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Investigating the Behavioral Patterns of Empowering and Self-Disabling Managers in Government Organizations in Creating and Developing Organizational Knowledge

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ABSTRACT

To lag behind other competitors in a competitive environment, organizations are forced to use and implement the empowerment of their employees. Accordingly, the present study was conducted with the aim of identifying the themes of self-disabling and empowerment of managers at the University of Medical Sciences with a qualitative strategy. The research method was content analysis based on the Clarck and Braun (2006) model. The data collection tool was a semi-structured and in-depth interview that was analyzed using open and axial coding. The research population was 15 experts (managers, employees, elites and qualified specialists of Iranian government organizations) who reached saturation level. The research findings show that the two models of self-disabling and empowerment of managers clearly explain their behavioral, emotional and mental structures and have different individual, organizational and social consequences. Also, the use of metaheuristic algorithms provides the possibility of optimizing decision-making, scheduling activities, and resource allocation. Therefore, it can be concluded that explaining and comparing the role of empowering and self-disabling managers in government organizations is not only important from a theoretical and psychological point of view, but can also lead to the design of practical models to improve the efficiency, motivation, and mental health of employees in the country's administrative system. **©authors**.

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1. Introduction

The organizational environment of the 21st century is rapidly changing, and these changes have confronted organizations and governments with complex challenges. In such circumstances, continuous empowerment of managers and employees is considered vital not only for increasing productivity, but also for the survival of organizations and government institutions (Rhodewalt & Vohs, 2005). Currently, Iranian government organizations are facing the problem of lack of integration in the management system and the development of self-disabling and empowering managers. For this reason, designing an efficient and effective model for the adaptation and development of managers in these organizations is an inevitable necessity. In most government organizations, the development of managers is usually carried out through training courses that are mainly limited to technical and skill training and neglect the psychological and behavioral dimensions. Such an approach fails to address real management challenges such as poor communication skills, time management, decision-making, and motivation (Schwinger, 2016). As a result, the need for a comprehensive model that can simultaneously cover the technical, managerial, and psychological dimensions of managers is increasingly felt. In the meantime, the concept of self-handicapping is one of the fundamental challenges in the field of organizational behavior and management psychology. Berglas & Jones (1978) used this term to describe a strategy that individuals use to create excuses to protect their self-esteem when faced with the possibility of failure. Self-handicapping includes any behavior or choice that allows the attribution of failure to external factors and success to internal factors (Ommundsen, 2004). For example, an individual may unconsciously avoid being fully prepared before undertaking an important task or may invoke external reasons such as fatigue or illness to protect their self-esteem in the event of failure. Such behaviors may help to psychologically protect the individual in the short term, but in the long term, they can lead to impaired performance, reduced motivation, and decreased professional growth (Strunk & Steele, 2011). As a general perspective, self-defeating is a voluntary effort to create a planned excuse in advance of potential failure to protect self-esteem (Kearns et al., 2007). This strategy allows for internalization of success and externalization of failure (Abacı et al., 2011). Since the idea of failing at a task can be highly stressful, individuals sometimes believe that they can maintain their sense of self-efficacy by creating obstacles or excuses that reduce their likelihood of success. In other words, the goal of self-defeatism is not failure; rather, it is an attempt to externalize potential failure and protect one's self-image. However, self-defeatism in practice reduces performance and makes it difficult to achieve actual success (Chen et al., 2018). According to Kammock (2022), externalizing failure is important for individuals because it allows them to accept failure without damaging their self-esteem. In addition to its internal aspect, self-defeatism may also be used to manipulate the perceptions of others; that is, the individual tries to present a self-image that their failure was caused by external circumstances (Urdan et al., 2004). Several studies have shown that low self-esteem, extreme perfectionism, unbalanced achievement goals, poor metacognitive strategies, and negative attributional styles are the most important factors affecting the occurrence of self-handicapping (Jiang & Kleitman, 2015; Stewart & George-Walker, 2014). In other words, people with lower self-esteem are more likely to use self-handicapping strategies to maintain a positive self-image (Török et al., 2022). These behaviors not only reduce the effectiveness of managers but also hinder organizational learning and growth (Eryuel, 2020). Since self-handicapping is a strategy to protect self-esteem in threatening situations, people with lower self-esteem are more prone to this behavior (Ferradas et al., 2018). In contrast, people with high self-esteem are less likely to resort to these behaviors (Üzbe et al., 2015). Furthermore, research shows that people who feel that their performance is being evaluated

by others, or who are anxious about failing at their tasks, are more likely to be self-disabled. Studies conducted from 1978 to 2007 show that self-disabled is associated with a set of psychological constructs, including social self-consciousness, social anxiety, self-esteem, fear of failure, status threat, fear of being seen as ignorant, socioeconomic status, gender, depression, shyness, conscientiousness, perfectionism, excuse-making, and parenting styles (Gupta, 2020).

In contrast to this approach, the concept of empowerment is proposed, which emphasizes increasing individuals' capacity for independent decision-making, personal growth, and control over their work environment. Empowerment in an organizational environment means providing employees with the necessary resources, information, authority, and support to perform their duties effectively and participate in organizational decision-making. This concept is based on the theories of positive psychology and participatory management, and its goal is to increase motivation, job satisfaction, and organizational performance.

In contrast, self-disabling managers create a context for psychological and functional disability in employees by adopting control-oriented approaches, incomplete information transfer, distrust in employees, and lack of feedback (Jia et al., 2021). By limiting decision-making authority and ignoring the developmental needs of team members, such managers reduce motivation, increase anxiety, and weaken organizational performance. In contrast, empowerment includes components such as delegation, building trust, providing constructive feedback, and developing skills. By creating an open and participatory environment, empowering managers allow employees to use their knowledge and abilities to solve problems and make decisions. By trusting employees, encouraging participation, and providing learning opportunities, these managers make people feel more valued, self-efficacy, and organizational belonging (Raziq et al., 2025). Therefore, a simultaneous examination of the behavioral patterns of self-disabling and empowering managers in Iranian government organizations can provide a comprehensive picture of the strengths and weaknesses of the country's management system. This understanding provides the necessary basis for designing a model for developing managers in Iranian government organizations to pave the way for improving organizational performance and effectiveness by focusing on psychological, managerial, and skill components.

