

Ante Rončević<sup>1</sup>, Domagoj Hruška<sup>2</sup>, Tihomir Luković<sup>3</sup>

## BEYOND MANAGEMENT BY OBJECTIVES: HOW THE WEG CONTROLLING MODEL SECURED MARINA RESILIENCE DURING COVID-19

**Abstract:** Strategic management faces challenges of digital transformation, algorithmic competition, unstable supply chains, and integration of artificial intelligence into decision-making, particularly in transitional economies such as Croatia. Classical frameworks, such as Management by Objectives (MBO), introduced by Peter Drucker in 1954, remain a foundation of participative goal-setting but exhibit limitations in real-time control and monitoring as well as scalability under the dynamic conditions of modern business. This paper examines the evolution of MBO towards Albrecht Deyhle's WEG model (Wege, Ergebnisse, Gestaltung – Paths, Results, Design), which integrates controlling as a predictive, cascading, and iterative methodology for goal attainment. The Croatian marina industry serves as a case study (Marina Frapa Rogoznica), demonstrating the application of the MBO-WEG framework in setting goals for capacity, supply, sustainability, and financial efficiency during the COVID-19 crisis. The findings indicate that this approach significantly improves decision-making in the marina business sector, where tourism, environmental, and economic imperatives intersect, rendering it scalable for coastal development of small municipalities and national macro-strategies.

**Keywords:** MBO, WEG model, controlling, marina industry, goal-oriented management education

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<sup>1</sup> University North, Varaždin, Croatia, ORCID ID: <https://orcid.org/0000-0003-2527-9506>, email: ante.roncevic@unin.hr

<sup>2</sup> University of Zagreb, Faculty of Economics and Business, Department of Organisation and Management, Zagreb, Croatia, ORCID ID: <https://orcid.org/0000-0002-5434-6758>, email: dhruska@efzg.hr

<sup>3</sup> Aspira University of Applied Sciences, Split, Croatia, ORCID ID: <https://orcid.org/0000-0001-5043-1579>, email: tihomir.lukovic@aspira.hr, corresponding author

## Introduction

The problematic nature of Peter Drucker's Management by Objectives (MBO) concept lies in its inherent limitations when applied to contemporary complex business environments characterised by globalisation, ERP integrations, and dynamic value chains. Although MBO, introduced in 1954, revolutionarily addressed the motivational and coordination challenges of the 1950s through participative setting of Key Result Areas (KRA), self-control, and annual reviews, it has confronted key shortcomings: absence of hierarchical cascading of sub-goals, the retrospective nature of interventions (Management by Exception activates only after deviations), and the lack of predictive controlling, which lags behind operational problems. The significance of these shortcomings has grown substantially in recent decades as business environments have become increasingly volatile, uncertain, complex, and ambiguous, a phenomenon widely described in the management literature as VUCA conditions (Bennett & Lemoine, 2014).

Contemporary crises in the Croatian marina industry, such as the strategic risk posed by the COVID-19 pandemic of 2020, require real-time interventions and protection of strategic objectives without quarterly revisions. Fluctuations in berth occupancy (e.g. 85% instead of the targeted 95%), delays in sustainable waste management, or revenue protection (a target of 25% growth) escalate risks and losses (exceeding 5% of capacity) in dynamic sectors such as nautical tourism, where MBO's rigidity constrains agility. The Croatian marina sector, comprising over 70 marinas and constituting a significant component of the national tourism value chain, is particularly vulnerable to external shocks due to its reliance on seasonal demand patterns and cross-border mobility of nautical tourists.

The subject of this research is a comparative analysis of the evolution of MBO from Drucker's pioneering formulation to Albrecht Deyhle's WEG model (Wege, Ergebnisse, Gestaltung). WEG extends MBO through a three-stage system (Paths, Results, Design), predictive controlling, and scalability for the 21st century, demonstrated through the case study of Marina Frapa Rogoznica during COVID-19. This paper contributes to the existing body of knowledge by bridging the gap between classical Anglo-American management theory and the German controlling tradition, illustrating how the WEG model can serve as a practical tool for crisis-resilient management in service industries dependent on tourism flows.

