Employee-driven innovation

Improving economic performance and job satisfaction

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Preface

It is widely agreed that a substantial part of Europe's solution to the challenge of globalisation consists of a greater emphasis being placed on training, research, high technology and innovation. A high capacity for innovation seems – indeed – to be the answer

However, the initiatives and policies implemented often overlook and miss the potential of integrating the ideas, competencies and experienced-based knowledge of employees – including non-academic employees. Innovation is – still – perceived as something driven by a limited group of academic experts, researchers or managers.

In real life, innovation is much more diversified. This is what employee-driven innovation tries to capture. Employee-driven innovation is bottom-up instead of top-down. In the context of employee-driven innovation, conceiving ideas, implementing ideas and creating value based on ideas do not rest with a limited team of experts, but are based on systematic involvement of all specialist groups.

Moreover, studies indicate that employee-driven innovation has a positive impact on companies' total profit performance. The involvement of skilled and unskilled workers can stimulate and support the company's development of new products and processes. Hence, employee-driven innovation plays an important part in improving the competitiveness of firms. Furthermore, case studies show that employee-driven innovation has other positive side-effects such as improved job satisfaction or reduced sickness absence.

In the work on innovation of the institutions of the European Union and international organisations like the OECD, a greater emphasis on employee-driven innovation can ensure a broader scope of these efforts. If our societies and economies are to become more innovative, all resources will have to be used and more people involved in innovative processes.

In the fight against climate change, employee-driven innovation has also already proven itself to be an important tool. Employees of all kinds are highly involved in developing the newest environmental solutions while the knowledge and experience of skilled and unskilled workers have ensured energy savings in a range of industries.

Employee-driven innovation is a central part of LO Denmark's (the Danish Confederation of Trade Unions) research- and innovation policies. This case study takes its point of departure in a Danish survey of employee-driven innovation on private and public workplaces (LO, 2006). The study was the first of its kind looking closer at the involvement of non-academic employees in innovation activities. employee-driven innovation is becoming more and more widespread – not least as a part of national and regional innovation strategies in Denmark.

LO hopes that this new case study may inspire workplaces, politicians, social partners, researchers and others at the international level to take on the innovation challenge and create better framework conditions for an open-minded innovation culture involving all levels in the organisation. The aim is to stimulate growth and employment, thus creating more and better jobs.

Enjoy your reading,

Marie-Louise Knuppert,
Confederal LO-secretary

Employee-driven innovation creates results

Globalisation is leading to closer economic, political and cultural integration across frontiers, one effect of which is increased competition and the outsourcing of labour. Denmark is well prepared for these challenges. By international standards, Denmark has succeeded in generating a very high level of employment, and is one of the world's most competitive economies. It is widely acknowledged that a substantial component of Denmark's response to globalisation is its emphasis on high technology, human capital and innovation.

Employee-driven innovation – a core component of Danish competitiveness

The active involvement of both skilled and unskilled workers in innovation processes has proved especially successful in Danish companies. Accordingly, the purpose of this case study is to disseminate information concerning employee-driven innovation to other companies around the world by presenting a case analysis of three Danish companies: Saint-Gobain Isover (insulation solutions), Vestas (wind power solutions) and DSB (rail service). These companies represent the manufacturing, technology and service sectors, respectively. They are also all international companies that share similarities with other large companies in Europe in terms of their production capabilities and the challenges they are facing in the aftermath of globalisation. Saint-Gobain Isover is a worldwide manufacturing company producing glass wool. Vestas delivers high-technology wind power solutions on a global scale, and DSB is an independent state-owned transport services company.

The great potential of employee-driven innovation

The case analyses for the three companies show that the potential employee involvement in their innovation processes is great. This

result is in accordance accords with the nationwide study titled 'Employee-driven innovation in private an public workplaces' which was conducted by LO in 2006[1]. This case analysis is a continuation of that study.
The main benefits of employee-driven innovation in international companies that were identified in both studies are:

- Improved bottom-line results
- Enhanced competitiveness on the global market
- Improvements in efficiency and quality
- The creation of a pleasant workplace
- Increased job satisfaction
- Reduced absence due to sickness and negative stress.

The national study of 2006 consisted of a survey conducted among management and employees in 500 Danish companies, plus 9 case studies. As in the present study, the case studies included interviews with management, employees and shop stewards in each of the selected companies.

No radical organisational changes are needed

Another very significant finding is that employee-driven innovation can be implemented in most companies without radical organisational changes. Therefore, cultural differences need not be a barrier to employee initiatives. Employee-driven innovation can be implemented in almost any organisation by means of some relatively simple innovation tools supported by an innovative work culture. Lean[2] boards, cross-disciplinary workgroups containing skilled and unskilled workers, change agents etc. are some of the innovation tools that have proved successful in Saint-Gobain Isover, Vestas and DSB.

An innovative work culture is

1. LO (2006). A list of references can be found at the end of this case study.

2. Lean and employee-driven innovation.
Lean is a management philosophy that seeks to maximize value for the customers by improving workflow and eliminating waste.
During the past decade, Lean principles have been employed to an increasing extent in western companies. The Lean principles stem from the Japanese manufac-turing industry and have been conceptualised by James P. Womack and Daniel T. Jones (see 'The Machine that Changed the World', 1990, and 'Lean Thinking', 1996).
It is evident that the Lean approach is applied very differently in companies around the world in terms of the emphasis given to the various Lean tools and the role of the employees in the Lean process.
The present case studies indicate that the application of Lean principles for employee involvement (e.g. using Lean boards and other kaizen systems) provides the potential for systematically utilizing employees in the innovation process. On the other hand, they also indicate that Lean does not necessarily support employee-driven innovation. In order for this to happen the involvement of the employees must naturally be taken seriously, and the management must focus on providing rapid feedback regarding the employees' ideas and highlight how they are influencing both the production process and the products.

characterized by a receptive management open to experimentation and failure – in other words, a management that has a trusting relationship with its workers. Accordingly, in all three companies the style of leadership has proved to be very important when implementing employee-driven innovation.

Cooperation between management and employees is essential

The Danish cases also indicate that buy-in from the employees to the innovation process is essential in order to be able to capitalize on their resources. One way to create this buy-in is to involve works committees and shop stewards in initiating the innovation process. Shop stewards form the link between the employees and management, and are often well respected and trusted by both co-workers and management. Therefore the shop steward is often a crucial element in building cooperation between management and employees.

