

MANAGERIAL COMPETENCES IN REGULATED INDUSTRIES

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Abstract: **Background:** Managerial competencies are vital in regulated industries, where organizations must balance strict legal compliance with competitiveness. **Methods:** This study applies Quinn's managerial competency model to a Latvian pharmaceutical company, focusing on three factors: Processes and Results (F1), Human Relations and Innovation (F2), and Public Interest (F3). Data from 55 employees were collected using a validated Likert-scale questionnaire. Reliability was confirmed with Cronbach's Alpha ($\alpha > 0.7$). Data analysis included descriptive statistics, correlation, and regression testing. **Results:** Correlation analysis revealed strong positive links between F1 (.821**) and F2 (.819**) with company performance, while F3 (.808**) showed weaker significance. Regression results confirmed that F1 ($t = 3.759$, $p < 0.001$) and F2 ($t = 3.632$, $p = 0.001$) significantly predicted performance ($R^2 = 0.742$), while F3 was excluded. **Conclusions:** Findings emphasize that process management and human relations are the most critical managerial competencies in regulated pharmaceutical contexts. Regulated industries demonstrate stronger alignment with public-sector management logic, where compliance, innovation, and stakeholder engagement drive performance.

Key words: managerial competences, regulated industry, pharmaceutical industry

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Introduction

Meeting performance expectations in regulated sectors poses a significant challenge for companies. On one hand, businesses must adhere to various legal requirements and standards (Bondarenko et al., 2021; Koval et al., 2019; Gryshova et al., 2019). On the other hand, they need to maintain their developmental momentum and competitiveness within the market (Anjoran, 2022; Deloitte, 2023). The pharmaceutical sector stands out as one of the most heavily regulated industries, irrespective of whether it involves pharmaceutical production or operations within the supply chain. Within the European Union, pharmaceutical supply chain processes, encompassing storage and distribution, are subject to rigorous regulations. At the same time, in the modern business scope there is a heightened importance of managerial competencies as in the pursuit of successful performance results in the face of dynamic market demands and the complexities of modern workplaces (Koval et al., 2020). Competent leaders are essential for empowering teams and driving organizational success (Martinkiene & Modestas, 2019; Petrova et al., 2020; Odinkova et al., 2018).

Managerial competences are exceptionally crucial for regulated sectors. Regulated sectors often have intricate and evolving regulatory frameworks. Managers need a deep understanding of these regulations to ensure the company operates within the legal boundaries (OECD, 2010). Competent managers can interpret and implement these regulations effectively, ensuring the organization remains compliant and avoiding legal complications. Their attention to detail is crucial in preventing errors that might lead to costly legal consequences or reputational damage (Memon et al., 2022). In regulated sectors, there is a delicate balance between adhering to regulations and fostering innovation, while regulated industry players often balance between the public and private companies (Petrova et al. 2025). Moreover, in regulated sectors, stakeholders, including customers, investors, and regulatory authorities, closely monitor an organization's compliance record.

In the realm of research concerning managerial competencies within regulated industries, as in sectors that integrate aspects of both private and public enterprises, there exists a notable knowledge gap. Existing studies have predominantly focused on analysing competencies within private or public companies or have compared these competencies between different sectors. However, there has been a relative lack of research concerning

regulated industries. Only in recent years has attention been drawn to this specific area. This paper aims to address this knowledge gap by analysing the significance and impact of specific managerial competences within regulated industries, with a particular focus on the pharmaceutical sector. The study will concentrate on a pharmaceutical company X (Latvia) that operates not only in the segments of production and supply chain management, but also engages actively in registration and pharmacovigilance processes. Furthermore, the chosen company not only demonstrates financial success but also operates under strict legal obligations from various dimensions. By analysing this case, this research is going to shed light on the connection between competences in a comprehensive manner, thus contributing to the existing body of knowledge.

1. Overview

The essence of regulated industries

Regulated sectors of the economy or so-called regulated industries are sectors of the market where the government actively intervenes and controls the economic activities of companies and individual industries. This type of regulation is a key aspect of the political economy of many countries and is driven by the desire to achieve certain socio-economic goals (Awasthi et al., 2019).

