

This article was downloaded by: 10.2.97.136

On: 22 Mar 2023

Access details: *subscription number*

Publisher: *Routledge*

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## **The Routledge Companion to Innovation Management**

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### **Innovation management within the organisation**

Publication details

<https://test.routledgehandbooks.com/doi/10.4324/9781315276670-18>

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**Published online on: 26 Feb 2019**

**How to cite :-** Regina Lenart-Gansiniec. 26 Feb 2019, *Innovation management within the organisation from: The Routledge Companion to Innovation Management* Routledge

Accessed on: 22 Mar 2023

<https://test.routledgehandbooks.com/doi/10.4324/9781315276670-18>

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## INNOVATION MANAGEMENT WITHIN THE ORGANISATION

*Regina Lenart-Gansiniec*

### **Creativity, fuzzy front end, and innovation**

In the literature one can see the concept of creativity and innovation being used interchangeably. However, it should be pointed out that these are not identical concepts. The distinction between creativity and innovation is proposed by Amabile et al. (1996): “like other researchers, we define creativity as the production of novel and useful ideas in any domain. We define innovation as the successful implementation of creative ideas within an organization”. Innovations include “a process of developing and implementing a new idea” (van de Ven, Angle, and Poole, 1989). The authors believe that “innovation refers to the process of bringing any new problem solving idea into use . . . it is the generation, acceptance, and implementation of new ideas, processes, products, or services”. On the other hand, creativity is perceived as the cause of action and creation, as well as the process of communication between innovation and the environment. It is connected with stimulating new thoughts, reformulating the existing knowledge, and analysing assumptions in order to formulate new ideas. It can therefore be concluded that creativity stimulates creating innovations.

Creativity is defined in the literature in different ways. Considering psychology, it should be emphasised that creativity can be understood as a psychological process, part of human intelligence and cognitive ability. In this conceptualisation, the basis of creativity is the emotions, the joy of creating something new, and tolerating ambiguous answers and solutions that translate into readiness and the ability to formulate new problems, communicate, and apply knowledge in different contexts. Thus, creativity in psychological terms is a certain attitude and the result of skills, expert knowledge, intelligence, talent, cognitive and personality processes, cognitive style, internal motivation to undertake tasks, interests, pleasures, a sense of challenge, passion, and external motivators.

In the context of management, creativity is a process that creates or brings to life something new, useful, and generally acceptable. Creativity is a process of developing novel and useful ideas, whether an incremental improvement or a world-changing breakthrough. King and Anderson (1995) consider creativity to be as necessary a characteristic as novelty, that is, the conception must differ significantly from what has gone before. It should also be appropriate to the situation it was created to address, be public in its effect, and deliver a perceived benefit. Creativity is also associated with the domain of exceptional personal influence (Sawyer, 1998), social processes of

creating reputation and production, adoption, implementation, diffusion, and commercialisation of innovations (Rogers, 1983; Spence, 1994). For instance, Sternberg and Lobar (1999) define creativity as “the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints)”.

The relationship between creativity and innovation seems undisputed. Creativity is a necessary precondition for successful innovation. It is pointed out in the literature that creativity and innovation can be considered determinants of the organisation’s performance, its success, and its survival. However, the relationships between creativity and innovation are complex and multi-dimensional, and the benefits gained from this relationship require specific skills. Only then will they allow one to maximise benefits and improve ways of working in the organisation.

Creativity, as the most important feature of human capital, affects the implementation of innovation and is the basis of the innovation process. It is an important feature of all aspects of decision-making in business. It is a phenomenon of stimulating new thoughts, reformulating existing knowledge and analysing assumptions in order to formulate new theories and paradigms or create consciousness. It is a process that involves revealing, selecting, exchanging, and combining facts, ideas, and skills. In practice, this boils down to the fact that organisations are able to use the ideas and suggestions of their employees, which contribute to the generation of new ideas constitute a source of competitive advantage (Anderson, de Drue, and Nijstad, 2004; West, 2002a; Zhou and Shelley, 2003).

It should also be emphasised that it is difficult to indicate at what stage of innovation creativity is important – this is due to the ambiguity and multiplicity of approaches. On the one hand, it is pointed out that creativity is necessary only in the early stages of innovative processes (Oldham and Cummings, 1996; Rank, Pace, and Frese, 2004). It is also debatable that creativity contributes to novelty, while innovations also include the adoption or modification of ideas from other organisations (Anderson, de Drue, and Nijstad, 2004). In addition, creativity has been argued to involve primarily intra-individual cognitive processes, whereas innovation mainly represents interindividual social processes in the workplace (Rank, Pace, and Frees, 2004). However, other authors believe that creativity is necessary during the entire period (Paulus, 2002). They point out that creativity is often seen as the first step of innovation (Mumford and Gustafson, 1988; West, 2002a, 2002b). This is supported by the fact that the innovation process as it unfolds over time is messy, reiterative, and often involves two steps forwards for one step backwards plus several side steps (van de Ven, Angle, and Poole, 1989).

“Fuzzy front-end” (Zhang and Doll, 2001) is another link that can contribute to the success of the entire innovation management process. This term was popularised by Smith and Reinertsen (1991). It denotes all time and activity spent on an idea prior to the first official group meeting to discuss it, or what they call “the start date of team alignment”. Another way of thinking about this concept is to highlight the fuzzy front end as that territory leading up to organisational-level absorption of the innovation process (Cohen and Levinthal, 1990). In general, the front end ranges from the generation of an idea to either its approval for development or its termination (Murphy and Kumar, 1997). This is a kind of starting point in which the possibilities of creating innovations are identified.

