

## THE IMPACT OF TECHNOLOGICAL DEVELOPMENT ON MANAGERIAL RESILIENCE IN THE MILITARY ORGANISATION

Associate Professor Dorel BADEA, PhD

Associate Professor Diana Elena RANF, PhD

*“Nicolae Bălcescu” Land Forces Academy, Sibiu*

*The current course of the 21<sup>st</sup> century has challenged humanity as a whole in terms of the operationalisation of large-scale changes, both quantitative and qualitative, one of the directions for changing social functionality being subsumed under global technological governance. Trends specific to emerging and disruptive technologies, technological superiority, digital diplomacy and sovereignty, innovation ecosystems etc. have a major impact on a macro-indicator of analysis of contemporary global performance, namely resilience. The pace of implementing the solutions characteristic to these advanced technologies is a dynamic one, practically influencing all areas of activity. At the military level, there are concerns of interest at the level of NATO member states regarding space systems, robotics and advanced conventional weapons systems (laser, hypersonic weapons), innovative resources, digitisation, artificial intelligence, cyber security etc. In this context, the present article brings to attention some presumptive aspects regarding the modification of managerial resilience, in terms of military roles and responsibilities, starting from classical managerial theories. Directions for exploring the subject proposed by the title which are of interest to military decision-makers are also presented.*

*Keywords: advanced technologies; change; resilience; management; defence;*

## FUNDAMENTALS OF ROLE THEORY – BETWEEN CLASSICAL AND MODERN APPROACHES

The article is based on research from secondary sources that combines a series of methods and techniques adapted to the objectives. Regarding the study method used in the article, the scientific documentation is combined with the direct documentation, resulting in the analysis of the practical reality providing information on the field in which the research topic is integrated. The main methods used are content analysis, comparative method, used to highlight the characteristics of analysed concepts and notions and research techniques contextualised to the subject.

Henry Mintzberg, one of “*the world’s premier management thinkers*” (Nguyen, 2011), conducted an in-depth study of the behaviour of a group of managers to define a set of roles that make their activity abstract (Mintzberg, 1973). Based on studies undertaken in this direction, he showed that the work of managers is characterised by a sustained pace, interruptions, short stages, variety and fragmentation of activities and a preference for verbal contacts. The manager spends much of his time in pre-scheduled meetings, maintaining a whole network of contacts outside of these meetings. The fragmentary nature of managerial work leads us to the idea that the manager fulfils a wide variety of roles.

The ten roles identified by Mintzberg, which managers perform, fall into three broad categories: *interpersonal roles, informational roles, and decision-making roles*. Subsequent research has identified the need for a new concern at the management level, which can be translated into a new role, namely that of *academic researcher*, a new quality of managers that can be a response to changes in their practical activities (Hamzah, Gharibeh, 2017, pp. 920-925). The high complexity of the problems encountered requires a higher concern for a more thorough investigation of the phenomena before making decisions. Proposals to improve the theory of managerial roles have also raised the issue of introducing a role of project manager, an important contribution in this regard having the practice of the military field, which often has a greater advance than theory, as a reaction to the changes required from the environment (Darkazanli, 2021).

In the context of increasing the complexity of a manager’s activity, the article also highlights the importance of integrating information technology in the activity of managers. Because role theory suggests that people will behave appropriately when they are aware of the expectations of their role, managers should also become aware of the possibilities they have to fulfil their roles excellently (Qian, Wang, 2018). The difference is in the use of technological and information support (table no. 1).

Table no. 1: Managerial roles reconfiguration

| ROLE   | ROLE DESCRIPTION  | TYPE (CHARACTER) OF THE ACTIVITY  | THE CONTRIBUTION OF INFORMATION TECHNOLOGY TO IMPROVING THE ACTIVITY OF MANAGERS  |
|--|---|---|---|
| <b>I. Interpersonal roles</b>                                    |   |   |   |
| <b>1. Representative (representative figure, representative)</b> | He/she is an official representative of the organisation and according to their statute, the obligations will be of a legal or social nature. | Participation in ceremonies, activities that are mandatory according to the position, receiving, signing documents. | - Use of social networks in the practice of guidance and communication:<br>- Paper resources have been almost completely replaced by electronic resources;<br>- Use of ICT as a means of disseminating information (via e-mail, intranet networks).<br>- Use of ICT as a means of communication and interaction (lectures held on e-learning platforms, Skype etc.) |
| <b>2. Leader</b>   | Establishes a system of relations with subordinates, coordinates them (based on communication) and trains them (based on motivation).         | Virtually all management functions: planning, organising, coordinating, coaching, controlling-evaluating.           |   |
| <b>3. Binding agent (liaison person)</b>                         | Maintains connections inside and outside the organisation.  | Correspondence processing, participation in conferences, meetings, councils, etc. The company’s external relations. |   |

