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Development Of A Competence-based Role Model For Managers Considering Current Megatrends

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Abstract

Due to the digital transformation and global megatrends, the industrial environment of manufacturing companies is changing faster than ever. As a result, the tasks of managers in these companies are evolving. New management roles and competences are required to master the challenges of this industrial change and remain competitive in the global market. This paper describes the development of a competence-based role model of managers in manufacturing companies focusing on the influence of current megatrends and the associated digital transformation. The model provides an overview of future tasks and roles of managers, which are becoming increasingly important in view of current megatrends. In regard to existing role models, seven roles of modern managers are derived. These management roles were evaluated in an extensive survey and detailed with corresponding competence profiles.

Keywords

Digital Transformation; Megatrends; Competences; Management Roles;

1. Introduction

With its technological and social changes, the digital transformation significantly impacts manufacturing companies [1]. Due to current megatrends like digitalization (e.g., big data, KI, Robotik, IoT), globalization (e.g., international competition, higher customer demands), volatility (e.g., uncertainty, instability, shortened product cycles), sustainability (e.g., environmental protection, climate change, decarbonization, circular economy), and demographic change (e.g., aging, shortage of skilled workers, lifelong learning, changing values), the industrial environment is evolving [2]. These challenging environmental conditions can also be described by the acronym VUCA (volatility, uncertainty, complexity, ambiguity) [3]. In today's VUCA world, the day-to-day tasks of managers are highly complex and dynamic. Therefore, managers are constantly facing new challenges. Especially in the course of the digital transformation, the tasks of managers are changing [4]. There is no scientific consensus on how managers' tasks will change in the context of the digital transformation and global megatrends, what roles they will take on, and what competences they will need.

This paper aims to develop a competence-based role model of managers in manufacturing companies that considers the influence of current megatrends and the accompanying digital transformation. After describing the literature-based fundamentals of competence-based role models in section two, the description of the research method follows in section three. Section four includes the results of the role description and the empirical study results determining the competence requirements of the different management roles. The results will be presented in the form of competence profiles that are tailored to the corresponding role models. A discussion of the results follows before this contribution summarizes with a conclusion.

2. Management role models

Based on the classic process- and task-oriented management models, the models of Koontz & O'Donnell [5] and Rühli [6] need to be mentioned. The former describes the management process and the associated tasks in five areas: planning, organization, personnel deployment, leadership, and control [5]. According to Koontz & O'Donnell [5], the central tasks of managers in these areas follow a chronological sequence. The tasks should be fully described and structured. A similar approach can be found in the Zurich management approach, according to Rühli [6], in which the four management functions, planning, decision, arrangement, and control, are distinguished. The main difference to Knootz & O'Donnell's management process is that the Zurich management model focuses less on the specific tasks of the respective manager and more on the overall management tasks of a company.

In contrast to the above-mentioned process- and task-oriented models, Mintzberg's [7] and Quinn's [8] approaches are role-based. Mintzberg identifies ten management roles, which are divided into three superordinate groups [7]: Roles in establishing and maintaining interpersonal relationships (figurehead, leader, liaison), informational roles (monitor, disseminator, spokesperson), and roles in decision-making (entrepreneur, disturbance handler, resource allocator, negotiator). The ten management roles illustrate in a practical way the broad spectrum of tasks of a manager and are described precisely [7]. At the same time, they are kept general to ensure relevance even in today's world. Quinn's competing values framework examines which roles managers assume depending on the company's strategic orientation. Based on a study of organizational effectiveness [9], Quinn [8] derives the bipolar scales of flexibility vs. stability and internal vs. external focus. In the four quadrants of the two-dimensional model, eight specific management roles are described: facilitator and mentor, innovator and broker, producer and director, coordinator, and monitor [10]. The main difference to the approach of Mintzberg [7] is that Quinn [8] explicitly names the contradictions of different roles and processes within the framework of a coherent overall model [10]. According to Quinn, effective leadership behavior exists when all roles are fulfilled [8]. This includes the role-immanent conflict that a manager sometimes has to take on opposing roles simultaneously [11].

Reinhart describes the range of management tasks based on six categories: providing orientation and goals, deciding and taking responsibility, delegating, monitoring and controlling, informing and communicating, motivating, and developing [12]. The effects of digitalization and demographic change on the above-mentioned management tasks are explicitly examined. Zeichhardt analyses the influence of digitalization on managers [13]. Here, not only the tasks of individual managers are analyzed, but the digital management tasks in the entire company are considered. These are classified based on seven digital management roles: digital figurehead, digital game changer, digital broker, agile facilitator, digital specialist, big data manager, and artificial intelligence. The management concept *Teamlead* of Graf et al. examines how managers efficiently lead teams in the context of digitalization and a VUCA environment [14]. The Teamlead model defines six system functions with 23 management tasks important for teams and leaders. The six functions are difference, resource, structure, process, reflection, and development management [14]. In the Teamlead concept, the tasks of a manager are viewed from a modern, team-based perspective.