The “fuzzy front end” of innovation projects includes fostering issues and ideas before the start of the formal project development phase (Koen et al., 2001). It also includes both generating ideas and approving the development or its end (Murphy and Kumar, 1997). In short, “fuzzy front-end” can be defined as a clearly early phase of innovation. This stage precedes the formal process of product development and allows for the acquisition of a multitude of ideas, validation of opportunities, creativity, and making decisions about the resources possessed, as well as seeking and creating value. It includes both generating ideas and approving or ending development

(Murphy and Kumar, 1997). It is not without significance to propose a problem and recognise the possibilities of solving it (Leifer, O'Connor, and Rice, 2001; Urban and Hauser, 1993), gathering information, and exploring it.

In this section, the importance of creativity and “fuzzy front-end” for innovations has been discussed. It also indicates where to start the creativity found in the organisation. In the following sections, the issues of interface management of innovation will be discussed. Interface enhancement tools will be presented, and concurrent engineering and the R&D marketing interface will be discussed.

### **Interface management of innovation**

A review of the literature shows that the process of creating knowledge and innovation resources depends on the cooperation and interaction of many entities. It is also a derivative of the interaction resulting from the cooperation of many departments in the organisation. The marketing, R&D, production, financial, and human resources departments are of great importance here. Their cooperation facilitates interaction – to provide the quality operations of the organisation and the decision-making process with it. Only few authors recognise that to meet the interface requirements, teamwork organisation (Clark and Wheelwright, 1992) and systemic operation are important.

Research into the systemic features of innovation is rooted in two main theoretical currents. One of them focuses on the evolutionary theories of economic and technological changes. According to this conceptualisation, innovation is a derivative of the evolution of various institutions and changes, and it is a process that has its historically conditioned path of development. The second approach draws attention to the role of knowledge and interactive learning in the system. Innovations are considered here as a social process, created by many individuals as well as external and internal factors. Innovation is created by systems of interdependent departments of the organisation that create dependency networks. In particular, the second concept requires proper management.

In essence, the interface management comes down to planning, coordinating, and controlling innovations in cooperation with various units of the organisation. This is particularly important in technological and product-related innovations that require a multifunctional interface. The main goal of interface management is to improve the innovative potential of the organisation and thus facilitate the achievement of success and the implementation of tasks or projects. It is recognised that controlling dynamic interfaces is necessary to achieve goals, schedule, and scope. Moreover, static interfaces should be clearly defined throughout the duration of innovation creation. It also facilitates coordination of work, communication between particular departments, and identification and minimisation of possible problems or threats.

Concurrent engineering and the R&D marketing interface may help in improving interface management. Concurrent engineering comes down to a systematic approach to an integrated, concurrent development of products and accompanying processes, including the production and support system.

It is a method of designing and developing innovations in which individual stages are carried out simultaneously; thus, this requires synchronisation, coordination, quality control, and monitoring. The main task of concurrent engineering is to accelerate and increase the efficiency and quality of product development. Technological and IT solutions that help manage the product's life cycle (idea, design, creation, quality/cost control, use, and reprocessing), shorten the time to create innovations (it reduces the product development time by 30 to 70 percent), and introduce them to the market (time to market 20 to 90 percent.) are helpful here. They also improve the efficiency of the entire innovation creation process (administrative productivity by 20 to 110 percent), contribute

to the improvement of the quality of innovations (their application increases the product quality by 200 to 600 percent), reduce the number of necessary changes (number of engineering changes 65 to 90 percent), reduce costs, and match the requirements of construction and technology of innovation in terms of costs, quality, and logistics. They eliminate the need to redesign the project several times, creating a friendly environment for designing products.

A characteristic feature of concurrent engineering is its interdisciplinarity, and its principal task is to collect information necessary to carry out the tasks included in the various phases of innovation creation so that the new product development project can be freely implemented between individual moments of making key decisions for a given project.

Among the IT solutions that make up concurrent engineering, the following are mentioned in the literature:

- Document management systems – they enable collection and classification of documents and facilitate their search and access to them, as well as record the work performed on these documents (e.g. controlling their version, tracking the changes introduced, etc.).
- Workflow systems – they support the implementation of procedures for handling documents; knowledge bases and information extraction mechanisms are included in these systems help to collect materials necessary to create content (e.g. pointing to relevant legal provisions or similar records in previously prepared documents).
- Groupware – facilitates communication between teams and between individuals.
- Intranet – an internal network connecting, for example, computers in one company and its branches, enabling the flow of information within the organisation.
- Corporate portals – allow for combining information from practically all data sources in the organisation (e.g. in the form of e-mails or video recording) in one place. Access to information takes place via a web browser.
- Decision support systems and expert systems – interactive computer systems used in performing planning and decision-making functions. They enable managers to obtain selected, condensed, and already analysed information and facilitate decision-making.

It should be emphasised that the use of IT tools shortens the work cycle of innovations, reduces the number of employees participating in their creation, increases work efficiency, and contributes to creating innovations that are more adapted to the needs of the market. They also allow for effective use and optimal allocation of engineering and production resources; synchronous work and partial overlap of construction, technological, and planning works; team implementation of project work; electronic form of communication between team members; flattening of organisational structures; and high transparency of organisational connections.

Despite its many benefits, the IT tool is recognised as complementary in the literature – it only contributes indirectly to the efficient management of innovations. According to the report of Deloitte (Hagel, Brown, Samoylova, and Lui, 2013), the IT system is not seen as a centre of innovation. They are also not the catalysts of differentiation and competitive advantage. Nevertheless, IT systems are supporting factors because they increase the efficiency of teams working on creating innovations.

