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December 2012

Online at <https://mpra.ub.uni-muenchen.de/43406/>

MPRA Paper No. 43406, posted 24 Dec 2012 10:17 UTC

Mainstreaming Innovation in Europe:

Findings on employee innovation and workplace learning from Belgium.

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Abstract (147 words):

The EU is striving for an 'Innovative Union'. Various case studies already hinted that the involvement of various types of employees is crucial for the organisational innovativeness. Using data from a large scale Belgian employee level survey in five industries, this article focuses on the question how 'mainstream' innovation is in Belgian firms and how this coincides with forms of workplace learning. Innovation mainstreaming here refers to the inclusion of various occupational groups in the innovation process. Findings suggest that innovation in most sectors, is an 'elite driven' process with only a limited involvement of lower level employees. Moreover, genuine employee-driven innovations are a rarity. Nevertheless, the research also finds that workplace learning (job training and in-work learning opportunities) are potentially strong levers for employee innovation for all types of employees. Specifically providing in-work learning opportunities to technical workers could make innovation more mainstream in Europe.

Keywords: Employee Driven Innovation, Innovation Mainstreaming, Innovative Work Behaviour, Workplace Learning

Reference: De Spiegelaere, S., Van Gyes, G., Van Hootegem, G. (2012). Mainstreaming Innovation in Europe. Findings on Employee Innovation and Workplace Learning from Belgium. *Lifelong Learning in Europe (LLinE)*, 17(4).

Acknowledgment: This study was performed as part of the IWT (Agentschap voor Innovatie door Wetenschap en Technologie) sponsored VIGOR project. More information on:
www.vigorinnovation.com.

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Introduction

Over 47% of the European innovative organizations mention intra-organizational sources as one of their main sources of innovation (Eurostat, 2008). Employees thus play a central role in the innovation process of organizations. If Europe is to become an 'Innovative Union' (European Commission, 2010), it should therefore search for ways to promote and develop further the innovative potential of employees and organizations.

One of the policy instruments put into place for this objective is the European program on Lifelong Learning (European Commission, 2010). Lifelong learning and more specifically workplace learning is intrinsically related to employee innovation. They are mutually reinforcing as workplace learning give employees the capacity and opportunity to explore opportunities for innovations. At the same time, being involved in an innovation process necessarily constitutes an element of learning and knowledge creation for the concerned employees (Ellström, 2010; Høystrup, 2010). This mutually reinforcing character of innovation and learning was further confirmed by research which found that the innovative behaviour of employees is primarily related to the degree of learning opportunities provided in a job (De Spiegelaere, Van Gyes, & Van Hootegem, 2012; De Spiegelaere, Van Gyes, Vandekerckhove, & Van Hootegem, 2012). These insights are shared by various researchers, and multiple case studies were performed on how to promote employee driven innovation through workplace learning or through other mechanisms (Høystrup, Bonnafous-Boucher, Hasse, Lotz, & Møller, 2012).

There is nevertheless a striking lack of knowledge on how employee involvement in innovation is distributed in the economy. This article is the very first in presenting extensive survey data of employees in different sectors on their innovative work behaviour (IWB) and experiences with employee-driven innovation (EDI). In doing so, we develop the concept of 'innovation mainstreaming' which refers to an innovation regime in which all employees, of all hierarchies are on

a regular basis engaged in innovative activities. Therefore we distinguish between different occupational groups and compare their innovative behaviour in the different sectors.

The article thus has a triple purpose. First it aims to introduce and develop the concepts of 'innovation mainstreaming' and 'employee-driven innovation'. Second it uses survey data to identify sectoral differences in the mobilization of employees in the innovation processes of firms. Third, the article relates the information on employee innovation to forms of workplace learning. Attention is in this regard paid to both practice-based learning (Ellström, 2010) and more formal types of learning.

