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THE CORE OF MANAGERIAL COMPETENCES IN MANAGING INNOVATION PROJECTS

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Purpose: The purpose of this paper is to systematise the concept of innovation based on a literature review and present the importance of the human element, such as key managerial competences, in the process of managing innovation projects, according to IPMA Individual Competence Baseline v. 4.0.
Design/methodology/approach: The objectives are achieved through a systematic literature review of the innovation and competence concept. Moreover, the paper provides an analysis of competence as stated in IPMA Individual Competence Baseline v. 4.0 in terms of its usefulness for providing organisations with innovative solutions.
Findings: Due to the of complexity of the innovation process, this paper discusses and develops the appropriate skills and competences which are required to improve or develop new and untapped solutions. The solutions might result in implementing and bringing innovation to the market.
Originality/value: The complexity of the economic environment requires not only team cooperation and flexibility, but also an innovative approach to each and every process in an organisation. The paper attempts to comprehends the human element of the innovation project, which might be helpful for managers who lead innovation projects and for innovative organisations as a whole.

Keywords: Competences, innovations, innovation projects, competence baseline.

Category of the paper: Literature review.

1. Introduction

We live in times where change is the only constant. Both the definition of innovation and the development or implementation of innovation are inherent to the concept of change, innovation, reform or an idea that is perceived as new (Gerlach, 2012). Innovation can be equated with the changes that are taking place in an economic entity. It is precisely these

changes that, as a response to events inside the entity and in its relations with the environment, improve its functioning (Potocki, 2011). Automation, robotics, cyber-physical systems and modelling, the Internet of Things and services, cloud computing capabilities, the Internet of Everything – all of these innovative phenomena contribute to the Fourth Industrial Revolution, known as Industry 4.0 (Furmanek, 2018) and are imprinted in all areas of an enterprise environment. The production, social and even political changes brought about by the Fourth Revolution will also bring about significant social transformations in the future (Kurt, 2019). Increasingly rapid technological changes are making the labour market more demanding for highly skilled workers (Brynjolfsson & McAfee, 2014). The changes also apply to the competency requirements for employees (Jerman, Bejć Bach, & Halmow, 2019). In order to compete on the market, companies are forced to face these processes, not only by responding appropriately and adapting to changing market conditions, but also by anticipating and even creating change through innovation. Without doubt, these are huge challenges for present and future organisations.

In this day and age, organisations and businesses operate in an economy that relies heavily on human resources, which is a key asset of companies that can provide a significant competitive advantage by creating innovative solutions. The proper management of competences enables the effective use of human capital (Wieczorek-Szymańska, 2012), leading to a high degree of readiness of an organisation to change and reducing the failure rate of innovation projects (Todt et al., 2019). Scandia's approach to implementing a strategy is that the "Navigator is proof of the importance of employee-aggregated intellectual capital". According to this, it is the people who are the most important area of the organisation, and as the only perspective, they are directly connected to all other areas, namely by affecting: finance, processes, customers and renewal and development. According to Scandia's Navigator method, all of the company's achievements in the present and future arise from intellectual capital (Nesterak, 2015). Moreover, the topic of entrepreneurial and managerial competences has gained scientific attention since 2008, and quite a variety of contributions have been published (Tittel & Terzidis, 2020). The importance of entrepreneurial and managerial competences is enhanced by the fact that they are closely linked to an organisation's strategy and the strategic behaviour, which enables quick adaptation to the environment (Behling & Lenzi, 2019).

The above statements are intended as a basis to discuss the essence of managerial competences in managing innovation projects. This is the group are managers, which are crucial for all organisations. By demonstrating the appropriate competences, managers increase the value of a company (Tyrańska, 2017). The aim of this paper is to discuss the competences based on the Individual Competence Baseline v. 4.0. This is a set of guidelines for methods, techniques and good practices, but also a set of key individual competences in three areas: people, practice and perspective, in regard to the issue of managing innovation projects.

2. Methods

To present the research approach related to competences in innovation project management, a literature review process was carried out. The process consisted of the following six stages:

The first step was to search the Scopus and Science Direct databases for magazines related to business and management. In the result, three scientific journals was chosen for the next step of the analysis: International Journal of Project Management, Project Management Journal and International Journal of Managing Projects in Business. The aim of the second step of the review was to set a time frame for the publication of the articles that could be reviewed.

It was decided that publications from 2015-2020 will be subject to literature analysis. This decision was guided by the fact that in 2015, project manager was included in the list of professions in Poland. In addition, the last five years can be considered decisive in the development of innovative projects. After this, the articles were searched in terms of key words: project management, project manager, innovation project, competences, managerial competences. As a result of this action, a database of 100 scientific articles were obtained.

