

The Pressure Transmission Mechanism of Medical Representatives during Policy Shock Periods: A Dynamic Analysis Based on the JDR Model

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Abstract: Against the backdrop of the normalization of volume-based procurement and the increasingly strict governance of medical insurance, medical representatives are confronted with cumulative pressure from both the “organization-individual” dual paths. Based on the JDR (Job Requirements—Resources) model, this paper constructs a dynamic framework suitable for policy shock periods: At the organizational level, the policy frequency increases and the job requirements increment is formed through institutional compliance, indicator reconstruction and process reengineering; At the individual level, medical representatives experience emotional exhaustion due to the increased tension and uncertainty of their dual roles in academic and sales. The model introduces “policy perception” as a cross-layer moderating variable and incorporates “relationship capital” and “academic resources” into the key buffer resources. Further, set a critical condition — when the number of policy changes in the current year reaches or exceeds four times, the resource buffering effect will significantly decline. Based on this, this paper proposes a policy-responsive resource allocation approach and demonstrates the feasibility of digital tools’ intervention in pressure transmission, providing a reference for enterprises’ compliance operation and team resilience building.

Keywords: Volume-based procurement; Medical representative; JDR model; Digital intervention

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1. Introduction

With the optimization of the drug access and price discovery mechanism due to the reform of volume-based procurement, the procurement decisions of medical institutions have gradually become centralized, and payment and performance have become the core correlation points. Starting from 2025, the medical insurance credit evaluation mechanism has been strengthened, and regularization has been established. The compliance constraints, information disclosure, and behavioral boundaries faced by enterprises and front-line personnel have undergone fundamental changes. Medical representatives serve as a bridge between the business community and the medical

field, playing the role of academic promotion and empirical exchange, and also shouldering the responsibility of performance indicators and compliance bottom lines. The job requirements and resource allocation fluctuate sharply, with obvious cyclical and sudden characteristics. The “demand—resources—health/performance” path can be explained by the JDR model, but it fails to reflect the dynamic combination of policy frequency and individual perception in the short term. Revise the JDR framework, analyze the bidirectional path of “organization-individual” pressure transmission, and derive the implementable resource allocation and digital intervention plan.

2. Theoretical framework and model revision

2.1. “Organization-individual” dual-path JDR expansion

The organizational structure and system processes are currently facing external shocks, involving changes in batches of volume-based procurement, deductions in medical insurance credit evaluations, and accountability pressure. To counter the above-mentioned impacts, measures such as adjusting the assessment criteria, extending the approval process, and increasing the density of compliance reviews have been adopted, which are gradually passed down to the front line. This is specifically reflected in aspects such as work instructions and time urgency. Medical representatives need to constantly balance and analyze between academic norms and sales targets, and maintain efficiency and psychological balance amid rule changes and information instability. In actual operation, the two paths frequently alternate and run in parallel, with effects accumulating and amplifying each other. This weakens emotional reserves and also shakes business execution and the stability of long-term performance.

2.2. Definition of key variables

In terms of job requirements, the intensity of compliance affairs, the threshold for license approval, and the time needed for filing and record-keeping, as well as frequent adjustments to performance targets due to policy fluctuations, all these will increase the complexity of tasks and psychological burden. Professional elements can be subdivided into academic assets and social capital. This field covers the completeness of the evidence set, professional technical assistance from the medical affairs team, and the ability to plan and implement academic activities. This characteristic is reflected in the trust foundation and communication efficiency among multiple parties, such as departments, pharmaceutical affairs, medical insurance, and material procurement ^[1]. Emotional exhaustion is adopted as a representative of health-related indicators to assess the level of psychological energy depletion. Simultaneously introduce the quality of job completion and the frequency of violation incidents, and independently assess business results and risk exposure levels.

2.3. Model correction and adjustment mechanism

In the model correction, “policy sensitivity” is adopted as the inter-level adjustment tool. Through the differences in individual sensitivity to the frequency and intensity of policy changes, even if the frequency of policy updates is similar, when facing new organizational requirements, highly perceptive individuals tend to interpret them as uncertainties and potential risks, leading to the expansion of emotional exhaustion and performance fluctuations. To address the consumption pressure triggered by external demands, integrate social relationship capital and academic resources into a buffer structure, thereby enhancing academic resources and improving professionalism and persuasiveness when communicating with clients. Utilize relationship capital to enhance the efficiency of reaching out to key stakeholders and the smoothness of collaboration, and build a dual protective barrier of psychology and performance.