The significance of this cooperation is emphasized by the fact that most change-oriented companies assign a positive and important role to their shop stewards in the cooperation process (DISKO 1999).

The successful Danish experiences of employee-driven innovation will hopefully inspire other companies both within and beyond Europe to improve their own innovation efforts.

What is employee-driven innovation?

Innovation is one of the essential drivers of economic growth. It occurs when a business introduces new products or services to the marketplace or reinvents existing ones. One important component of the innovation concept is that the idea must be new, whether it concerns new products/services or new processes within the organisation. Secondly, it must create or improve value for one or more of its stakeholders (the company, its customers etc.). Employee-driven innovation is characterized by the all-inclusive involvement of both skilled and unskilled workers in different innovation processes in order to create value for the organisation.

A bottom-up approach to innovation

Employee-driven innovation represents an inclusive and bottom-up approach to innovation that includes all the players in an organisation, i.e. its employees, management and shop stewards, as Isover's Development Manager, Susanne Højholdt, emphasizes:

"All the relevant employees are informed and included in the development of new products. They possess excellent know-how which is very valuable in the innovation process".

This approach is opposed to the traditional innovation approach, which is mostly centralized and top-down, and depends on ideas emerging from an exclusive team of highly-educated people.

Employee-driven innovation, on the other hand, is based on all employee groups systematically and actively interacting with the management.

Hard and soft benefits from employee-driven innovation

Innovation is therefore a process which generates new products, concepts or processes that create value for the company and workplace once they have been implemented[3]. These values can be both 'hard' values, such as higher turn-

over, better bottom-line results etc., and 'soft' values, such as better job satisfaction and a reduction in negative stress etc. This is exemplified at Vestas: "Employee-driven innovation is very beneficial for our company both in terms of our bottom-line results, but also with regard to improving the job environment," says Mads Harder Mikkelsen, a Vestas production manager. The fact that innovation produces output that has value for a company is an important aspect of the concept that distinguishes it from innovative thinking or inventions.

Employees can play an important part in the creation of innovation, one reason being that they posses experience-based knowledge such as up-to-date information about customer needs and the production processes at the production plant. This is the case for DSB, that believes it will be able to save 100,000 EUR per year if it refills all the water tanks on its trains more efficiently. The idea was brought up by two production operators who considered that the previous way of filling the tanks was wasting too much water and tried to come up with a more efficient method. Their new method is now being tested as part of a pilot project.

Employee-driven innovation means that employees systematically and actively contribute to the generation of new ideas which create value when they are implemented.

Another example of a cost saving innovation is the reuse of glass wool in Isover. Thanks to a great innovation by a couple of workers Isover is now saving thousands of Euros by reusing insulation materials from water tanks (further information: page 21)

Unfortunately, not many companies measure the outcome of their employee-driven innovation processes, and it is therefore not possible to present precise statistics.

The national study (LO 2006) shows that 59 per cent of companies with an employee-driven approach to innovation considered that their innovation process had produced an improvement of the bottom line. By contrast, only 41 per cent of companies with a centralized approach to innovation assessed their outcome positively.

In recent years, intensified global competition and the increasing demand for sustainable energy has resulted in an emphasis on a more

3. The national LO study (2006) focuses on employee-driven innovation at both public an private workplaces.

bottom-up approach to innovation at Vestas and the gradual abandonment of the traditional top-down approach. The bottom-up approach at Vestas has proved very successful; one of its effects being that average worker productivity has increased thanks to the employee-driven optimization of its processes and products. Another significant result is improved job satisfaction among both skilled and unskilled workers.

Different types of employee involvement

Employees can be involved in innovation in different ways and to different extents, depending on the sources of innovation.

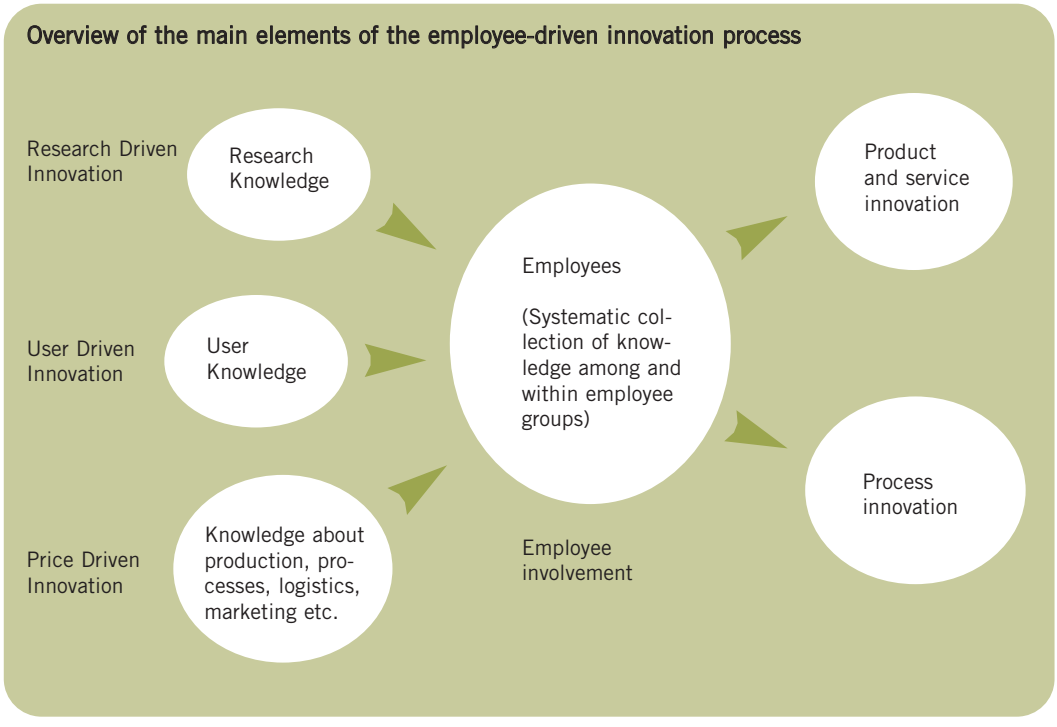
Some innovation is *research-driven*. The opportunities for non-academic employee involvement in the first phase of research-driven innovation are limited. However, unskilled and skilled employees can contribute to this innovation process at a later stage. They are able to assess what is feasible in practice regarding the implementation of products or services. DSB's employees have a huge reservoir of knowledge about technical possibilities and limits, stresses machinist Michael Sonne Hansen: "We are the experts in the implementation stage of an idea. The production leaders refer to our solutions".