**Management in marinas.** Marina management operates in accordance with either a hazardous approach guided by instinct, which may yield superior financial results, or a cautious and safer approach that produces lower profit but greater resilience to strategic risks. The COVID-19 pandemic of 2020 revealed significant differences between these two management approaches among Croatian marinas. Analyses conducted after 2020, comparing ACI's strategic orientation towards transit berths with private marinas such as Marina Frapa Rogoznica, which operates with annual contract-based berths, demonstrated differences in strategies that become apparent under conditions of strategic risk.

In general, marinas operate without clearly defined strategic objectives but maintain clear operational goals and plans. They utilise management and all its functions, and the highest-quality Croatian marinas occasionally engage external consultants who apply the WEG model in specific situations based on predictive analyses, with Marina Frapa Rogoznica leading in this respect. The distinction between strategic and operational management in the marina context is particularly important because marina managers must simultaneously coordinate berth logistics, environmental compliance, client relations, and financial performance within a highly seasonal business cycle. This multidimensional management challenge renders traditional retrospective control mechanisms insufficient and calls for more proactive, predictive approaches such as the WEG model.

## Materials and methods

**Management by Objectives: From Drucker to Deyhle.** Management by Objectives (MBO) represents a fundamental concept of participative management that revolutionised management in the 20th century. According to Peter Drucker, MBO is defined as a process in which superiors and subordinates jointly set specific, measurable goals, develop action plans, and regularly evaluate them, with an emphasis on self-control and accountability for results. This approach, first systematically presented in Drucker's book *The Practice of Management* (1954), revolutionarily addressed motivational and coordination challenges of the post-war period, transitioning from authoritarian management and supervision to team collaboration with a focus on the future rather than the past. Drucker emphasised that employees better accept changes when they understand expectations and connect personal ambitions with organisational goals, thereby fostering ownership of tasks and reducing resistance to innovations. Given that Drucker worked and researched in the US economy as an American and naturalised German, his orientation towards the future rather than the past signalled the importance of controlling. This fact was recognised and developed by Deyhle approximately 40 years later, noting that Drucker, operating within American management conditions, did not have the opportunity to develop this as Deyhle did.

Drucker's MBO model is based on five key steps that form a hierarchical process from strategic objectives to operational implementation. These steps are illustrated in detail in Table 1, adapted to the context of the marina industry, the subject of this research to demonstrate their applicability in a dynamic environment.

The key principles of Drucker can be summarised in the following categories, which became the foundation of subsequent managerial paradigms:

- Clear and measurable goals: Concrete, challenging yet realistic (SMART principle: Specific, Measurable, Achievable, Relevant, Time-bound), directed towards Key Result Areas (KRA).
- Participation and motivation: Joint goal-setting increases engagement and reduces resistance, transitioning from "orders" to "agreements".

- Future-oriented monitoring: Focus on forecasting and corrections, not merely past errors, observed through periodic reviews.
- Results-based accountability: Rewards for outcomes, not activities; integration of MBO into planning, organising, leading, and controlling.
- Hierarchical alignment: Goals are cascaded top-down to avoid contradictions across levels.

Table 1. Five key steps of the MBO model according to Drucker

Step	Description	Example (Marina Context)	Potential Deviation
1. Defining organisational goals	Analysis of mission, vision, and external factors; setting strategic goals at the highest level.	Increase total revenues by 15% annually through service expansion.	Revenue decline due to an unexpected season (e.g. poor weather).
2. Setting individual goals	Joint agreement between managers and employees on sub-goals.	Berth team: 95% average monthly occupancy in season.	85% occupancy due to delayed charter reservations.
3. Planning actions and resources	Development of detailed plans, allocation of budgets and resources.	Allocation of 20% of budget to digital marketing and staff training.	Budget overrun due to emergency repairs.
4. Monitoring progress	Periodic reviews (monthly/quarterly) and corrections.	Monthly KPI dashboard: occupancy, revenues, client satisfaction.	Deviation detected only in the quarterly report.
5. Evaluation and rewards	Annual performance assessment, feedback, and motivational rewards.	10% salary bonus for teams exceeding targets.	Motivational decline if rewards are delayed.