The R&D marketing interface constitutes a combination and cooperation of the R&D department with the marketing department. It is defined as an information processing subsystem of the organisation designed to reduce customer, market, and technology uncertainty in the innovation process (Moenaert and Souder, 1990). It should be emphasised that the aim of R&D and marketing is to influence the strategic development of the whole innovation creation process. Cooperation between these departments increases the volume of communication, increases

the reliability of the obtained information, and allows for identifying and diagnosing the usefulness of innovations and the fulfilment of market requirements by them. The R&D department should inform the marketing department about new technologies – the purpose of this is to gain knowledge whether their proposals will be accepted by customers. In addition, the marketing department should inform the R&D department about any reservations and expectations of customers regarding new products. Moreover, each of these departments should cooperate with the production department so that the new products are adapted to the company's production capacity and do not generate additional costs. Therefore, individual areas are permeating and numerous feedbacks between them can be observed.

In this section, the importance of concurrent engineering and R&D marketing interface for innovations was discussed. It was explained why cooperation between each department in the organisation is important in the case of creating innovations. In the following section, the problematic aspects of managing new product development processes will be discussed. The term new product development (NPD) will be defined and its course will be discussed.

### **Management of new product development processes**

In 1998 Schilling and Hill stated that “between 33 percent and 60 percent of all new products that reach the market place fail to generate an economic return”. Fifteen years later, a similar report is presented by the Nielsen agency in which it was said that more than half of the new products implemented in the world are not able to survive in the market within one year of the introduction date, and out of 100 new products entering the market only 5 will be able to survive. This is also confirmed by the finding of the Product Development Management Association Foundation: new product sales fell from 32 percent of total company sales in 1990 to 28 percent in 2004. This means that the biggest challenge for the organisation is collecting information.

Despite these data, it is emphasised in the literature that new products ensure sales growth, profit, and competitive advantage (Sivadas and Dwyer, 2000). Indeed, they are the key to competitiveness and the driving force of the organisation (Song and Parry, 1997). It is perceived as a strategic priority (Nijssen, Biemans, and de Kort, 2002; Ozer, 2004) and a critical activity. Introducing a new product to the market is a complex and difficult process. It is difficult because at each stage there may be a risk of failure and a threat of the appearance of competitors. Organisations should therefore focus on reducing the number of new product or service failures and shorten the time to introduce new products to the market.

And so the term “new product development” is not only connected with new product development. It also includes developing the concept of new products, as well as using appropriate strategies. This leads to an evaluation of the justification for spending money on new product development (Pisano, 2015). The U.S.-based Product Development and Management Association defines new product development as “a disciplined and defined set of tasks and steps that describe the normal means by which a company repetitively converts embryonic ideas into saleable products or services” (Belliveau, Griffin, and Somermeyer, 2002).

The literature indicates that new product development must be well planned, must be implemented, and should receive support. Moorman and Miner (1998) point out that new product development management should be flexible enough to enable the implementation of any possible necessary changes and adaptation to the changing conditions and new information. It is pointed out in the literature that new product development boils down to ten steps.

First ideas are searched for and generated (Stage 1). It seems that the most important stage is connected with collecting information. Subsequently, these ideas are evaluated in terms of

feasibility and efficiency (Stage 2). Testing at the stage of ideas, adaptation to the needs and expectations of customers takes place as part of the next stage (Stage 3). Next, defining the concept of the product, its specification, and testing the concept with the target group (Stage 4). Not without significance is product pricing, cost, and price estimation (Stage 5); the method of implementing the new product and identifying the necessary resources and time to reach this point (Step 6); creation of a project team (Stage 7); and designing the early prototype, its testing, improvement, and modification according to the needs of the users (Stage 8). Next, there is an assessment of the legal regulations and their impact on the new product or service, as well as developing mechanisms for intellectual property protection (Stage 9). The final stage is the development of a marketing strategy oriented on maximising revenues and commercialisation of the new product (Stage 10).

As mentioned, new product development that is efficient and leads to success, as well as reducing production costs, shortening the product implementation cycle, and increasing quality, depends on the adoption of an appropriate strategy for introducing the product to the market. Regardless of the adopted strategy, new product development assumes, among other things, defining an internal process of work on the development of a new product, including developing the concept, design, and prototype of the new product. It is also important to maximise the matching to the needs of customers, which translates into the need to respond to the behaviours of competitors and thus the product's fit, its quality, and accessibility to the requirements and needs of the customers. In addition, it is important to estimate the size of the market, position the product, introduce it into the market at the right time, calculate the price, and determine the methods to promote and advertise the new product.

For the success of the new product development process, various factors that drive the success or failure of the organisation and allow it to achieve the determined effect of implementation and thus affect efficient management are of great importance. Usually, they boil down to four basic factor groups: (1) product strategy and planning; (2) internal knowledge, sharing, and communication; (3) external relationships and cooperation; and (4) use of marketing activities.

Product strategy and planning are the milestones of the new product development (Brown and Eisenhardt, 1995). In particular, it is important to involve the employees in R&D resources and have a flexible and planned strategy, as well as support of the officers enabling its implementation. Cooper and Kleinschmidt (2007) also point to the need for strategic thinking about the new product and its positioning. Ilori, Oke, and Sanni (2000) emphasise the need to allocate resources for R&D and synergy between the product and key competences. Market orientation and technology orientation are also important (Jeong, Pae, and Zhou, 2006).

The second group of factors includes internal knowledge, sharing, and communication. Madhavan and Grover (1998) emphasise the importance of information and knowledge for new product development. In particular, the flow of knowledge in project and innovation teams is important (Moenaert, Caledries, Lievens, and Wauters, 2000); this especially concerns R&D and marketing employees (Gresham, Hafer, and Markowski, 2006). It is because this may increase the involvement of these teams' members (Fredericks, 2005). The knowledge flow and the organisation's relationships with its surroundings are also important (Moenaert, Caledries, Lievens, and Wauters, 2000). For example, the experience of suppliers may contribute to improving the implementation of a specific technology.