Researchers working on this topic are faced with the lack of a single, comprehensive, and relevant tool for determining the level and nature of regulation in various industries. Firstly, many studies focus on analysing specific aspects of regulation or use a limited set of parameters to determine the extent of regulation in an industry. Secondly, existing tools for classifying regulated industries, such as indices, have their limitations as may be outdated. Iannarelli & O'Shaughnessy discuss the complexity of data management in highly regulated industries. The problems of tracking data storage rules, as well as organizing and structuring large volumes of information are highlighted. Authors caution organizations in highly regulated industries against insufficient engagement with legislators (Iannarelli & O'Shaughnessy, 2015). The importance of maintaining constant communications with legislators for active participation in bills and ensuring the organization's influence on legislative changes is highlighted.

Snedaker & Rima emphasize the need to recognize the limitations and have a legal team in highly regulated industries (2014).

Pharmaceutical manufacturing challenges

Pharmaceutical manufacturing and distribution are among the most regulated industries in the world. This industry is subject to a high level of control and regulation by various government agencies and international organizations. Governments closely monitor the production and distribution of medicines and medical devices to ensure safety, effectiveness and quality of products. Additionally, pharmaceutical companies are also subject to strict monitoring by medical research organizations and regulatory agencies such as the FDA (Food and Drug Administration) in the US and the EMA (European Medicines Agency) in Europe (FDA, 2023; EMA, 2022). These agencies are responsible for assessing the safety and effectiveness of new medical products and ensuring that they are registered and licensed for use on the market. Regulation in the pharmaceutical industry is imperative due to the many stakeholders involved and the high risk of ethical and legal conflicts when promoting and distributing new patented medicines (Petrova & Tairov, 2022). History shows past instances of illegal activity, including the actions of physicians, scientists, medicine regulators, and patient organizations (Kontoghiorghe, 2021). Regulatory affairs play a key role in the pharmaceutical industry, developing and implementing strategies to efficiently develop medicines. One of the main tasks is to ensure that the medicines being developed comply with global standards and recommendations. Regulatory authorities are important players in this context, ensuring the competitiveness of new medicines in the pharmaceutical industry (Majumder, 2020).

Managerial competences in regulated industries

Managers working in regulated industries face unique challenges that require balancing the competencies of those managers in private and public companies. One of the main reasons is the need to comply with strict laws and regulations set by the government. Regulated industries such as pharmaceuticals, healthcare, telecommunications and energy have stringent rules to ensure consumer safety, the environment and social justice. Managers in these areas must be aware of all current laws and standards, their changes and updates, to effectively manage the company and avoid possible legal problems. In addition to strict compliance with laws, managers in regulated industries must consider the needs and expectations of society. Unlike private companies, their activities are often subject to public scrutiny and criticism. In addition, managers in regulated

industries must be flexible and adaptable in the face of rapidly changing regulatory environments and technological innovation (Schiavone & Simoni, 2019). These industries often face new challenges, such as the introduction of new technologies, changes in medical standards or data protection requirements. Managers must be able to respond quickly to these changes so that the company can remain competitive and comply with all regulations (Moura et al., 2022).

In the context of the regulated sector, specifically within regulated industry companies, the emphasis on managerial competences presents a unique challenge due to the presence of professionals who often resist managerial intervention in their work. This resistance has historical roots and has made it difficult for traditional private sector practices to be effective within regulated or public organizations.

Development and trends in managerial competences

The trend of managerial competences in regulated sectors, particularly in fields like healthcare and pharmacy, is moving toward a more tailored approach that recognizes the specific challenges posed by the presence of professionals within bureaucratic frameworks. This trend suggests a departure from the one-size-fits-all mentality often associated with private sector practices. Instead, organizations within regulated sectors are increasingly recognizing the need to balance managerial requirements with the unique characteristics and expectations of professionals, such as clinicians in healthcare settings (Fanelli et al., 2019). Managers in regulated sectors are expected to develop competences that not only encompass traditional managerial skills but also demonstrate a deep understanding of the professionals' expertise and a respect for their autonomy. In the post-COVID era, several trends are shaping the landscape of managerial competencies, reflecting the evolving needs of businesses in response to the challenges posed by the pandemic and the changing global environment. Basic managerial competencies are shifting towards non-specialized cognitive skills such as critical thinking, creativity, and innovativeness. At the same time, managerial competencies, specifically in the areas of communication, leadership, teamwork, and planning, have a significant influence on business continuity. Consequently, the trend in managerial competences appears to be moving towards an approach that combines traditional skills like communication and leadership, with modern requirements such as adaptability, strategic thinking, and a deep understanding of market dynamics. Managers are expected to possess a diverse skill set that equips them to navigate complex and ever-changing