2. Literature Review

In recent years, the concept of empowerment, as one of the new approaches in human resource management and organizational development, has attracted the attention of many researchers and managers. Empowerment refers to the process of increasing the capacity of individuals to make independent decisions, grow personally, and control over the workplace. In an organizational setting, it means providing employees with the necessary resources, information, authority, and support to perform their duties effectively and actively participate in organizational decision-making. This concept is based on the theories of positive psychology and participatory management, and its goal is to improve motivation, job satisfaction, and organizational performance (Raziq et al., 2025). Employee empowerment includes a set of components, including delegation of authority, building trust, providing constructive feedback, developing skills, and creating opportunities for professional growth. Accordingly, empowering managers allow employees to use their knowledge and abilities to make decisions and solve problems by creating an open, supportive, and collaborative environment. By trusting subordinates, encouraging participation in decision-making, and providing a platform for continuous learning, these managers create a sense of value, self-efficacy, and organizational belonging in employees. Research shows that such managers increase innovation, creativity, and organizational commitment by strengthening a sense of responsibility and mutual trust (Raziq et al., 2025). On the other hand, there is the concept of self-disabling managers who, through

control-oriented approaches, incomplete information transfer, distrust of employees, and avoidance of feedback, provide the basis for reduced motivation and psychological disability of employees. These managers usually tend to make all decisions centrally and avoid delegating authority to subordinates. Such behaviors lead to reduced engagement, decreased efficiency, increased job anxiety, and ultimately weakened organizational performance (Jia et al., 2021). In contrast, empowering managers operate on the principles of transformational leadership and servant leadership. By fostering effective communication, providing positive feedback, delegating authority, and building trust, they create an environment in which employees can demonstrate their abilities and participate in the decision-making process. Empowering behaviors of managers (including delegating authority, involving employees in decision-making, and enhancing self-efficacy) increase employees' job performance, and these effects are mediated through goal clarity and self-efficacy (Ye et al., 2022). Research results indicate that organizations with empowering managers have higher levels of creativity, innovation, job satisfaction, and organizational commitment (Raziq et al., 2025). Recent studies have shown that empowering managers, by using delegation, encouraging participation, supporting skill development, and providing effective feedback, increase self-efficacy, enthusiasm for innovation, job satisfaction, and high performance of employees (Kim & Yoon, 2025). Conversely, controlling and centralized styles that incompletely communicate information and exclude subordinates from decision-making increase job anxiety levels and reduce motivation and performance (Jing Jing et al., 2022). In recent years, numerous studies have examined the relationship between empowerment and psychological, behavioral, and performance variables in organizational environments. The results of these studies generally show that employee empowerment has a positive and significant effect on job motivation, job satisfaction, creativity, organizational commitment, and individual and group performance. In contrast, self-defeating behaviors among employees and managers are associated with consequences such as job anxiety, reduced self-efficacy, decreased performance, and increased willingness to quit. In a foreign study, Chen et al. (2018) showed that self-defeating behaviors in the workplace are directly related to reduced productivity and organizational commitment of employees. They stated that self-defeating individuals usually avoid accepting responsibility or making decisions due to fear of failure and judgment from others, which hinders their professional growth. In another study, Abaki et al. (2011) found that people with low self-esteem are more likely to use self-defeating strategies when faced with difficult tasks in order to attribute possible failure to external factors. On the other hand, several studies have emphasized the role of empowering managers in improving organizational performance. Raziq et al. (2025) showed in their research on service organizations that empowering managers increase the sense of self-efficacy and motivation in employees by delegating authority, building trust, and strengthening collaborative relationships. Their results indicated that organizations that benefit from empowering managers have higher levels of creativity, innovation, and organizational commitment. Jia et al. (2021) also reported that controlling management styles and incomplete transfer of information by managers are one of the main factors in the emergence of self-disabling behaviors among employees.

In an internal study, Yousefi et al. (2021) showed that there is a positive and significant relationship between employees' psychological empowerment and their job satisfaction. It was also found that empowerment components such as job self-confidence, sense of meaningful work, and autonomy are effective predictors of organizational commitment. Hosseini and Rahimi (2020) also found in their study that empowering behaviors of managers reduce job conflicts and psychological burnout in employees by increasing the sense of organizational belonging. From the perspective of self-empowerment, Ghanbari et al. (2019) reported in their study on

employees of government organizations that people with low self-esteem and high anxiety are more prone to self-empowerment behaviors. Also, their findings showed that control-oriented work environments and managers with an authoritarian style increase the likelihood of these behaviors in employees. Ahmadi & Sadeghi (2022) also concluded in a similar study that a sense of distrust in the organization is a direct predictor of job self-handicapping. In general, a review of the empirical literature indicates that empowering behaviors of managers can play a preventive role in the formation of self-handicapping among employees.

Empowering managers, with a supportive approach, building trust, delegating authority, and providing learning opportunities, reduce job anxiety and increase the feeling of self-efficacy in employees. Conversely, self-handicapping managers, by creating restrictions on decision-making and strict control of the work environment, reinforce the feeling of powerlessness and psychological disability among employees.

3. Methodology

The present research method is a combination (qualitative-quantitative and computational) that was carried out in several consecutive stages. In the first step, in order to conceptualize self-disabling and empowering managers in government organizations, library studies and semi-structured interviews with 15 experts were used. Interview questions include:

1. *What approaches does your organization have to knowledge management and how are these approaches implemented in practice?*
2. *What characteristics and behaviors do you think an empowering manager has?*
3. *Under what circumstances does a manager in your organization try to encourage employees to create and develop organizational knowledge?*
4. *How can managers encourage people in the organization to share their knowledge and experiences?*
5. *Do you have examples of empowering behaviors of managers in your organization that have led to the development of organizational knowledge?*
6. *What behaviors by managers can cause employees to self-disable in the process of creating and developing organizational knowledge?*
7. *What signs do you see in the behavior of managers in cases where employees feel prevented from developing their knowledge and experiences?*
8. *Have there been cases where managers' behaviors have reduced employee motivation and participation in knowledge-based projects? Explain.*
9. *Based on your experience, how have managers' empowering behaviors affected the organization's performance and growth in the long term?*
10. *How do self-disabling behaviors of managers affect knowledge and innovation in the organization?*
11. *What behavioral changes in managers do you think can lead to improvements in organizational knowledge creation and development processes?*
12. *What are the biggest challenges for managers in empowering employees in the knowledge creation process?*
13. *What solutions do you suggest to deal with self-disabling behaviors?*
14. *Do you think that training and developing management skills can help improve managers' behaviors in the field of empowerment and prevent self-disabling?*
15. *What characteristics do you think a government manager should have in order to be effective in creating and developing organizational knowledge?*
16. *From your perspective, how can organizational culture be changed to empower employees and facilitate knowledge development in the organization?*

To solve this model, genetic metaheuristic algorithms (GA), biogeographic-based optimization (BBO), and hybrid algorithms were used in the MATLAB environment. The performance of each algorithm was compared in terms of effectiveness (best value of the objective function) and efficiency (algorithm execution time) using the RDI index and Tukey's statistical test (ANOVA). This combination of qualitative, quantitative, and computational approaches has provided a comprehensive method for explaining, validating, and optimizing the research management model.