2.4. Dynamic expression and critical value setting

Express the emotional exhaustion during period t as

$$E_{t+1} = \phi E_t + \alpha (F_t \times P_i) + \gamma R_t - \beta_1 A_t - \beta_2 C_t + \varepsilon_t$$

Among them, F_t represents the frequency of policy changes, P_i represents individual policy perception, R_t represents role tension, A_t represents academic resources, and C_t represents relationship capital. When the number of annual policy changes reaches or exceeds four times, the threshold is triggered, and the buffer coefficient decays:

$$\beta_k^* = \beta_k (1 - \lambda), \quad k \in \{1, 2\}, \lambda \in (0, 1]$$

It indicates that under high-frequency oscillation, the marginal buffering capacity of existing resources fails or rapidly decreases.

3. Explanation of the mechanism of pressure transmission: From direct effect to buffering effect

3.1. Direct path: The cumulative effect of pressure from the increase in policy frequency

The shortening of the policy update cycle indicates continuous changes in regulations and a sharp increase in learning costs, forming a stepwise upward trend. When new regulations are issued, organizations and individuals need to quickly absorb, understand, and internalize the rules. This stage is often accompanied by forced interruptions and resettings of the current work rhythm. The uncertainty of the process leads to frequent reconfiguration of the schedule, and the project advancement path needs to be adjusted in direction in response to urgent policy requirements. At the organizational level, external changes have been transformed into more stringent compliance regulations, assessment standards, and audit requirements, narrowing the scope of constraints of the grassroots management system. At the individual level, there is a phenomenon of accumulated emotional exhaustion and scattered attention, frequent task switching, fragmented time utilization, and the possibility of in-depth thinking and systematic preparation is weakened. The operational driving force of this path stems from the dual influence of “unpredictability” and “time fragmentation.” The pressure curve is characterized by short cycles and a sharp increase in growth rate, which poses a compound impact on the psychology and performance of medical representatives.

3.2. Buffer path: The peak shaving effect of academic resources and relationship capital

Against the background of policy fluctuations, academic resources and relationship capital have constructed an inherent buffer system. The richness and update speed of academic resources have significantly enhanced the information matching degree between medical representatives and medical institutions, making professional communication more in-depth and targeted, and greatly reducing the communication and coordination pressure caused by rule changes. When policy changes raise doubts in the clinical field, authoritative academic achievements become the anchor of trust, reducing the frequency and intensity of doubts. At the level of contact channels, relationship capital demonstrates its unique advantages, significantly shortening the path of information transmission, while also deepening the understanding of situations through long-term trust relationships and reducing frictional expenditures caused by differences in policy interpretation. The combination of the two reduces the peaks of exogenous shocks, raises their troughs, and curbs the upward trend of emotional exhaustion. In the

face of the urgent moment when policy adjustments occur frequently, it is necessary to rely on both academic and interpersonal relationships to consolidate the resilience foundation of front-line personnel and prevent the predicament of ineffective response due to the depletion of a single resource.

3.3. The coupling effect of the tension between the academic and sales dual roles

Medical representatives play a dual role in both academic promotion and sales conversion. During the stable stage, this combination of roles can still complement each other. During the period of policy tightening, when the risk of conflict may rise and the intensity of supervision keeps increasing, the priority of academic norms rises particularly significantly. The allocation of internal resources and time investment within enterprises has shifted towards a long-term academic development path. However, the immediate nature of sales targets remains prominent and still accounts for a significant proportion in the assessment system. The contradiction between time and goals reveals a “tense situation of roles.” In an environment of frequent policy updates, this tension resonates with the frequency of policies, and its intensity keeps rising along with policy updates. The synergy between short-term sales targets and long-term academic strategies is facing challenges. Medical representatives need to frequently switch their task forms under the constraints of time budgets, transitioning from evidence-based communication within the department to driving market performance, which increases their memory load and reduces the stability of their strategies. This coupling effect significantly enhanced the effect value of role tension on the emotional exhaustion contribution term (R_t), and the nonlinear growth of the stress effect.