A second option is to involve knowledge of the users and their needs. This is known as *user-driven innovation*. Thanks to their continual customer contact, employees in Isover's Sales Department function as an information conduit regarding actual and potential demand, and are therefore a vehicle for user-driven innovation.

The third possibility applies knowledge of production processes, logistics and marketing. This is known as *price-driven innovation* because it attempts to reduce costs or to utilize existing resources in order to improve competitiveness. Price-driven innovation also offers excellent opportunities for employee-driven innovation. When two employees came up with a way to reorganise the production materials and products stored in Vestas' warehouse, their idea minimized costs by saving a lot of space and making it easier to retrieve stored items.

Radical and incremental innovation

Innovation can be either radical or incremental. Radical innovation produces a dramatic change that transforms existing markets or creates new ones. Incremental innovation improves products or production processes in existing markets. The kaizen technique in



the Lean concept is one example of incremental innovation, while radical innovation often requires heavy investment into research knowledge. However, the case studies show that radical and incremental innovation can go hand in hand, and that both types of innovation can utilize the knowledge of employees.

The figure above shows that ordinary employees can be involved in research-driven innovation. When Vestas invents new types of windmills, highly specialised engineers and researchers develop the concept for the new windmill, and the plant workers develop the first prototype. The practical knowledge of both skilled and unskilled workers is invaluable during this stage of the innovation process.

The case studies also show that systematically collecting the employees' ideas for improvements can produce both lesser incremental innovation and radical large-scale innovation.

The benefits of employee-driven innovation

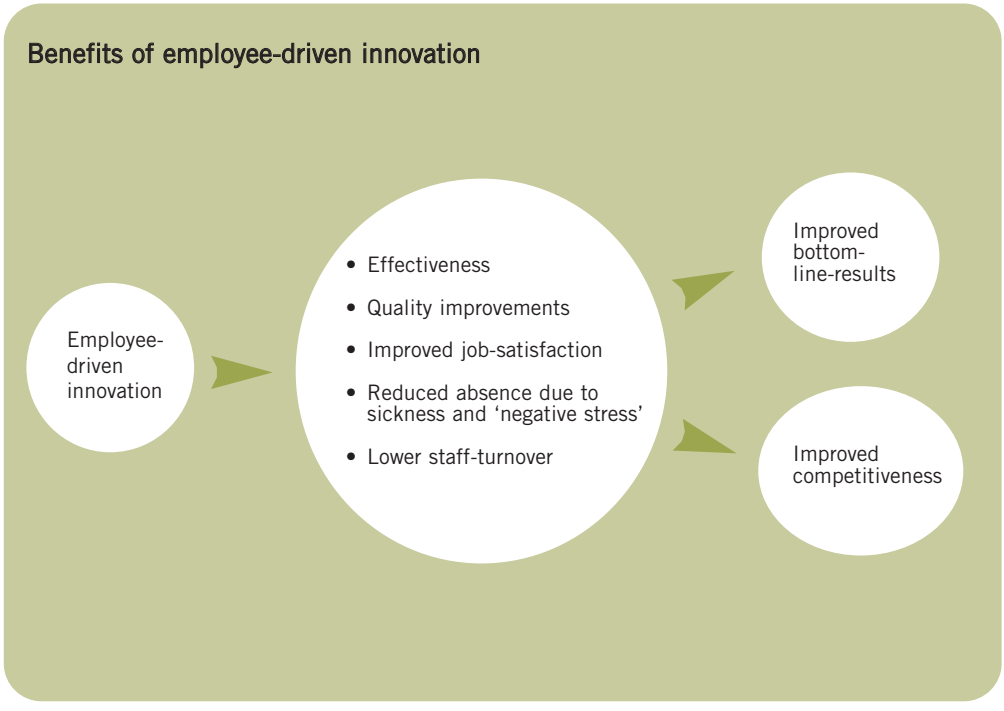
The nationwide study of employee-driven innovation (LO 2006) shows that attention is being paid to innovation in the majority of Denmark's companies that have a strategic focus on innovation. This is particularly the case in its public-sector organisations. Moreover, the study and the present case analysis show that companies that are capable of combining product development with the involvement of their employees have a number of growth-promoting and competitive advantages.

The creation of an attractive workplace for skilled labour, an increase in job satisfaction and the reduction of sickness absence and negative stress are some of the main benefits that appear from both studies. In turn, they lead to a further improvement of bottom-line results and an enhancement of competitiveness.

Improved bottom-line results and competitiveness

Both the nationwide study (LO 2006) and the current case analysis of Saint-Gobain, Isover and DSB demonstrate that employee-driven innovation has a positive impact on a company's total profit performance. The involvement of both skilled and unskilled workers encourages and supports the development of new products and processes in international companies as well as in local ones: "The involvement of the employees is indispensable in a globalized and highly competitive market. They possess a wealth of information that we cannot afford not to take advantage of." (Production manager Harder Mikkelsen, Vestas.)

Accordingly, 58 per cent of the managers in workplaces where unskilled and skilled workers were involved in the innovation process considered that their financial performance and bottom-line results had improved as a result of their approach to innovation. By compa-



rison, only 41 per cent of the managers in workplaces where unskilled and skilled workers were not involved in this process thought that their financial performance had improved as a result of their centralized innovation approach (LO 2006). The results indicate that employee-driven innovation is invaluable in developing and improving companies' production and work processes. This conclusion is well supported by the case analyses.

Increased job satisfaction – an attractive workplace

The fact that employee-driven innovation produces satisfied employees is also one of the results to emerge from the nationwide study. Evidently, companies that actively involve their employees in product and process innovation report higher employee satisfaction than do those relying on traditional innovation processes. This was demonstrated in the case analyses: "We have been given almost endless freedom in our work. It is professionally challenging and

inspiring, as we can structure our workdays very independently. No two workdays are alike. It makes me love my work." (Per Neupart, technical operator at Isover.)

Minimizing absence due to sickness

A high level of absence due to sickness noticeably increases a company's costs by reducing its productivity. Improving productivity by reducing the level of sickness absence should therefore be a priority both for companies and for society as a whole.