| ROLE  | ROLE DESCRIPTION  | TYPE (CHARACTER) OF THE ACTIVITY   | THE CONTRIBUTION OF INFORMATION TECHNOLOGY TO IMPROVING THE ACTIVITY OF MANAGERS  |
|---|---|--|---|
| <b>II. Informational roles</b>                  |   |  |   |
| <b>1. Monitor</b>                               | Continuously scans the internal and external environment to identify the strengths and weaknesses of the organisation, as well as opportunities and restrictions in the external environment. | Correspondence processing, maintaining contacts, analysing and selecting information etc.  | - The use of secure online sources of information because the future performance of the organisation depends on the information processed;<br>- Use of ICT to disseminate information inside and outside the organisation; rapid data collection and analysis using cloud management. (Hardy, 2018) |
| <b>2. Disseminator of information</b>           | Transmits information received from external sources or from subordinates to other members of the organisation.   | Sending correspondence through organisations to receive reverse information, recruitment contacts for the transmission of information (calls, meetings).   |   |
| <b>3. Spokesperson (representative, symbol)</b> | Transmits messages to the external environment; this role refers to public speaking.  | It is important to have speaking skills (public speaking); the information is transmitted externally. (As a spokesperson, each manager must inform and meet the expectations of stakeholders who have an influence on the organisation). (Mintzberg, 1990) |   |

| ROLE   | ROLE DESCRIPTION  | TYPE (CHARACTER) OF THE ACTIVITY   | THE CONTRIBUTION OF INFORMATION TECHNOLOGY TO IMPROVING THE ACTIVITY OF MANAGERS  |
|--|---|--|---|
| <b>III. Decision roles</b>                                     |   |  |   |
| <b>1. Entrepreneur</b>   | Acts as an initiator, planner, encourages innovation and change, transforms opportunities and changes into action plans for change. | Organises organisational strategy analysis meetings; creates and controls change in the organisation.  | - Use of a blockchain system to streamline processes, increase security, confidentiality, reliability and work speed. (Walsh, O'Reilly, 2021, pp. 353-365)<br>- Use of software that supports the construction of diagrams, graphs, so that information or data is presented in a structured, intelligible and visually appealing format. |
| <b>2. Handler of dysfunctions (conflict resolution factor)</b> | Prevents and manages conflicts in the organisation.   | Mediates conflicts that arise within work teams. The manager takes corrective action during disputes or crises; adapts from the internal environment. (Kumar, 2015, pp. 12-19) |   |
| <b>3. Resource distributor</b>                                 | Decides how resources are distributed in the organisation: people, money, equipment materials, information.                         | Developing graphs, scheduling subordinates' work.  |   |
| <b>4. Negotiator</b>   | Negotiates with subordinates, colleagues and other organisations.   | Conducting talks, negotiation, sales etc.  |   |

| ROLE  | ROLE DESCRIPTION   | TYPE (CHARACTER) OF THE ACTIVITY  | THE CONTRIBUTION OF INFORMATION TECHNOLOGY TO IMPROVING THE ACTIVITY OF MANAGERS  |
|---|--|---|---|
| <b>IV. Research roles</b>                                 |  |   |   |
| <b>1. Academic researcher</b><br>(Hamzah, Gharibeh, 2017) | Investigates in a scientific and organised way the viable and unique problems that may arise in the workplace. | Improving practices based on research results: better decision-making, improved negotiations, better matching of opportunities with organisational needs etc. | - Use of electronic information resources for information and new technologies and the most creative strategies in research processing. |

Very often managerial roles are outlined as a result of the existence of certain patterns of behaviour that operate outside and inside the company and are related to the position of a certain person in the structure of the organisation (Katarzyna, 2007).