The third group of factors is the external connections and cooperation. As was already mentioned, the implementation of a new product must be preceded by collecting information about the needs, expectations, and customer preferences. This information, as well as the customer's

involvement, can contribute to improving the success indicators of new product development (Stewart and Martinez, 2002).

And finally the fourth group of factors is the use of marketing activities. Some believe that they are important, whereas others think they are only marginal and rather less important (Rochford and Rudelius, 1997). Certainly, marketing plays a leading role in managing customer relations (Leigh and Marshall, 2001) because it allows for adjusting the product to the customer's needs.

These findings are confirmed by March-Chordà, Gunasekaran, and Lloria-Aramburo (2002). In their opinion, the following are important: market analysis (identification of market trends and requirements and expectations of the customers), planning a new product (creating orders and other formal product development plans, quality management), and the support of top management (setting the strategy direction and working out a systemic approach within its framework, developing a vision of a new product development-oriented organisation, enabling the creation of interdisciplinary project teams and supporting them). In another approach, Brown and Eisenhardt (1995) indicated, in addition to rational planning, additional communication networks and disciplined problem solving. On the other hand, Harmancioğlu, Finney, and Joseph (2009) emphasise the importance of a high degree of implementation of project assumptions for a new product, the advantages of the product itself, speed in development and commercialisation, and taking into account the needs and expectations of customers. Marketing activities, appropriate and well-thought-out distribution channels, and financial means necessary to initiate sales as well as R&D are not without significance. In addition, Henard and Szymanski (2001) noticed that environmental factors play an important role.

In this section, NPD for innovation was discussed. It explains how to manage it and the factors that are important for NPD. In the following section, innovation acceleration will be discussed. The differences between acceleration and incubation will be indicated. The notion of an accelerator will be defined. Also, examples of innovation acceleration will be given.

### **How to accelerate innovation**

Acceleration means accelerating the stage related to development and maturation. In this approach, it complements the organisation's innovation strategies, which expect quick results in a short time. It usually includes activities in the areas of market entry, customer relations, promotion and marketing, collaboration with R&D institutions, technology transfer and commercialisation, and networking and building company credibility, as well as raising capital for development. These activities are usually carried out in incubators and technology parks. This includes an attempt to verify the market and support the entrepreneur's business and technological competencies. Acceleration often concerns small and medium-sized companies that introduce new products and develop technological competences. Acceleration of innovative activity complements the innovation strategy or, for entities that expect quick results in a short time, is a kind of "quick path".

There are discussions in the literature about the convergence of the terms acceleration and incubation. This is important because the difference between them is quite open-ended and these terms are often used interchangeably (von Zedtwitz, 2003; Carayannis and von Zedtwitz, 2005; Grimaldi and Grandi, 2001; Pauwels, Clarysse, Wright, and Van Hove, 2015). This linkage is largely because "there is little formal academic literature on the subject and no universally



accepted definition of what an accelerator is” (Barrehag et al., 2012). As a result, some researchers seem to even use the accelerator label while actually describing incubators (e.g. Malek, Maine, and McCarthy, 2014). While accelerators have some elements that might resemble incubators, they also have defining characteristics that differentiate them from incubators:

- (1) Time horizon: For incubation, it is around three years and for the accelerator it is approximately three months.
- (2) Space: Incubators are oriented on diagnosing local potential, while the accelerator only needs an appropriate environment, access to an investor network, and possible partners. However, it is unrelated to a given place.
- (3) Required resources: Running an acceleration program requires a team, many years of experience, and networking. However, an incubator needs infrastructure and staff to maintain the tenants at all times.
- (4) Work organisation: Incubators operate on a continuous basis, while accelerators are organised periodically, at a specific time and companies are accepted as cohorts.
- (5) Forms of support: An incubator offers access to management and other consulting, specialised intellectual property, and networks of experienced entrepreneurs; helps businesses mature to the self-sustaining or high-growth stage; and helps entrepreneurs round out skills and develop a management team and, often, obtain external financing, while the accelerator is a “fast-test” validation of ideas and opportunities to create a functioning beta product and find initial customers, links entrepreneurs to business consulting and experienced entrepreneurs in the Web or mobile app space, and provides assistance in preparing pitches to try to obtain follow-up investment.
- (6) Customers: For an incubator, there are all kinds, including science-based businesses (biotech, medical devices, nanotechnology, clean energy, etc.) and nontechnology, all ages and genders; this includes those with previous experience in an industry or sector. For an accelerator, there are web-based mobile apps, social networking, gaming, cloud-based, software, etc.; firms that do not require significant immediate investment or proof of concept; primarily youthful, often male technology enthusiasts, gamers, and hackers.

Accelerators are programs that help entrepreneurs bring their products into the marketplace. They typically operate by inviting a cohort of start-up companies to work intensively on their technologies for a time. Accelerators are organisations offering a suite of professional services, mentoring, and office space in a competitive program format (Fishback et al., 2007). This means that the accelerators:

- are for-profit organisations that receive equity in exchange for the provision of funding to the start-ups.
- do not necessarily provide office space for the start-ups they support, but typically provide meeting space.
- target regional, national, or even global start-ups.

In this section, the problematic aspects of innovation acceleration were discussed. Examples of innovation acceleration were provided. In the following section, the problematic aspects of the chief innovation officer and innovation will be discussed. The skills and competences that should distinguish a chief innovation officer will be provided. Attention will also be focused on proactive leadership.