In this study, considering the complex, contextual, and human nature of managers' behavior in government organizations, a

qualitative approach to indicator science has been used in the first step. Empowering and self-disabling behaviors of managers, especially in the process of creating and developing organizational knowledge, are multidimensional phenomena, dependent on the organizational context, and influenced by social interactions that can hardly be identified solely with predefined quantitative variables. Therefore, the use of in-depth interviews and qualitative analysis has made it possible for indicators to be extracted from the lived experience of managers and employees and to have higher content validity and locality.

In the second step, after identifying and refining behavioral indicators, the research has used mathematical modeling based on meta-heuristic methods to systematically analyze the complex, nonlinear, and sometimes conflicting relationships between these indicators. In government organizations, managerial behaviors do not necessarily have linear and simple effects on knowledge creation and operate under the influence of structural constraints, resources, and conflicts of interest. Metaheuristic methods with the ability to search for optimality in large, multi-objective problem spaces allow for a more realistic simulation of the interaction between empowering and self-disabling behaviors and their consequences on organizational knowledge.

Finally, the combination of a qualitative approach and metaheuristic modeling gives the research a integrated and coherent methodological logic that has both explanatory depth and analytical and predictive power. Qualitative indexing ensures that the model is based on the behavioral realities of managers, and mathematical modeling allows for testing different scenarios, identifying optimal behavioral patterns, and providing implementation solutions for policymakers and decision-makers in government organizations. In this way, research goes beyond the level of describing behavior and becomes an analytical tool for improving knowledge management in the public sector.

4. Findings

The data extracted in the first phase were extracted from the separated text. A sample of the extracted code table is given in Table (1).

Table 1. *Sample summarized and separated text*

Overarching Theme	Basic Core Themes	Summary and segmented text
Drivers of Empowerment	Real Performance Improvement	Focus on continuous improvement of individual and organizational competencies to achieve goals Overall, "real performance improvement" in the field of medical universities means that in addition to improving skills and specialized knowledge, the organizational capacity to respond quickly, accurately, and innovatively to the health needs of the community is also increased. This process is one of the main pillars of empowerment that leads to the realization of the organization's strategic goals, improving the quality of services to patients, and enhancing the university's scientific standing.
Drivers of Self-Disempowerment	Systemic Inequalities	Lack of equality can lead to dissatisfaction and a sense of injustice among employees. When people feel that they are not being considered unfairly, this can lead to a decrease in their motivation and efficiency.

The extracted basic concepts were categorized into three levels of overarching, organizing, and basic themes based on the analysis model. Table 2 shows the extracted components of self-handicapping themes in this category.

Table 2. *Overarching, Organizing, and Basic Themes of Self-Handicapping*

Comprehensive Code	**Organizer Code**	**Basic Code**
Drivers of Self-Disability	Potential Performance Weakness	Performance Barriers
		Reduction and Destruction of Actual Performance
		Anticipation of Decrease in Desired Performance
		Dealing with Personal Matters Instead of Work
		Rationalizing Performance
		Justifying Possible Poor Performance in the Future

	Low Self-Esteem	Protecting Low Self-Esteem
		Possibility of Disappointment
		Emotional Need for Coworker Approval
		Insecure Self-Esteem
	Emotional Weakness	Less Sense of Efficacy
		Lack of Competence
		Lower Mental Motivation
		Improvement in the Workplace
		Emotional Distress
		Worry of Not Being Liked
		Reduced Psychological Well-Being
	Persistent Fear	Avoiding Being Labeled as Incompetent
		Fear of Failure
		Fear of Backbiting
		Fear of Negative Evaluation
		Fear of Stigma
		Fear of Appearing Ignorant
		Fear of Being Disliked or Ignored by Others
	Instability	Behavioral Instability
		Continuous Changes in Needs and Expectations
		Employee Political Behavior
		Bipolarization
		Ambiguity in Managerial Behavior
	Organizational Damage	Systemic Inequalities
		Cultural Disturbances
		Employee Indifference
		Stress Work
		Work-family conflict
		Job role uncertainty
		Emotional discrimination
		Work pressure
		Managerial instability
		Managerial work politics
Individual Self-Disability	Behavioral	Pretending to be indifferent and disjointed behavior
		Avoidance
		Internet trolling
		Avoidance of group work
		Neglect
		Need for privacy
	Emotional	Exaggeration of pain
		Lack of attachment
		Self-pity
		Negative mood
		Excuse-making
		Excuse-making
		Internalized shame
	Mental	Poor attitude towards oneself
		Lack of attention and distraction
		Mental minimization
		Negativity
		Negativity
		Negative rumination
Preparators of Self-Disability	Self-Deprecation	Lack of support for ideas and innovations
		Feeling of inadequacy
		Self-deprecation
		Experience of feelings of shame
		Stress due to failure
	Negative Experience	Attributional styles
		Lack of maternal care
		Lack of delegation
		Ambiguity in goals and expectations
	Social Deficiency	Parental educational role
		Social and personality growth
		Need for social approval
		Lack of confidence in social abilities
	Personality Traits	Psychopathism
		Perfectionism
		Duty orientation
	Emotional Action	Increase Negative mood syndrome
		Outward failure documents
		Inward success documents
		Emotional deadlock
		Effective adaptation motivation
	Cultural Literacy	Cultural gaps
		Cultural conflict

		Cultural prejudices
	Organizational Gap	Ineffective management system
		Lack of general knowledge and experience
		Negative superior behaviors
		Imbalance in the organization's reward and punishment system
		Predominance of cronyism towards work
		Suppression of organizational voice
		Gap between the status quo and the desired situation
		Limited communication expansion
Barriers to Self-Disability	Interpersonal Interactions	Increase in positive interactions within the organization
		Employee self-management
		Employee self-efficacy
		Sharing decision-making power
		Sharing authority
		Level of cultural intelligence
		Positive self-image towards others
		Team members' abilities
		Positive relationships and cooperation in the team
	Social Skills	Sense of safety
		Psychological security
		Emotional and emotional balance
		General self-efficacy
		Self-improvement motivation
		Positive assessment of one's competence
		Encouragement to develop skills
		Growth of competence
		Language skills
		Feedback-receiving skills
		Development of professional competencies
		Receiving social reinforcements
	Individual Capabilities	Tolerance Ambiguity
		Cognitive flexibility
		Strengthening creative thinking
		Self-assessment capacity
		Openness to change
		Cultural and communication literacy
		Self-awareness
		Professional mastery
		Controlling unconscious negative perceptions
		Self-regulation
		Improving ability through learning
		Behavioral flexibility
		Self-monitoring learning
		Positive resilience
		Normal perfectionism
	Organizational Capabilities	Cultural norms
		Creating learning opportunities
		Decentralization
		Developing communication capacities
		Supportive behaviors
		Understanding the cultural context
		Supporting self-actualizing behavior
		Managing emotional resources
		Facilitating supportive processes
		Technical and skill training
		Educational and professional development opportunities
		Acceptance
		Growth opportunities
Consequences of Self-Disability	Care Consequences	Protecting oneself from failure
		Potential failure
		Protecting self-concept
		Emotion-oriented coping
		Reducing negative feedback to the individual
		Protecting self-efficacy
	Insurance Consequences	Maintaining dignity
		Job satisfaction
		Reducing stress Work
		Reducing workload
		Job enjoyment
		Future success
		Avoiding failure
		Increased expectation of facing failure