The correlation of the roles developed by Mintzberg with the new information technologies contributes to the facilitation of the managerial activity and the increase in the organisational performance, offering the possibility of saving some types of resources. Although initially implementing a change such as digitising an activity or even an organisation involves a number of costs and attracts resistance to change, in the long run the benefits are high, varied, the financial ones being ahead of others with a beneficial effect on organisational viability: reducing conflicts by increasing the well-being of employees, increasing staff stability and productivity.

### APPROACHING MANAGERIAL ROLES IN THE MILITARY ORGANISATION IN THE CONTEXT OF TECHNOLOGICAL TRANSFORMATIONS

At NATO level, the subject of advanced technologies and especially of emerging and disruptive ones is of great topicality and interest, the DIANA (Defence Innovation Accelerator for the North Atlantic) initiative being an example in this respect (NATO 2030, 2021). The most important effect, related to the functional specifics

and missions of the military-type organisation, is expected to produce positive changes in the readiness indicator. A study conducted by Deloitte Centre in the context of the analysis of changes in defence capabilities as a result of the development and use of emerging technologies highlighted, under the auspices of the imperative *Stop reporting, start knowing*, the need to change the current approach paradigm of the mentioned performance macro-indicator, based on three key queries represented in figure no. 1.

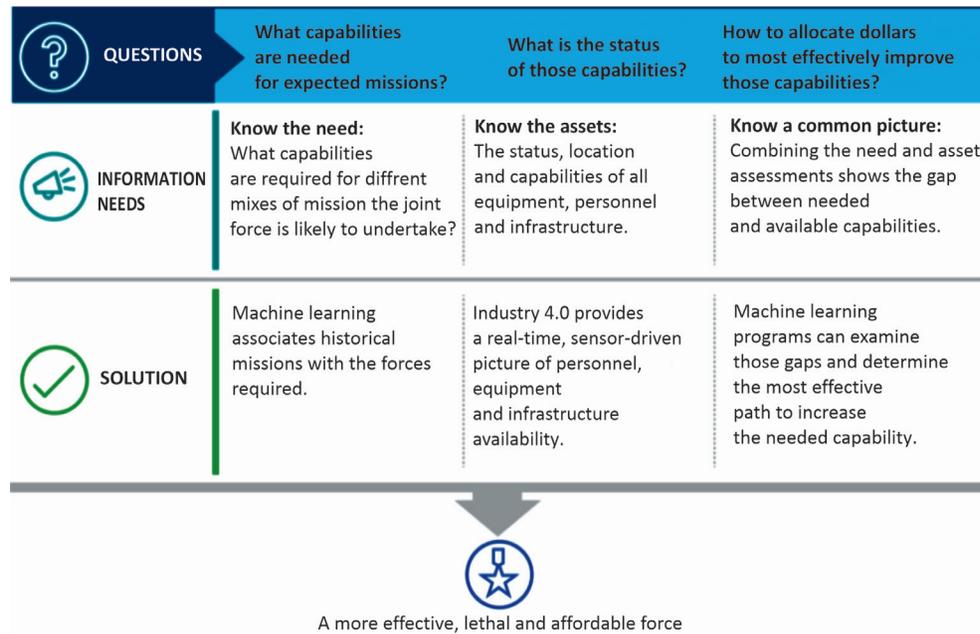


Figure no. 1: Fundamentals of rethinking the concept of readiness (Schultz et al., 2018, p. 7).

We have found it interesting to link managerial resilience to concrete coordinates of managerial activity regarding roles and responsibilities. It is also an aspect very little treated in the literature as is the case of defining managerial resilience. In this context, the approaches related to organisational-managerial resilience summarised in table no. 2 were identified and considered as a reference.

Table no. 2: Approaches to organisational-managerial resilience

| No. | Approach   | Source                     |
|-----|--|----------------------------|
| 1.  | <i>“Resilience is the ability to be successful both personally and professionally, in the midst of a high-pressured, fast-paced and continuously changing environment”.</i>  | Turner (2014).             |
| 2   | <i>“Resilience is the ability of managers to keep going when encountering adversity and the stress resulting from it, recovering from setbacks by adapting to change in a positive context, and being creative in finding solutions for moving forward”.</i>   | Bartz, Bartz (2017, p. 1). |
| 3.  | <i>“...employee resilience is a variable of individual differences. It is not only a unique component of an individual’s personality, but also an individual’s dynamic ability to use the protective resources in the organisation and the environment to interact dynamically with the environment to accomplish goals and achieve their own growth”.</i> | Rabenu, Tziner (2016).     |