Source: Compiled and expanded based on Drucker (1954), ToolsHero (2024), Communication Theory (2017), TheBusinessProfessor (2025), and Mind Companion (2024)

The Encyclopaedia of Management (1973) expands the definition of MBO as “a process of planning and controlling in which common goals are identified, principal responsibilities are defined through expected results that serve as guides for operations and evaluation of contributions.” Humble (1968) further emphasises MBO’s strategic analysis: “Long-term and short-term objectives are defined following a critical analysis of internal strengths/weaknesses, external threats/opportunities, and stakeholder expectations.” However, Drucker’s model exhibits inherent limitations in contemporary complex environments:

- Absence of automatic hierarchical cascading of sub-goals, which may lead to unsynchronised activities.
- Retrospective interventions (Management by Exception activates only after deviations, e.g. quarterly reviews).
- Reactive controlling that lags behind operational problems, lacking predictive mechanisms.

These limitations become particularly evident in dynamic industries such as marinas, where seasonal fluctuations, regulatory pressures (sustainability, ecology), and external shocks (e.g. pandemics) require real-time adjustments.

**Evolution towards Deyhle’s WEG Model.** Albrecht Deyhle (1936–2011), the key German theorist of controlling and author of *ControllingWissen* (2003), operationalised Drucker’s MBO through the WEG model (Wege – Ergebnisse – Gestaltung: Paths/strategies, Results/outcomes, Design/leadership), creating a “bridge” from abstract goals to sustainable results. In the 1970s, Deyhle recognised the need to structure participative MBO, integrating controlling as an operational framework that WEG symbolises as the path (Weg):

- Wege (Paths): Strategic paths and resources for achieving goals.
- Ergebnisse (Results): Measurable outcomes and KPIs with predictive monitoring.
- Gestaltung (Design): Flexible adaptation of structures and processes.

Unlike Drucker’s reactive self-control, Deyhle’s WEG is proactive, iterative, and quantitatively oriented. Deyhle’s WEG anticipates deviations through predictive models, coordinates the hierarchy with cascading goals, and enables scalability in turbulent environments. Horváth (2007), founder of the German controlling school, notes that WEG “coordinates the hierarchy and predicts variances,” whilst Wagenführ (1990) emphasises its practical application in *Erfolgscontrolling*. Croatian authors (Piplica et al., 2024) view WEG as a European contribution that surpasses MBO limitations, establishing it as a standard of the German school of controlling-oriented management and the foundation of German economic successes in the 1980s and 1990s.

The WEG model is thus applicable across all industries, including the marina industry, where it excels in the following context: it enables predictive monitoring of berth occupancy (Wege), real-time revenue corrections (Ergebnisse), and adaptation of sustainability services (Gestaltung), where traditional MBO fails.

**Setting the aim and objectives.** The distinction between aim (a broad goal) and objectives (operational goals) is fundamental to understanding the MBO and WEG models, where aim defines the long-term vision (“what” is to be achieved), and objectives define concrete steps for realisation (“how”). Aim is a qualitative strategic guide, whilst objectives are SMART (Specific, Measurable, Achievable, Relevant, Time-bound), measurable, and iterative steps. In this research, the aim is the development of acontrolling-oriented MBO-WEG strategy for Croatian marinas, whilst the objectives are: (1) theoretical analysis of MBO limitations, (2) elaboration of the WEG evolution with predictive mechanisms, (3) empirical validation through the Marina Frapa Rogoznica case study, (4) recommendations for implementation in transitional economies (Table 2).

Table 2. Key differences between aim and objectives (adapted for management)

Criterion	Aim (Broad Goal)	Objectives (Operational Goals)
Time scale	Long-term (3–5+ years)	Short-term (quarterly/annual)
Specificity	Qualitative vision (“what”)	Quantitative, SMART (“how”)
Question	“Why/What do we aim for?”	“What/How/When do we achieve?”
Measurability	Difficult to quantify	Clearly measurable (KPI)
Flexibility	Stable guide	Iteratively revised
Example (marina)	“Leadership in sustainable nautical tourism by 2030.”	“Q2 2026: 95% occupancy, +15% revenue.”
Role in MBO	Strategic direction (KRA)	Cascading implementation

Source: Adapted from DiscoverPhDs (2020); Enago Academy (2023); Testbook (2023)

The question arises of clearly defining the distinction between Drucker’s and Deyhle’s Management by Objectives.