The article starts with a general discussion of the various used concepts and the proposition of two main research questions. We continue with a description of the data and provide a lengthy discussion of the findings and the implications for both research and practice in which the relation with workplace learning is given special attention.

Literature

Innovation Mainstreaming:

The successful development and implementation of innovations depends on many factors. One of these factors is the active and constructive involvement of all the stakeholders in the process. Innovations should be developed, changed and initiated in all hierarchical levels of the organization. As such, literature on 'continuous improvement', 'incremental innovation' (Harrington, 1995; Terziovski, 2002), and employee-driven innovation (Høyrup, 2010) stresses the importance of small scale, employee initiated innovations which are crucial on their own and which stimulate the successful introduction of radical innovations (Robinson & Schroeder, 2004). As both routine manual and non-manual workers have high levels of tacit knowledge (Polanyi, 1966), they are in an ideal position to find the needed 'new combinations' (Schumpeter, 1934) of existing practices, which form the core of the innovations in organizations.

It is thus essential that innovation is not only a top-down process, a privilege of the management or some specialized department. Companies should be equally open for bottom-up innovation initiatives. Innovation should be an issue for all employees in the organization, independent of the hierarchical position or work tasks. Innovation should thus be 'mainstream' in the organizational functioning and not 'exceptional'. Just as the concept 'gender mainstreaming' refers the introduction of a gender perspective in any policy domain, the concept '**innovation mainstreaming**' addresses the introduction of innovation in the work tasks of all employees, from all occupational groups. In innovation mainstreaming, employees of different kinds are on a daily basis engaged in innovative activities. Just as 'democratizing innovation' (Hippel, 2005) refers to the full inclusions of the users in the innovation process, 'innovation mainstreaming' pleads for the full inclusion of the employees in the firms' innovation. Various firm level studies already stressed the importance of such an employee inclusion (Robinson & Schroeder, 2004) while individual level studies extensively covered the triggers for employee creativity and innovation (Axtell et al., 2000; Shalley, Zhou, & Oldham, 2004). No single research however took a more general, descriptive approach. Sectoral differences in the use of employee ideas in the innovation process are not covered by research. This article is the very first to study this subject. The first research question of this article is therefore:

"How mainstream is innovation in different sectors? Are there important sectoral differences in the inclusion of employees in the innovation process?"

This research question is addressed through a research in five different sectors with very different innovation profiles (Castellacci, 2008): the banking, the retail, the hotels and restaurants industry, the chemical industry and the sector of social work (social sector). In these sectors, different occupational groups are compared regarding their 'innovative work behaviour' (IWB) (de Jong & Den Hartog, 2010; Janssen, 2003). IWB is defined as "*all employee behaviour directed at the generation, introduction and/or application (within a role, group or organization) of ideas, processes, products or procedures, new to the relevant unit of adoption that are meant to significantly benefit the relevant*

unit of adoption” (De Spiegelaere, Van Gyes, Vandekerckhove, & Van Hootehem, 2012). It thus covers behaviour directed at the development and introduction of both incremental and radical workplace innovations.

Employee Driven Innovation:

The concept of IWB is useful in comparing the innovative behaviour of employees in very different contexts. It nevertheless provides no information on the content and type of innovation activities in which the employees are engaged.