		Considering failure as uncontrollable
		Defensive pessimism
	Individual-Organizational Damage	Modeling others
		Managers' lack of attention
		Labels
		Behavioral stereotyping
		Generalization of performance
		Irresponsibility
		Behavioral disintegration
		Behavioral paradox
		Decreasing trust within the organization
		Decreasing mental health
		Workaholism
		Reliability
		Depression
		Decreasing service quality
		Economic instability
		Decreasing organizational human resource productivity
		Development of hypocrisy
		Injustice
		Hypocrisy

The self-handicapping model shows that the behavioral, emotional, and mental processes of managers are influenced by numerous factors that can be categorized into four levels: drivers, facilitators, barriers, and consequences. At the driver level, factors such as potential performance weakness, low self-esteem, emotional weakness, persistent fear, instability, and organizational disasters motivate self-handicapping and lead managers to behaviors such as evasion, procrastination, feigning lack of effort, and negative mood. Facilitators of self-handicapping include self-deprecation, negative experience, social shortcomings, personality traits, emotional actions, cultural gaps, and organizational gaps that provide the basis for the formation and consolidation of these behaviors. In contrast, barriers to self-disempowerment such as positive interpersonal interactions, social skills, individual capabilities, and organizational capacities can reduce this trend and help strengthen self-efficacy, flexibility, self-monitoring learning, and resilience of managers. The consequences of self-disempowerment can also be observed in three areas: care consequences that include protecting oneself from failure and reducing negative feedback; security consequences that are related to maintaining dignity, job satisfaction, and future success; and individual-organizational harms that include reduced intra-organizational trust, decreased mental health, decreased human resource productivity, and increased self-defeating and unfair behaviors. This structure shows that managerial self-disempowerment not only has individual effects, but can also have broad and long-term organizational consequences, highlighting the need to pay attention to the contexts and barriers associated with it to improve organizational performance and health. Also, the extracted concepts of empowerment themes were categorized into three levels of overarching, organizing, and basic themes in Table (3) based on the analysis model.

Table 3. *Overarching, organizing, and empowering themes*

Overarching Theme	Organizing Theme	Basic Theme
Drivers of Empowerment	Performance Enhancement	Improving Actual Performance
		Predicting Performance Success
		Focusing on Organizational Goals
		Commitment to Professional Development
	High Self-Esteem	Sustained Self-Confidence
		Self-Belief in Decision Making
	Positive Motivation	Eagerness to Learn
		Motivation for Progress
		Intrinsic Job Satisfaction
	Psychological Courage	Accepting Challenges
		Resistance to Fear of Failure
		Desire for Constructive Feedback

	Behavioral Stability	Consistency in Decision Making
		Commitment to Organizational Values
		Transparency in Manager Behavior
		Systemic Justice
	Dynamic Organization	Participatory Culture
		Work-Life Balance
	Cognitive Empowerment	Self-Efficacy
		Analytical Thinking
	Emotional Empowerment	Emotional Intelligence
		Resilience
	Behavioral Empowerment	Communication Skills
		Participatory Leadership
Individual Empowerment	Behavioral	Purposeful Effort
		Active Participation in Teamwork
		Effective Time Management
	Emotional	Work Engagement
		Optimism
		Optimal Self-Compassion
	Mental	Critical Thinking
		High Focus and Attention
		Growth Attitude
Resources for Empowerment	Self-Worth	Support for New Ideas
		Experience of Past Successes
	Positive Experience	Positive Attribution Style
		Effective Delegation
	Social Growth	Reliance on Social Skills
		Supportive Network Strong
	Personality Traits	Extroversion
		Adaptive task orientation
	Cultural Literacy	Cultural flexibility
		Intercultural dialogue
Barriers to Empowerment	Systems Weakness	Inefficient management processes
		Unfair reward system
	Individual	Fear of change
	Organizational	Hierarchical structure
	Environmental	Job insecurity
Consequences of Empowerment	Individual	Increased self-efficacy
		Higher mental health
		Professional growth
		Job satisfaction
	Organizational	Human resource productivity
		Organizational innovation
		Organizational agility
	Social	Social responsibility

The empowerment model suggests that successful management processes are shaped by drivers such as performance enhancement, high self-esteem, positive motivation, psychological courage, and behavioral stability that guide managers to focus on organizational goals, purposeful effort, active participation, and clear and sustainable decision-making.

At the individual empowerment level, these factors can be observed in three behavioral, emotional, and mental dimensions and include purposeful effort, participation in teamwork, commitment to work, optimism, critical thinking, and a growth mindset. Empowerment contexts such as self-worth, positive experience, social growth, personality traits, and cultural literacy provide supportive contexts for the realization of these behaviors. In contrast, barriers such as weak systems, ineffective management processes, fear of change, and job insecurity can limit the empowerment process. The consequences of empowerment include increased self-efficacy, mental health, professional growth and job satisfaction at the individual level, human resource productivity, organizational innovation and agility at the organizational level, and social responsibility at the community level.

Mathematical modeling

It is assumed that self-empowering and self-empowering managers affect the performance of the University of Medical Sciences, and in the present study, their importance was determined based on the weighting of these components according to the productivity of self-empowering and self-empowering managers. The weighting of the components

of self-empowering and self-empowering managers and performance productivity indicators was carried out using the gray relation analysis method with interval fuzzy numbers.

In the next step of the research, a multi-level mathematical model including the components of managers' self-empowerment processes was designed as a multi-objective model based on the weights determined in the previous step, and to solve it, a multi-objective meta-heuristic algorithm based on the Pareto archive was implemented. After determining the set of optimal solutions, the resulting solutions were examined and the final solution was selected for optimizing the model for optimizing self-disabling and enabling managers. In order to examine the performance of meta-heuristic methods, it is necessary to conduct experiments. To answer this question, it is necessary to use several appropriate evaluation methods to obtain a general conclusion from their results. In this section, it is necessary to first create standard problems and have all these algorithms start solving these problems. The conditions and parameters that are set for the execution of these algorithms should be considered the same for all of them so that fair conditions are observed for them and they compete under the same conditions.