**Drucker’s MBO approach to goal-setting.** Drucker (1954) views aim as a stable organisational vision within KRA, for instance, “achieve a 5% market share in Croatian marinas through sustainability within 5 years”, aligned with the mission and external opportunities. This corresponds to the definition of a long-term “what” that transcends operations and motivates the hierarchy (Table 3).

Objectives operationalise aim through five cascading SMART steps, creating a “performance contract”:

1. Joint KRA setting: Participative definition with subordinates (e.g. strategic plan for expansion by 30 vessels).
2. Action plans: Quarterly standards (e.g. Q1: 20% increase in online reservations, budget with less than 10% deviation).
3. Participative implementation: Operator autonomy with management support.
4. KPI monitoring: Monthly review (occupancy above 90%, client satisfaction above 4.5/5, ecological indices).
5. Evaluation and corrections: Annual assessment with rewards/bonuses; correction of deviations (Management by Exception).

Drucker emphasises that objectives are “90% clarity” for MBO success – unclear goals lead to inefficiency.

Table 3. Drucker’s aim vs. objectives (Marina Example)

Element	Characteristics	Marina Example	Hierarchical Role
Aim	Long-term KRA vision, qualitative	“25% revenue growth by 2030 through green tourism”	Top-down: inspires strategy
Objectives	5 SMART steps, quantitative	“Q1: >20% reservations; monthly KPI <5% deviations.”	Bottom-up cascade: operationalises

Source: Drucker (1954); Value Based Management (2024)

**Deyhle’s WEG model: extension of goal-setting.** Deyhle (2003) evolves Drucker’s MBO by integrating aim as Wege (strategic paths), objectives as Ergebnisse (measurable results), and Gestaltung (dynamic design). Aim remains the vision (“sustainable leadership in Croatian marinas”). Simultaneously, objectives become predictive and iterative steps that: employ controlling to anticipate deviations (e.g. AI occupancy forecasts based on weather conditions), enable real-time corrections, and ensure hierarchical coordination.

In the WEG framework, objectives are not merely retrospective (as in Drucker’s model) but proactive: Wege plan resources, Ergebnisse measure KPIs (e.g. 98% service uptime, 0% waste), and Gestaltung adapts structures (e.g. seasonal staffing). This is critical for marina operations, where crises (weather, regulatory) require agility, for instance, rapid demand-driven price adjustments. The German controlling school (Horváth, 2007) highlights WEG’s scalability for transitional economies such as Croatia.

The WEG model developed by Deyhle constitutes a significant enhancement of Drucker’s MBO model (Table 4).

Table 4. Comparison of goal-setting: Drucker vs. Deyhle (WEG)

Aspect	Drucker MBO	Deyhle WEG
Aim	KRA vision	Wege: strategic paths
Objectives	5 SMART steps, reactive	Ergebnisse + Gestaltung: predictive, iterative
Monitoring	Monthly/annual	Real-time controlling
Marina example	Q1: 15% revenue increase	Forecast: 95% occupancy; auto-correction
Advantage	Participation	Proactiveness, scalability

Source: Deyhle (2003); Horváth (2007); Piplica et al. (2024)

In conclusion, Drucker recognised the importance of Management by Objectives and the importance of controlling within this system of participative management. Nevertheless, Drucker was constrained by the economic environment of American management, which limited the need for controlling only to situations of significant deviation from plan, namely in production problem situations. Thus, it may be concluded that Drucker was confined by the environment in which he operated. In contrast, Deyhle, operating within the conditions of German economic expansion that demanded new and better solutions and was not satisfied with merely good achievements, enjoyed a favourable environment for his new management ideas based on controlling. Consequently, the WEG model emerged as a product of an exceptionally favourable German environment that Deyhle maximally exploited, leaving room for future development and application across various industries, including the marina industry.

**Management by Objectives and the WEG Model.** Within the Management by Objectives system, the WEG model is visualised as a three-stage bridge with a cyclical process, where each element of the WEG system complements the previous one, whilst the flow from goal elaboration (objectives) to motivationally achieved results proceeds through five management by... stages at the centre (Fig. 1).