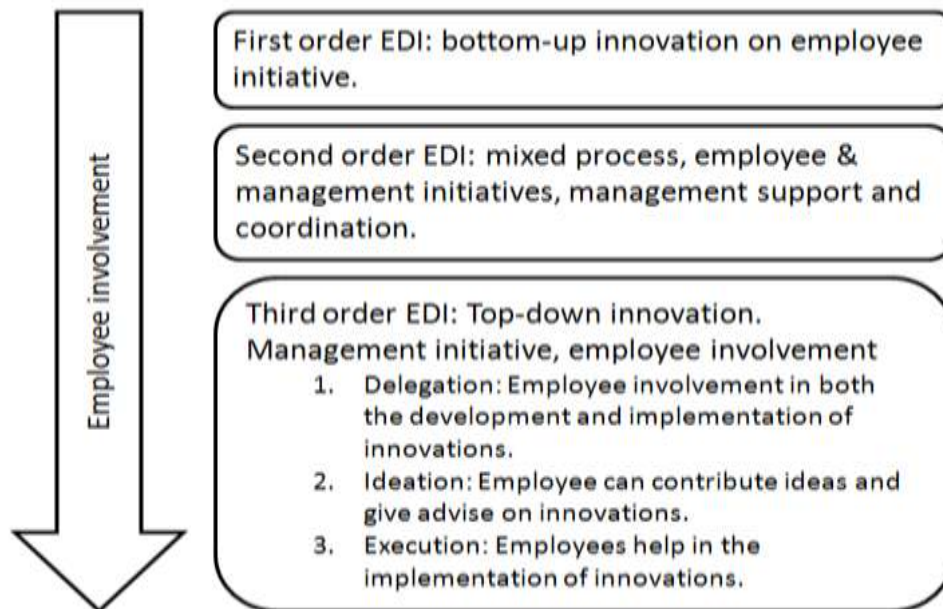
Therefore we refer to the literature on ‘Employee Driven Innovation’ (EDI). EDI covers a broad range of employee activities regarding innovation. EDI can be a truly bottom-up, self-initiated employee activity, but can also cover more top-down activities in which the management invites employees to propose or develop innovative ideas. To better assess this reality, Hoyrup et al. (2012) proposed to distinguish between 3 orders of EDI. First order EDI refers to the truly bottom-up innovation processes initiated, developed and introduced on employee initiative. Second order EDI covers a more mixed reality in which the employee takes an initiative which is taken over by the management in order to systemize or generalize its introduction in the organization. Third order EDI covers the innovations which are developed by employees on the invitation of the management. We here propose to further distinguish between three types of third order EDI called ‘delegation’, ‘ideation’ and ‘execution’, depending on the level of employee involvement.

1. **Delegation:** Here, the employees are invited by the management to generate, develop and introduce innovations in the workplace. The management therefore gives a certain degree of autonomy to the employees over the whole innovation process.
2. **Ideation:** In ideation, the role of the employees is limited to proposing ideas and giving advice about workplace innovations. The management keeps control over the selection of the ideas and the actual implementation. Typical examples of ideation are suggestions schemes and brainstorm sessions.

3. **Execution:** In execution, the role of the employee is limited to the introduction of innovations on the work floor. Employees do not have any influence on the selection or development of the innovation but need to change existing work practices in order to integrate the new innovation on the workplace.

Figure 1 graphically illustrates these various types of EDI. We could discuss whether the ‘execution’ type of EDI can still be counted as ‘employee-driven innovation’ as the role of the employee in the innovation process is very limited to nonexistent.

Figure 1 - Types of Employee Driven Innovation



Based on this conceptual framework we develop our second research question which focuses on the content of the EDI in different sectors:

“How do employees innovate in different sectors? Are there important sectoral differences regarding the dominant type of EDI in different sectors?”

Data & method

The data used in this article were collected in the context of the VIGOR project¹ on innovative work behaviour. The sample consisted of Flemish, unionized workers from the five above mentioned industries. Respondents were contacted by interviewers which made appointments for face-to-face meetings in which the standardized survey was completed. As such, 927 surveys were collected with an overall response rate of 49%, yet large differences in terms of response between industries were observed (see table 1).