The analyzed approaches were assessed in terms of model structuring, the considered focus area, and clustering. Regarding **model structuring**, a distinction can be made between process-oriented, task-oriented, and role-oriented models [15,16]. The former is characterized by a chronological sequence of process steps, whereas individual management tasks are unordered in a task-oriented structure. A role-oriented structure can be distinguished by summarizing various subtasks in a role description. Most of the models examined are process or task-oriented; only Mintzberg [7] and Quinn [8] focus on the individual management roles. Furthermore, the models can be differentiated based on the chosen **focus area**. In contrast to a general focus, a trend-oriented focus takes current developments and megatrends into account. Current megatrends are considered in the approach of Reinhart [12]. In the other approaches, either no recent developments or only a few selected trends are addressed. In addition, most of the mentioned approaches developed a general,

exhaustive model, i.e., to represent all tasks or management roles [5,6]. Therefore, unspecific **categories and clusters** are formulated. Older models do not lose relevance because current trends hardly influence the results. However, the practical significance regarding current developments is diminished. The approach of Zeichhardt [13] describes the different management roles and tasks in a specific and concise manner. It can be stated that no model describes the roles of managers arising from current megatrends in the context of individual role descriptions. In addition, there is no competence model in which specific and prioritized competence profiles are assigned to roles arising from current trends. Figure 1 shows an overview of the evaluated role models of managers.

	model structuring			focus area		categories & clusters	
	process-oriented	task-oriented	role-oriented	general	trend-oriented	general & exhaustive	specific & concise
KOONTZ & O'DONELL (1955)	●	○	○	●	○	●	○
RÜHLI (1985)	●	◑	○	●	○	●	○
MINTZBERG (1973)	○	○	●	●	○	●	○
QUINN (1988)	○	○	●	●	○	●	○
REINHART (2017)	○	●	○	○	●	●	○
ZEICHHARDT (2018)	○	◑	◑	○	●	○	●
GRAF ET AL. (2020)	○	●	○	○	●	●	○

Fulfillment level: ● fulfilled   ◑ half fulfilled   ○ not fulfilled

Figure 1: Analysis of relevant management task and role models

3. Research method

The research method used to develop the competence-based role model is divided into two steps: In the first step, individual preliminary roles of managers were identified. These were developed based on current megatrends and managers' existing tasks and role models. The following process was used to create the preliminary roles. With the help of developed guiding questions (e.g. 'How are the potential tasks and roles of managers changing with regard to the addressed megatrends?), hypotheses were collected from the presented literature and megatrends (e.g., change of a current role due to digitalization). The hypotheses describe aspects of managers' everyday work that are becoming increasingly important due to current megatrends. Afterwards, the hypotheses were combined and clustered to derive specific management roles.

The second step represents an empirical survey among managers. The empirical-inductive procedure evaluated the preliminary roles from step one in a practical manner. For this purpose, the preliminary roles were integrated into a comprehensive survey concept. The empirical survey comprises two objectives: First, the preliminary developed roles were validated and examined regarding their relevance. Secondly, competence profiles for the respective roles were derived from an extensive collection of competences. Thereby, survey participants selected what they considered the five most important competences for each role from a collection of 40 future management competences. This competence collection was derived based on literature from Heyse & Erpenbeck [17], IFIDZ [18], Stifterverband & McKinsey [19] and Cloots [20]. 60 production-related managers from various age groups, company sizes, and management levels took part in the online survey (17 % top management, 48 % middle management, 27 % operational management, 8 % consultants).

4. Description of the results – management roles and their required competences

The preliminary roles of managers developed in step 1 were assessed by the survey participants in step 2 as part of the empirical survey. The role model contains seven roles of modern managers. According to the

survey results, each management role will become more significant in the future. The seven management roles are presented in more detail below.

As a **Data Analyst**, a manager uses digital technologies to analyze large amounts of data and derives insights for management decisions. The task of a manager is to interpret the results of the data analysis and draw conclusions for their actions. Managers are thus enabled to make well-founded and data-based decisions.

As a **Change Manager**, a leader organizes change processes from an initial state to a target state. The industrial environment is constantly changing. Therefore, companies need to adapt their products or services, react to unexpected events, and manage sudden crises. Managers have the task of responsibly shaping these changes and involving employees in the process.

As a **Digital Communicator**, a manager uses digital tools to interact with people. Leadership tasks are performed digitally, and communication with employees, customers, and other stakeholders gradually shift into the digital space.

As an **Influencer & Digital Role Model**, a manager represents the company or department internally and externally. Thereby, the manager acts as a symbolic figure in the digital space and influences the opinion and behavior of people in his or her network. This includes, for example, customers, employees, investors, and journalists. By using digital services, managers multiply their reach.