3.4. “Shock points” for medical insurance credit evaluation in 2025

In the 2025 medical insurance credit assessment system, key links such as medical insurance payment, agreement management, and procurement access are directly integrated with the behaviors of enterprises and individuals, significantly enhancing the institutional effectiveness of policies in organizational processes. Possible impact points include: the frequency and depth of compliance reviews are simultaneously enhanced; The approval of academic activities is becoming more cautious, introducing a pre-review and process monitoring stage. The scope of accountability has been expanded to negative events, enhancing the ability of front-line personnel to identify the risks of violations. The frequency of training and re-certification has increased, and the requirements for updating policy knowledge and compliance skills have become stricter. The organizational benchmark requirements have been comprehensively raised to a new height, management expenses have sharply increased, and the assessment standards have also been permeated from top to bottom, extending to the front-line execution positions. As a result, individuals’ subjective expectations of punishment and reputation risks have risen, and their psychological burden has increased. The amplification effect of the $F_t \times P_i$ item in the policy impact path is obvious. During the period of frequent policy changes, individuals’ sensitivity to the consequences of violations and the pressure to cope with them show a superimposed upward trend.

3.5. Contextualized interpretation of threshold effect and resource failure

The frequency of annual policy changes has exceeded four times, and the pressure of policy response will cross a critical threshold. The memory, energy, and time resources that medical representatives possess are being continuously depleted. The localization progress of academic materials lags behind, resource allocation is misaligned, and clinical communication lacks the latest contextualized empirical support. The pace of relationship maintenance has been disrupted, and there are obvious signs of a decrease in the frequency of trust network interactions. The β_k buffer coefficient rapidly decreases with resource depletion, the success rate of

communication drops, information transmission lags behind, and confidence in efficiency declines. When this state persists, even if the total amount of resource input does not decrease and fails to match the distribution and rhythm of environmental changes, the marginal benefit will significantly decline. This phenomenon of “resource failure” serves as a warning to management. In the face of frequent policy changes, resource regulation strategies should shift from being quantity-driven to prioritizing rhythm and adaptability, to prevent the unnecessary consumption of organizational and individual response capabilities by habitual investment.

3.6. Feasibility of the intervention of digital tools

When dealing with high-frequency policy shocks, digital means can be implemented following the path of “policy frequency visualization—knowledge unit refinement—behavior closed loop construction.” In the rule analysis and push stage, relying on the compliance text analysis model, policy priorities are automatically screened, scenario adaptation mapping is implemented, and operation manuals for departments, positions, and task processes are compiled to reduce the time input for interpretation. In terms of micro-learning and evidence package management, empirical data are modularized to form reusable knowledge units, which are automatically classified according to departmental attributes and disease pathways to optimize the rate and accuracy of knowledge retrieval. The combination of path planning and traceability automation enables a direct connection between the visit plan and the approval traceability system, reducing the process interference caused by cross-system operations and repetitive data entry. In the risk and emotion monitoring stage, an early warning mechanism is formed through processing data and self-assessment scales to promptly adjust resource allocation and execution pace. Under the premise of data compliance, permission stratification, and privacy protection, such tools significantly reduce information asymmetry and process obstacles, effectively curb the pressure gradient rise in the direct path, and enhance the positive effect level of the buffer path.

4. Policy responsive resource allocation and operation framework

4.1. Hierarchical and clustered resource allocation logic

In a high-frequency policy environment, the homogenized resource allocation model is not efficient enough and is prone to misallocation among different groups. Taking “policy release frequency - public awareness” as the coordinate axis, the audience is divided into four quadrants for precise targeting. For high-frequency and high-perception groups, priority should be given to concentrating the strength of MSL (Medical Science Liaison Officers), key evidence databases, and front-line capability improvement courses to ensure that they can quickly master and implement the new norms. The high-frequency but low-perception group, by means of process assistance tools, automatic alarm systems, and visual operation manuals, strives to make up for the perception differences and reduce the information lag effect. For groups with low frequency but high perception, emphasis should be placed on strengthening situational exercises, mentorship guidance, and case reviews to enhance their response capabilities. The low-frequency and low-perception group adheres to the stability of the basic business territory and focuses on maintaining relationship capital and consolidating the trust chain.

