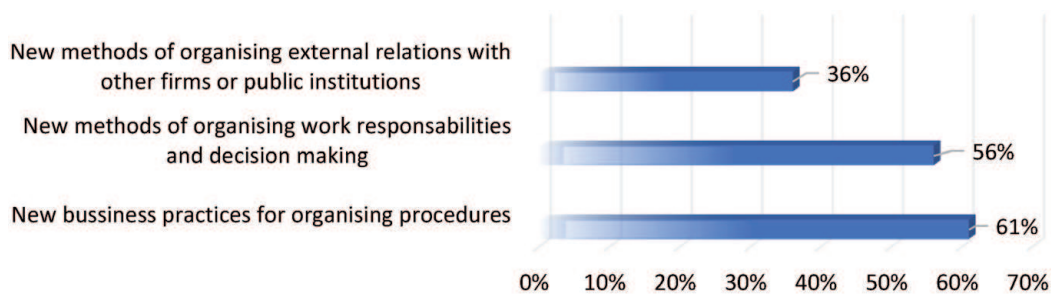
The analysis aimed to examine which organizational, process and individual factors play a role in innovation adoption at the employee's level.

#### 3.2.1 Organizational level

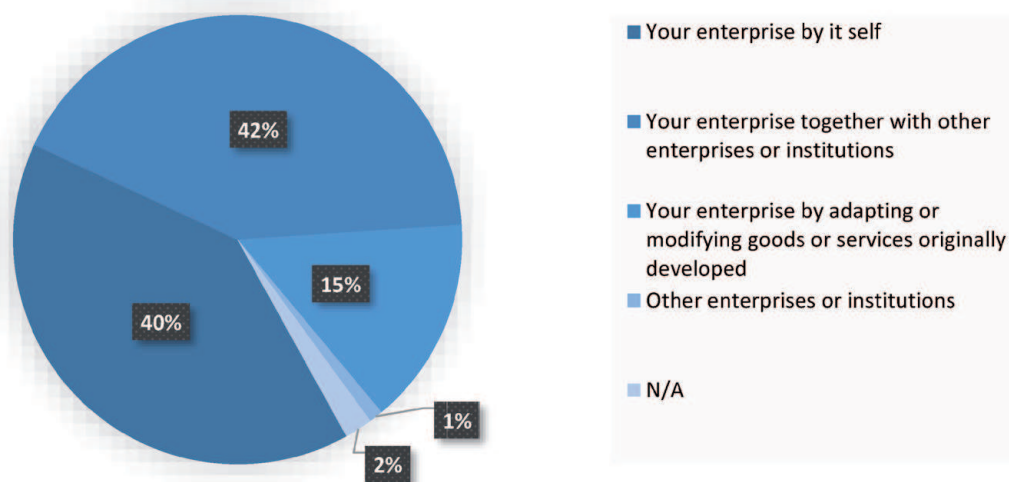
Organizational variables concern the context in which work is carried out. As long as WI is lacking, technological innovation is regarded a necessary but not sufficient prerequisite for change and improvement. As a result, WI refers to the essential organizational adjustments that will enable employees to properly incorporate and apply technological innovation. Most of the respondents (79,5%) indicated that during the last three years their companies had introduced new product or new process to the market. Furthermore, 60,2% of the respondents confirmed that additionally, their entities introduced organizational and marketing innovation strategies as shown in **Figure 2**.

The majority of the product and process innovations were developed by the companies' themselves, and these innovations resulted from collaborative work with other entities and institutions. Companies should go beyond their internal processes and develop cooperation with external organizations or professionals. This means combining their internal knowledge with external knowledge to move forward in their strategy. In this sense, it should be highlighted that not many rail entities focus their innovation on modifying other entities innovative solutions and this is shown in **Figure 3**.

**Figure 4** shows how each company has its own approach to organize their innovations. Based on the results, most of the entities involve different departments in



**Figure 2.**  
*Innovations introduced during the last three years in EU entities.*

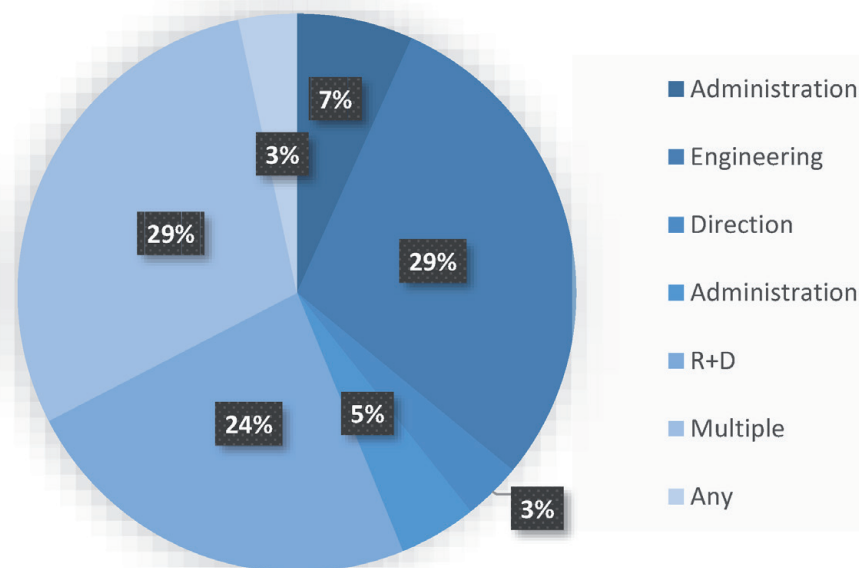


**Figure 3.**  
*Innovation's development in EU rail entities.*

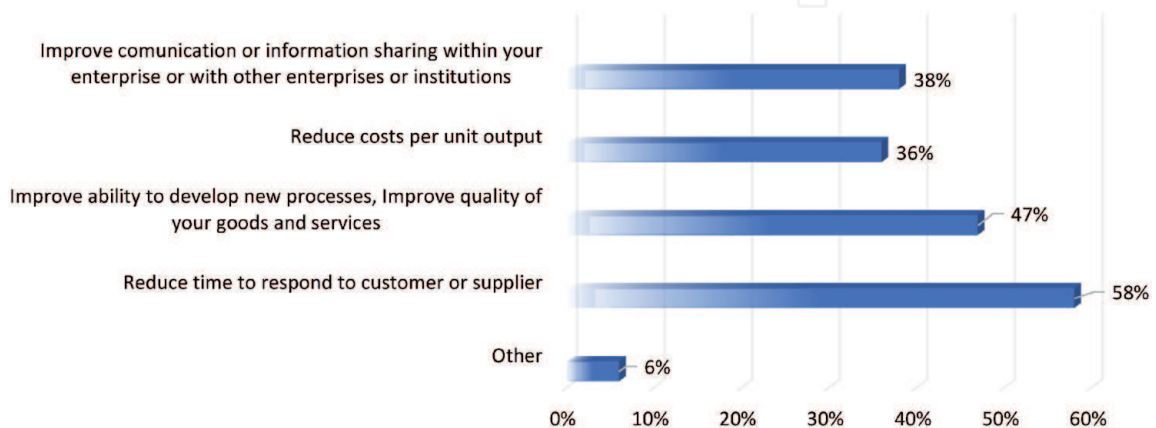
their innovation processes. However, in most of the cases, the engineering department is the one that leads the innovations.