business environments, ensuring the continuity and success of their organizations (Kabii & Kinyua, 2023).

Moreover, in today's digital economy, managers are confronted with a transformative movement that significantly impacts the way businesses operate. One of the key challenges faced by managers in this digital era is the need for making strategic decisions that are not only fundamental and proficient, but also timely (Armusevica et al., 2019). This shift towards a digital economy underscores the importance of strategic decision-making based on a foundation of well-informed and relevant knowledge. It is also being noted that leadership skills, while undoubtedly crucial, do not directly influence firm performance in the digital economy (Heubeck, 2023).

2. Methodology

Methodological background

To determine and develop managerial competencies, various assessment methods are used, which allow not only to measure the level of professionalism, but also to adapt management strategies to the constantly changing requirements of the business environment. In recent years, based on research and fruitful collaboration with the business sector, several key tools for measuring and analysing managerial competencies have been developed. As per the literature (Gerhart et al, n.d; Roszyk-Kowalska, 2016; Lawicka & Sitko-Lutek, 2017; Raisiene, 2014) the division is as follows: Assessment centers are special programs in which managers are assessed on a range of competencies while completing a variety of tasks and scenarios. These programs typically include role-playing games, business simulations, and group exercises. The assessment is carried out using structured questionnaires or interviews, which allow for different perspectives on the manager's competencies from different groups of people in the organization. The MSAI (Managerial Skills Assessment Instrument) questionnaire is designed to assess managerial skills and abilities. The SHL (Saville & Holdsworth Limited) Manager Test aims to assess various aspects of managerial ability, including analytical thinking, problem solving, communication and time management. Advanced Managerial Tests are more complex and specialized methods for assessing managerial competencies. These may include various case studies, simulations of business situations, or analysis of strategic decisions. Psychometric tests are aimed at assessing the psychological characteristics

of a manager, such as personality traits, motivation, stress resistance, etc. Private companies can adapt these assessment methods to the specific requirements and strategies of the company, which allows them to obtain a more nuanced and targeted assessment of the competencies of managers.

For the public sector, these assessments of managerial competencies are less suitable since they are usually subject to strict government control and regulation. The use of complex evaluation methods may be more difficult to implement in an organization where there exist a more rigid hierarchy and bureaucracy. As per the literature (Freitas & Odelius, 2022; Paz & Odelius, 2021) in the public sector, there is often a simplification of scales for assessing managerial competencies. Unlike the private and corporate spheres, where more complex methods are used, the public sector, due to its specifics, usually resorts to more universal and simplified assessment models. This is because state and public organizations are often focused on meeting national needs and social functions, and not on competition in the open market. Three main categories of managerial competencies in the context of the public sector are identified. The first category includes people skills such as empathy, communication, and teamwork. The second category is business skills, including budget management, planning and project coordination. The third category is self-management skills, which involve the ability to adapt to change, manage stress, and use time effectively. Quinn proposed a managerial competency model that is often used in the public sector. According to this model, successful managers in government and public organizations must possess four key characteristics: internal stability, external focus, flexibility, and systems thinking.

Regulated industries are often a unique mix of private and public components that arises from the need to meet government standards and regulations. While maintaining the competitiveness and efficiency associated with the private sector, there is a challenge in assessing management competencies in such industries is balancing government expectations with private business requirements, which requires a unique and flexible approach to assessment. Based on a review of the literature, regulated industries do not have a single rating scale that satisfies all needs. In recent years researchers (Sacre et al., 2023; Iam, 2019; Kakemam & Liang, 2023) are actively creating their own scales, considering the specifics of their industry. However, often these scales are either too broad and include too many parameters, or, conversely, too narrow and do not cover the full complexity of the managerial tasks.