Military roles and responsibilities will be rethought as a need for change in the future, under the impact of technological development, given the particularities such as: specifics of the weapon (there are weapons and military specialties that are extensively and intensively prone to innovation and technological progress such as those related to missiles, air defence or aviation); hierarchical level (at low/platoon level there will be a pressure for the adoption of operational technologies adapted to the specificity of the weapon while at high/strategic level the orientation will be towards the decisional component, cyber protection, automation and computerisation of processes, management of dedicated databases etc.); the necessary budgets within multiannual programmes/projects; the level reached in the general technical training of the different categories of personnel in the military system; the prioritisation of the implementation of new technologies in stages, while maintaining the imperatives related to interoperable architectures.

The influence of the intensity (1-very weak, 5-very intense) of the changes of the main technological vectors at the level of roles may be of interest for military researchers from the point of view of the current perception, expecting a differentiation of results. A working hypothesis may be that generations under the age of 30 have a strong positive perception of the beneficial influence of these

technologies in relation to the possibility of changing the physiognomy of managerial roles and responsibilities, a possible investigation model being represented in *table no. 3*.

*Table no. 3: Approaching managerial roles in relation to technological vectors*

| Role/<br>Assessment of<br>the intensity of<br>changes caused by<br>technology | Information<br>technologies | Artificial<br>intelligence | Cybernetics | Digitisation<br>of processes | Example<br>of influence<br>score<br>calculation<br>(mathematical<br>average<br>of grades given<br>on the line) |
|---|-----------------------------|----------------------------|-------------|------------------------------|--|
| 1. Representative   | 3                           | 2                          | 1           | 1                            | 1.75   |
| 2. Leader   | 1                           | 1                          | 1           | 1                            | 1  |
| 3. Binding agent  | 3                           | 1                          | 1           | 1                            | 1.25   |
| 4. Monitor  | 4                           | 4                          | 4           | 4                            | 4  |
| 5. Disseminator<br>of information   | 5                           | 3                          | 3           | 4                            | 3.75   |
| 6. Spokesperson   | 4                           | 4                          | 1           | 2                            | 2.75   |
| 7. Entrepreneur   | 3                           | 3                          | 3           | 5                            | 3.5  |
| 8. Handler of<br>malfunctions   | 2                           | 1                          | 1           | 1                            | 1.25   |
| 9. Resource<br>distributor  | 5                           | 1                          | 1           | 4                            | 2.75   |
| 10. Negotiator  | 3                           | 2                          | 1           | 4                            | 2.5  |
| 11. Research  | 5                           | 5                          | 5           | 5                            | 5  |
| 12. Project<br>manager  | 5                           | 5                          | 5           | 5                            | 5  |

## DISCUSSIONS AND CONCLUSIONS

Regarding a new role brought to attention in the recent literature, highlighted in section 1 of the article, that of project management, one can anticipate an increase in its importance in the military organisation in the near future, given the absolute necessity to introduce new technologies, an example of which is digitisation approaches. The solutions to be implemented aim at a minimum time horizon (over ten years) and they must be interoperable with other newly introduced technical solutions. In fact, it is a characteristic necessary to be fulfilled by all the technologies intended to be operationalised, with a high level of scalability. The result is a change of approach in terms of how to make procurement for defence, the greatest responsibility being both at the level of decision-makers who approve the initiation of a new programme and at that of project managers responsible for implementing (beyond the actual procurement) the targeted solution.

Regarding the topicality of the subject in the military field, it is relevant to mention the opinion of Jiří Šedivý (European Defence Agency Chief Executive) who emphasised: *“For the EU to be a credible security provider and a trusted partner in defence, we must focus our efforts on the development and mastering of technologies that have a serious potential to revolutionise our military capabilities, strategies and operations. Emerging Disruptive Technologies, such as Artificial Intelligence, quantum technologies or hypersonic weapons and new space technologies, must be in the centre of our capability development”* (EDA, 2021).

Under the auspices of technological development, the working hypotheses needed to be built and researched refer to the following situation: the introduction of new technologies, especially from the IT spectrum, weakens the management of processes specific to the military organisation, which can lead to a decrease in general organisational resilience but, analysed as means of intervention and decision, it can improve managerial resilience (increases the capacity and ability to return to the initial situation and re-enter previous roles).