The evidence points to the fact that companies which actively involve their employees in the process of innovation report have experience decreased absence due to illness: 28 per cent of the managers in companies that did so reported that absence due to sickness had decreased. By comparison, just 12 per cent of managers in companies that did not involve their skilled and unskilled workers in the innovation process reported that their rate of absence due to sickness had decreased. The overall results from the nationwide study show that encouraging employee-driven innovation reduces the level of sickness absence.

Reduced negative stress

Some studies of employee-driven innovation indicate that the innovation process can have negative effects on the employees:

- Developing and implementing new ideas is time- and energy-consuming
- Innovation leads to changes which can create insecurity regarding job content and working conditions
- Innovation leads to a change in routines. Therefore employees engaged in the innovation process often meet resistance from some of their colleagues. This resistance can put employees under emotional pressure.

(Janssen 2004)

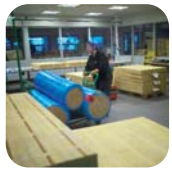
The study by Janssen (2004) points out that predictability and fairness in the reward systems is an important part of avoiding the negative stress resulting from employee-driven innovation.

Other studies (e.g. DISKO, EPOC 1998) have found some positive effects from employee-driven innovation: increased job satisfaction, reduced sickness absence and lower employee turnover.

Employee involvement can both reduce and increase stress levels at the workplace. The case studies indicate that there are both 'good' and 'bad' types of stress. In the words of one employee, "Good stress is when you are able to meet deadlines and show commitment in performing your duties. Bad stress is when you cannot do your work within deadlines". The employees do not want to trade 'good' stress for less influence and responsibility.

The next section of this case study presents experiences connected with employee-driven innovation in three large Danish companies.

Saint-Gobain Isover: Innovation at all levels



The Danish company Isover is part of the global group Saint-Gobain, which has affiliates in 54 countries and is a leader in the world's production of glass wool. Isover creates efficient insulation solutions that are designed to provide safe solutions for their users while helping to protect the environment.

Isover's inclusive and bottom-up approach to innovation, which includes all actors in the organisation in the innovation process, has proved very successful. By actively encouraging its employees to interact with the management in cross-functional teams and taking advantage of the knowledge embedded in its own organisation, Isover has succeeded in improving the company's bottom-line results and job satisfaction, as well as reducing staff turnover.

The formula for its success has been a receptive management, a flat organisational structure and an informal work culture, combined with the use of result-oriented innovation tools.

Innovation as a lifestyle

The management of Isover makes itself visible, and is in constant dialogue with the employees through its informal visits to the production areas, storage facilities and sales department. This provides the employees with the opportunity to discuss particular ideas or suggestions for improvement with the management in a casual atmosphere, and thus to construct a trusting relationship. This generates valuable ideas for improved processes and products, and makes it easier for the management to gain support for new initiatives. Isover's visible, participatory and informal leadership and non-hierarchal organisational culture are essential prerequisites for the success of its employee-driven innovation.

Isover's working culture is receptive to external changes, such as customer demand for new products, as well as to internal suggestions for improvements in the production process. It also leaves room for experimentation and

"Innovation is a lifestyle which flourishes best in informal settings. It is not only about developing new products, but also about developing concepts. Innovation is all about thinking out of the box."

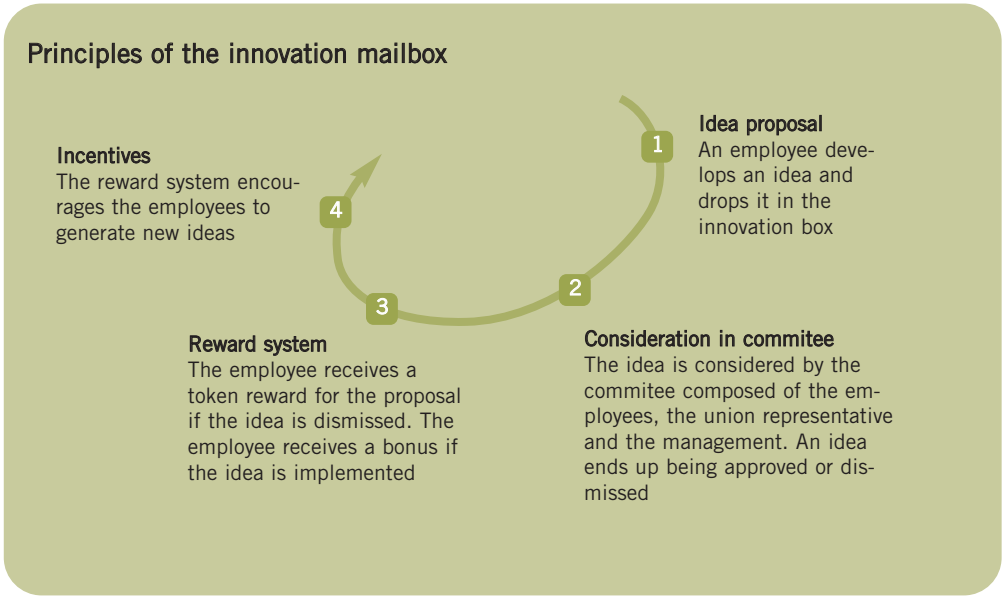
– Susanne Højholt, development manager

mistakes. It is a central principle that employee involvement in innovation should be voluntary, as this is regarded as the best way to motivate the employees to contribute to the innovation process: "It would simply kill people's creativity if they were obliged to generate new ideas. Innovation has to be based on peoples' own initiative. The freedom and trust we are given in our work makes innovation fun and has a positive impact on our job satisfaction. This is illustrated by the many employees who have worked in the company for most of their careers", explains production operator Ejvind Christensen, who has worked at Isover for 28 years. Innovation in Isover is perceived as a lifestyle insofar as it represents a deeply ingrained mentality and mindset among its employees. Its philosophy is that innovation cannot be driven by an exclusive group of people. On the contrary, the innovation process at Isover relies on its inclusiveness and on being deeply rooted in the employees' attitude to their jobs.

Innovation out of the box

In order to utilize its employees' know-how, Isover has created an innovation mailbox. This has proved an effective way to channel the employees' knowledge of customer needs and to make use of their technical and specialized knowledge of the production process. It provides Isover with a competitive advantage in a market where success is highly dependent on constant product improvement.

The innovation box encourages the generation of ideas and the exchange of knowledge within Isover. All employees at all levels of the company are encouraged to write down their ideas for product and process innovation and to drop them into the innovation mail box. The overriding principle is 'thin-



king out of the box'. Afterwards, all ideas, both large and small, are discussed in a committee composed of managers, the shop steward and a selected group of employee representatives.