Methodology of the research

To assess managerial competencies in a regulated industry, particularly in a pharmaceutical company, the author turned to Quinn's model of managerial competencies. This model is appropriate for the study because Quinn identifies the key characteristics of successful managers as being internally resilient, externally focused, flexible, and exhibit systems thinking. In the pharmaceutical industry, where government standards must be met while remaining competitive, these qualities are especially important. To conduct the survey, it was decided to use an already proven scale for assessing managerial competencies. The already tested scale has high validity and reliability, which will allow us to obtain accurate and reliable results. This choice will provide us with the opportunity to conduct a comparative analysis of data and highlight the main trends in managerial competencies in a pharmaceutical company, taking into account the specifics of the regulated industry and compliance with government standards. The choice of an already proven scale for assessing management competencies, intended primarily for public companies, is justified by a number of important factors that make it suitable in the context of a regulated industry, in particular in a pharmaceutical company. Since the scale covers various aspects of management and leadership, which is important in the pharmaceutical field, where it is necessary to manage both business processes and research projects. It covers not only technical skills, but also soft competencies such as communication, team motivation and strategic thinking.

To analyse the influence and importance of various competencies in the regulated pharmaceutical industry, a model proven of its significance was used, narrowed down to three main factors: Processes and results (F1), Human Relations and innovation (F2) and Public Interest (F3). Each of these factors included several subfactors. To assess the influence of each factor and their importance for the operation of an enterprise in a regulated industry, two key questions were proposed: how strongly a managerial competence influences the company's performance in this industry, and how important this managerial competence is. The average score was calculated by multiplying the responses to both questions. To conduct the survey, a Likert scale was used, consisting of five levels, where each level represents a specific answer to the question. The scale covers a range of responses from "absolutely no" to "absolutely yes." The use of the Likert scale is justified by its ability to provide survey participants with the opportunity to express their opinions, considering various nuances of

opinion, which allows us to obtain a more detailed and accurate picture of the assessment of each of the questions (Iam, 2019). Each question has its own Likert scale, where respondents can choose a response level from 1 to 5 depending on their opinion. After collecting data for each factor, the average indicator (mean) was calculated for all subfactors within each of the dimensions of managerial competences (F1, F2 and F3).

To determine the overall impact and importance of each competency in the regulated pharmaceutical industry, the impact and importance scores obtained from the responses to the corresponding questions were multiplied. In addition, the questionnaire contains questions related to assessing the performance of both the enterprise, department, and individual productivity of respondents. The ratings obtained in answers to these questions is subject to calculation of the mean, which will form an indicator of the performance of the enterprise. The object is a pharmaceutical company operating as a comprehensive distributor of pharmaceutical goods and medical devices in Latvia. The company under study employs a total of 59 employees excluding the Board, with four new additions to the team. For the purpose of this research, the main focus will be on the 55 existing employees, excluding the recent hires. This group forms the core population that will be analyzed and studied in detail to gain insights into various aspects of the company's operations, procurement processes, and compliance with regulations.

3. Results

First, the reliability analysis assesses the internal consistency and stability of the measurement scales used in the research.

Table 1
Reliability results

Dimension	Managerial competence factor	Cronbach's Alpha
Influence	Processes and results	0.902
	Human Relations and innovation	0.889
	Public Interest	0.804
Importance	Processes and results	0.878
	Human Relations and innovation	0.923
	Public Interest	0.892
Performance	Performance	0.828

Source: Authors' development

A commonly accepted rule of thumb is that a Cronbach's Alpha value above 0.7 is considered acceptable for research purposes, all scales demonstrated the required results above threshold of 0.7.