## **Chief innovation officer and innovation**

A chief innovation officer (CIO) is a person in a company who is primarily responsible for managing the process of innovation and change management in an organisation as well as being in some cases the person who originates new ideas but also recognises innovative ideas generated by other people.

In practice, a CIO's tasks include primarily designing innovation concepts in accordance with the organisation's strategy and the needs of customers. The CIO also monitors the course of innovation, maximises the organisation's potential benefits from innovations and re-education costs, and provides the necessary resources. In addition, he or she is responsible for detecting errors while working on innovations. Moreover, the CIO responsibilities and tasks include supporting best practices, developing the skills of the team working on innovations, motivating the team to generate ideas, supporting business units cooperating in the creation of innovations, identifying new space for creating and implementing innovations, and managing budgets. Due to the wide range of duties, the CIO should have specific skills and competences.

First of all, team management is an important skill. Due to the fact that the CIO is required to support employees and strive for their development, he or she should be able to identify new ideas and insights, encourage and motivate employees, and propose their own ideas and creative thinking. He or she should also create group work opportunities and create open innovations (e.g. by initiating the launch of platforms for generating ideas, organising a hackathon, or using crowdsourcing).

Second, the CIO should update and follow the latest trends and requirements, constantly improve his or her competences and skills, and look for solutions that will contribute to the search for improvements.

Third, the CIO should be an expert in initiating and supporting innovations but also seeking inspiration to create them. He or she should also focus on training managers from other business units in order to educate them about the need to support innovations created by the organisation.

Fourth, the CIO should always look for new opportunities. This includes analysing market trends and seeking opportunities to enter new markets. It is also tracking and analysing the opportunities and threats associated with creating innovation.

The fifth skill is budget management. The CIO has at his or her disposal and manages funds allocated for the creation and implementation of innovations. In addition, he or she is involved in acquiring additional sources of financing, including the inclusion of sponsors.

Analysing the individual requirements and scope of duties of the CIO, it can be considered that he or she should be the so-called "proactive leader". Proactive leadership means behaviour and an attitude in which the officers take the initiative, start some action, initiate, can find the best solution (Seibert, Kraimer, and Crant, 2001), and actively and constantly seek information to increase knowledge resources (Crant, 2000).

A proactive leader focuses also on introducing changes in the organisation as well as his or her behaviour (Parker, Williams, and Turner, 2006). This is connected with identifying the possibilities and willingness to implement these changes (Crant, 1995), effective leadership (Crant and Bateman, 2000), or entrepreneurship (Becherer and Maurer, 1999).

Proactive people have the ability to scan the environment in search of opportunities for change (Bateman and Crant, 1993), to determine effective ways to achieve goals, to anticipate and prevent problems, and to perform tasks in a more effective way. They are also characterised by perseverance, a results orientation, and a vision for the future (Frese and Fay, 2001). Proactive

leadership is necessary to create innovative teams, because it focuses on overcoming the old principles of thinking and creating new ones.

In this section, the problematic aspects of the chief innovation officer and innovation were discussed. Examples of skills and competences that a CIO should possess were identified. Moreover, the issue of proactive leadership was discussed. In the following section, focus will be on how to build a high-performance innovation team. Attention will be drawn to the importance of team learning, innovation culture and climate, and trust towards building innovative teams.

### **How to build a high-performance innovation team**

It is pointed out in the literature that most innovations are created through networks – groups of people working in concert. In practice, it comes down to the fact that innovations are born everywhere, in all departments and at all levels of responsibility. Employees constantly share ideas, invent, propose, evaluate, and constantly seek things that can be improved. Innovative teams play an important role. A team in colloquial language means two or more people who interact, but additionally they influence each other in the pursuit of a common goal. It is also referred to as a system that operates through the integration of individuals and work instruments and joint involvement of all members in a matter and acceptance of the resulting obligations. What is important in the team is the discussion, joint determining both individual and group goals, approach to work, and a collective sense of responsibility for the task.

Research suggests that many components contribute to building innovation teams, including team learning, an innovative culture and climate, and trust.

The research has proven the relationships between team learning and building innovative teams. Teamwork fosters innovation, especially at the creating stage, when ideas come to life and initiatives are taken. The team's norms play an important role. They show what is important, what to strive for, and what to avoid. The team's norms are vision, participation, task orientation, risk taking, error tolerance, and speed in action (Anderson and West, 1998). In addition, diversity contributes to the synergy effect. The size of the team is also significant. Teams with not too many members have a mobilising effect on individual participants and ensure efficiency. This leads to the creation of new and unique solutions. In addition, it improves team learning. Team learning is the process of targeting the team and developing its ability to achieve the results that its members desire. It is also joint problem solving that develops the ability of individual groups to take a holistic look that goes beyond individual perception.

This means recognising the team as a carrier of intellectual potential greater than the combined potential of its individual members. The idea of team learning comes from the exercise of dialogue, team members' learning, rejection of predetermined assumptions, and authentic team thinking. Team learning occurs when individuals begin to share information and views in order to obtain or improve the group's efficiency and achieve the set goals. Team members are open to other people's opinions; they accept them or try to understand them, which allows for possible negotiation in matters of interpersonal differences and conflicts – in the case of differences, discrepancies are integrated and patterns of common meaning and agreement are worked out. The most important thing is to achieve the team's goals, which enables synergic learning, and in particular creating knowledge with the possibility of expressing their opinions freely and openly, even if they are different from other team members. Team members in this case are willing to change their views based on internal and external perceptions. The basis is interpersonal relationships, mutual development, good communication, experimentation, expressing "uncomfortable" or ambitious views, and learning. Importantly, team learning takes place on the basis of real work processes, which allows learning new things, but also to observe and experience real

work processes. In this approach, team learning, through the synergy effect, enhances the use of the team's potential, its creativity, creative abilities, innovation creation, flow of information and ideas – and by the same token innovation.