Among organizational innovation, entities mostly implement new business practices for organizing procedures (62,3%). More than half of the respondents confirmed their organization had used new methods for organizing work assignment and decision making in their enterprises. These improvements were focused on the use of a new system of employee responsibilities, teamwork, decentralization, integration or de-integration of departments, as well as education/training systems. The remaining 40,7% introduced new methods of organizing external relations with other firms or public institutions. These changes were mostly focused on the use of alliances, partnerships, outsourcing or subcontracting.

The improvement of quality goods or services (60%), the reduction of time to respond to customer or supplier needs (57,5%), and the improvement of the ability to develop new products or processes were assigned the highest priority among the objectives for firms addressing organizational innovations over the previous three years (47%). An open culture will allow to face the challenge of launching innovative products, offering quickness and flexibility to respond to changing demands from their customers, as shown in **Figure 5**.



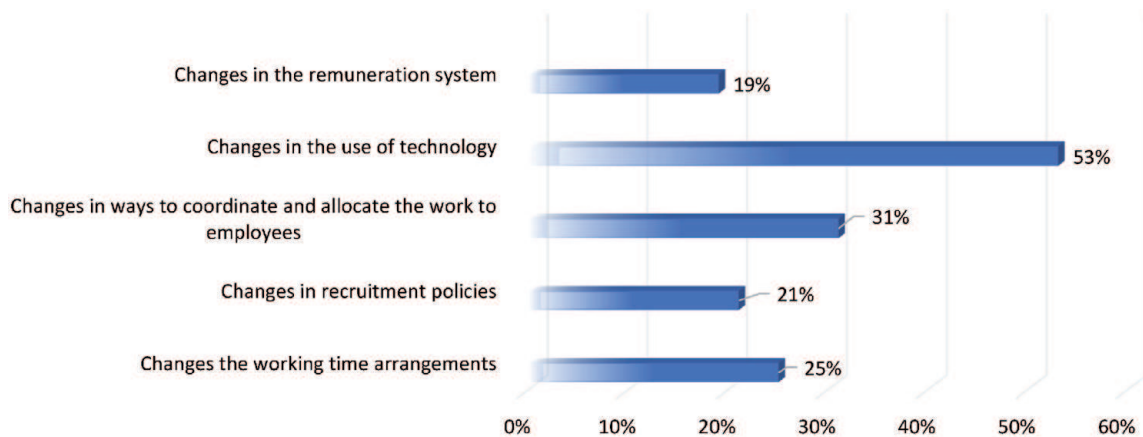
**Figure 4.**  
*Departments in charge of the product and process innovations development.*



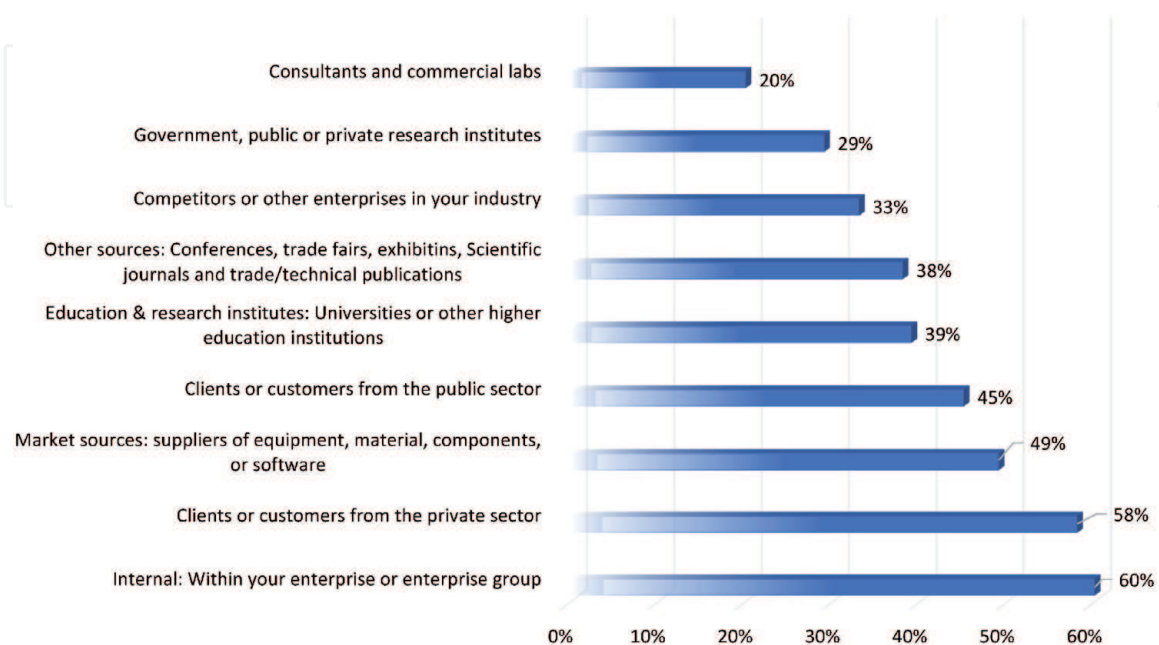
**Figure 5.**  
*Objectives for organizational innovations introduced in EU railway enterprises during the last three years.*

Companies that work in the railway sector are prompt to introduce changes in their internal processes. In particular, great changes in relation to the use of technology, the way to coordinate and allocate the work to employees, the remuneration system, recruitment policies and in the working time arrangements have been confirmed (**Figure 6**).

As mentioned in Section 2, WI is a complex process which depends on various organizational and management factors. With regards the changes in the external processes, these seem to be less important than the internal ones. More than half of the respondents have confirmed their organizations had adopted new strategies for organizing job responsibilities and decision making. The most used information methods are internal sources and public sector sources. Both of them are used by more than a half of the respondents. Market sources (e.g. suppliers of equipment, materials, components, or software) and opinion of clients or customers from the public sector are very frequent also (both have more than 40% of positive answers). Nevertheless, information provided by consultants and commercial labs were not considered relevant source of the information for innovation projects, as shown in **Figure 7**.