All measures included used a 7 point Likert scales ranging from ‘totally agree’ to ‘totally disagree’ except when mentioned otherwise. **Innovative work behaviour**, was measured using an adaptation of the questions used by De Jong & Den Hartog (2010). Respondents indicated how much a certain characteristic occurred in their job, ranging from ‘very rarely’ to ‘very frequent’. Examples are: *‘finding original solutions for work related problems’* and *‘developing innovative ideas into practical applications’*. **Employee driven innovation** was measured using two one closed and two open questions. The first closed question distinguished between the employees which were involved with innovative processes in their work, and those who were not. The two open questions next treated the content of the innovation process and the role of the employee in this process. Using this information, the answers were coded using the previously developed types of EDI. As such, employees which mentioned own initiatives were coded as having performed first or second order EDI. Employees which mentioned ideation and/or the executive tasks were classified in one of the three categories of third order EDI. Some were recoded as ‘non-EDI’ if the given examples didn’t include any employee contribution.

All employees were asked to indicate their profession and the tasks they generally perform. Based on that information, 4 digit ISCO08 codes were attributed to the respondents. These codes were

¹ For more information on the VIGOR project: www.vigorinnovation.com

consequently recoded in ISCO88 codes (Ganzeboom & Treiman, 2012) and together with the information on the supervisory status of the employee attributed to ESeC (European Socio-economic Classification) categories (Harrison & Rose, 2006).

Table 1 shows the total and industry response rates, together with more information on the analyzed results. The overall distribution over industries and over occupational groups is quite satisfactory. Only in the hotels & restaurants, the number of employees belonging to the ‘salaried’ and ‘lower grade white collar’ categories is relatively low, yet this resembles the actual distribution in the industry. The same remark holds for the chemical industry with a relatively low degree of ‘lower grade white collar workers’. In the interpretation of the results, these relatively low absolute figures are taken into account.

To study the research questions, the mean scores on the various indicators of innovative behaviour were computed. Further, a series of ANOVA tests were performed in order to assess the differences regarding innovative behaviour between industry and occupational groups.

Table 1 – Response level - Sample

	Salaried	Intermediate	Lower grade white collar	Lower Technical workers	Total	Response rate
Banking	92	42	45	n.d.	179	53%
Retail	23	43	78	36	180	46%
Hotels and restaurants	8	44	12	91	155	38%
Chemical	55	61	13	66	195	49%
Social sector	81	71	16	28	196	61%
Total	259	261	164	221	801	49%

Results

Innovation Mainstreaming

Table 2 shows the means, standard deviation and ANOVA results of the innovative behaviour of employees in the 5 researched sectors. By focusing on the first column, the **overall importance** of employee innovation in a certain sector can be assessed. We observe that employees are relatively more innovative in the chemical industry and in the social sector, in comparison with the other researched sectors. The very low scores of the employees in the hotels and restaurant sector are further striking.

The 'all sectors' row provides us with information on the overall distribution of innovative behaviour depending on the occupational status of the employee. As we could expect, higher status employees belonging to the salariat or the intermediate group of employees perform significantly more innovatively than other employees. Innovative behaviour thus seems to increase with occupational status.

Next, we focus on the intra-sectoral differences between employees to measure the degree of 'innovation mainstreaming'. In sectors with relatively small differences, innovative activities are (more) equally distributed among occupational groups. Innovation is thus not an exclusive activity of the higher status employees. In these sectors we can speak of a certain degree of 'innovation mainstreaming'. As such, the differences in the chemical industry, the hotels and restaurants and the banking sectors are the smallest. Regarding the banking sector, this can be explained as there were no lower technical and routine employees included in the sample of the banking sector. This occupational group tends to show the least innovative behaviour. Their exclusion thus artificially reduces the difference in the banking sector. In the other two sectors (retail and social sector) the differences between occupational groups are relatively high. In these sectors, innovation seems to be a specialized task of the higher occupational groups (salariat and intermediate). We can thus conclude that the chemical industry, together with the banking sector, is the sectors in which innovation is the most 'mainstream'. In the other sectors, innovation is more unequally distributed.