Most researchers emphasise the importance of the organisational culture and climate for creating innovations. Stimulating innovative activity requires a specific organisational culture. The climate and innovative culture determine the creative possibilities of the organisation, because from them flows the inclination of employees to take innovative endeavours. Organisational culture is defined as a set of created norms developed on the basis of the assumptions, values, and norms of the models of operation, showing employees how to achieve the company's goals. The basic cultural patterns conducive to innovation are openness to risk, change; willingness to experiment; tolerance of uncertainty; and the use of opportunities, creativity, trust, cooperation, mutual support and error tolerance. What is also important is the autonomy in action, validation, freedom to submit ideas, supporting new ideas, and tolerating discussions on the submitted ideas (Brilman, 2002, p. 172).

Thus, in enterprises with an innovation culture, employees deal with uncertainty themselves, based on their own knowledge, skills, and experiences, and dynamic networks of cooperative ties are created.

The innovative climate is focused on the development of employees, including the assessment of their qualifications, skills, and potential. An organisation with such a climate has a flexible organisational structure, where formalism and strict subjection to regulations and organisational procedures are reduced to a minimum. There is a cult of professionalism, risk tolerance, freedom in action, individualism, and permission to take risks and be innovative. Moreover, there is a large tolerance for errors, because it is thanks to them that the organisation can access new solutions. The goals of the organisation are treated by the employees as challenges (Ekvall and Ryhammar, 1999). The role of the management staff is to encourage and stimulate the employees to submit their own ideas for improving the work or products or services offered by the organisation. Non-formal channels of communication and free flow of information between employees and their superiors are also promoted. This is to enable employees to disclose and exploit their creative potential.

Another factor that may increase the chances of building an efficient innovation team is trust. Trust is defined and interpreted in various ways in the literature. According to a psychological approach, it is a kind of mental state that is related to the willingness to take risks and accepting them. It can also mean being ready to be sensitive to the actions of the other party based on the belief that the other party has done specific actions important to the trusting party, which are independent of the ability to monitor and control. It is also readiness based on the assessment of the other party's credibility in a situation of interdependence and risk.

Trust is a resource of social capital, which means that it is embedded in relationships between people (Nahapiet and Ghoshal, 1998; Myszal, 1996). It is therefore generated and used during social interactions. Additionally, trust is recognised in the literature as a key source of social capital, indispensable for creating a friendly work environment in which ideas are freely generated, evaluated, selected, and transformed into new products and services. Trust is therefore a basic requirement of social integration, organisational efficiency, loyalty of employees, and broadly understood management. This is particularly important in conditions of uncertainty and risk, when it is not possible to check and control the other party.

## **Conclusion**

The chapter focuses on innovation management within the organisation. The meaning of creativity and “fuzzy front end” for innovation were discussed. Then attention was paid to the

interface management of innovation. Management of the new product development process was discussed. The answer to the question of how to accelerate innovation was searched for. The role and importance of the chief innovation officer for the innovation process were defined. And finally, the factors or mechanisms that enable building a high-performance innovation team were provided.

Innovation should be treated as a process that should be properly managed. Innovation management is a broad spectrum of activities that focus on motivating employees and inspiring them to think creatively. Systems supporting the processes of creating, collecting, and identifying knowledge are not without significance.

## Bibliography

- Amabile, T. M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39(5), 1154–1185.
- Anderson, N., De Dreu, C. K. W. and Nijstad, B. A. (2004). The routinization of innovation research: a constructively critical review of the state-of-the-science. *Journal of Organizational Behavior*, 25(2), 147–173.
- Anderson, N., Potonik, K. and Zhou, J. (2014). Innovation and creativity in organizations: a state-of-the-science review and prospective commentary. *Journal of Management*, 40(5), 1297–1333.
- Anderson, N. and West, M. A. (1998). Measuring climate for work group innovation: development and validation of the team climate inventory. *Journal of Organizational Behaviour*, 19, 235–258.
- Barrehag, L., Fornell, A., Larsson, G., Mårdström, V., Westergård, V. and Wrackefeldt, S. (2012). Accelerating success: a study of seed accelerators and their defining characteristics. Bachelor Thesis TEKX04–12–10 Chalmers University, Sweden.
- Bateman, T. S. and Crant, J. M. (1993). The proactive component of organizational behavior. *Journal of Organizational Behavior*, 14, 103–118.
- Becherer, R. C. and Maurer, J. G. (1999). The proactive personality disposition and entrepreneurial behavior among small company presidents. *Journal of Small Business Management*, 37, 28–36.
- Belliveau, P., Griffin, A. and Somermeyer, S. (2002). *The PDMA tool book for new product development*. New York: Product Development and Management Association, p. 450.
- Brilman, J. (2002). *Nowoczesne koncepcje i metody zarządzania*. Warszawa: Polskie Wydawnictwo Ekonomiczne.
- Brown, S. L. and Eisenhardt, K. M. (1995). Product development: past research, present findings, and future directions. *Academy of Management Review*, 20(April), 343–378.
- Carayannis, E. G. and von Zedwitz, M. (2005). Architecting gloCal (global – local), real–virtual incubator networks (G–RVINs) as catalysts and accelerators of entrepreneurship in transitioning and developing economies: lessons learned and best practices from current development and business incubation practices. *Technovation*, 25(2), 95–110.
- Clark, K. B. and Wheelwright, S. C. (1992). *Revolutionizing product development*. New York.
- Cohen, W. M. and Levinthal, D. A. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128–152.
- Cooper, R. G. (1990). Stage-gate systems: a new tool for managing new products. *Business Horizons* (May–June), 44–55.
- Cooper, R. G. and Kleinschmidt, E. J. (1986). An investigation into the new product process: steps, deficiencies, and impact. *Journal of Product Innovation Management*, 3(2), 71–85.
- Cooper, R. G. and Kleinschmidt, E. J. (2007). Winning business in product development: the critical success factors. *Research & Technology Management*, 50(3), 52–66.
- Crant, J. M. (1995). The proactive personality scale and objective job performance among real estate agents. *Journal of Applied Psychology*, 80(4), 532–537.
- Crant, J. M. (2000). Proactive behavior in organizations. *Journal of Management*, 26(3), 435–462.
- Crant, J. M. and Bateman, T. S. (2000). Charismatic leadership viewed from above: the impact of proactive personality. *Journal of Organizational Behavior*, 21, 63–75.
- Crawford, C. M. (1980). Defining the charter for product innovation. *Sloan Management Review*, 21, 3–12.
- Crawford, C. M. and Di Benedetto, A. C. (2003). *New products management* (7th ed.). Burr Ridge, IL: Irwin/McGraw-Hill.
- Ekvall, G. and Ryhammar, L. (1999). The creative climate: its determinants and effects at a Swedish University. *Creativity Research Journal*, 12(4), 303–310.