Alt text: Conceptual diagram showing the WEG management system as a cyclical three-stage bridge connecting Wege (Paths/strategies), Ergebnisse (Results/outcomes), and Gestaltung (Design/leadership), with five sequential management-by stages at the centre: Management by Objectives, Management by Participation, Management by Delegation, Management by Exception, and Management by Results.

The WEG management system is founded on the principles of controlling. It is a system that supports the leading and governance tasks of the controller, which together with planning forms the complex core function of management. The WEG system was developed in the 1970s at the Management Academy in Munich within the framework of the German Institute for Economics, in collaboration with V. Bataillard (Zurich), G. Grupe (Stuttgart), J. Haeusler (Karlsruhe), A. Sahm (Munich), and E. Zander (Hamburg). The WEG system promotes and is founded on three pillars as premises of a controlling-oriented management system: (1) Wachstum (growth), (2) Entwicklung (development), (3) Gewinn (profit).

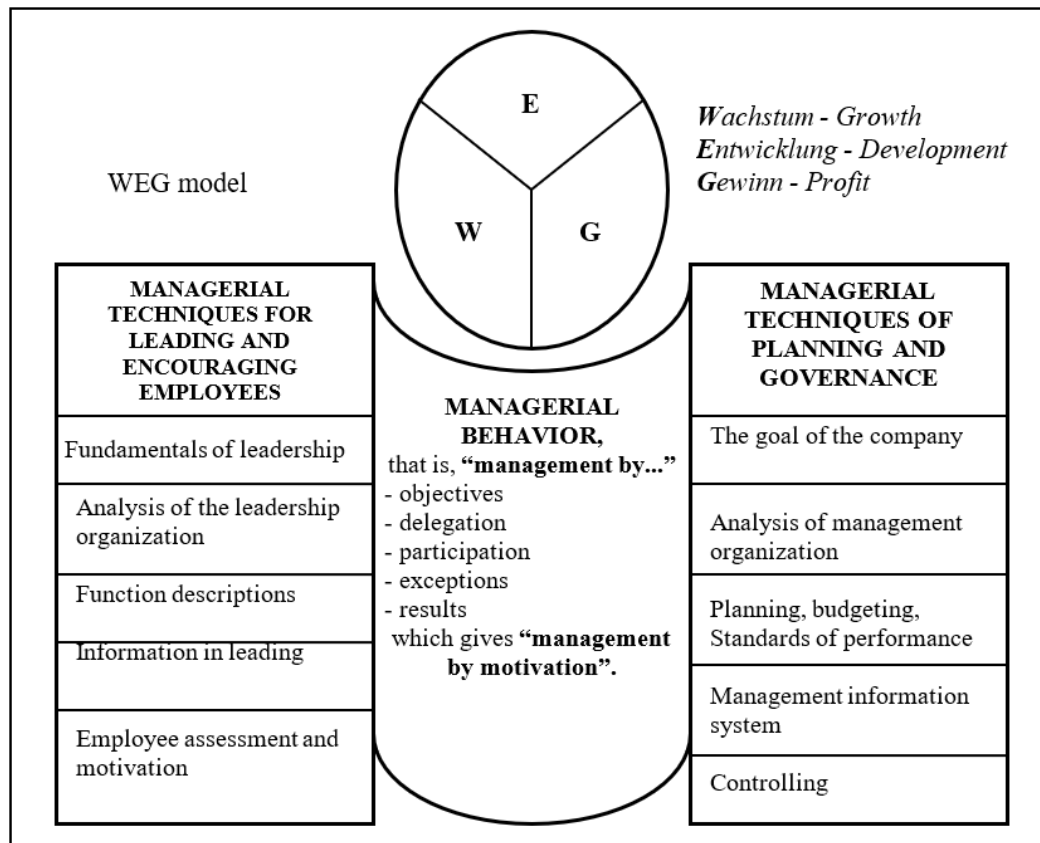


Fig. 1. Conception of the WEG Management System and Management  
 Source: Deyhle (2003, p. 137)

At the outset of this WEG model stands a role model that needs to be presented and depicted, which the “WEG” must surpass on the path to the goal. The WEG circle functions as a Vexierbild (optical illusion). On the one (left) side, it should act as a stimulus for the formulation and beliefs of the company, whilst on the other (right) side, WEG acts as a catalyst, so that goals can be defined through the dimensions of growth, development, and profit. The role model is always ideistically set and multidimensional to satisfy the requirements of all stakeholders. Expressions and guidelines such as “service for health”, “service for ecology and sustainable development”, “price breaker”, “problem solver”, “always first in development”, and similar can be found within it. Simultaneously, goals set with regard to the role model must be established concretely, quantitatively, and measurably.