Table 2 - Innovation Mainstreaming

	All employees		Salarial		Intermediate		Lower grade white collar		Lower Technical workers		Largest difference	ANOVA p-value
	M	SD	M	SD	M	SD	M	SD	M	SD		
Banking	-0,09	0,79	0,13	0,80	-0,30	0,69	-0,25	0,70	n.d.	n.d.	0,44	<0,01
Retail	-0,14	0,90	0,52	0,73	0,33	0,77	-0,37	0,87	-0,69	0,87	1,21	<0,01
Hotels and restaurants	-0,25	1,07	0,16	0,80	0,39	0,88	-0,36	1,17	-0,16	0,76	0,76	<0,01
Chemical	0,17	0,85	0,44	0,76	0,38	0,87	0,30	0,60	-0,12	0,83	0,56	<0,01
Social sector	0,25	0,95	0,65	0,79	0,22	0,83	-0,07	0,91	-0,52	0,99	1,17	<0,01
All Sectors			0,39	0,81	0,22	0,85	-0,25	0,85	-0,46	0,96	0,85	<0,01
ANOVA p-value	<0,01		<0,01		<0,01		0,15		0,04			

A taxonomy of innovation mainstreaming

Given these results on both the overall importance of employee innovativeness and the degree of innovation mainstreaming, a taxonomy of ‘sectoral employee innovation regimes’ can be developed. In figure 2, this is graphically illustrated. On the vertical axis, the sectors are positioned depending on the overall importance of employee innovative behaviour; on the horizontal axis the positioning depends on the degree of innovation mainstreaming observed in the sectors. As such, four different ‘sectoral employee innovation regimes’ are identified. The first innovation regime combines a high importance of overall employee innovative behaviour with large differences between occupational groups. This regime is named ‘**specialist innovation**’ as innovative behaviour in these sectors is a specialized task of the higher status occupational groups such as the salariat. Lower status occupational groups are significantly less involved with innovative behaviour. In our study, the social sector was identified as having an ‘elite innovation’ regime.

The second quadrant is characterized by high overall employee innovativeness and small differences between occupational groups. This employee innovation regime is termed ‘**regular, broad innovation**’ as innovative behaviour is an everyday reality for both high and low status occupational groups. An example of a sector with such a regime is the chemical industry.

The third quadrant is named the ‘**irregular, broad innovation**’ type of employee innovation regime.

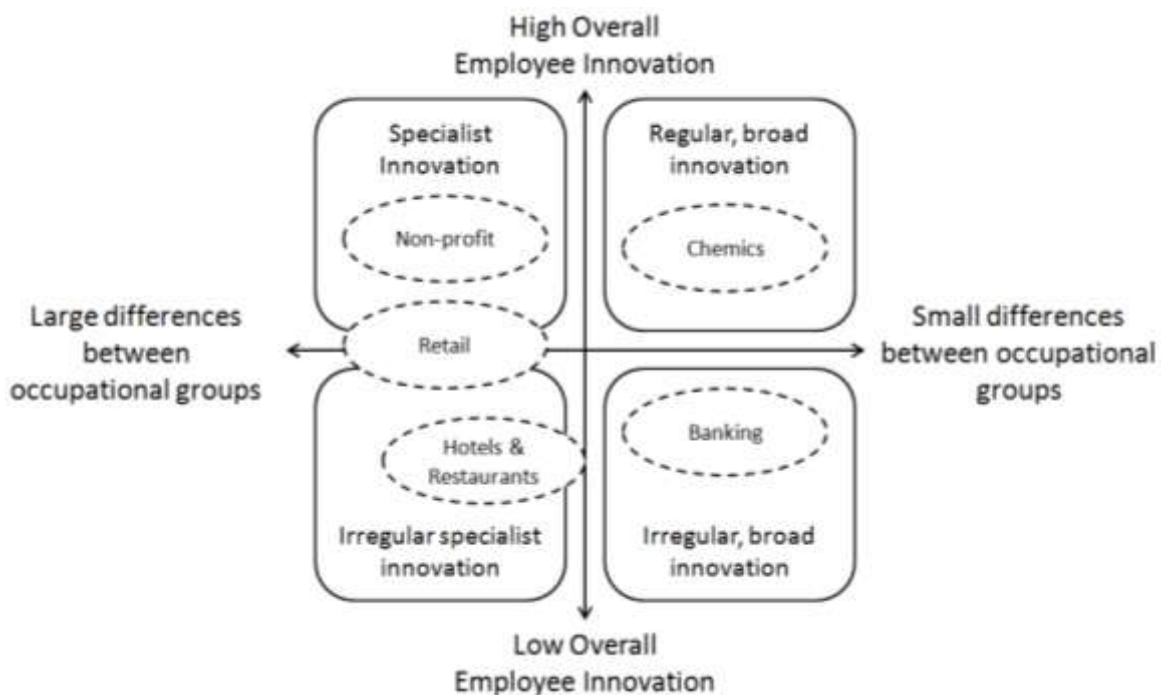
These industries, such as the banking industry in Flanders, have generally low overall degrees of