Genetic algorithm (GA) or biogeographic optimization algorithm (BBO) or a hybrid algorithm of two genetic algorithms and biogeographic optimization algorithm (Hybrid), find a sequence of partial schedules, such that the maximum completion time in the flow problem of self-disabling and enabling managers is minimized. The final schedule of the problem consists of the schedule in the first stage, which is obtained by the genetic algorithm (GA) or the optimal algorithm (BBO) or the hybrid algorithm, in the MATLAB software, and the schedule in the second stage, which is obtained using the completion times of the tasks in the first stage and the processing times of the tasks in the second stage.

Research model

In the first stage, the problem model for solving the problem of self-impaired and self-empowering managers at the University of Medical Sciences is specified. The solution to this problem is given by a set $\boldsymbol{S}$ of partial schedules S_B, $\beta \in B$ such that $\boldsymbol{B}$ is a set of general indices of justified partial schedules. The partial schedule S_B is specified by the duration Δ_β and $V_{ij}^{B}\left(j=1,...,n.i=1,...m\right)$ shows the assignment of tasks to the process, such that if the j[th] task is processed on the i[th] process in the partial schedule S_B, then $V_{ij}^{B}=1$, otherwise it will be $V_{ij}^{B}=0$. The formulation of the problem in the first stage is as follows:

$$C_1^* = \min \sum_{BEB} \Delta\beta \qquad (1)$$

Subject to

$$\sum_{BEB} \Delta_\beta \sum_{isi}^{m} \frac{xij^{\beta}}{Pij} = 1 \quad , \quad j=1,...,n \qquad (2)$$

$$\sum_{j=1}^{n} v_{ij}^{\beta} \leq 1 \qquad ,i=1,...,m,\beta \in B \qquad (3)$$

$$\sum_{i=i}^{m} v_{ij}^{\beta} \leq 1 \qquad , j=1,...,n,\beta \in B \qquad (4)$$

$$\sum_{j=1}^{n} \sum_{i=1}^{m} \alpha ijr \quad Vij^{\beta} \quad \leq Wr \qquad ,r=1,...,e \quad ,\beta \in B \qquad (5)$$

$$\Delta_\beta \geq \circ \qquad \beta \in B \qquad (6)$$

$$V_{ij}^{\beta} \in \{0,1\} \qquad , j=1,...,n \qquad ,i=1,...,m, \qquad ,\beta \in B \qquad (7)$$

where

$$\left(j=1,...,n,i=1,...,m,\beta \in B\right)X_{ij}^{\beta} \qquad ,\left(\beta \in B\right)\Delta_\beta$$

are decision variables. Constraint (2) shows that each task in the process completes its processing in the first stage of the self-disabling and enabling managers flow problem. Constraints (3) and (4) show that in each of the partial schedules, each business process performs at most one task at any time and each task is not processed on more than one process at any time. Constraint (5) also shows that in each partial schedule, the usage of each resource at any time cannot exceed the available amount of the resource. This problem is solved optimally by the column generation algorithm. The maximum optimal completion time will be C_1^*. The column generation algorithm is an iterative program that starts from the initial set of columns and in subsequent iterations, the linear programming (LP) problem is solved with all the columns generated so far and then a new

column is created. In each iteration of the column-column (CG) algorithm, the parent problem, which is in the form of a linear programming (LP) problem, is solved:

$$\underline{Master-\text{Pr}oblem}$$

$$\min \sum_{\beta EB} \Delta\beta \qquad (8)$$

Subject to

$$\sum_{\beta \in B} \Delta_\beta \sum_{i=1}^{m} \frac{vij^{\beta}}{\alpha ij} = 1 \qquad j = 1,...,n \qquad (9)$$

$$\Delta_\beta \geq \circ \qquad \beta \in \widetilde{\text{B}} \qquad (10)$$

Where $\Delta_\beta\left(\beta \in \widetilde{B}\right)$ is the decision variable. The values of $v_{ij}^{\beta}\left(\beta \in \widetilde{B}, j = 1,...,n, i = 1,...m\right)$ are fixed. Their initial values are determined in the parent subproblem before the first iteration, based on the problem data and the calculation method stated in the problem, and then in subsequent iterations their values are calculated in the subproblem. $\widetilde{B}$ represents a subset of the set B that includes the indices (columns) that have been generated so far. In the next iteration, the set $\widetilde{B}$ is enlarged by the new index $\beta'\left(\beta' \in \text{B} \setminus \widetilde{\text{B}}\right)$. In order to find the assignment of tasks to processes in the new column with index β', the subproblem is solved:

$$\underline{Sub-\text{Pr}oblem}$$

$$man \qquad \sum_{i=1}^{m}\sum_{j=1}^{n} \pi_j^{x} v_{ij}^{\beta'}$$

subject to

$$\sum_{j=1}^{n^{st}} v_{ij}^{\beta'} \leq 1 \qquad , \quad i = 1,...,m$$

$$\sum_{i=1}^{m} v_{ij}^{\beta'} \leq 1 \qquad , j = 1,...,n$$

$$\sum_{j=1}^{n}\sum_{i=1}^{m} \alpha ijr \qquad v_{ij}^{\beta'} \leq wr \qquad r = 1,...,\ell$$

$$v_{ij}^{\beta'} \in \{0,1\} \qquad j = 1,...,n \qquad ,i = 1,...,m$$

While $(j = 1,...,n)\pi_j^*$ is the optimal solution of the dual problem (8-10). The πj dual variables are in accordance with the constraint (9).

The first step in the column generation algorithm is to solve the parent problem and obtain the optimal solutions Δ_β. The dual solutions of the parent problem are π_j^*.

The second step in the column generation algorithm is to solve the sub-problem and obtain the optimal solutions $v_{ij}^{\beta'}$, which indicate the assignment of tasks to processes in the new column with index β'.

A new iteration of the algorithm (CG) starts when the condition $(\sum_{i=1}^{m}\sum_{j=1}^{n} \pi_j^* v_{ij}^{\beta'} / p_{ij} - 1 \succ 0)$ is met, otherwise the optimal solution is obtained and the algorithm stops.

The initial solution to obtain the values of v_{ij}^{β} in the first step of the algorithm (CG), which is the solution of the sub-problem of the parent problem, is obtained in such a way that the assignment of tasks to processes is in the form of assigning the task to the process that requires the least time to complete and only one process works in each partial schedule.

After giving a numerical example and explaining the convergence graph and the results obtained from the execution of the algorithms, this section compares the three developed algorithms in terms of effectiveness and efficiency. Each of the algorithms was run on 15 problem samples, each with 10 iterations, and after each run, the results obtained related to the best value of the objective function (minimum task completion time) and the first time the algorithm reached the best value of the objective function were recorded. For this purpose, each of the algorithms was coded using MATLAB 7).