These articles were very thoroughly verified on the basis of abstracts (the fourth step). If issues related to innovative project management, innovation management, project management or the essence of competence appeared in the abstract, then the text was selected for a further stage or analysis (the fifth step). In the last stage, all articles were selected and further analyzed.

Finally, ten scientific texts were analysed. The articles were analysed in accordance with two criteria: the topic of the essence of managerial competence in project management and human resource management in innovative organisations. In addition, the review of the literature included textbooks and articles by Polish authors who raised these issues in their scientific papers.

Comparing these works allowed the authors to develop interpretations in terms of innovation for competences developed under IPMA ICB 4.0.

3. The substance and scope of innovation

Innovation[1] is defined as a set of activities the aim of which is to produce new or improved products, processes or services (Jakubiec, 2016). Schumpeter identified five events that could indicate innovation: new product development, new technology use, new market opening, access to new raw materials and the transformation of the economy sector (Damanpour, 1992).

[1] Innovation (lat. Innovatio – renewal).

Innovation can be defined by the following criteria: Innovation Facility, degree of transformation, degree of originality of change, extent of change, funding arrangements, environmental impact and innovation participants (Furmanek, 2017). The following paper describes the typology of innovation by objects, degree of transformation and innovation participants.

The first criteria for defining innovation, namely an object, distinguishes five types of innovation, which are described in Table 1.

Table 1.
Division of innovation

Innovation type	Characteristics	Example
Product	New or significantly improved product that has not been applied to the field to date.	Mobile phone with built-in camera
Marketing	New forms of marketing or significantly improved existing marketing processes.	Loyalty cards in shops and restaurants
Technology	New or improved production processes.	Remote car control
Social	New or improved solutions to serve the social group.	Quiet hours in supermarkets
Organisational	New or improved organisational methods and techniques.	Home office

Adapted from: Own study based on Tomczak-Horyń, K., Knosala R. *Ocena poziomu wprowadzonych innowacji w wybranych przedsiębiorstwach*, [w:] Knosala R. (red.): Innowacje w Zarządzaniu i Inżynierii Produkcji. Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole 2018.

Due to the level of change implemented, two types of innovation can be distinguished. First are radical new solutions that have never been seen before, for example replacing CDs with MP3 media. Second are incremental innovations, i.e. to improve existing solutions, for example, a larger touchscreen on smartphones (Sikora, 2013).

We can also differentiate between two types of innovation, taking into account the participants in the innovation process: collaborative and uncollaborative. Collaborative, also known as team-based, innovation is developed by a team with a specific number of experts and researchers. Uncollaborative innovations, also known as individual, innovations are usually created by one main creator. In today's economy, collaborative innovations (Stachowski, 2012) are the main form of farming activity.

The development of human capital has an impact on many economic processes, which not only determine productivity growth but also improve the pace of innovation (Firma, 2008). Innovation is a step-by-step process that assumes R&D as a source of innovation in the linear model. The innovative process is shown in Figure 1.

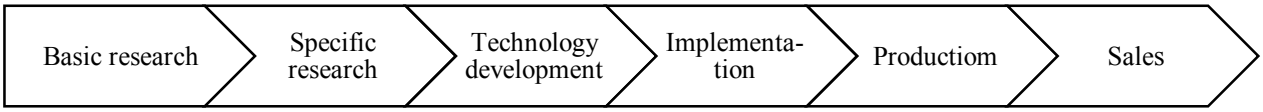

Figure 1. *Stages of the innovation proces.* Own study based on: Ogórek M., Skuza Z. *Etapy procesu wdrażania innowacyjnej technologii azotowania jonowego z warunków laboratoryjnych do warunków przemysłowych*, „Innowacje w Zarządzaniu i Inżynierii Produkcji", Zakopane 2017.

The stages of the innovation process, as shown in the Figure 1, are important in the design of innovation. Firstly, a basic study should be carried out, in theory examining the need to create a new product or service. Secondly, specific research should be carried out to find a practical application for a new or improved solution. Thirdly, development should be started, which will result in the creation of a prototype of an innovative solution. The fourth step is to implement and test innovation. After successful attempts to innovate, production can be started, and the innovation can be brought to the market (Głód, Ingram 2015). As you progress through the innovation process, you can see that knowledge, experience, competences and skills each have an important role to play in the human factor (Firszt, 2008). Human resources can be seen as a factor that directly influences the course of innovation processes. According to the author, the innovation process is a kind of project that requires its participants to have characteristics for both entrepreneurs and managers.

4. Competence in managing innovation projects

Numerous research on competences has resulted in many attempts to define this concept, and thus there are a large number of definitions of competences. Nevertheless, it is possible to separate certain components common to most of them. These are components such as knowledge, skills and attitudes (L.M. Spencer, S.M. Spencer, 1993; M. Kossowska, I. Sołtysińska, 2002; Project Management Institute, 2007). Competences are key factors in the proper performance of an employee at work (R.E. Boyatzis, 1982). The same rule applies in the innovation process. The success of this process depends on the professional competences and knowledge accumulated in employees, which are the core of innovation in enterprises (Komańda, 2011).