Subsequently, the question can be asked whether and to what extent the development of current technologies contributes to shaping a new military management model, which incorporates the new realities of the organisational environment and leads to the consolidation of a feature of proactivity and operational agility.

Through the analysis of some landmarks of the specialised literature, corroborated with the applicative presentation of some research techniques contextualised to the subject, this article represents a contribution to the development of the military organisational culture, on the identified research niche (the connection between technological development and managerial resilience).

#### BIBLIOGRAPHY:

1. Bartz, D.E., Bartz, C.E.A. (2017). *The Resilient and Focused Manager*. In *International Journal of Business and Social Science*, vol. 8, no. 9.
2. Darkazanli, W. (2021). *The Project Manager Role: Management or Managing?* Project: PMO for the Urban Development Department. SBS Swiss Business School.
3. Hamzah, A., Masa'deh, R., Gharibeh, A. (2017). *The Role of Academic Researcher to Mintzberg's Managerial Roles*. In *International Journal of Business Management and Economic Research*, no. 8.
4. Hardy, Q. (2018). *How Cloud Computing Is Changing Management*. In *Harvard Business Review*, <https://hbr.org/2018/02/how-cloud-computing-is-changing-management>, retrieved on 11 August 2021.
5. Katarzyna, C. (2007). *The Basic Roles of Manager in Business Organization*. In *Annals of the Polish Association of Agricultural and Agribusiness Economists*, Poznań University, vol. 6, no. 385.
6. Kumar, P. (2015). *An Analytical Study on Mintzberg's Framework: Managerial Roles*. In *International Journal of Research in Management & Business Studies/IJRMBS*, vol. 2, no. 3.
7. Mintzberg, H. (1973). *The Nature of Managerial Work*. New York: Harper & Row.
8. Mintzberg, H. (1990). *The Manager's Job: Folklore and Fact*. In *Harvard Business Review*, <https://hbr.org/1990/03/the-managers-job-folklore-and-fact>, retrieved on 12 August 2021.
9. Nguyen, P. (2011). *On Henry Mintzberg's Model of Managing, Project: Management Education*. CFVG School of Management, [https://www.nato.int/nato\\_static\\_fl2014/assets/pdf/2021/6/pdf/2106-factsheet-nato2030-en.pdf](https://www.nato.int/nato_static_fl2014/assets/pdf/2021/6/pdf/2106-factsheet-nato2030-en.pdf), retrieved on 10 August 2021.
10. Qian, J., Li, X., Wang, B., Song, B., Zhang, W., Chen, M., Qu, Y. (2018). *A Role Theory Perspective on How and When Goal-Focused Leadership Influences Employee Voice Behavior*. In *Frontiers in Psychology Journal*, vol. 9: 1244.
11. Rabenu E., Tziner A. (2016). *Employee Resilience: A Faceted Analytical Approach*. *Ind Organ Psychol.*, no. 9 (2), doi:10.1017/iop.2016.43.
12. Schultz, D., Mariani, J., Jenkins, I., Strickland, F., Raymond, L. (2018). *Military Readiness. How Emerging Technologies Can Transform Defense Capabilities*, <https://www2.deloitte.com/us/en/insights/focus/industry-4-0/reframing-defense-military-readiness.html>, retrieved on 10 August 2021.
13. Turner, D., *Developing Resilience in Managers*, <https://www.sheffield.ac.uk>, retrieved on 30 August 2021.
14. Walsh, C., O'Reilly, P., Gleasure, R. McAvoy, J., O'Leary, K. (2021). *Understanding Manager Resistance to Blockchain Systems*. In *European Management Journal*, vol. 39, no. 3.
15. EDA (2021), <https://eda.europa.eu/news-and-events/news/2021/04/20/high-level-conference-discussed-impact-of-emerging-disruptive-technologies-on-defence>, retrieved on 25 August 2021.
16. NATO 2030, (2021), [https://www.nato.int/nato\\_static\\_fl2014/assets/pdf/2021/6/pdf/2106-factsheet-nato2030-en.pdf](https://www.nato.int/nato_static_fl2014/assets/pdf/2021/6/pdf/2106-factsheet-nato2030-en.pdf), retrieved on 12 September 2021.