Lest it be taken literally, and to avoid interpretation as “enslavement to capital”, profit is not an absolute and exclusive goal at any cost. In conjunction with growth and development, a compromise is struck in relation to profit, as sustainable development must be taken very seriously. Therefore, it will sometimes be necessary, in the interest of larger market shares, to sacrifice pricing opportunities, or, for the sake of a good developmental climate and general stability, the budget will be burdened with costs that reduce potential profit. From potential profit, budgets for additional research and development tasks must be allocated, provided they ensure long-term representation of the role model. All of this is presented in the Balanced Scorecard.

The process established in the WEG model is iterative, as Wege defines the paths, Ergebnisse provides verification, and Gestaltung corrects the entire flow, minimising risks in VUCA environments (Bennett & Lemoine, 2014). To clarify how the WEG model functions in practice, as indicated in the final column of the preceding figure, the case of a marina operating under COVID-19 pandemic conditions in 2020 and utilising the WEG model to resolve the crisis will be elaborated.

## Results

### **WEG Model Case Study: Marina Frapa, COVID-19 (2020).**

**Marina Frapa, Rogoznica – initial situation.** Late 2019 and early 2020 discreetly signalled the arrival of the COVID-19 pandemic, to which Croatia did not respond promptly. The owner and management of Marina Frapa Rogoznica (462 berths: ~75% annual contracts, ~25% charter), monitoring German analyses, anticipated the impact on nautical tourism, which remained without significant state assistance. Thanks to German predictive analyses and their own assessment of the nautical tourism situation, the marina's management, together with external analysts monitoring the marina's operations, analysed the marina's condition. The fundamental starting point of the analysis was as follows:

- a) The marina holds a large portion of vessels on contract-based berths (stable revenues in advance).
- b) A significant portion of operations involves charter companies with whom annual contractual relationships also exist. A significant decline in charter business is anticipated (which materialised with a drop of approximately 40–50% in Central Dalmatia).
- c) To secure marina operations in 2020, a model for safe arrival and health-secure stays at the marina, as well as in Rogoznica, must be developed.
- d) For realisation of point (c), cooperation and assistance from local health services from the airport/arrival to the marina must be activated.
- e) The local health service must be linked with the marina to ensure health-secure daily movement within the marina.
- f) A system of departure with daily communication in terms of health monitoring must be agreed upon with nautical tourists.
- g) Clear guidelines for navigation outside the marina and stays at sea must be provided to nautical tourists.

Analysing all operational options, from taking no action and incurring no costs in 2020 whilst waiting for the crisis to pass, to acting and operating step by step with the goal of satisfying nautical tourists' needs under COVID-19 pandemic conditions and operating profitably, the analysis yielded the following result (Table 5).

Thanks to the conducted analysis, the marina's management decided to intensify operations in accordance with all the challenges posed by the COVID-19 pandemic. In line with this decision, management set operational goals for 2020, and operational procedures were carried out in accordance with the WEG model.

Table 5. Example of monthly profit calculation per Berth, based on 2020 price lists

Scenario	Revenue/month (€)	Costs/month (€)	Profit/month (€)	Note
Nautical tourist arrives	2,500 (contract + services)	2,100 (regular 2,000 + safety 100)	400	Full operation
Nautical tourist does not arrive	2,083 (contract only)	1,700 (lower operational)	383	Lower costs
KRA Target	-	-	>250	ROI >10%

Source: Calculations from Marina Frapa Rogoznica

**Aim:** Health-secure arrival/stay of nautical tourists with monitoring of movement within the marina; maintain high guest occupancy at the marina (comparable to 2019) and support charter.