Within the Influence dimension, "Processes and Results" received a moderate score of 3.23. This suggests a collective belief that managing processes and achieving specific outcomes holds a moderate level of importance for the company's success in the regulated industry. Similarly, "Human Relations and Innovation" garnered a mean score of 3.32, indicating a perceived moderate importance placed on fostering positive relationships and encouraging innovation within the organization. The factor "Public Interest" received a relatively higher score of 3.52, signaling a consensus that active engagement in public interest initiatives holds a moderately significant impact on the company's overall performance. Moving on to the Importance dimension, "Processes and Results" were rated slightly above moderate at 3.49, indicating a belief that effective management of processes and the attainment of desired outcomes carry some significance for the company's performance. "Human Relations and Innovation" received a moderately higher importance score of 3.55, suggesting that respondents consider cultivating positive relationships and promoting innovative thinking as moderately important factors influencing the company's success in the regulated industry. Lastly, "Public Interest" was perceived as relatively more important, receiving a score of 3.67. This signifies that respondents view the company's engagement in public interest initiatives as moderately significant, believing that societal contributions play a role in enhancing overall performance.

The multiplied scores for each factor of managerial competences' influence and impact provide a comprehensive perspective on their combined significance for the company's performance in the regulated industry. With a moderate combined score of 11.36, effective management of processes and specific outcomes showcases a notable impact, emphasizing its role in shaping the company's overall success. Fostering positive relationships and encouraging innovation, represented by a combined score of 11.88, are also moderately significant, highlighting the importance of a collaborative and innovative work culture. The factor with the highest combined score, 13.27, belongs to engaging in public interest initiatives, underscoring the considerable impact of the company's societal contributions and community engagement on its overall performance.

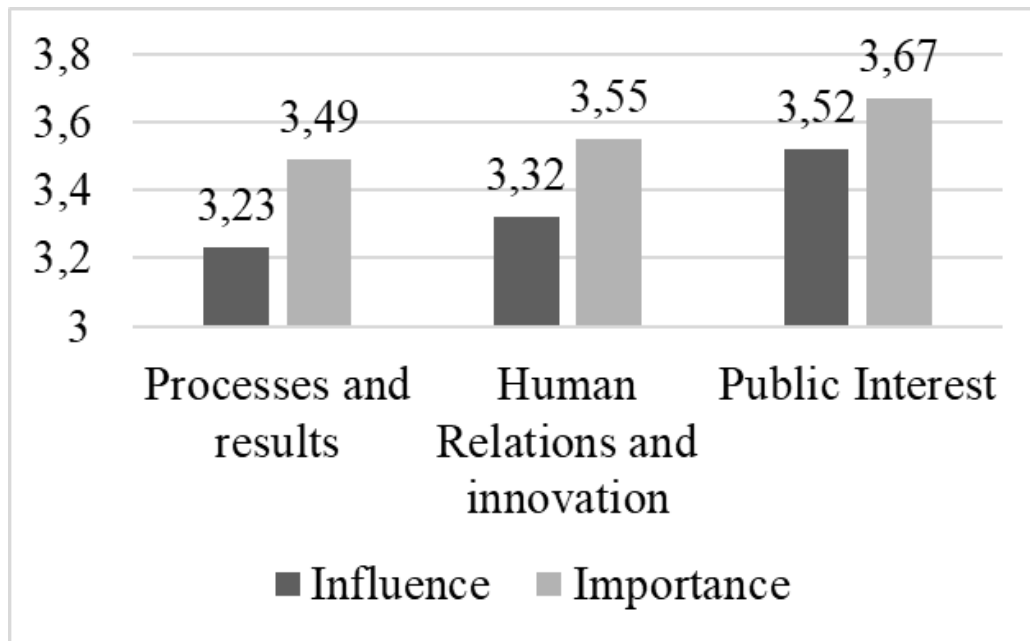


Figure 1. Comparison of the dimensions

Source: Authors' development

Next, authors follow a two-step process: first, checking for normality using the Kolmogorov-Smirnov test with $p > 0.05$, meaning the null hypothesis of normal distribution is not rejected, and then using the Pearson method to analyze the data correlation assuming it is normally distributed. The correlation analysis revealed the significant impact of different managerial competences on overall company performance within the regulated industry context. Management of Processes and Results (F1) demonstrated the strongest positive correlation with Performance (.821**), indicating that companies excelling in process optimization and desired outcomes tend to achieve higher performance levels in the regulated sector. Similarly, fostering positive Human Relations and Innovation (F2) (.819**) within the organization showed a robust positive correlation with Performance, underlining the importance of cultivating positive relationships and encouraging innovative thinking in enhancing overall company success. Active engagement in Public Interest initiatives (F3) also exhibited a substantial positive correlation with Performance, emphasizing the positive influence of social contributions on a company's overall performance (.808**) in the regulated industry.