An idea is always rewarded regardless of whether it is rejected or approved by the committee. The intention is to show that the employees' active involvement in the innovation process is valued and that the management gives equal consideration to all ideas. If an idea is not implementable, the employees receive a token reward consisting of theatre tickets, gift vouchers etc. On the other hand, if the idea is approved, the employee who came up with it receives a bonus. The size of the bonus is computed on the basis of the costs saved or the profit generated by implementing the idea.

Ultimately, the idea is that their active participation in the innovation process and the prospect of a financial bonus will encourage the employees to come up with further ideas. It is more the prospect of seeing their ideas being implemented than the financial reward that motivates them to take part in the innovation process. It gives them ownership of their work and is an expression of their loyalty to Isover: "There is no doubt that the bonus plays a role in giving us an

incentive to take part in the innovation process. It motivates us to think creatively at work and not carry out our job mechanically. However, the most motivating factor is definitely the influence you have and the recognition you gain from your managers and colleagues when one of your ideas are realized." (Ejvind Kristensen, production operator, Isover).

From idea to product

An idea for a new product typically arises from changes in the market, expressed in the form of changes in customer requirements. These are often uncovered by employees in the sales department, who have close contact with the customers in the course of providing product instruction on building sites. They funnel information about their customers' desire for new products or product improvements back into their own organisation by informing management about them (an example of user-driven innovation).

Employees are also involved when a new product is being designed. In this phase, cross-functional groups of employees with different technical skills and knowledge are brought together in order to create synergy effects.

Process optimization is needed either as a consequence of the launch of a new product or because the employees that are involved in the production process find more efficient ways of manufacturing existing products. The production employees are provided with estimates and parameters

Isover saves thousands of euros by reusing products

"A huge amount of waste used to be generated in the production of insulation for water tanks. This led to a lot of additional cost as the useless glass wool had to be packed into sacks and disposed of. My colleagues and I began to consider how this waste product could be reused in the glass wool production process. We experimented with reusing small amounts of the waste wool. This turned out successfully. Subsequently we posted the idea in the innovation box. We received 3500 euro each for the idea, as tons of glass wool were able to be recycled. The idea saved Isover thousands of euros. It is very satisfying to have such an impact on the production process, along with the freedom to experiment and see your own ideas being realized."

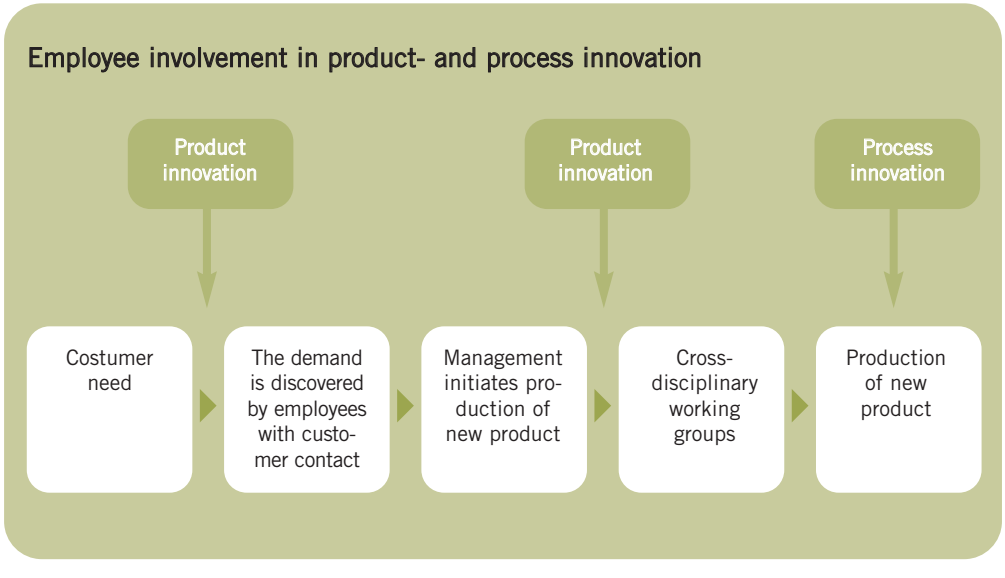
– Production operators Vagn Tved and Per Neupart

concerning the product's properties. The most important criterion is to make the product work successfully.

A secondary aim is to minimize costs while not compromising quality. The production employees have a huge impact on the final outcome, since the product is adjusted in accordance with what is technically possible while simultaneously taking these two criteria into account.

Improved bottom-line results and job satisfaction

"Employee-driven innovation is without a doubt a competitive advantage and has had a positive impact on our bottom-line results in Isover", (Susanne Højholt, Development Manager). Apart from having significant bottom-line effects, the involvement of the employees has had a significant positive impact on their job satisfaction and job affiliation. One of its outcomes is low staff turnover and their strong loyalty to Isover, which is important in the endeavour to maintain skilled labour in a globalised market in which such labour has become more mobile. Altogether, these benefits have turned the increased focus on employee-driven innovation into a central feature of Isover's current market strategy.



Vestas: Employee involvement – a competitive advantage in a globalised market

With 23 per cent of the global market share, Vestas is the world's leading supplier of wind power. In order to respond to the challenges posed by globalisation, such as the fast-growing economies' demand for sustainable energy resources as well as the intense competition for skilled labour, Vestas is focusing on employee-driven innovation as part of its lean strategy.

This aims to enhance Vestas' position as the world's number-one modern energy producer, while simultaneously creating an inspiring, challenging and attractive workplace, says Vestas manager Orla Jepsen: "In order to succesfully compete in the long run, we have to invest in employee-driven innovation and human capital. Faced with globalisation and the intense competition for skilled labour, all employees need to be involved, take responsibility and contribute to the innovation process if our workplaces are not to be outsourced to other countries".

Visible leadership and an informal work culture

It is rare for plant managers to put their desks in the middle of the factory floor. Nonetheless, this is the case with Vestas, where a paramount leadership principle is to be as close to the employees as possible. An informal and non-hierarchical relationship between management and employees creates an optimal environment for employee-driven innovation, points out manager Mads Harder Mikkelsen:

"I have placed my desk as close to the production area as possible. It is a great advantage to sit close to the employees, as I have direct access to their know-how. Besides, my visible leadership helps me to build a trusting relationship with them. This is invaluable in the innovation process, because we depend on their input".