employee innovativeness, yet small differences between occupational groups. Innovative behaviour is not a day-to-day practice of employees, yet this is true for all occupational groups.

The fourth quadrant is the **'irregular, specialist innovation'** quadrant in which we can (to a certain extent) position the hotels & restaurants industries in Flanders. In this quadrant, the overall innovativeness of employees is low, yet large differences exist depending on the occupational group of the employees. Innovation here is a privilege of the salariat, yet not a priority. This holds true for the hotels & restaurants industry, yet the fact that the intermediate employees in this industry demonstrate (not statistically significant) higher degrees of incremental and radical creativity than the salariat makes it not fit perfectly in this quadrant.

Innovativeness in the **retail** industry doesn't fit any of the four quadrants perfectly and is positioned between the 'specialist innovation' quadrant and the 'irregular specialist innovation' quadrant.

Figure 2 - Sectoral employee innovation regimes'



This taxonomy answers our first research question on how mainstream innovation is. Obviously, innovation is still largely a privilege of the higher status occupational groups in all sectors.

Nevertheless, in one sector, the chemical industry, the innovative potential of lower level

occupational groups is effectively mobilized. Here, we can speak of a certain degree of innovation mainstreaming.

Employee Driven Innovation

The information on the innovative behaviour of employees gives us a view on general importance of employee innovation in the studied sectors, yet doesn't give insight in the content and the type of innovative activities of employees. Hence, we use the previously developed 'Employee Driven Innovation' concept to get a grasp of the reality of employee innovation in the field. Table 3 shows the proportion of employees which were included in an innovation process in their organization. In line with the previous observations, employees in the chemical industry (73%) and in the social sector (69%) are relatively more involved in innovation processes than employees in the other sectors.

Table 3 - Employee involvement in innovation

	Yes	No
Banking	64%	36%
Retail	51%	49%
Hotels and restaurants	44%	56%
Chemical	73%	27%
Social sector	69%	31%
Total	61%	39%

Table 4 presents the types of EDI by sector. EDI of the first and second order were taken together as their frequencies were very limited. Most EDI were from the 3rd order which refers to employee innovations occurring on a management initiative. Employee innovative initiatives are thus rather rare or were rarely reported by the respondents. Further, most frequently, 3rd order EDI took the form of 'delegation' or 'execution'. Differences between the sectors here are in line with the earlier observations on IWB. Both in the chemical industry and in the social sector, the observed EDI is from a relatively higher order with over 35% of the respondents declaring to be involved in 'delegation' or higher order types of EDI.