Project management has become a well-developed area of management and can be seen as a source of professional knowledge in the field of scientific research and didactics (Fortune, White 2002). Project management is seen as a proper answer to present volatile economic conditions (PMI, 2018). These trends are predicted to develop the role of project managers from deputy managers to responsible entrepreneurs (Gemuenden & Schoper, 2015), which is part of the previous considerations concerning the importance of entrepreneurial and managerial competences in project management.

Each innovation process is a project of its kind, and the participants in the process are members of the project team. Both the innovation team leader and the other participants in the project are expected to have a high level of competences, both hard and soft (Alvaro, Branco, Guedes, Soares, & e Silva, 2019).

Managing innovation projects requires the implementation of certain standards of competences (Pant & Baroudi, 2008), which will guide project teams and enhance the effectiveness of achieving objectives that, when creating innovation, have a very high intellectual and market value. It should be stressed that there is a strong relation between competences and excellent project results (Gillard and Price, 2005). The level of competences in accordance with the guidelines of competence standards can be reflected in certification, which increases trust among colleagues, stakeholders and partners (Blomquist, Farashah, & Thomas, 2018). One of the standards of competence guidelines for project management is IPMA Individual Competence Baseline v. 4.0. This is a set of guidelines for methods, techniques and good practices, but also a set of key individual competences in three areas: people, practice and perspective.

Individual and social competences are particularly important in terms of innovation, as each innovation is created by people for a specific audience, which requires appropriate interpersonal skills from those involved in the innovation process. A set of human competences based on the IPMA ICB 4.0 standard is presented in Table 2.

Table 2.
Set of human competences

Elements of "People" competence	Skills
Self-reflection and self-management	– Awareness of own work styles and preferences; – Awareness of instances that lead to personal distractions; – Self-reflection and self-analysis; – Controlling emotions and focusing on tasks, even when provoked; – Self-motivation; – Delegating tasks; – Setting meaningful and authentic individual goals; – Carrying out regular checks of progress and results; – Dealing with mistakes and failures.
Personal integrity and reliability	– Development of confidence and building of relationships; – Following own standards under pressure and against resistance; – Correcting and adjusting personal behaviour.
Personal communication	– Use different ways of communicating and different styles for effective communication; – Active listening; – Questioning techniques; – Empathy; – Presentation and moderation techniques; – Effective use of body speech.
Relationship and engagement	– Use of humour as an icebreaker; – Appropriate ways of communicating; – Respectful communication; – Respecting others and being aware of ethnical and cultural diversity; – Trusting own intuition.

Cont. table 2.

Leadership	– Personal self-awareness; – Listening skills; – Emotional strength; – Capacity to express a set of values; – Dealing with mistakes and failure; – Sharing values; – Creating team spirit; – Methods and techniques for communication and leadership; – Management of virtual teams.
Teamwork	– Recruiting and personnel selection skills; – Interview techniques; – Building and maintaining relationships; – Facilitation skills.
Conflict and crisis	– Diplomatic skills; – Negotiation skills, finding a compromise; – Moderation skills; – Persuasiveness; – Rhetorical skills; – Analytical skills; – Stress resistance.
Resourcefulness	– Analytical skills; – Facilitating discussions and group working sessions; – Choosing appropriate methods and techniques to communicate information; – Thinking 'outside the box' – new ways of doing things; – Imagining an unknown future state; – Being resilient; – Dealing with mistakes and failure; – Identifying and seeing different perspectives.
Negotiation	– Identification of the desired outcomes; – Assertiveness and drive to reach desired outcomes; – Empathy; – Patience; – Persuasion; – Establishing and maintaining trust and positive working relationships.
Results orientation	– Delegation; – Efficiency, effectiveness and productivity; – Entrepreneurship; – Integration of social, technical and environmental aspects; – Sensitivity to organisational do's and don'ts; – Management of expectations; – Identifying and assessing alternative options; – Combining a helicopter view and attention to essential details; – Total benefit analysis.

Adapted from: *Individual competence baseline v. 4.0*, the International Project Management Association, Zurich 2015.

ICB 4.0 competences are represented by the three competence areas: People, Practice and Perspective. Each competence from the *People* area is presented by lists of general knowledge and skills (Vukomanović, Young, Huynink, 2016).

It should be noted that some competences are more or less complex in terms of skills. Each of the human competences listed above relates to the personal and interpersonal behaviour of both project managers and project team members. Skills sets, which are part of human competences, present both personal human traits and hard management and analytical skills.

The development of organisational skills in project management is a combination of organisational and innovation learning applied as part of the strategy, processes, structures and culture. This requires strategic commitment at the highest level of managerial and responsible leadership. Competence management and development of organisational competences require constant involvement and should be analysed systemically (Rzempała, 2017).