The company's leadership style has undergone a conceptual transformation in recent years. According to employee Anders Grimstrup, this has encouraged employee involvement. Anders has been with the company for eight years: "The management has become better at recognizing when the employees point to problems and to perceive it as an opportunity to improve their production process and thereby the competitiveness of the group concern. Today, management encourages us to take part in the development and improvement of processes and products."

The interplay between effective innovation tools and an innovative work culture

Implementing employee-driven innovation

According to logistics manager Richard F. Hvas, the visible leadership and informal work culture combined with the systematic use of innovation tools result in optimal conditions for employee-driven innovation.

Change agents, workshops, learn boards and dialogue meetings are some of the tools Vestas used to include employees in its innovation processes.

Change agents

To apply employee-driven innovation successfully, a well-articulated and appealing vision of the envisioned future state is needed. Change agents are useful in this regard. As part of the management, they help to facilitate employee-driven improvements and problem-solving in production and logistics. One of the ways they prepare the grounds for a high level of employee involvement is by working closely with the employees to help them learn to identify problems and come up with solutions: "The change agent is the promoter in the start-up phase. He provides the employees with concrete innovation tools", says production manager Mads Harder Mikkelsen, who was himself once a change agent at Vestas.

When management, shop stewards or employees identify challenges or potential for improvements concerning safety, production or quality, the change agent moves his desk to the unit where the challenge or potential has been identified. The change agent then works with the workers of that unit for a couple of days or even several weeks in order to facilitate improvements in the relevant area. The change agent listens to the workers' perspectives, as well as encouraging the generation of ideas and the implementation of new procedures in the unit.

Increased job satisfaction

"Innovation gives us an enormous amount of freedom in our work. Taking part in the process of developing 3-MW wind turbines was a very different and challenging work experience. We were entirely in charge of our day. It was amazing to discover that many of the ideas we suggested and thought were impossible were realizable and approved by the developers. We had great influence on the final outcome, which was really motivating and satisfying. I hope to get the chance to be part of such an enormous development project again."

– John K. Olesen, machinist, Vestas

Dialogue meetings and education modules

It is mandatory for the production employees to attend an education programme to learn about Vestas' lean strategy – in other words, how they are supposed to be involved in the innovation processes etc.: "All the production employees have attended an education programme to learn about Vestas' lean strategy, in which employee involvement plays an important role. The more knowledge the employees possess about employee-driven innovation, the more effective the implementation is, and hence the better the final outcome is," explains shop steward Michael A. Lisbjerg. Dialogue meetings involving the management, the shop steward and the employees have been another way in which employee-driven innovation has been implemented in Vestas.

Workshops

When a new innovation project is initiated, a workshop is scheduled in which managers, change agents, shop steward and selected employees participate. A workshop typically lasts two days. During this time the new product or process optimization method is presented to the employees, who are requested to provide their input and technical insights. Workshops for production workers are also used as a way of mitigating or resolving problems concerning safety, quality and production efficiency.

These workshops consist of successive phases including the identification of a problem or a potential improvement; idea generation; and the elaboration of an implementation plan. A central aim is to obtain the workers' perspectives and knowledge concerning the production process and to include it in the innovation phase. Various manageable tools such as brain-

storming and the construction of logic models are used to facilitate the process.

The employees are selected on the basis of merit, qualifications and persuasiveness. The involvement of the employees in the development phase means that they will accept the introduction of a change in the production process more readily, because they have a stake in the decision that has been made.

Cross-disciplinary cooperation

The quote in the box above comes from a machinist who has been involved in the development of new wind turbines at Vestas. Vestas has had good experiences with the involvement of skilled and unskilled workers in innovating new products.

For several years, these workers collaborated with engineers every day to develop a new 3-megawatt wind turbine. Using rough drafts produced by the engineers, they built the prototype for it.

According to the plant management, the involvement of the workers in this process was a great asset. The workers contributed with valuable insights into what was practically feasible and desirable in the production of wind turbines: "This knowledge significantly contributed to the quality of the windmill, and their input helped us to design a turbine that was less complicated to manufacture and maintain."

Lean boards

Finally, another of Vestas' innovation tools is its Lean boards. The employees can post their ideas anytime on the boards, which are divided into categories such as safety, production, processes etc. Ideas concerning safety always receive the greatest priority and are evaluated by the management immediately. However, everything revolves around the actual translation of the employees' inputs into concrete results. In other words, mere proforma involvement is ineffective. It is essential that the employees should be able to see their ideas being implemented in practice relatively quickly.

A global potential

Employee-driven innovation has proved important for enhancing Vestas' position as the world's number-one modern energy producer. It has generated improved bottom-line results and strengthened Vestas' competitiveness.

Thus Vestas sees great economic potential in implementing employee-driven innovation in its factories around the world. However, cultural differences are a

potential barrier. “My experiences when working with production in different European and Asian countries have shown that the workplace culture can be a barrier to involving workers in innovation”, explains production manager Mads Harder Mikkelsen. However, a trusting relationship between management and workers can help to overcome cultural barriers: “The cultural differences are challenging, but can be overcome if you build up trust. Additionally, you have to train the employees for an innovative culture and hence an innovative mindset,” emphasizes ligistics manager Richard F. Hvas.

The exchange of knowledge among employees both within Denmark and beyond its borders also helps to break down the cultural barriers. For two months, Italian workers were stationed at one of Vestas’ plants in Denmark in connection with the production start-up of a new type of wind turbine in Italy. The Danish workers taught the Italian workers how to construct the new turbine. Afterwards some Danish workers visited Italy in order to help implement the new production there. The following assessment comes from electronics mechanic Per Rasmussen, who participated in the exchange: “This exchange process has contributed to an exchange of work cultures, and can be used to transfer the innovation mindset to plants elsewhere in the world.”

Production manager Mads Harder Mikkelsen is optimistic with regard to the opportunities for implementing employee-driven innovation on a global scale in Vestas’ companies. What is needed is an innovative work culture that trains the employees to be innovative, together with the use of some manageable innovation tools. These are the main ingredients for the successful implementation of employee-driven innovation in companies all around the world, states Mikkelsen.

DSB: Punctual trains across borders

DSB operates rail services both internally within Denmark and across international frontiers. DSB operates approximately 80 per cent of all the passenger train services in Denmark, and is an independent state-owned company. Like such former state-owned railway companies as Deutsche Bahn or British Rail, DSB is in the midst of a transition process from a highly traditional state bureaucracy to a modern train operating company doing business in a global market. Here, the involvement of employees has become essential in ensuring improved customer service, product quality and productivity. The central elements in DSB's employee involvement are self-management and the systematic gathering of new ideas from its employees.