Table 4 - Types of Employee Driven Innovation by sector

	1st or 2nd order EDI	3rd order EDI			No EDI
		Delegation	Ideation	Execution	
Banking	1%	18%	14%	28%	38%
Retail	1%	18%	11%	20%	50%
Hotels and restaurants	3%	19%	10%	12%	58%
Chemical	3%	32%	11%	26%	28%
Social sector	6%	31%	14%	17%	31%
Total	3%	24%	12%	21%	40%

Table 5 further shows the types of EDI by occupational group. As expected, the salariat is generally more involved in EDI from a higher order. Nevertheless, also here only 5% of the respondents declared that they took a proper innovative initiative. Lower occupational status groups tend to be less involved in EDI in general and their EDI is from a lower order. Nevertheless, the difference between the lower grade white collar employees and the lower grade technical and routine workers is remarkable. Although limited, relatively more respondents from the lowest status occupational group declared to be engaged with EDI from the first or second order and with the 'delegation' type of EDI.

Table 5 - Types of Employee Driven Innovation by occupational group

	1st or 2nd order EDI	3rd order EDI			No EDI
		Delegation	Ideation	Execution	
Salariat	5%	38%	14%	20%	22%
Intermediate	4%	30%	9%	22%	34%
Lower grade white collar	0%	12%	11%	24%	53%
Lower Technical workers	2%	14%	10%	16%	59%
Total	3%	26%	11%	21%	40%

* The small differences in the 'total' row between table 4 and table5 are due to more missing values in the table 7 data. **Error! Reference source not found.**

Building on these survey results we can answer our second research question on 'how employees innovate'. From the survey findings it seems that a large proportion of employees were never really involved in any kind of innovation process. Further, most employees who were involved in innovation processes did this in on the initiative of the management. Self-initiated employee innovation is only a marginal phenomenon in most sectors and in most occupational groups.

The importance of workplace learning for EDI

Workplace learning can be defined as all 'learning that takes place in and through the workplace and derives its purpose from the context of employment' (Evans, Hodkinson, Rainbird, & Unwin, 2006). As such, workplace learning refers to both informal, 'on-the-job learning' through a challenging job content and more formal learning through work related training.

Employee innovation and workplace learning are intrinsically linked to each other. They are mutually reinforcing and largely dependent on each other. Employee learning (both formal and informal) can trigger employees to change work practices and engage in EDI. At the same time, every EDI leads to a form of workplace learning or knowledge development (Ellström, 2010; Høyrup, 2010). This learning can take the form of formal training, yet when the innovation has a more bottom-up character (first or second order EDI), the learning will take the form of 'practice based learning' (Ellström, 2010) or even 'self-initiated learning' (Ellinger, 2004). Although the concepts of employee innovation and workplace learning are intrinsically linked to each other, they are not interchangeable. Where EDI almost automatically leads to workplace learning, the inverse relation is less direct and automatic.

In the following section we analyze the relation between these two aspects of workplace learning on the one hand and innovative behaviour and EDI on the other hand. The analyses are limited to the study of the simple bivariate relations. For more complex analyses we refer to other research papers which study these subjects in more detail (De Spiegelaere, Van Gyes, Vandekerckhove, et al., 2012).

In the survey, questions regarding both types of workplace learning (in-work learning and job training) were included. In-work learning opportunities were assessed through a series of questions which referred to the degree in which respondents were able to develop their occupational skills and knowledge through the exercise of their job. For job training, the respondents were asked whether they enjoyed a company financed training (one or more than one) in the last year. The survey further asked whether the training was related to innovation or changes in the workplace.

Table 6 presents the correlation coefficients between the two variables on workplace learning opportunities and IWB. As expected, we find a strong positive correlation between the two variables. The relation is the strongest for lower technical workers and the salariat.