- Emerson, R. (1962). Power – dependence relations. *American Sociological Review*, 27(2), 31–41.
- Fay, D. and Frese, M. (2001). The concept of personal initiative (PI): an overview of validity studies. *Human Performance*, 14, 97–124.
- Fishback, B., Gulbranson, C. A., Litan, R. E., Mitchell, L. and Porzig, M. (2007). Finding business idols: a new model to accelerate start-ups. *Ewing Marion Kauffman Foundation*. 2–8.
- Fisher, C. and Schutta, J. T. (2003). *Developing new service incorporating the voice of the customer into strategic service development*. Milwaukee, WI: ASQ Quality Press.
- Fredericks, E. (2005). Infusing flexibility into business-to-business firms: a contingency theory and resource-based view perspective and practical implications. *Industrial Marketing Management*, 34, 555–565.
- Gresham, G., Hafer, J. and Markowski, E. (2006). Inter-functional market orientation between marketing departments and technical departments in the management of the new product development process. *Journal of Behavioral and Applied Management*, 8(1), 53–65.
- Grimaldi, R. and Grandi, A. (2001). The contribution of university business incubators to new knowledge-based ventures: some evidence from Italy. *Industry and Higher Education*, 15(4), 239–250.
- Hagel, J., Brown, J. S., Samoylova, T. and Lui, M. (2013). From exponential technologies to exponential innovation. May 9, 2018. [https://www2.deloitte.com/content/dam/Deloitte/es/Documents/sector-publico/Deloitte\\_ES\\_Sector-Publico\\_From-exponential-technologies-to-exponential-innovation.pdf](https://www2.deloitte.com/content/dam/Deloitte/es/Documents/sector-publico/Deloitte_ES_Sector-Publico_From-exponential-technologies-to-exponential-innovation.pdf)
- Harmancioglu, N., Finney, R. Z. and Joseph, M. (2009). Impulse purchases of new products: an empirical analysis. *Journal of Product and Brand Management*, 18(1), 27–37. <http://dx.doi.org/10.1108/10610420910933344>.
- Henard, D. H. and Szymanski, D. M. (2001). Why some new products are more successful than others. *Journal of Marketing Research*, 38(3), 362–375.
- Ilori, M. O., Oke, J. S. and Sanni, S. A. (2000). Management of new product development in selected food companies in Nigeria. *Technovation*, 20(6), 333–342.
- Jeong, I., Pae, J. H. and Zhou, D. (2006). Antecedents and consequences of the strategic orientations in new product development: the case of Chinese manufacturers. *Industrial Marketing Management*, 35(3), 348–358.
- King, N. and Anderson, N. (1995). *Innovation and change in organizations*. London: Routledge.
- Koen, P. A., Ajanian, G., Burkart, R., Clamen, A., Davidson, J., D'Amoe, R., Elkins, C., Herald, K., Incorvia, M., Johnson, A., Karol, R., Seibert, R., Slavejkov, A. and Wagner, K. (2001). New concept development model: providing clarity and a common language to the 'Fuzzy Front End' of innovation. *Research Technology Management*, 44(2), 46–55.
- Leifer, R., O'Connor, G. C. and Rice, M. P. (2001). Creating gamechangers in mature firms: the role of radical innovation hubs. *Academy of Management Executive*, August, 102–113.
- Leigh, T. W. and Marshall, G. W. (2001). Research priorities in sales strategy and performance. *Journal of Personal Selling & Sales Management*, 21(2), 83–93.
- Lucio, M. M. and Stuart, M. (2002). Assessing partnership: the prospects for, and challenges of, modernisation. *Employee Relations*, 24(3), 252–261.
- Lynn, G., Morone, J. and Paulson, A. (1996). Marketing and discontinuous innovation: the probe and learn process. *California Management Review*, 38(3). <https://srn.com/abstract=2151914>.
- Madhavan, R. and Grover, R. (1998). From embedded knowledge to embodied knowledge: new product development as knowledge management. *Journal of Marketing*, 62(4), 1–12.
- Malek, K., Maine, E. and McCarthy, I. (2014). A typology of clean technology commercialization accelerators. *Journal of Engineering and Technology Management*, 32, 26–39.
- March-Chordà, I., Gunasekaran, A., Lloria-Aramburo, B. (2002). Product development process in Spanish SMEs: an empirical research. *Technovation*, 22(5), 301–312.
- Misztal, B. A. (1996). *Trust in modern societies: the search for the bases of social order*. Cambridge: Polity.
- Moenaert, R. K., Caledries, F., Lievens, A. and Wauters, E. (2000). Communication flows in international product innovation teams. *Journal of Product Innovation Management*, 17, 360–377.
- Moenaert, R. K. and Souder, W. E. (1990). An information transfer model for integrating marketing and R&D personnel in new product development projects. *Journal of Product Innovation Management*, 7, 91–107.
- Moorman, Ch. and Miner, A. S. (1998). Organizational improvisation and organizational memory. *Academy of Management Review*, 23(4), 698–723.
- Mumford, M. D. and Gustafson, S. B. (1988). Creativity syndrome: integration, application, and innovation. *Psychological Bulletin*, 103, 27–43.
- Murphy, S. A. and Kumar, V. (1997). The front end of new product development: a Canadian survey. *R&D Management*, 27(1), 5ff.