**Figure 6.**  
*Internal changes introduced in EU railway enterprises during the last three years.*



**Figure 7.**  
*Information sources used for new innovation projects or contributed to the completion of existing projects during the last three years.*

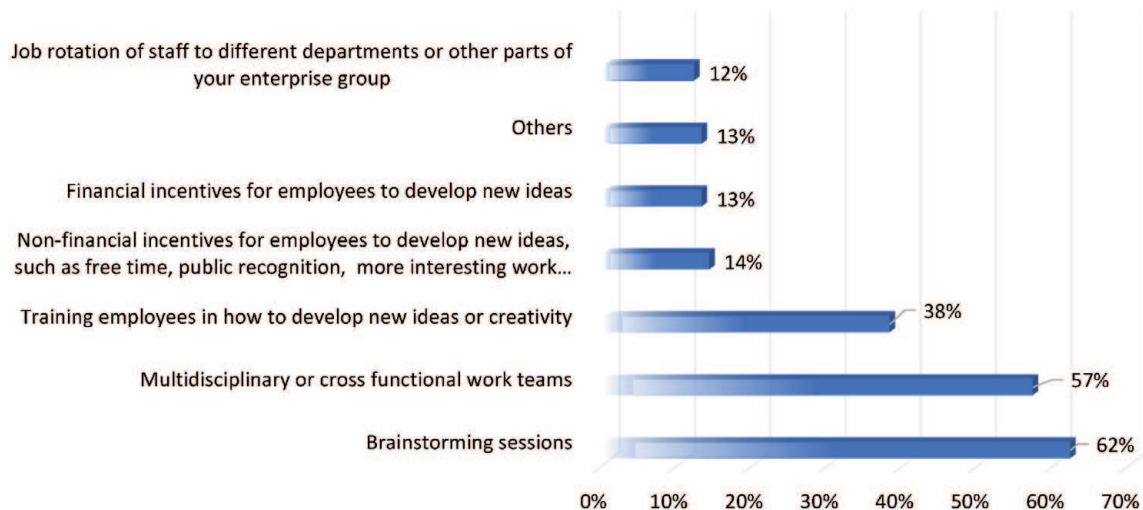


According to the achieved results, brainstorming sessions are the most common tools the entities implement in their innovation practices (61,9%), followed by multidisciplinary or cross functional work teams (56,7%). These methods are based on staff rotation through different departments, financial and non-financial incentives, and public recognition, among others (Figure 8).

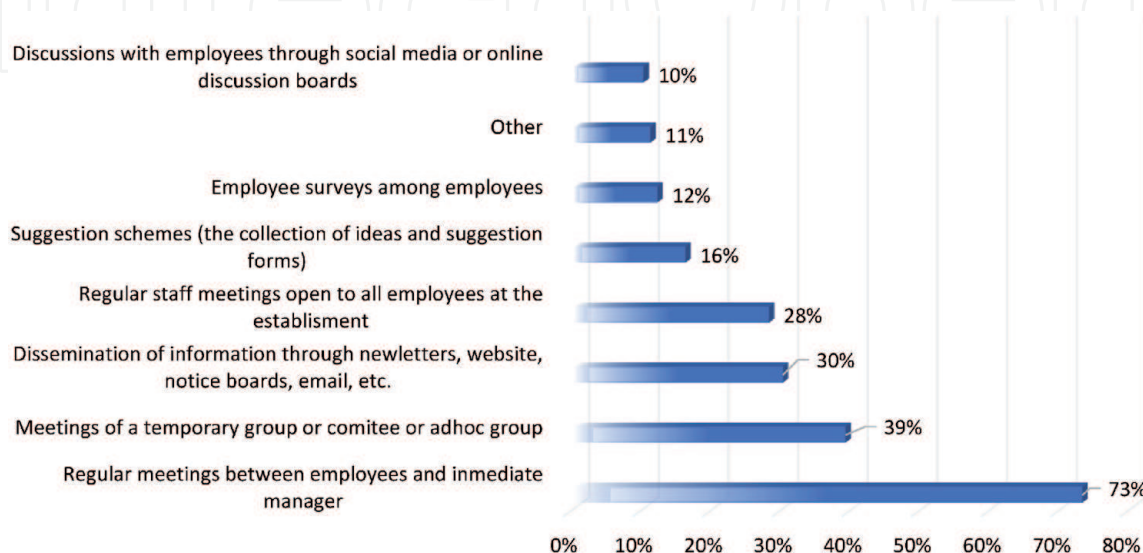
The most common method to involve the employees are regular meetings between employees and immediate managers (73%). The Committees or task forces are less common, as well as the communication methods such as internal newsletters, notice boards and email. Additionally, open meetings to all employees, suggestions schemes for collection of ideas and employee surveys are the most used ones by big entities (Figure 9).

### 3.2.2 Process level

At process level is measured the development of new approaches/practices as a result of the implementation of various WI instruments, analyzing the effect of methods on the staff's ability to generate new ideas. Autonomy and participation concern the degree to which employees can decide the way their work is carried out.



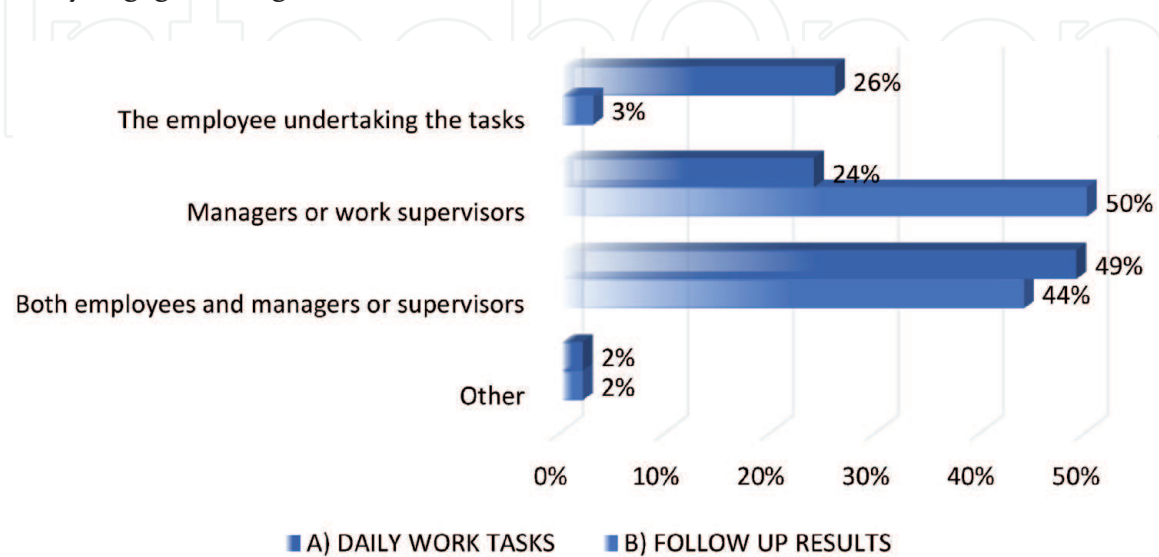
**Figure 8.**  
*Methods of staff stimulation in order to develop new ideas or creativity.*