Table 2
Linear regression results

Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	2.105	0.156
	Processes and results	0.079	0.021
	Human Relations and innovation	0.077	0.021
a. Dependent Variable: Performance			

Source: Authors' development

The results indicated that while Processes and Results (F1) and Human Relations and Innovation (F2) significantly influenced company performance, Public Interest initiatives (F3) did not show a significant impact and were consequently excluded from the regression model. In the regression analysis conducted to examine the impact of different managerial competences on company performance within the regulated industry, the model presented explanatory power, with an R-squared value of 0.742. The regression coefficients further illustrate the relationship between the variables. The coefficients represent the change in the Performance score for each one-unit increase in both managerial competence's types. The t-values for both Processes and Results (F1) ($t = 3.759$, Sig. = 0.000) and Human Relations and Innovation (F2) ($t = 3.632$, Sig. = 0.001) were significant, highlighting the robustness of these relationships.

4. Discussion

The strong correlation between Processes and Results (F1) and Human Relations and Innovation (F2) with company performance in the regulated industry can be attributed to several key factors. In regulated industries, adherence to processes and regulations is paramount. Companies that excel in managing their processes and achieving desired outcomes demonstrate a high level of operational efficiency and compliance. The correlation between Human Relations and Innovation (F2) and performance highlights the importance of fostering a culture of innovation within the company. Innovations in products, services, or operational methods can give a company a competitive edge, allowing it to adapt to changing market demands and regulatory landscapes. A workforce

that encourages and implements innovative ideas can navigate regulatory challenges more effectively, leading to improved performance outcomes.

At the same time, Effective management of processes (F1) is directly linked to the quality and safety of products and services. In regulated industries, ensuring the highest quality standards and product safety is essential to compliance. Companies that excel in these areas not only meet regulatory requirements but also build customer trust.

The results of this study fit well with previously reviewed management competency models and literature, highlighting the importance of certain aspects of management in regulated industries, especially the pharmaceutical industry. The first key factor highlighted in this study is effective process management and compliance, which highlights the importance of strong compliance in regulated industries. This aspect is consistent with the literature analysis, which highlights people skills, business skills, and self-management skills. The second important aspect highlighted in the results of this study is the relationship between human relations and innovation and overall company performance in a regulated industry. This aspect also corresponds to the ideas of the literature that highlighted the importance of human capital and innovation for the successful development of companies. Finally, ensuring product quality and safety, as well as maintaining ethical standards, are key aspects of management highlighted in the work of Quinn et al., where public interest factors are highlighted. These aspects are also consistent with the model examined in our study.

Based on the discussed models and research results, it can be concluded that aspects of managerial competencies in regulated industries are closer to the analysis of public companies than to private ones. In summary, the managerial competency models and research findings confirm that regulated industries have more in common with state-owned companies in terms of managerial skills and competencies.

Conclusions

The results of the study allow us to draw several key conclusions regarding managerial competencies in this area. First, effective process management and regulatory compliance prove to be fundamental aspects in regulated industries. Positive relationships within the team and external innovation contribute to adaptability to changing regulations and market

demands. The strong correlation between Processes and Results, Human Relations and Innovation, with company performance in the regulated industry underscores the importance of effective operational management, a culture of innovation, positive stakeholder relationships, assurance of quality and safety, and adherence to ethical standards. These competences not only facilitate regulatory compliance but also contribute significantly to the overall success of companies in regulated sectors. Companies that excel in these areas are better positioned to navigate complex regulatory environments, meet industry standards, and deliver value to their stakeholders, ultimately leading to improved performance outcomes.

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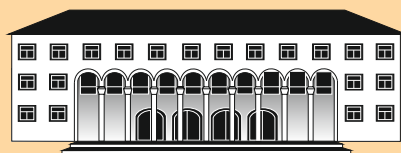
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