**Specific WEG task:** “Ensure safe arrival of a significant number of nautical tourists by 15 June 2020, with full marina service operation”.

According to the WEG model (Deyhle, 2003), the entire system developed by the marina’s management with collaborators operationalised work at the marina through five “management by...” steps with detailed explanations. Each step ensures the transition from plan to results, protecting profitability (balance sheet: 94.7% of revenues/98.5% of profit in 2020 vs. 2019). The operational WEG model of Marina Frapa Rogoznica under COVID-19 pandemic conditions operated through the following management by... steps (Table 6):

- **Management by Objectives (Wege – Path to Goal):** The marina’s management sets SMART Key Result Areas (KRA) as the foundation: 95% online check-in (digital verification of tests/distancing reduces risk/contact in 95% of cases), downtime below 2% (max. 4.8h/month service downtime), ROI above 10% (€250/berth/month net). Aligned with operations managers (logistics) and health managers (protocols); 120 days of preparation for testing (simulations of arrival of over 100 nautical tourists). This strategically allocates resources, anticipating safety costs (~€100/berth/month).
- **Management by Participation (Detail Planning):** The operations manager involves teams/health services in iterative elaboration, where as the initial level (Q1), Frapa develops 3 rules (testing at the airport before arrival at the marina, vessel disinfection per protocol, 2m distancing at the marina), accelerating check-in procedures to 20% (QR app) of the time. Participation generates innovations (daily status messages) and ensures plan ownership; final verification on 14 June 2020.
- **Management by Delegation (Execution):** Autonomy for teams: the berth team optimises scheduling (contract priority, depth above 3m against storms), the health prevention team organises logistics (tests/hour ready at 14:40, capacity for hundreds). Task delegation enables rapid adaptation (e.g. redirection during delays), minimising hierarchical bottlenecks.
- **Management by Exception (Monitoring & Alignment):** The controller establishes monitoring only for critical deviations: occupancy above 70% and at peak season 95% (activation of reserve berths), positive test above 1% (isolation/Protocol B), delays beyond 15 June 2020. The controller establishes principles delegated to

operational teams; “do not touch routine” saves 80% of time; focus on risks; direct towards the goal; contributing to alignment of all actions.

- **Management by Results (Ergebnisse):** On 15 June 2020, successful arrival of nautical tourists was secured; one week later, 78% occupancy was achieved, NPS 74, profit €240/berth. Results confirm the model, leading to corrections and scaling.

Table 6. KPI Results Table of the WEG Model at Marina Frapa, Rogoznica

KPI	Plan	Actual	Deviation
Berth occupancy	80%	78%	-2%
Net Promoter Score (NPS) for safety	>77 points	74 points	-3 points
Profit/berth/month	€260	€240	-€20 (-7.7%)

Source: Authors’ calculations

Based on the results presented in Table 6, corrections represent concrete operational measures for eliminating deviations: development of a monitoring application increases profit by +€20 per berth (from €240 to the targeted €260) and improves the safety NPS from 74 to above 77 points. Gestaltung closes the WEG cycle through strategic planning for future crises: risk analytics anticipates threats, investment in safety equipment strengthens capacities, and bonuses motivate teams for zero incidents, ensuring iterative refinement of the model. In conclusion, the WEG model applied to the case of Marina Frapa Rogoznica ensured resilience (98.5% of profit in 2020), protecting the value chain.

## Discussion

Deyhle’s WEG model demonstrates superiority over Drucker’s classical MBO under dynamic conditions, as evidenced by the COVID-19 crisis at Marina Frapa, where 94.7% of revenues and 98.5% of profit were achieved despite a 40–50% decline in charter traffic in the region. Whilst MBO retrospectively reacts to deviations (e.g. quarterly reviews), WEG’s predictive controlling (Management by Exception) enabled real-time interventions, limiting deviations to less than 8% (occupancy – 2%, profit – 7.7%).