All problems were run on a computer with an Intel ® Core (TM) 2 Due, 2.80 GHz processor and 4.00 GB main memory and using the Windows 10 Ultimate operating system.

After running the meta-heuristic algorithms on the considered problems, one-way analysis of variance was performed using MATLAB software to perform detailed statistical analyses. In this section, the

performance of the three developed meta-heuristic algorithms was analyzed in terms of efficiency and effectiveness.

The results obtained from the implementation of the algorithms on the given problems are related to the best value of the objective function in the scheduling problem of two-stage self-enhancement processes, namely the maximum time to complete tasks and the time to reach the best value of the objective function, as an efficiency criterion.

The following is a reference to the method of generating problems in meta-heuristic algorithms. Then, in the form of a numerical example, the performance of the algorithms is examined in terms of efficiency and effectiveness, and finally, the performance of the algorithms for the given problems is compared and evaluated statistically. Among the effective parameters in meta-heuristic algorithms are the population size, maximum repetition and in each algorithm, which in the problems developed in this research are considered to be 40, 100, respectively.

Other effective parameters in the GA algorithm are the probability of intersection and the probability of mutation and the probability of elitism and the number of the best solution kept from the current population in the process of preventing rapid convergence and in the BBO algorithm, and the probability of migration and the probability of mutation and the number of the population kept from the best solutions, which are specified in Table 4.

Table 4. *Required parameters of genetic algorithms and biogeographic optimization*

Percentage of population maintained from best population	Algorithm	Population	Repetition	Crossover/Migration Probability	Mutation Probability
0.28	GA	40	100	0.8	0.05
0.2	BBO	40	100	0.8	0.04

The problem is implemented using three meta-heuristic algorithms, Genetic Algorithm (GA), Biogeographical Optimization (BBO), Hybrid Algorithm, and Biogeographical Optimization (Hybrid) based on the parameters determined in the previous section. After each run, the results obtained from each algorithm in terms of the best objective function value and the first time to reach the best objective function value (in seconds) are recorded and are presented in Table 5.

Best cost is related to the best value of the objective function, that is, the maximum time to complete tasks as a measure of the effectiveness of the algorithms, and CPU time is related to the first time the algorithm reaches the best value of the objective function based on seconds as a measure of the efficiency of the algorithms.

Table 5. *Results obtained from running the algorithms on the problem with 60 tasks and 2 processes (self-enhancing and self-disabling)*

Algorithm	Cmax	CPUtime
GA	*229.273*	*79.4455*
BBO	*227.8*	*141.83*
Hybrid	*227,5*	*110.82*

As a result, in this example, the performance of the three aforementioned algorithms can be compared in terms of effectiveness and efficiency. The convergence curves of each algorithm are shown together in Figure 1.

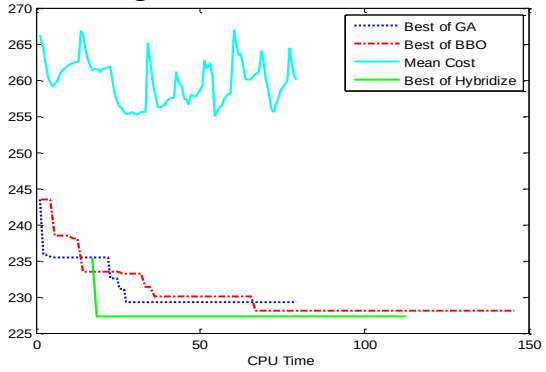

Figure 1. *Obtained from running the algorithms on a sample problem with 60 tasks and 2 processes (self-enablement and self-disablement)*

In this example, with the aim of minimizing the objective function in the shortest possible time, the performance of the algorithms from best to worst is primarily related to the hybrid algorithm of the two aforementioned algorithms (Hybrid), secondly to the biogeographic optimization algorithm (BBO), and finally to the genetic algorithm (GA).

In this research, the criterion (RDI) is used to evaluate meta-heuristic algorithms in various problems. The calculation method is given in equation (1), where Alg_{sol} represents the solution obtained by the developed algorithms, Min_{sol} is the smallest desired value, and Max_{sol} is the largest desired value from each algorithm execution in each of the 15 examples of different problems considered.

The RDI value shows how far the solutions in each algorithm are from the best solution obtained. The greater this distance means that the algorithms produce more outliers, and conversely, the smaller this distance indicates that the algorithms produce better solutions and are more suitable algorithms.

$$RDI = \frac{Alg_{sol} - Min_{sol}}{Max_{sol} - Min_{sol}} \quad (1)$$

Table 6. *Comparison of the results obtained from the implementation of the algorithms in terms of the best objective function value and arrival time on sample problems.*

n*m		**Cmax**			**CPUTime**	
	GA	BBO	Hybridize	GA	BBO	Hybridize
50*2	202,3	201,56	198,4	62,9	114,933	93,75
60*2	231,05	229,2	227,1	77,929	141,627	109,832
70*2	265,3	262,0735	261,3	90,716	181,918	140,355
80*2	314,25	310,5	308	131,76	221,65	187,58
90*2	349,4	347,9	346,9	143,7	241,3	189,112
100*2	394,21	392,7	391,2	182,89	303,452	256,32
110*2	446,2	445,085	442,2	196,241	391,626	293,916
120*2	483,277	478,6	475,5	240,419	473,262	375,093
130*2	517,424	511,123	509,4	279,124	471,7	367,231
140*2	553,803	549,027	544,6	324,11	550,12	358,101
150*2	588,65	586,1	577,4	405,904	685,43	681,88
160*2	632,729	626,25	616,05	423,662	716,91	528,7
170*2	663,224	658,4	652,4	481,22	799,95	633,68
180*2	702,3	697,158	692,4	601,143	1317,21	892,14
190*2	742,126	740,126	734,7	835,8	1489,11	1289,11

According to the equation in question, the results obtained from the best objective function value of the execution of different algorithms in each execution are converted by the RDI criterion into an equal scale for all 15 considered problem examples. The results obtained from the RDI of the execution of algorithms in terms of the best objective function value on the example problems are presented in Table 7.