5. Characterisation of the competence of the Individual Competence Baseline

Below are presented the *individual competences in the field of people*, together with an interpretation relating to innovation (*individual competence baseline v. 4.0).*

Self-reflection and self-management – self-reflection is the ability to acknowledge, reflect on and understand one's own emotions, behaviours, preferences and values and to understand their impact. Self-management is the ability to set personal goals, to check and adjust progress and to cope with daily work in a systematic way. The core of this competence in the innovation process is to enable innovativeness to control and guide behaviour of managers at every stage of innovation, enabling efficient and effective use of theirown knowledge and skills.

Personal Integrity and Reliability – personal integrity means that an individual is acting in accordance with his or her own moral and ethical values and principles. Reliability means acting dependably, according to expectations and/or agreed behaviour. The core of this competence in the innovation process is to enable innovativeness to take coherent action and to ensure consistency. The commitment to internal cohesion and integrity is supported by a team that creates confidence-building innovations.

Personal communication – the exchange of proper information, delivered accurately and consistently to all relevant parties. This competence enables effective communication between both the innovation team and its customers, contractors and consultants.

Relationship and engagement – the ability to form strong relationships driven by social competences, such as empathy, trust, confidence and communication skills. Sharing visions and goals with individuals and the team drives others to engage in tasks and to commit to the common goals. Personal relationships and engagement are particularly important for creating innovation, as they contribute to the achievement of the team's common goal of exploring the needs and putting innovation into practice.

Leadership – providing direction and guidance to individuals and groups. It involves the ability to choose and apply appropriate styles of management in different situations. Leadership in innovation is particularly important, because it involves the ability to select and apply appropriate styles and management concepts in different situations, because innovative

solutions differ in terms of the effects of implementing innovations, the effectiveness of which largely depends on the innovation leader and originator.

Teamwork – bringing people together to realise a common objective. Teams are groups of people working together to realise specific objectives. This competence in innovation is intended to select the appropriate members of the innovation team in terms of their experience and knowledge and to manage a team of members representing different disciplines.

Conflict and crisis – moderating or solving conflicts and crises by being observant of the environment and by noticing and delivering a solution for disagreements. Conflicts and crises may include events and situations, character conflicts, stress levels and other potential dangers. This competency enables team members working to create innovation to take effective action in crisis situations and during conflicts of interest.

Resourcefulness – the ability to apply various techniques and ways of thinking to defining, analysing, prioritising, finding alternatives for and dealing with or solving challenges and problems. In an innovative process that is inherently creative, this is a very important competence, because it enables us to deal with the problems of restrictions, which are very often encountered in the initial stages of innovation.

Negotiation – the process between two or more parties that aims to balance different interests, needs and expectations in order to reach a common agreement and commitment while maintaining a positive working relationship. This competence is particularly relevant when the interests of different parties, such as scientists, entrepreneurs, politicians, etc., are involved in a team working on one innovation.

Results orientation – is the critical focus maintained by the individual on the outcomes of the programme. The individual prioritises the means and resources to overcome problems, challenges and obstacles in order to obtain the optimum outcome for all the parties involved. The innovation process assumes a concrete result of an innovative solution that will be specific to a particular user group. It is important that team members throughout the innovation process are aware of the intended outcome and strive to achieve this at every stage of the work.

The competencies outlined above, which apply to both leaders and team members performing current tasks, present the desired features that innovative process participants and managers should have, as teamwork and human capital are the most important resource in creating each innovation.

6. Discussion and summary

The purpose of the article was to present the human element in the process of managing innovation projects. Due to the complexity of the innovation process, people working to improve or develop new and untapped solutions are required to have the appropriate skills and

competences, as the result of implementing and bringing innovation to the market is always the result of many people's work. This requires strong commitment and being oriented to a common goal (Bilan et al., 2020).

The set of human competences outlined above perfectly reflects what skills people should have when they work as creators or co-creators of innovation. It presents elements of communication, leadership and organisational skills that are a key aspect of team work and contribute to the climate of an organisation that is conducive to innovation (Newman et al., 2020). Attention should be drawn to the fact that the atmosphere and behaviour of innovation creators often affect the reputation and the future of innovation. At a time of constant change and high competition, companies must be able to innovate and adapt to changing economic conditions. Continuous development and modern technologies mean that the goals, missions and values of organisations must be strongly based on innovative attitudes and processes. In conclusion, social and organisational competences have a very large impact on the implementation of innovative processes and on the development of those involved in this process.

In addition, it is recommended to continue a literature research and take into account the trends occurring in magazines in connection with the changing conditions for creating innovation and managing innovative projects. Changing working environment and dynamically changing working conditions mean that competences change their value at various stages of an organization's development.

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