**Figure 9.**  
*Methods of involving employees into enterprises' innovation activities.*

Almost half of respondents indicated that daily work decisions are taken in collaboration between employees and managers. However, the number of employees involved in the follow up is not really relevant. Normally, it is the manager the responsible of monitoring the tasks, as it is shown in **Figure 10**:

Innovation behavior concerns the extent to which employees feel they are involved in the development of innovation. For all job levels, highest percentage of employee's involvement was in the development of process innovation (58,45%), as well as for product innovation (57,67%). However, the study reveals that employees do not feel really engaged in organizational innovation. **Table 1** shows the obtained results.



**Figure 10.**  
 Difference between decision taking for daily work tasks and follow up results.

Developed innovation	Position						Total (row) f
	Assistant		Director		Manager		
	f	%	f*	%	f*	%	
<i>Product innovation</i>							
No	13	56,5%	13	32,5%	30	38,0%	56
Yes	10	43,5%	27	67,5%	49	62,0%	86
Total	23	100,0%	40	100,0%	79	100,0%	142
<i>Process Innovation</i>							
No	9	39,1%	15	37,5%	35	44,3%	59
Yes	14	60,9%	25	62,5%	44	55,7%	83
Total	23	100,0%	40	100,0%	79	100,0%	142
<i>Marketing Innovation</i>							
No	8	34,8%	23	57,5%	46	58,2%	77
Yes	15	65,2%	17	42,5%	33	41,8%	65
Total	23	100,0%	40	100,0%	79	100,0%	142
<i>Organizational Innovation</i>							
No	17	73,9%	20	50,0%	53	67,1%	90
Yes	6	26,1%	20	50,0%	26	32,9%	52
Total	23	100,0%	40	100,0%	79	100,0%	142

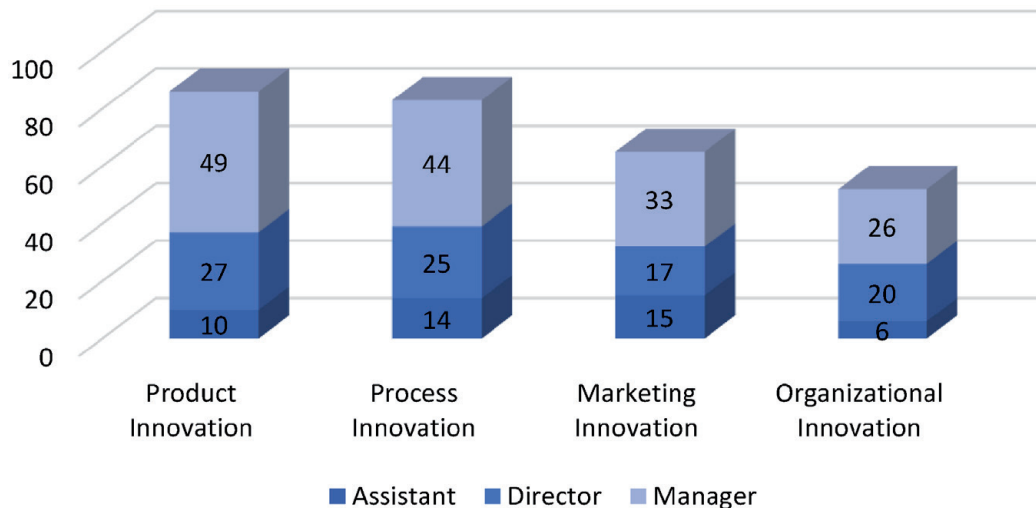
\*f =frequency.

**Table 1.**  
 Type of developed innovation/role in entity income crosstabulation.

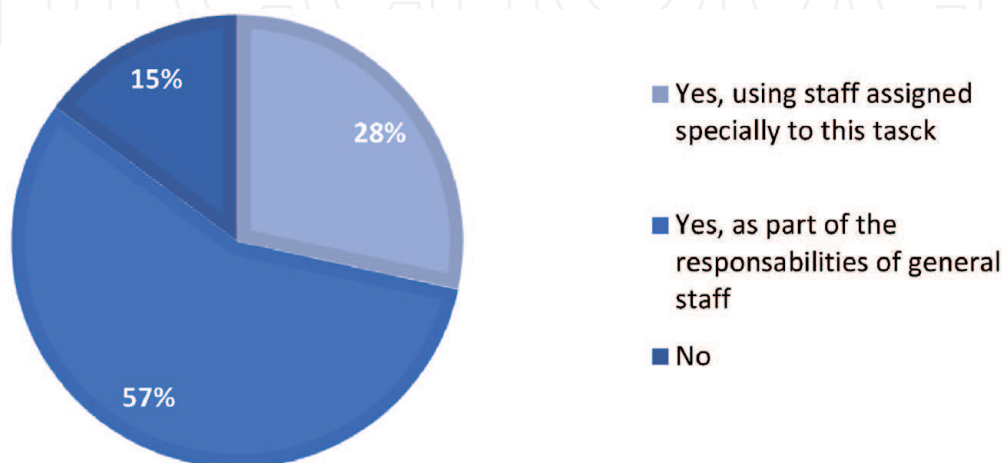
**Figure 11** show the position perspective on involvement of employees into development of different types of innovations.

Existing approaches to the organizations' Knowledge and Information Management (KIM) were also evaluated. These aspects are focused on keeping and sharing best practices among the entity. In most of the cases (66,8%), there is an established procedure for keeping records of the good practices or lessons learned. Additionally, 56,7% of the entities that implemented these documenting procedures for monitoring external ideas or technological developments are doing it as a part of the responsibilities of general staff and 28,4% are using staff assigned specifically to this task, as shown in **Figure 12**.