As a **Trend Seeker & Visionary**, a manager engages deeply with current and future developments. The manager tries to anticipate trends and align the company with change or actively shape it through proactive as well as strategic leadership.

As a **Talent Scout & Talent Developer**, it is the responsibility of a manager to recognize and develop the potential of employees. The shortage of skilled workers and international competition make it more difficult to recruit suitable employees. Moreover, the continuous development of employees is becoming increasingly important in view of advancing technological progress.

As a **Culture Manager**, a manager establishes a corporate culture and a working environment in which the company's goals can be realized. The manager anchors methods and sets the framework to create a pleasant, productive, and inspiring work atmosphere.

The seven roles of modern managers have been derived based on a literature review in step 1. Figure 2 shows a cutout of the most significant correlations between the megatrends and the management roles. It is evident that all roles have a trend-oriented focus. Especially the megatrend digitalization plays a significant role.

megatrends / roles	Digitalization	Globalization	Volatility	Sustainability	Demographic change
Data Analyst	large amounts of data available	global data streams in a networked world	identify trends faster based on data		
Change Manager	need for change in digital areas		change processes are on the daily agenda	ecological transformation leads to fundamental changes	changed understanding of values; involve employees
Digital Communicator	new and digital forms of communication are becoming established	employees and customers are globally dispersed			young and digital employees demand new forms of communication
Influencer & Digital Role Model	external presentation of managers is shifted to digital space	companies and their managers must show global presence		sustainability as a key topic in the public image of companies	young and digital employees who want to be inspired
Trend Seeker & Visionary	proactively shaping digital change		recognizing trends and developments and shapin…	shaping…	
	qualified employees in				

Figure 2: Correlation matrix of preliminary roles and megatrends

In the survey, the participating managers were asked to assess the relevance of each management role. The importance of the roles in the personal workday is widely confirmed, and the importance of the seven roles rises in the future. Figure 3 shows the comparison between the evaluated relevance of each role right now (black markers) and for the future (blue markers) (in 3 to 5 years). Thereby, the relevance of the management roles in the future personal work situation is consistently rated higher. The most significant discrepancy between the actual and the future situation is evident in the role of an Influencer & Digital Role Model. In total, the roles of Talent Scout & Talent Developer, Change Manager, and Trend Seeker & Visionary are currently the most important in the personal day-to-day work of the respondents and will continue to be so in the future. As a further result of the survey, competence profiles were derived for the respective roles. Figure 4 contains the five most essential competences for each role as rated by the survey participants, as described in chapter three.
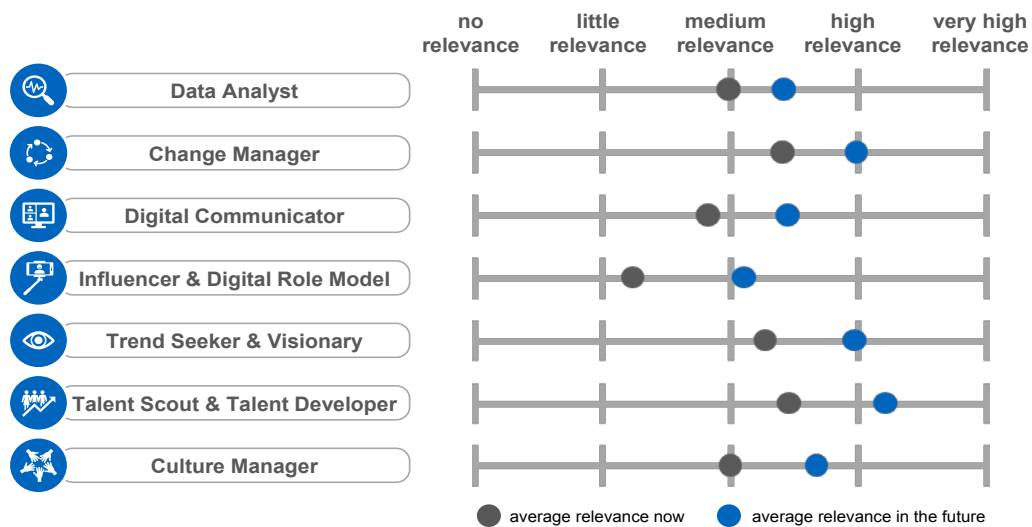