Self-management and autonomy

In DSB's train maintenance unit 'DSB Klargøring' – the train maintenance unit – technicians and service staff undertake daily repairs and maintenance work on trains. These skilled and unskilled workers work in self-managing groups. Instead of responding to requests from an operations manager, the workers now make joint decisions regarding when and where to make repairs and how to shunt the trains.

Introducing self-management in this department has significantly increased productivity:

'The trains need to be in service as much as possible. In the space of 120 minutes a train travels from

the central railway station to the maintenance plant, where repairs and preparations for the next trip are made, and the train is ready to welcome new passengers at the central station once again. That leaves us with no more than 60 minutes for performing safety checks, replenishing water tanks, replacing damaged seats and doing other repairs.

Thanks to self-management, the planning of repairs and maintenance has improved. One example is that the shunting of the trains can be adjusted more easily to changing tasks on different trains. We have been able to increase the time that the trains are in service by approximately 20 per cent.' (Michael Sonne Hansen, DSB's train maintenance unit)

This increased autonomy means faster and better-qualified decision making, with the result that the repair and maintenance process is now more efficient. The philosophy behind this initiative is that self-management and increased autonomy enhance both productivity and job satisfaction. By contrast, DSB's previous hierarchical and formal work culture was an impediment to innovation and employee involvement.

"Your daily work becomes more fun when you can influence it. It is also satisfying when your knowledge and experience are made use of. You experience a certain sense of ownership of your work." (Flemming Pihl-Plambek, electrician, DSB's train maintenance unit.)

Employee-driven innovation saving thousands of liters of water

Train service technicians had been wondering why they were wasting so much water when they refilled the water tanks of the trains. This induced them to figure out how to solve the problem.

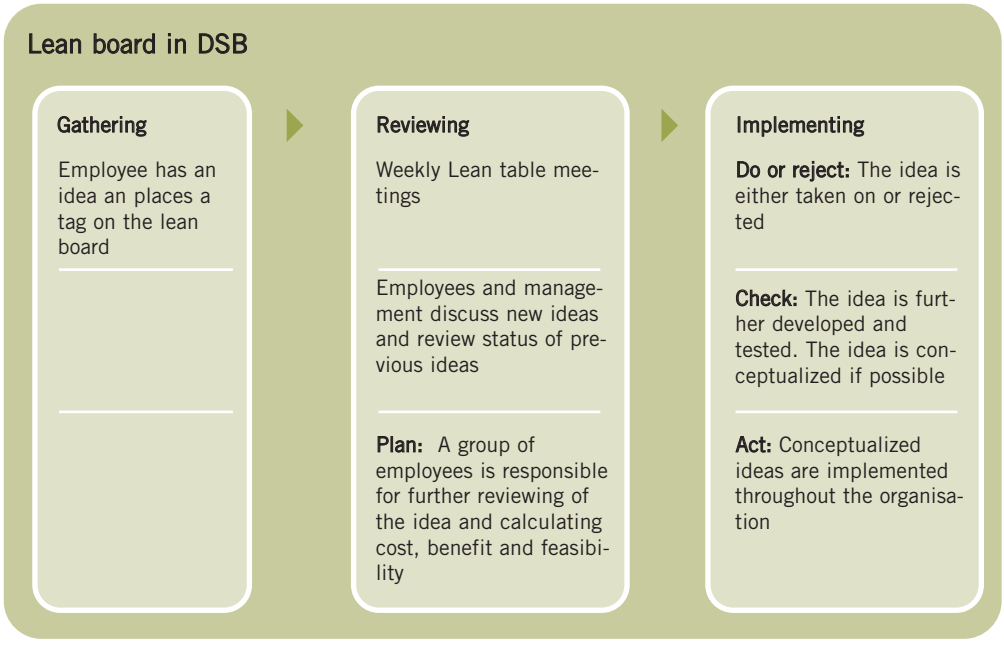
The employees found a solution that stopped the water flow as soon as the tanks were full. This idea has now been implemented on one train as a pilot project, and calculations show that it should save more than 100,000 EUR a year when fully implemented. In addition, thousands of liters of water will be prevented from going to waste, which will help the environment.

Another example of DSB's employee involvement is the systematic gathering of new ideas. Throughout the company, Lean boards are used to organise the gathering, testing and ultimately the implementation of new ideas. The workers in DSB's train maintenance unit can tag any kind of idea to the improvement of a process, product or the working environment on the Lean board.

Once a week, these ideas are reviewed by employees and their manager, who assess the costs and benefits of the most promising ideas. The ones that prove cost-effective are implemented and presented to the employees on the board. This process has optimized safety, product quality and service. The employees generally feel that decisions are now made on a better basis, and that their innovation projects and the self-management approach are both helping them to do their jobs better.

Greater job satisfaction and ownership

The focus on employee-driven innovation has had an enormous positive impact on the employees' job satisfaction:



"I can influence my own work day and the direction of my company. It has opened my eyes because I have become aware of the difficult choices the managers have to make. This helps me to see the decisions from the management's point of view as well." (Michael Sonne Hansen, machinist in DSB's train maintenance unit).

Hansen's colleague Anita Nielsen explains: "Nobody is afraid of talking to the supervisor anymore, as there are no "bad" ideas. If people want to highlight a problem, they can write it down instead of complaining about it and creating a bad atmosphere."

All in all, the employees are more than happy about the changes. Working with employee-driven innovation has clearly created a better working environment in which greater job satisfaction and greater ownership are only two examples of the positive outcome. Shop steward Lillian Haaning sums it up: "It has clearly reduced sickness absence. Now, we can influence our own work and take on more responsibility".

Breaking barriers

However good DSB's results may be, there are certain barriers to keep in mind when working with innovation. A cornerstone of DSB's employee-driven innovation is that changes are initiated in the form of a Lean process. The Lean process was introduced by the top management, and many employees and

middle managers were initially sceptical:

'I thought it was all about cutbacks, and I didn't believe the fine words about employee involvement. But it turned out that the concept of employee involvement really was put into practice, and it has really helped us to do our jobs more effectively.' (Michael Sonne Hansen, machinist, DSB's train maintenance unit.)