Organizations have the need for new models of relationships based on sharing and making information accessible, the exchange of ideas and open collaboration. Most of the respondents had their own technology surveillance systems (69,9%) for monitoring market trends and technological developments. Among the methods used for monitoring external sources, the following are highlighted: Internet (58,6%), seminars and trade fairs (57,1%) and personnel training (49%). Other methods such as visits to other workplaces, reading publications in both professionals' journals and research and scientific magazines are not relevant for rail industry (**Figure 13**).



**Figure 11.** Position perspective on involvement of employees into development of different types of innovations (in frequency of participation).

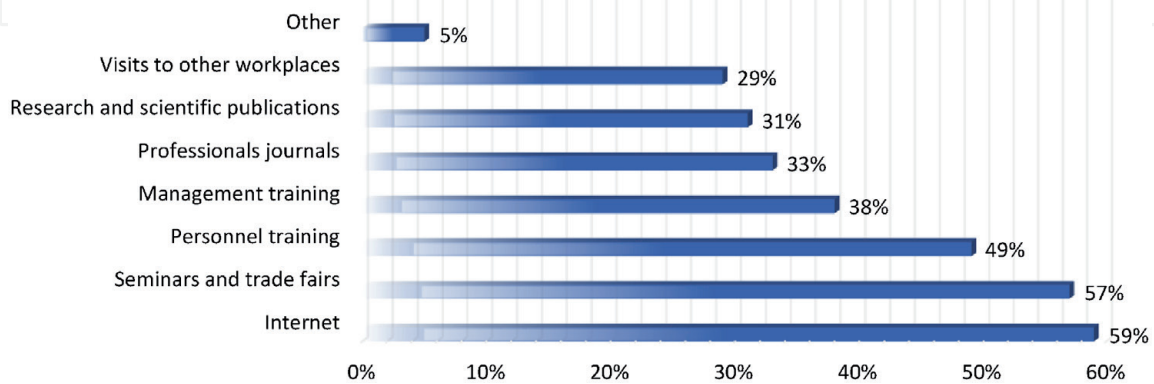


**Figure 12.** Particularities of KIM in EU railway enterprises (organization of work of employees who document and keep records of their good work practices).

### 3.2.3 Individual level

The individual level refers to the attitudes of the employees towards innovation, as well as their individual characteristics, such as age and gender. The only type of innovation in which women have a higher chance than men of being involved is management innovation, which accounts for around 19% of the difference. The drawn-up cross-tabulation (**Table 1**) allows us to see that all age groups are participating in the development of all four types of innovation.

**Table 2** shows that the middle-aged employees (36–55 years old) have the highest frequency of participation in innovation development. However, if we



**Figure 13.**  
 Methods and instruments used for monitoring of external ideas or technological developments for new or changed products, processes or services.

Developed innovation	Age						Total (row) f
	18–35		36–55		56–65		
	f	%	f*	%	f*	%	
<i>Product Innovation</i>							
No	13	65,0%	42	36,5%	15	46,9%	70
Yes	7	35,0%	73	63,5%	17	53,1%	97
Total	20	100,0%	115	100,0%	32	100,0%	167
<i>Process Innovation</i>							
No	13	65,0%	55	47,8%	9	28,1%	77
Yes	7	35,0%	60	52,2%	23	71,9%	90
Total	20	100,0%	115	100,0%	32	100,0%	167
<i>Management Innovation</i>							
No	9	45,0%	66	57,4%	19	59,4%	94
Yes	11	55,0%	49	42,6%	13	40,6%	73
Total	20	100,0%	115	100,0%	32	100,0%	167
<i>Organizational Innovation</i>							
No	12	60,0%	75	65,2%	21	65,6%	108
Yes	8	40,0%	40	34,8%	11	34,4%	59
Total	20	100,0%	115	100,0%	32	100,0%	167

**Table 2.**  
 Type of developed innovation/age crosstabulation.



look at the average probability of participation in the innovation development for different age groups, the 56–65 years old participants are those who have the highest probability of being involved in innovation development (50%). The second highest involvement in innovation development is among young employees (41,25%), and the lowest (37,63%) is among middle-aged employees (36–55 years).

#### 4. Workplace innovation scheme for rail industry

The Scheme pretends to be a flexible itinerary that will drive the company to better competitiveness using WI. The analysis in Section 3 evidences that companies must pay attention to the environment to identify the barriers that prevent teams to be more productive. Therefore, managers must believe in the WI and commit the team, as they will be the responsible of implementing the new tools and measure results to progressively move towards a full open culture that promotes digital transformation.

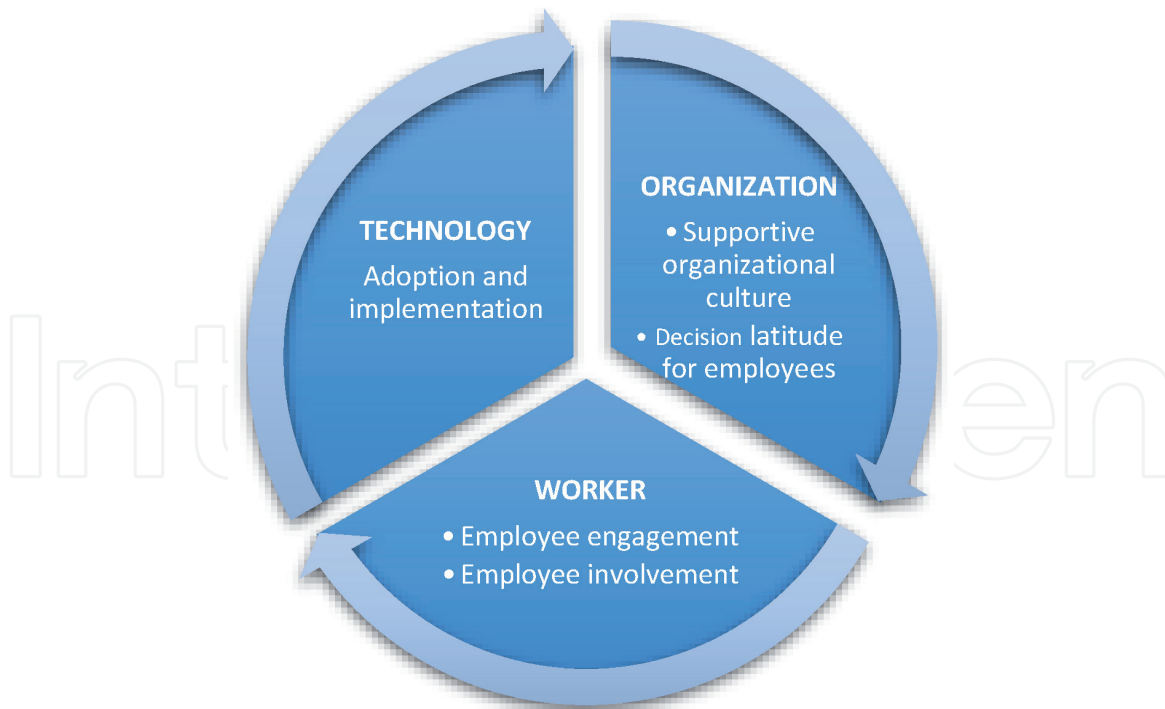
The driver for Workplace Innovation includes economic as well as social and human aspects, such as:

- **Strategic orientation:** to be innovative and competitive, organizations need to react to in their environment such as client and competitor behavior, new technological developments, and legislation, etc. this requires purchasing of new knowledge from outside, networking and cooperation with external partners.
- **Organizing smarter:** the ability of the company to invent new combination of organization, staff deployment and technical applications with a clear focus on the renewal or improvement of work processes.
- **Flexible work:** increasing flexibility of work through increasing the employability of the staff, facilitating flexible working time and/or contracts, self-rostering, etc. with attention to individual arrangement on working time, work performance, personal development and flexible employment.
- **Product-market improvement:** innovation by searching for new markets and clients, and the improvement of products and services.

These elements were already part of the questionnaire used in the consultation analysis and are also the basis of the WI Pilot Scheme. The Scheme will drive the company through an itinerary to understand where they stand on WI focusing on the following three interrelated aspects shown in the **Figure 14**:

- The Organization as such
- The employee
- The approach to technological and market developments

The company can select the blocks based on their specific needs, some companies will go for all the blocks, while others will select and implement only those they



**Figure 14.**  
*Workplace innovation scheme.*



**Figure 15.**  
*WI scheme for rail sector.*

want to improve. The blocks and the itinerary suggested to improve the Workplace Innovation within a company are the following ones shown in **Figure 15**:

#### **4.1 Block 1: employees**

In this block or step, the company will analyze, and address aspects directly related to employees within a company. The main purpose is to check how the employees feel within a company and focus on a better engagement and involvement. **Table 3**, shows the structure suggested for the Block on Employees, based on the previous research. Seven relevant aspects are suggested to be considered in a company to check the status of WI under the Block Employees:

#### **4.2 Block 2: organization**

Following the same logic as for the Block on Employees, the following results have been raised by the people participating in the survey and, on this basis, these are the eleven key factors suggested to review and consider for improving WI oriented to the organization (**Table 4**):

Block 1. Employees. Aspects to consider	Block 1. Employees. Some ideas to do it
<ul style="list-style-type: none"> <li>• Innovation culture among employees</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage innovation culture: Be honest and open, share ideas, explore initiatives without fear of retribution, allocate time for the employees to break from routine roles to inspire new thoughts.</li> </ul>
<ul style="list-style-type: none"> <li>• Cross functional teams</li> </ul>	<ul style="list-style-type: none"> <li>• Promote the development of cross actions among different teams: employees from different parts of the business; brainstorming sessions, improvements to processes together, etc.</li> </ul>
<ul style="list-style-type: none"> <li>• Encourage different perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• Look for employees who understand business vision, align with its culture – which is not necessarily the same one, may have different perspectives, come from diverse backgrounds, etc.</li> </ul>
<ul style="list-style-type: none"> <li>• Gender issues</li> </ul>	<ul style="list-style-type: none"> <li>• Take it into consideration. Average of women in the railway sector. Identify their responsibilities, their positions in the company, etc.</li> </ul>
<ul style="list-style-type: none"> <li>• Training / Professional career</li> </ul>	<ul style="list-style-type: none"> <li>• To know the level of education of employees. Contrast it with the needs of the company and detect gaps. Identify training needs and support individual training and individual training plans for employees. Trainings about creativity, innovation, etc.</li> </ul>
<ul style="list-style-type: none"> <li>• Employees from different positions work together</li> </ul>	<ul style="list-style-type: none"> <li>• Employees from different positions and responsibilities get together to improve the work organization and processes of different departments.</li> </ul>
<ul style="list-style-type: none"> <li>• Clear responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>• The responsibilities of the employees should be clear, defined and shared, aiming to avoid the lack of motivation among the staff.</li> </ul>

**Table 3.**  
*Workplace innovation under the block employees.*

### 4.3 Block 3: technology and market

Based also in our research, these are the eleven topics that are suggested as key topics to assess WI under Block 3 (**Table 5**):

### 4.4 How to implement WI scheme for rail sector?

The Pilot Scheme can be implemented by each company on an individual basis, the recommendation would be for each company to create a small team devoted to WI (including employees from different profiles and responsibilities) that follows up the situation of the company (**Figure 16**). The time devoted to the implementation of the Scheme should be decided by each company. The following three steps are suggested:

More in detail, the following is suggested:

**Step 1.** Workplace Innovation Kick off. The idea is to check the initial situation of the company regarding Workplace Innovation. An internal analysis including a Strengths, Weaknesses, Opportunities and Threats (SWOT) matrix as a result could be very useful. This will help to better contextualize and decide a further approach. The SWOT matrix allows a strategic analysis useful for a further planning to achieve the objectives or expected results. The Strengths and Weaknesses are related to internal factors while the Opportunities and Threats depend on external factors, as shown in the table.

Based on the initial SWOT produced, a meeting where the results are shared with the rest of employees is suggested. On this basis, an updated matrix can be proposed and at the same time, decide where the weaknesses and strengths regarding Workplace Innovation are. Following this, the company will decide if they go for the three blocks of the Pilot Scheme or for any of them.