Table 7. *Comparison of the results obtained from the RDI of the execution of algorithms in terms of the best objective function value on the example problems*

n*m		**RDI of Cmax**	
	GA	BBO	Hybridize
50*2	0,92975	0,71901	0
60*2	1	0,69624	0,218013
70*2	0,84457	0,5	0,071429
80*2	0,58865	0,37455	0,090618
90*2	0,54644	0,4406	0,153464
100*2	0,66445	0,53156	0
110*2	0,58503	0,42041	0,176871
120*2	1	0,67647	0,127451
130*2	0,76267	0,16377	0
140*2	0,27354	0,44109	0,157286
150*2	0,42254	0,43662	0,140845
160*2	0,87194	0,69585	0,231631
170*2	0,49342	0,74039	0,131579
180*2	0,82386	0,27727	0,181818
190*2	0,48216	0,30955	0,194476

In addition to the best objective function value, which is evaluated as a measure of the effectiveness of the algorithms, the algorithms are also evaluated and compared in terms of the time to reach the best objective function value as a measure of efficiency. As can be seen from the results obtained, the Tukey test compares the performance of the three developed algorithms in two stages. In

this way, first, it compares and evaluates GA with two meta-heuristic algorithms, BBO and Hybridize.

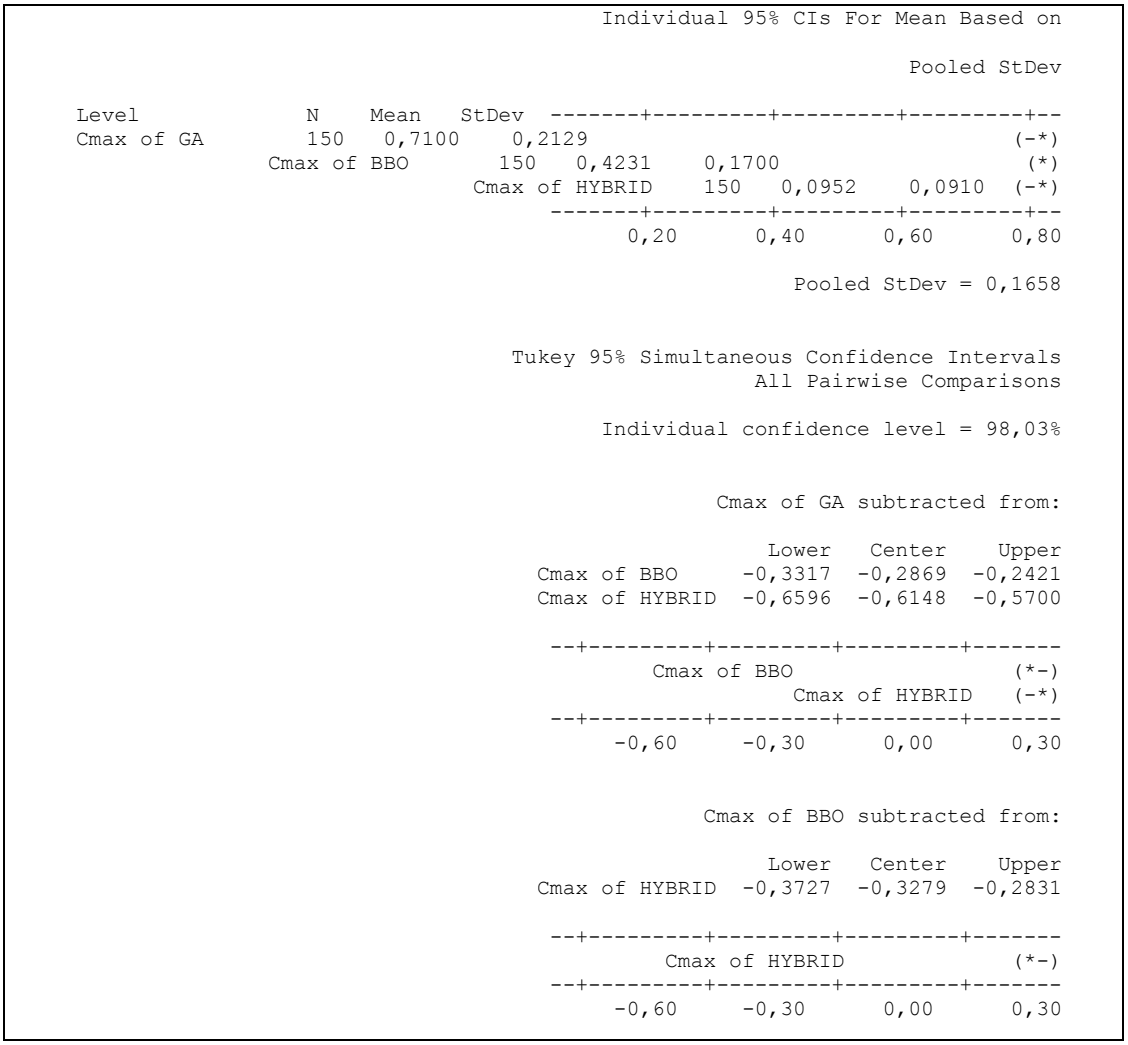

Figure 2. *Tukey test result for the best objective function value*

According to the results obtained, it can be said that all three meta-heuristic algorithms GA, BBO and Hybridize are significantly different from each other. As a result, it can be said that statistically and at a 95% confidence level, the performance of the algorithms in terms of effectiveness is in order from best to worst, with GA in first place, BBO in second place and Hybridize in third place, as shown in Figure 3.

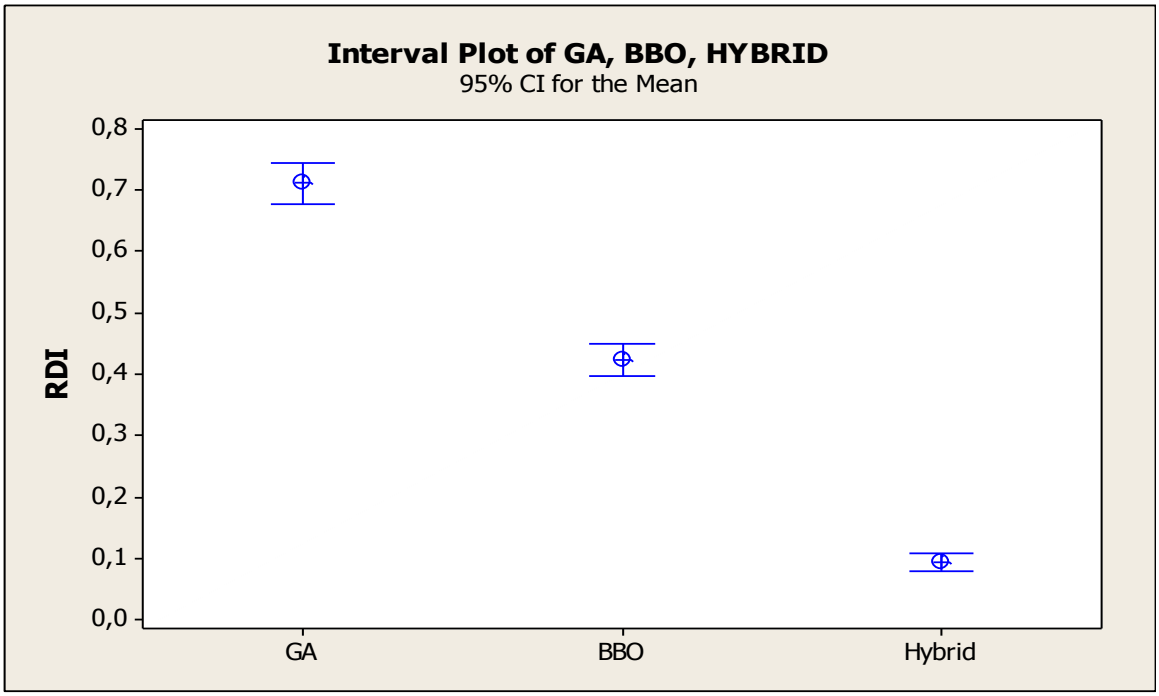

Figure 3. *Mean and 95% confidence interval diagram for the best value of the objective function*