4.2. Rhythmic deployment and “threshold plan”

In the policy change monitoring system, a peak of the annual number of changes needs to be set. When the number of changes approaches the set threshold, it immediately switches to the “wartime” operation mode. Within the established model, non-core business activities should be moderately reduced, and limited resources

should be concentrated in the areas and departments most affected. MSL and compliance advisors should enhance collaboration to form an immediate Q&A and risk early warning mechanism. Implement the “minimum viable version” strategy, promptly launch the evidence package, carry out short-term rolling iterations, and continuously optimize and upgrade to ensure the timeliness and availability of core materials. In the maintenance of relationship capital, precise communication at key nodes should be emphasized. For instance, during critical moments such as the procurement cycle, price negotiations, and adjustments to the medical insurance directory, core contacts should be relied upon to maintain process consistency and the sustainability of cooperation. Such orderly deployment and contingency plans, in the face of concentrated shocks, can significantly reduce the risk of pressure concentration and maintain operational stability.

4.3. Organizational governance and indicator closed loop

The effectiveness of policy response is not only achieved independently through resource input, but also requires the construction of a governance closed-loop structure with the aid of an indicator system. It is proposed to build a three-level evaluation indicator matrix. The process layer elements, such as the quality of learning completion, the comprehensiveness of the evidence package coverage, and the time-consuming nature of the approval process, directly present the results of execution efficiency. The score of the Emotional Exhaustion Scale, the self-assessment of role stress, and the usability score of digital tools jointly constitute the perception layer, extracting the relevant data of the psychology of front-line workers and the adaptability of tools. The performance evaluation hierarchy involves the ratio of compliance incidents, the success rate of communication, and the effectiveness of task execution, outlining the final business performance profile. Conduct quarterly reviews, match data with human resources, capital flow, and time consumption, dynamically adjust the allocation ratio based on the performance of different links, and use a data visualization platform to transparently present hierarchical indicators. The team visually presents its implementation trajectory on the direct and buffer paths, enhancing the team’s self-regulation and goal-oriented levels, and thereby achieving a positive feedback mechanism for policy response.

4.4. Structuring and localization of academic resources

Enhance the alignment of academic resources with policy adjustments. For key specialties, a four-element database framework of “evidence—script—material—activity” is constructed and precisely mapped according to disease pathways and in-hospital processes, which can be directly integrated with clinical communication and supported by the most cutting-edge evidence-based guidelines and key research results. The script library has been reshaped into a clinically applicable communication vocabulary. This library brings together standardized slides, summary cards, and chart collections. Academic salons, case discussions, and teaching activities have been fully incorporated, alleviating the heavy burden of secondary processing on front-line representatives due to frequent changes. Therefore, regional annotations should be implemented for the detailed policies of local medical insurance, procurement, and pricing to ensure that the data can be directly applied in practice.

5. Summary

This study introduces policy perception and relationship capital elements into the JDR model and designs an “organization-individual” dual-pathway pressure transmission model to cope with policy shock periods. Empirical

logic indicates that the frequency of policies, due to the cascading effect of organizational requirements, directly exacerbates the phenomenon of emotional exhaustion. Academic resources and relationship capital effectively resisted this shock. Once the number of policy adjustments exceeded the critical value of four times, the marginal effect of resources significantly declined. Based on this dynamic rule, a resource allocation and operation framework should be established, with policy monitoring as the starting point, hierarchical classification as the key, and digital tools as the auxiliary, to pursue team resilience and customer communication stability on the basis of compliance. In the future, benchmarking analysis should be carried out in multiple regions, across multiple products, and at different levels of organizational development. The external implementation validity of thresholds, buffer ratios, and the intensity of intervention tools should be analyzed to optimize the dynamic coupling relationship of “policy—demand—resources—effectiveness.”

Disclosure statement

The author declares no conflict of interest.

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