**Theoretical contribution.** The evolution from MBO to WEG (Drucker to Deyhle) through the introduction of the triple cycle (Wege-Ergebnisse-Gestaltung) resolves key MBO shortcomings: hierarchical cascading of KRA, predictive risk analytics, and iterative corrections. Application of the WEG model in the marina industry demonstrates scalability from Marina Frapa’s 462 berths to the national system (ACI), where stable contracts (~75% of revenues) combined with safety protocols create crisis resilience. The ACI’s strategy of transit berths in 2020 demonstrated high risk and a lack of resilience to strategic risks such as COVID-19.

**Practical implications.** Using the contract-based berth strategy, Marina Frapa achieves ROI above 10% (€250+/berth) through value-chain protection (arrival–stay–departure), whilst ACI Opatija loses 78.1% of revenue due to a higher share of transient, daily guests, and berths. The Gestaltung phase (analytics, equipment, bonuses) renders the model replicable for other sectors, such as healthcare, tourism, and logistics in VUCA

environments. Furthermore, the integration of health-safety protocols with berth management demonstrated that operational innovation under crisis conditions can become a source of competitive advantage rather than merely a cost burden, a finding with implications for marina management education and professional development programmes across the Mediterranean region.

**Limitations and further research.** The study is based on a single case study (Marina Frapa, 2020), limiting the generalisability of results. Longitudinal analyses (2021–2025) are needed to track the WEG model through multiple crises, as well as comparative studies of Dalmatian marinas (Frapa, ACI Split) versus Istrian marinas (ACI Rovinj, Marina Frapa Superyacht) to identify regional specificities.

With regard to directions for further research, the integration of the WEG model with artificial intelligence (AI) for predictive management should be investigated. AI would analyse historical booking data, weather forecasts, and regional trends to predict occupancy 30–90 days in advance, automatically adjusting KRA targets (e.g. dynamic pricing for 95% occupancy). Sentiment analysis of reviews and social media would optimise NPS to above 77 points by identifying pain points (long check-in, WiFi) before decline. Further research should also consider the post-pandemic context: after 2025, this includes climate risks (storms), war escalation, geopolitical tensions, and digital nomads. An empirical test of WEG + AI across 5–10 Croatian marinas during 2026–2027, measuring ROI, NPS stability, and deviations below 3%, will demonstrate scalability of the marina system to a national level.

## Conclusions

The WEG model operationalised MBO in the case of Marina Frapa, Rogoznica during the COVID-19 crisis, achieving 94.7% of revenues and 98.5% of profit despite a 40–50% regional decline in charter. The Croatian marina industry, utilising the WEG model, gains a practical tool for ensuring crisis resilience through German controlling.

The key conclusions of this research can be summarised as follows:

- Predictive controlling: WEG's Management by Exception limited deviations to less than 8% (occupancy –2%, profit –7.7%) vs. MBO's retrospective approach.
- Structural resilience: 75% annual contracts + safety protocols resulted in superiority over transit-oriented marinas (ACI Opatija: 78.1% of revenues lost).
- Value-chain protection: Safe arrival–stay–departure was achieved, securing ROI above 10% (€250+/berth) during the pandemic.
- Model scalability: Applicable from Marina Frapa's 462 contract berths to the national ACI system's berth management strategy.
- Cascading KRA setting: Hierarchical alignment from AIM to operational teams eliminates MBO's coordination shortcomings.
- Iterative refinement: Corrections (app +€20 profit) + Gestaltung (analytics/bonuses) render the model self-improving.
- Multi-sectoral application: The WEG model is replicable in healthcare (patient value-chain), logistics (ERP integrations), and tourism (seasonal peaks).

- Future direction: WEG+AI targets deviations below 3% (maximum permissible), NPS above 77 points (minimum target), and predictive management in post-pandemic tourism from 2026 onwards.

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## **Declaration of Competing Interests**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## **Data Availability**

Data supporting this study’s findings are available within the article. Additional data relating to Marina Frapa Rogoznica’s financial performance during 2019–2020 were obtained from the marina’s internal records and are subject to confidentiality agreements. The data may be available from the corresponding author upon reasonable request and with the marina’s consent.

## **Use of Generative AI and AI-Assisted Technologies**

The author used Grammarly for Microsoft Word (Grammarly, Inc., AI-assisted language editing add-in, accessed March 2026) solely for grammatical and stylistic improvement of the manuscript. All suggested changes were reviewed and approved by the author, who takes full responsibility for the final content.

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