The results indicate that in terms of effectiveness, the GA method ranks first. This result shows that among the evaluated methods, GA provides the highest performance in modeling the self-empowerment processes of managers in medical sciences.

5. Discussion

The self-empowerment model shows that managers' behaviors are influenced by several factors that can be categorized into four levels: drivers include potential performance weakness, low self-esteem, emotional weakness, persistent fear, instability, and organizational disasters that create the necessary motivation for self-empowerment and lead to behaviors such as evasion, procrastination, pretending to not try, and negative mood.

Conducive factors include self-deprecation, negative experience, social shortcomings, personality traits, emotional actions, cultural gaps, and organizational gaps that strengthen the context for the formation of these behaviors. Barriers to self-disabling, such as positive interpersonal interactions, social skills, individual capabilities, and organizational capacities, can reduce the process of self-disabling and enhance self-efficacy, flexibility, resilience, and self-monitoring learning. The consequences include three domains of care, provision, and individual-organizational harms, which range from personal protection against failure to reduced organizational trust, decreased mental health, and reduced human resource productivity.

In contrast, the empowerment model suggests that drivers such as performance enhancement, high self-esteem, positive motivation, psychological courage, and behavioral stability lead managers to focus on organizational goals, purposeful effort, active participation, transparent decision-making, and sustainable behavior. Individual empowerment can be observed in three dimensions: behavioral (purposeful effort, team participation), emotional (work engagement, optimism), and mental (critical thinking, growth mindset). Empowerment platforms, including self-esteem, positive experience, social growth, personality traits, and cultural literacy, provide the context for the realization of these behaviors, while barriers such as weak systems, managerial inefficiency, fear of change, and job insecurity can limit the empowerment process. The consequences of empowerment at the individual level include increased self-efficacy, mental health, professional growth, and job satisfaction; at the organizational level, they include productivity, innovation, and organizational agility; and at the societal

level, they include social responsibility. Comparing this model with the self-disempowerment model shows that these two approaches are actually two sides of a management spectrum: in self-disempowerment, drivers such as poor performance, low self-esteem, persistent fear, and behavioral instability cause behaviors such as procrastination, pretending to be unattractive, and negative moods, and the consequences include reduced productivity, decreased mental health, and organizational damage. In contrast, empowerment, by strengthening positive individual and organizational factors, creates fewer obstacles to progress and its consequences are completely constructive and growth-enhancing.

This comparison shows that with the proper management of drivers, platforms and obstacles, self-disempowerment processes can be transformed into empowerment and have a positive impact on individual, organizational and social performance. In other words, empowerment of managers not only increases productivity and job satisfaction, but also strengthens resilience, innovation and responsibility at the organizational and societal levels, while self-disempowerment has widespread negative consequences and threatens the health of the individual and the organization.

The results of implementing metaheuristic algorithms including genetic (GA), BBO, and Hybrid showed that the Hybrid algorithm has the best performance in reducing the time to complete tasks, while the genetic algorithm provides the most effectiveness in optimizing self-empowerment processes. These findings indicate that metaheuristic algorithms are a suitable tool for managing and optimizing complex management processes, especially in multi-objective and multi-level environments such as medical universities.

According to the findings, it can be concluded that self-disabling and empowerment models have a meaningful structure, good fit, and high explanatory power, and can provide a suitable scientific framework for examining managerial behavior in universities. Empowering managers increase organizational productivity by using optimal processes, and self-disabling managers can reduce efficiency and create obstacles. Also, the use of meta-heuristic algorithms allows for the optimization of decision-making, scheduling activities, and resource allocation. The findings of the present study, in line with the literature, show that the patterns of self-disabling and empowerment of managers in universities are consistent with the results of previous studies in the educational and organizational fields. Several studies have shown that self-leadership and career autonomy have a positive and significant relationship with empowering leader behaviors and job reinvention (Agha Babaei, 2014), similar to what the current empowerment model states that individual and organizational drivers strengthen managers' goal-oriented and collaborative behaviors. Also, research has shown that low self-esteem, fear of negative evaluation, and certain personality traits predict self-disabling behaviors (Azadi & Fathabadi, 2013; Ba et al., 2022), which is consistent with the self-disabling model, because individual and social drivers and contexts underlie these behaviors. Other studies have also shown the mediating role of self-efficacy, psychological hardiness, attributional styles, and cognitive-metacognitive strategies in reducing or predicting self-handicapping (Mazaheri, 2023; Khalili-Moghaddam, 2023; Soleimani et al., 2021), which is similar to the findings of this study and shows that individual barriers and capacities can moderate the effects of self-handicapping. In addition, there is evidence of the importance of resilience, trust in the leader, stable self-esteem, and psychological courage in increasing empowerment and reducing the negative consequences of self-handicapping in various studies (Razagh et al., 2025; Ching et al., 2025; Rodewalt, 2008), which is consistent with the present results and confirms the role of drivers and consequences of individual and organizational empowerment.

Conclusion

Overall, the findings of this study are highly valid and consistent with the theoretical and empirical framework of the relevant scientific

literature, and show that strengthening self-efficacy, self-esteem, and empowerment skills of managers can reduce the negative effects of self-disempowerment and improve organizational performance and health. Based on these results, it is suggested that university managers and policymakers use the empowerment model to design educational and management programs and reduce the factors of self-disempowerment of managers with counseling and management skills training programs. Researchers can use the presented model as a framework for similar studies in government and educational organizations and develop future research by adding variables such as employee motivation, job satisfaction, and organizational culture. In terms of practical application, the Hybrid algorithm is recommended for project scheduling and reducing process execution time, and the GA algorithm is recommended for optimizing empowerment processes and human resource management. Also, adding behavioral indicators and questionnaires to examine the direct effects of empowerment on employee productivity and motivation and using larger samples can increase the accuracy and generalizability of the results.

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Declaration of Competing Interest

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.

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