Table 6 – Learning & IWB – Correlations

IWB	Total	Salariat	Intermediate	Lower grade white collar	Lower Technical & Routine
Learning Opportunities	0,46*	0,45*	0,30*	0,29*	0,46*

*: sign at the $\alpha:0,01$ level

Table 7 presents next first the difference in mean score on IWB between respondents who received training or not. Secondly it distinguishes between respondents who received a training related to innovation or change and those who received a training which had nothing to do with innovation or change. Parallel with the previous observations we see that employees who received a training are significantly more innovative than employees who didn't. Only for the group of intermediate employees, the difference is not statistically significant. The difference is particularly outspoken for lower grade employees. The content of the training also seems to matter in terms of innovative behaviour. Employees who received an innovation or change-related training are significantly more innovative than employees who received another training. The fact that the difference is not statistically significant for the two groups of lower grade employees is mostly due to the small number of respondents that could be included in the analysis (because most employees in those categories didn't receive any training).

Table 7 - Difference in IWB - Training

	Total	Salariat	Intermediate	Lower grade white collar	Lower Technical & Routine
Training (0/1)	0,40*	0,16*	0,14	0,35*	0,32 ^P
Innovation or change related training (0/1)	0,47*	0,43 ^P	0,43*	0,27	0,33

*: sign at the $\alpha:0,01$ level; ^P sign at the $\alpha:0,05$ level

These bivariate results suggest that workplace learning (in-work learning opportunities and job training) are potentially powerful levers for employee innovation. The IWB of lower ranked occupational groups is particularly affected by general trainings, while specific change related

trainings contribute more to the IWB of higher ranked occupational groups. This suggests that the previously mentioned 'elite'-character of innovation can be effectively countered using both on-the-job learning and more formal job related training. These analysis are nevertheless only bivariate and based on cross-sectional analysis. We are therefore unable to establish strong causal relations.

Conclusion

Various case study researches indicated that fostering employee-driven innovation is a crucial asset for successful innovation in firms. Although one could suspect companies to learn from these findings, and fully mobilize the innovative potential of their employees, the reality is more gloomy. Having introduced the concept of 'innovation mainstreaming' as the inclusion of innovation in the daily work of employees, from all occupational groups, we investigated sectoral patterns of innovation mainstreaming. Based on this study, we conclude that in most sectors employees hardly contribute to innovation. Innovation is still mostly the privileged task of a certain occupational group in the firm. Lower level employees, both blue- and white-collar are significantly less engaged in innovative activities. Sectors nevertheless differ and the chemical industry is the sector in which employees of different kinds are more equally involved in innovative activities.

The article also studied the type of EDI employees are engaged in. From this research we conclude that genuine EDI (first or second order) is a rarity. Most employees are involved in third order EDI in which the management takes the initiative and invites employees to contribute. Again, first and second order EDI happens mostly by higher level white collar employees and in sectors in which innovation is part of the job requirement of the employees.

This research nevertheless also shows that innovation mainstreaming is feasible and lower level employees can be effectively mobilized for innovative activities as is shown by the chemical industry. Employee-driven innovation is a reality in all studied sectors and in almost all occupational groups. Although rare, employees do take self-initiatives for improving and developing their work organizations and it is a matter for policy and management to foster and support this behaviour.

As previous studies on the triggers of employee innovation showed that workplace learning is a crucial, if not the most crucial, antecedent of IWB (De Spiegelaere, Van Gyes, & Van Hootegem, 2012), this article further focuses on the relation between employee innovation and workplace learning. From the analysis, we conclude that both formal and informal practice-based learning are closely related to employee innovativeness. First and foremost, the job content (the learning opportunities in a job) asserts itself as particularly related to IWB. Second, formal training is also strongly related to IWB of employees of different occupational groups. Here, lower level employees are principally affected by general formal trainings, while the IWB of higher level employees seems more strongly related to specific, change oriented training schemes.

Policy makers can learn from these analysis as they can help in focusing the policy interventions on certain populations of employees or sectors. Further, this article finds support for the policy orientation of the EU on workplace learning. Yet, the article also stresses the importance of a EU policy focusing at social or workplace innovations which should increase quality of the work, and thus the learning opportunities enjoyed by employees in their work context (Van Hootegem, 2000).

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