'In the beginning, I was sceptical – maybe I didn't know enough about the concept. Now I see that if management continues to emphasize employee involvement it can really improve our services and working environment. But it is obvious that the management has to ensure that employee proposals are processed quickly – it is crucial for the employees to have the sense that their suggestions and ideas are being taken seriously.' (Morten Andersen, manager, DSB's train staffing unit 'DSB Togpersonale'.)

As the last quote indicates, one of the chief challenges facing employee-driven innovation in DSB has been to maintain management focus on the innovation tools being used, and to ensure fast follow-up and feedback concerning their employees' ideas.

Another challenge to the involvement of employees in the innovation process has been that DSB's staff is spread across the country and is working aboard the trains at different times of the day. In many departments it is very difficult to gather the staff because the trains always have to be in service. One way of overcoming this barrier has been to establish an 'e-Lean Board'. In some departments, the employees place their tags on a Lean board on the company intranet, where the process of planning, doing, checking and acting is also visible. Additionally, train service employees are visited twice a year by their managers, who shadow them on their shifts. Employees can then pass on some valuable insights to their managers that the latter would not otherwise be able to gain.

How can employee-driven innovation be initiated?

Innovation toolbox

1. **Lean board**
   A way of structuring the employees' ideas, DSB
2. **Workshop**
   Development of ideas, Vestas
3. **Innovation mailbox**
   Collection of ideas, Isover
4. **Cross-functional work groups**
   Synergy of different skills, Isover
5. **Dialogue meetings**
   Knowledge sharing, DSB
6. **Education modules**
   Information about methods and visions, Vestas
7. **Change agents**
   Help implement employee-driven innovation, Vestas
8. **Self-managing teams**
   Giving employees autonomy, DSB

Involving the employees in innovation processes does not necessarily require radical or large-scale organisational changes, as the case analyses have demonstrated. Saint-Gobain Isover, Vestas and DSB use a wide variety of manageable innovation tools. These can easily be combined, and all three companies are using several of these tools simultaneously. The figure below describes the tools:

All the tools have one thing in common: they are being applied in work cultures that enhance and encourage employee involvement in the process of innovation. Accordingly, employee-driven innovation consists of the interplay between the use of specific tools like those described in the figure, and an underlying culture of innovation.

Creating an innovative work culture

Common to all three companies is that their innovation tools are

being supported by an innovative work culture; this means that the employees are always critically considering whether a given task could be carried out more efficiently or with a better quality.

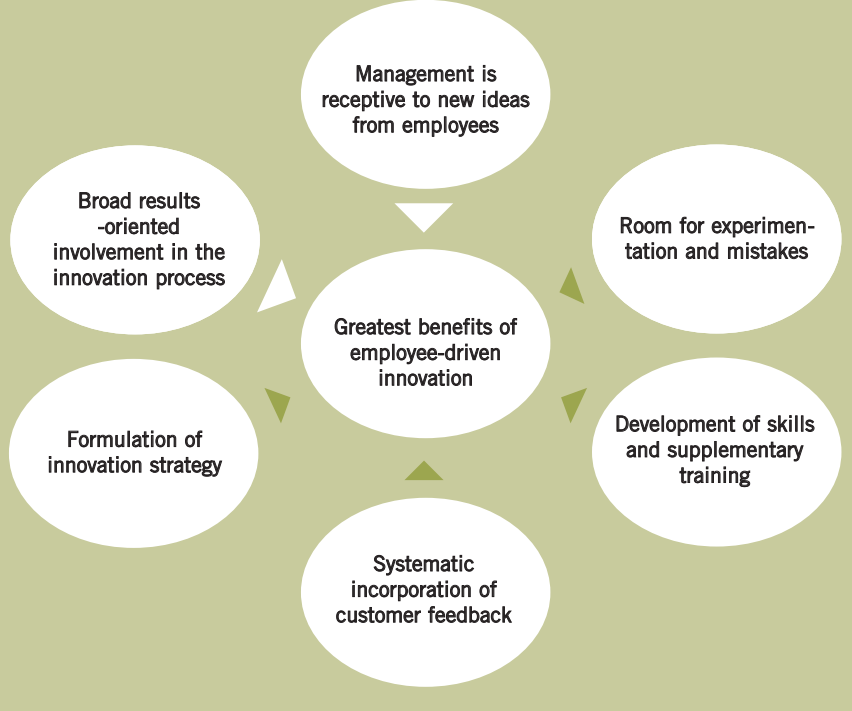
Secondly, an innovative culture implies that the employees are able to work together in a cross-disciplinary manner.

Thirdly, it means that the management is encouraging the employees to take an active role in the innovation processes.

Finally, a trusting relationship between the management and the employees is a crucial component of an innovative work culture.

It may not be easy to change some organisational cultures. However, all three cases demonstrate that it is achievable within a relatively brief timeframe. Together with the applicable tools,

The factors that have significant impact on the extent of the benefits derived from employee-driven innovation processes



an innovation culture is crucial in improving the extent of the benefits accruing from the innovation process. The national study (LO, 2006) points to some concrete advice for a company management that intends to create an innovation culture in the workplace similar to that shown in the figure above. The two white arrows indicate that these factors have the most significant impact on the benefits that accrue from the innovation process.

The study found that a broad result-oriented approach to employee involvement in the innovation process, as well as a management that is open to new ideas from employees, have the greatest positive impact on the extent of the benefits produced by the innovation processes. It is important that the employees feel they are making a difference, and that they can see the results of their involvement. If the employees feel that their ideas are not having enough impact and are only receiving pro-forma attention, they will be less inclined to contribute to the innovation process in the future. Hence, successful employee-driven innovation presupposes that the management is able to demonstrate that the employees' ideas and suggestions are being translated into reality.

How to get started

On the basis of the experience gained at Isover, Vestas and DSB, plus the findings of the 2006 national study, five recommendations stand out.

In order to obtain significant benefits from its innovation processes, a company should:

1. Produce a innovation strategy, recognising that innovation requires strategic leadership and set a strategy and goals to be realized.
2. Utilize the employees' experience-based knowledge; Hands-on experience is a valuable supplement to technical knowledge.
3. Generate buy-in for the innovation process among the employees by engaging shop stewards and works committees in the implementation process.
4. Be receptive and responsive to the employees' ideas; The motivation to participate in innovation processes is essentially based on being taken seriously and having influence.
5. Make room for experimentation and tolerate mistakes; highly fearful companies are unable to learn from mistakes and are not capable of innovating.

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