- Nahapiet, J. and Ghoshal, S. (1998). Social capital, intellectual capital and the organizational advantage. *Management Review*, 23(2), 242–266.
- Nijssen, E. J., Biemans, W. G. and de Kort, J. F. (2002). Involving purchasing in new product development. *R&D Management*, 32(4), 281–289.
- Oldham, G. R. and Cummings, A. (1996). Employee creativity: personal and contextual factors at work. *Academy of Management Journal*, 39(3), 607–655.
- Ozer, M. (2004). The role of internet in new product performance: a conceptual investigation. *Industrial Marketing Management*, 33(5), 355–369.
- Parker, S. K., Williams, H. M. and Turner, N. (2006). Modeling the antecedents of proactive behavior at work. *Journal of Applied Psychology*, 91(3), 636–652.
- Paulus, P. B. (2002). Different ponds for different fish: a contrasting perspective on teams innovation. *Applied Psychology: An International Review*, 51(3), 394–398.
- Pauwels, C., Clarysse, B., Wright, M. and Van Hove, J. (2015). Understanding a new generation incubation model: the accelerator. *Technovation*, 50–51, 13–24.
- Pisano, G. P. (2015). You need an innovation strategy. *Harvard Business Review*, 93(6), 44–54.
- Rank, J., Pace, V. L. and Frese, M. (2004). Three avenues for future research on creativity, innovation, and initiative. *Applied Psychology: An International Review*, 53(4), 518–528.
- Rochford, L. and Rudelius, W. (1997). New product development process stages and successes in the medical products industry. *Industrial Marketing Management*, 26, 67(18).
- Rogers, E. M. (1983). *Diffusion of innovations*. New York: Free Press.
- Sawyer, R. K. (1998). The interdisciplinary study of creativity in performance. *Creativity Research Journal*, 11, 11–21.
- Schilling, M. A. and Hill, C. W. L. (1998). Managing the new product development process: strategic imperatives. *Academy of Management Executive*, 12(3), 67–81.
- Seibert, S. E., Kraimer, M. L. and Crant, J. M. (2001). What do proactive people do? a longitudinal model linking proactive personality and career success. *Personnel Psychology*, 54(4), 845–874.
- Sivadas, E. and Dwyer, R. F. (2000). An examination of organizational factors influencing new product development in internal and alliance-based processes. *Journal of Marketing*, 64, 31–40.
- Smith, P. G. and Reinertsen, D. G. (1991). *Developing products in half the time*. New York: Van Nostrand Reinhold.
- Song, X. M. and Parry, M. E. (1997). A cross-national comparative study of new product development processes: Japan and the United States. *Journal of Marketing*, 61(2), 1–18.
- Song, X. M. and Montoya-Weiss, M. M. (1998). Critical development activities for really new versus incremental products. *The Journal of Product Innovation Management*, 15(2), 124–135.
- Spencer, W. R. (1994). *Innovation: the communication of change in ideas, practices and products*. London: Chapman & Hall.
- Sternberg, R. J. and Lubart, T. I. (1999). The concept of creativity: Prospects and Paradigms. In Sternberg, R. J. (Ed.), *Handbook of creativity*. London: Cambridge University Press, pp. 3–16.
- Stewart, H. and Martinez, S. (2002). Innovation by food companies key to growth and profitability. *Food Review*, 25(1), 28–32.
- Takeuchi, H. and Nonaka, I. (1986). The new product development game. *Harvard Business Review*, 64, 137–146.
- Urban, G. L. and Hauser, J. R. (1993). *Design and marketing of new products* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- van de Ven, A. H., Angle, H. L. and Poole, M. S. (Eds.) (1989). *Research on the management of innovation*. Harper & Row: New York, pp. 31–54.
- von Zedtwitz, M. (2003). Classification and management of incubators: aligning strategic objectives and competitive scope for new business facilitation. *International Journal of Entrepreneurship and Innovation Management*, 3.
- West, M. A. (2002a). Sparkling fountains or stagnant ponds: an integrative model of creativity and innovation-implementation in work groups. *Applied Psychology: An International Review*, 51, 355–387.
- West, M. A. (2002b). Ideas are ten a penny: it's team implementation not idea generation that counts. *Applied Psychology: An International Review*, 51, 411–424.
- Zhang, Q. and Doll, J. W. (2001). The fuzzy front end and success of new product development: a causal model. *European Journal of Innovation Management*, 4(2), 95–112.
- Zhou, J. and Shalley, C. E. (2003). Research on employee creativity: a critical review and directions for future research. In Martocchio, J. (Ed.), *Research in personnel and human resource management*. Oxford: Elsevier, pp. 165–217.