Figure 3: Assessment of the current and future relevance of the individual management roles
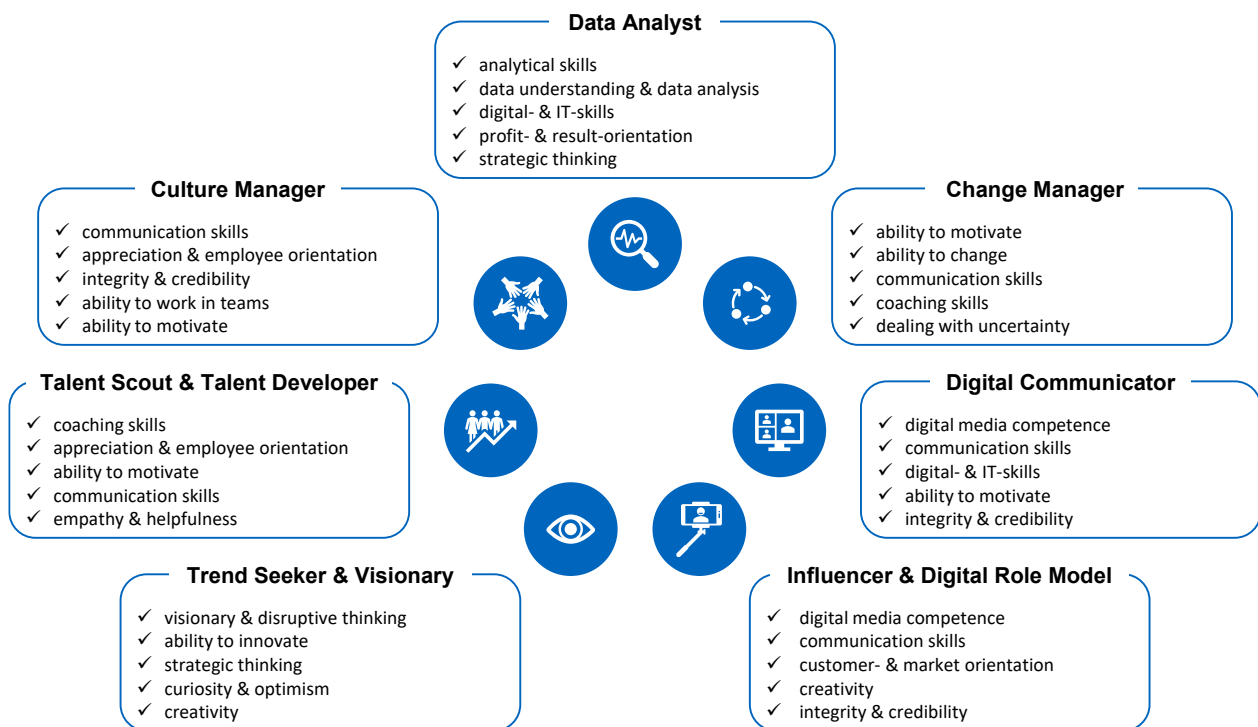

Figure 4: Seven roles of modern managers with the associated five most important competences

5. Interpretation and discussion

The developed competence-based role model provides a wide range of possible applications. The model reflects managers' central roles and competences in the context of current megatrends. Therefore, managers can use the competence-based role model to analyze their personal competence profile for their self-assessment. Based on the seven roles of modern managers, it is possible to assess to what extent and in what way the different roles are fulfilled and where the further potential for development exists. In addition, the competence-based role model can be used for the external assessment of managers. Possible applications arise when filling new management positions. For example, the model can serve as a starting point for developing a job profile. Although the 60 participants represent different company divisions, age groups, and roles, it should be noted that they do not constitute a holistically representative sample. Therefore, the study results of the questioned managers are only transferable to a limited extent. In addition, the competence profiles of the roles were developed based on the results of the empirical survey. They reflect the average opinion of the survey participants.

6. Conclusion

Nowadays, the day-to-day tasks of managers are highly complex and dynamic, as the environment for manufacturing companies is constantly changing in the context of digital transformation and current megatrends. Consequently, the required competences of managers and their roles are transforming. New competence-based role descriptions for managers are therefore necessary. In this paper, a competence-based role model of managers in manufacturing companies was presented, considering the influence of current trends. First, seven roles of modern managers were derived analytically and detailed based on role descriptions. In the course of an empirical survey of 60 managers from manufacturing companies, the roles were validated and analyzed in terms of their increasing relevance. Subsequently, in the context of the study, competence profiles were created for the respective roles with the help of a generated competence collection. Thus, the model describes and illustrates managers' central tasks and competences in role descriptions that arise from current megatrends. Future research is needed to transfer the findings into practice. To increase the benefits and possible applications, practical guidelines and trainings should be developed, enabling managers to develop their future competences in a more targeted manner.

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Biography

Barbara Tropschuh (*1994) is currently a Ph.D. candidate at the Institute for Machine Tools and Industrial Management (*iwb*) at the Technical University of Munich (TUM). She received her master's degree in Mechanical Engineering from TUM and is now leading the research field of "human in production". Her research activities focus mainly on competence- and strain-oriented employee scheduling.

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