<b>Block 2. Organization. Aspects to consider</b>	<b>Block 2. Organization. Some ideas to do it?</b>
<ul style="list-style-type: none"> <li>• Provide support for sharing ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Many large companies already have methods to allocate time and means to their employees to break from routine roles, to inspire new thoughts, etc. by means of meetings, suggestion boxes, suggestion area on the internal intranet.</li> </ul>
<ul style="list-style-type: none"> <li>• Generational change</li> </ul>	<ul style="list-style-type: none"> <li>• Employees' age and their position, what are the reasons behind, when it is necessary to transfer knowledge from the most experienced personnel to other workers, etc.</li> </ul>
<ul style="list-style-type: none"> <li>• Procedure to assess new ideas from employees.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure there is a specific process which everyone understands for assessing each new idea. This must be supported by acknowledgement and feedback in a timely manner. Introduce a new idea or <i>what if?</i> section to regular meetings, brainstorming sessions.</li> </ul>
<ul style="list-style-type: none"> <li>• Implement employees' ideas and suggestions in a fast and regular way.</li> </ul>	<ul style="list-style-type: none"> <li>• When employees see that they are influencing the direction of the business, they will be extremely motivated to continue sharing ideas, working towards the success of the idea and encouraging productivity of other employees.</li> </ul>
<ul style="list-style-type: none"> <li>• Suggest rewards to employees</li> </ul>	<ul style="list-style-type: none"> <li>• Rewards can be for individuals or even for teams or for the whole workforce. The important thing is that employees see that their efforts to improve the business are appreciated. They could be non-financial incentives such as free time, recognition, more interesting work, etc. Or financial with a specified in advance remuneration system.</li> </ul>
<ul style="list-style-type: none"> <li>• Establish a collaboration space</li> </ul>	<ul style="list-style-type: none"> <li>• Provide a dedicated area that will promote interaction with employees.</li> </ul>
<ul style="list-style-type: none"> <li>• Improve communication or information sharing</li> </ul>	<ul style="list-style-type: none"> <li>• Dissemination of information can be done through newsletters, website, notice boards, email, etc. depending on the type of information that is shared. Discussions with employees through social media or in online discussion boards, employee surveys among employees, etc.</li> </ul>
<ul style="list-style-type: none"> <li>• Establish a feedback culture at all organization levels</li> </ul>	<ul style="list-style-type: none"> <li>• This fact provides company members with feedback on their work. It also encourages them to participate in relevant decisions of the company.</li> </ul>
<ul style="list-style-type: none"> <li>• Promote and Share Good Practices/ lessons learnt</li> </ul>	<ul style="list-style-type: none"> <li>• Keep records of their good work practices or lessons learned and share it with other employees.</li> </ul>
<ul style="list-style-type: none"> <li>• Clarify which are the departments or areas in charge of innovation</li> </ul>	<ul style="list-style-type: none"> <li>• There are different options: to have a department where the innovations are centralized, to make innovations in for each department, to coordinate all actions, etc.</li> </ul>
<ul style="list-style-type: none"> <li>• Work Teams</li> </ul>	<ul style="list-style-type: none"> <li>• See if the work is done individually or in teamwork. Design the best protocols, carry out the work in the most efficient and satisfactory way, choose their own members, choose their own leaders, decide on their day-to-day and weekly tasks themselves, know who is the responsible for the quality of their work, members that perform several different tasks in the team etc.</li> </ul>

**Table 4.**  
*Workplace innovation under the block organization.*

**Results:**

- Create a Workplace Innovation team in the company.
- Produce a SWOT analysis regarding the WI.



<b>Block 3. Technology and market. Aspects to consider</b>	<b>Block 3. Technology and market. Some ideas to do it?</b>
• New product/services identification	• Which new product/services have been introduced in the market by the company and when, not only by the company itself, but also by competitors, stakeholders, etc.
• Marketing innovation	• Study the marketing situation in the company. Know the new trends, see how they can be adapted. Innovating in the way of communicating internally is also a key activity.
• Communication or information sharing with other enterprises or institutions	• Improve communication or information sharing with other enterprises or institutions. Both at the marketing level and at the relational level.
• Co-Development product/processes	• Co-Development with other enterprises or institutions, sharing of objectives, possible cooperation or alliances, participation in innovation projects, etc.
• Proactive approach to business	• Maintain the business model of the company continually updated and matching with changing conditions.
• Benchmarking in a systematic way	• Establishment of a methodology to monitor external ideas, technological developments, new or modified processes or services.
• Use more collaborative information sources	• Active participation in conferences, trade fairs, exhibitions scientific journals and trade/technical publications, professional and industry associations, etc.
• New business practices to organize internal procedures	• New practices such as: supply chain management, business reengineering, knowledge management, lean production, quality management, etc.
• Review and reformed if necessary	• Review for instance: the logistics, delivery or distribution methods for your inputs, goods or services.
• Review the production costs strategy	• It should be continuously adapted, agile to the changes that are made in the production process.
• Changes in the use of Technology	• Invest in having the latest technology that could allow companies to stay competitive and provide the best quality of services or products as possible. Also, apply new technologies at communication level to improve the communication and connection with employees, leaders, and co-workers anytime and anywhere. Systems like Project Management Software, CRM, etc., that can help and improve internal processes.

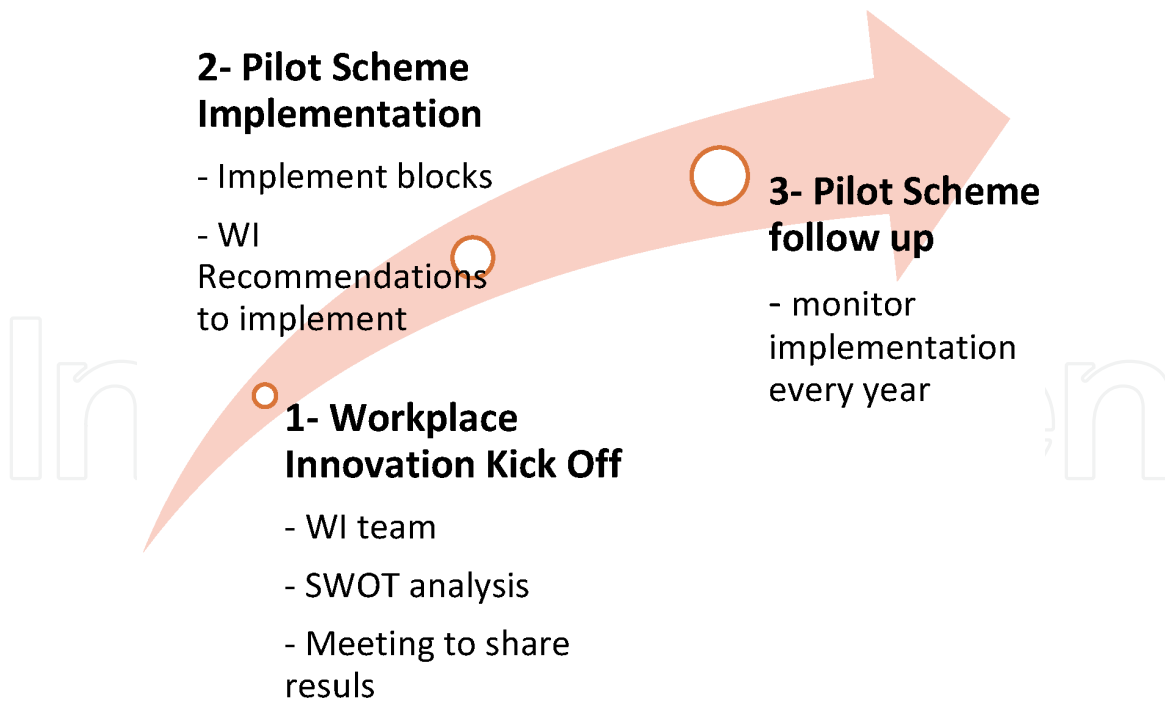
**Table 5.**  
*Workplace innovation under the block 3, technology and market.*

- Workshop with employees to share the SWOT and results.
- Update SWOT and decide for the block of the Pilot Scheme to implement.

**Step 2.** The company will implement the Pilot Scheme and provides recommendations for action. Based on the results gathered under Step 1, the company will implement the Pilot Scheme. The Company can select one of the blocks, two or all. The company should easily check their strong and weak points for the blocks suggested and decide how to implement reinforcement and corrective actions respectively.

**Results:**

- Implement the pilot scheme, all Blocks or the ones they consider based on the results from Step 1.



**Figure 16.**  
*WI scheme for rail sector; steps for implementation.*

**Step 3.** A follow up is suggested every year. This monitoring is very important to ensure implementation of results and potential updates to include.

**Results:**

- Follow up every year if possible.

## 5. Conclusions

At the heart of all transitions are teams and leaders who have the courage to think openly to create a long-term perspective. The literature confirms the digital transformation is influenced by the culture of innovation, the high levels of employee commitment and the capacity for organizational and individual transformation. Digital transformation is the key to business competitiveness in a changing and increasingly demanding market [16]. However, a culture that encourages innovation and creativity is needed to succeed in the railway technological transformation. While the technological investment increases, the digital revolution raises new requirements for completing the transition successfully. In this sense, one of the challenges in the digital age is the adaptation of values, procedures and experiences that characterize the entity through its employees.

A tentative conclusion from the analysis is that employee engagement is an essential driver of WI [17]. The analysis has shown that four elements are relevant for a successful innovation adoption: participatory implementation, innovation behaviors, usefulness of innovation and results demonstrability.

At the organizational level, the results revealed that organizational factors have different impacts on innovation climate. Employee-driven creativity influences the daily evolution of WI practices and gradual improvements, most railway organizations do not use their autonomy to improve WI practices [16]. These findings depart from the WI existing studies that suggest job autonomy can be relevant to guide one's behavioral intentions and has influence positively the company performance [16, 18]. However, within the process level, the result suggests that participatory

implementation plays a key role in WI Implementation. This result is in line with previous research, which confirm teamwork, internal cooperation and dialog will facilitate react more quickly to new ideas and challenges. In the correlation analysis it can be seen that the priority of the railway industry is to ensure the future by responding to business dynamics, rather than building an organizational model based on efficiency or quality or working life [16]. However, considering the change is unavoidable, railway organizations must to changes in order to be prepared for the future. There is evidence that participatory work environments and mechanisms for employee voice are associated with higher levels of innovative behavior [6]. Participatory implementation at the process level is positively related to results demonstrability and usefulness of innovation [16].

As a result, the railway industry's management practices should involve autonomous coordination. This means that instead of only suggesting ideas, the management should engage, stimulate and support the team. Then, based on their experience and point of view, employees would be able to recommend how the ideas should be developed [6, 17]. WI's current challenge thus, is to bridge the gap between employees and management.

As expected, there is a positive relation between innovation behavior and usefulness of innovation. But what's more important is that participatory implementation has an effect on all aspects of employees' perceptions of innovation (results demonstrability and usefulness of innovation). These results are aligned with previous research that evidences individual creativity has positive and significant effect on innovative behavior [19]. Finally, it can be seen there is no significant influence between the perception of innovation or innovation adoption among employees, not having a relevant role in WI autonomy and participation.

The main conclusions reached after the intensive consultation and test of the WI Scheme for rail sector is that the defined scheme is appropriate for Rail sector and it is suitable for other sectors. It is simple and flexible enough to be implemented in companies, that at the same time, can select and implement following an easy process the block or blocks they consider more relevant to better implement WI. The WI Scheme reached a great number of stakeholders and companies from different sectors. The follow up actions on the impact reached showed that the companies had a very positive reaction on the Pilot Scheme. Some observations can be made from these cases and confirm the railway industry is closely involved in the transformation towards WI practices at the process level. Within the scheme, the Block on Employees are the most relevant when implementing Workplace Innovation within an organization, followed by the organizational one and by far, the technology focused one.

However, in order to have a good implementation of the WI Scheme employees of each function should participate regardless of their role, and age, and involving several business functions as innovation goes beyond boundaries. The Scheme and Methodology is easy to use in other contexts too, when a need arises. Main obstacles that could arise are; if in the Scheme, only of technical profiles focused on product innovation are involved; if there is not enough recognition of the value of communication & management and the focus on tasks and less on getting as complete an overview as possible.

Therefore, a tentative conclusion of the analysis is that the change in the working system must be combined with a greater participation of the employees. Employees can commit to an innovative culture through the development of personal competences, but above all, it is important that employees have enough information to know where the company wants to evolve.

Future research would be necessary to analyze the preconditions for participatory structures within work teams. This is an essential factor in the WI since it

is also related to the innovative behavior of employees and their commitment to the company. Companies in the sector need committed workers who are willing to face the industrial revolution of the sector. The European railway industry has the potential to be highly competitive, but it will not be so in a few decades if the transformation of workplaces is not promoted in order to attract engage and retain young talents [16]. As previously stated, the railway industry is traditional sector and in order to adapt to the changing environment it has capacities to implement innovative culture that allow continuous change in response to consumer demands. Furthermore, further research on the factors that could influence railway efficiency in the future as a result of COVID-19 should be made in order to facilitate the acceleration of railway strategies ensuring long term sustainability of the sector.

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## **Availability of data and material**

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

## **List of acronyms**

WI	Workplace Innovation
OI	Open Innovation
SMEs	Small and medium entities
SWOT	Strengths, Weaknesses, Opportunities and Threats
EUWIN	European Workplace Innovation Network



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### Author details

Garazi Carranza Ruiz de Loizaga<sup>1\*</sup> and Begoña Sanchez Gonzalez<sup>2</sup>

1 MAFEX-Spanish Railway Association, Bilbao, Spain

2 TECNALIA Research and Innovation, Bilbao, Spain

\*Address all correspondence to: [garazi@mafex.es](mailto:garazi@mafex.es)

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