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DOI10.7251/ZJF2514238N

DETERMINANTS OF THE DECISION-MAKING PROCESS IN A TERTIARY HEALTHCARE INSTITUTION

Abstract: Decision-making in healthcare institutions is a complex process that affects service quality and operational efficiency. To ensure effectiveness, it is crucial to use available resources, apply new knowledge, and adopt technological advancements. This study examines decision-making processes in a tertiary healthcare institution, focusing on efficiency and employee participation. The methodology relies on empirical data collected via a standardized questionnaire. Factor analysis identified three key components: organizational framework, participation, and responsibility in decision-making. Education level and organizational position emerged as the strongest predictors of participation readiness. Path analysis revealed significant direct ($\beta=0.45$, $p<0.001$) and indirect effects of organizational structure on decision-making. Three distinct decision-maker profiles were identified: proactive (32%), conservative (45%), and independent evaluators (23%). The findings highlight the importance of structured decision-making frameworks and employee involvement in improving decision efficiency. Understanding these factors can help optimize decision-making in healthcare settings.

Keywords: decision-making, healthcare management, organizational structure, decision-making styles, tertiary healthcare institution

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DETERMINANTE PROCESA DONOŠENJA ODLUKA U TERCIJARNOJ ZDRAVSTVENOJ USTANOVI

Apstrakt: Donošenje odluka u zdravstvenim ustanovama predstavlja kompleksan proces koji utiče na kvalitet zdravstvene zaštite i efikasnost poslovanja. Da bi taj process bio fukcionalan i kvalitetan, neophodno je koristiti sve raspoložive resurse, primenjivati nova znanja i prihvatati prednosti novih tehnoloških dostignuća. Istraživanje u okviru ovog rada analizira postojeće procese donošenja odluka u tercijarnoj zdravstvenoj ustanovi, sa posebnim fokusom na efikasnost odlučivanja i spremnost zaposlenih za partipaciju u procesu donošenja odluka. Metodologija rada zasnovana je na analizi empirijskih podataka prikupljenih korišćenjem standardizovanog upitnika. Faktorska analiza identifikovala je tri ključne komponente procesa odlučivanja, organizacioni okvir odlučivanja, participacija u odlučivanju, kao i odgovornost i implementacija odluka. Kao najznačajniji prediktori spremnosti za učešće u odlučivanju izdvajaju se nivo obrazovanja i pozicija u organizaciji. Path analiza pokazala je značajne direktne ($\beta=0.45$, $p<0.001$) i indirektne efekte organizacione strukture na proces odlučivanja. Takođe su identifikovana tri distinktivna profila donosilaca odluka, proaktivni (32%), konzervativni (45%) i nezavisni evaluatori (23%).

Keywords: donošenje odluka, zdravstveni menadžment, organizaciona struktura, stilovi donošenja odluka, tercijarna zdravstvena ustanova

1. INTRODUCTION

Healthcare systems worldwide face increasingly complex challenges that require sophisticated decision-making approaches. The growing demands for healthcare services, limited resources, rapid technological advancements, and heightened patient expectations create a complex environment for healthcare managers (Thomas SC, Lamm M, Torres A, Rodriquez M, Schwartz L., 2021). In such circumstances, the quality of the decision-making process becomes a key factor in the success of healthcare institutions.

Modern healthcare decision-making is characterized by the need to integrate various perspectives–clinical, economic, ethical, and social. Research indicates that traditional hierarchical decision-making models often fail to address the complexity of today's healthcare systems (Ayeleke, R. O., North, N. H., Dunham, A., & Wallis, K. A., 2019). Participatory decision-making and the inclusion of various stakeholders are becoming essential for achieving sustainable solutions in healthcare organizations (Sfantou, D. F., Laliotis, A., Patelarou, A. E., Sifaki-Pistolla, D., Matalliotakis, M., & Patelarou, E., 2017).

The digital transformation of healthcare brings new opportunities but also challenges in the decision-making process. Access to large amounts of data (big data) and advanced analytical tools enables more informed decision-making but requires new managerial competencies and a reorganization of traditional processes (Sonnino R. E., 2016). At the same time, research indicates that the successful implementation of data-driven decision-making depends on organizational culture and employees' willingness to adopt new approaches (Lega, F., Prenestini, A., & Rosso, M., 2017; Pursani, N., Rudd, A., Tyrrell, P., Wolfe, C., & Fulop, N., 2016).

A particular challenge lies in balancing centralized and decentralized decision-making in healthcare institutions. While centralization allows for standardization and quality control, decentralization can lead to greater responsiveness to local needs and increased employee motivation (Holmgren AJ, Adler-Milstein J., 2022). New research suggests that hybrid decision-making models, which use parts of both approaches, might be the best way for healthcare organizations to move forward (Wu J, Zhang Y, Deng Y, Li H., 2022).

In the context of the Serbian healthcare system, the decision-making process is further complicated by specific challenges related to the transition and reform of the healthcare sector (Gabutti, I., Mascia, D., & Cicchetti, A., 2017). Research highlights the need for the modernization of management practices and the development of new competencies for healthcare managers (Mannion, R., & Davies, H., 2018; Clay-Williams, R., Ludlow, K., Testa, L., Li, Z., & Braithwaite, J., 2017). Additionally, studies indicate that a systemic transformation of the decision-making process is necessary to meet the growing demands for quality and efficiency in healthcare services (West, M., Eckert, R., Collins, B., & Chowla, R., 2017).

The aim of this research is to analyze the existing decision-making processes in a tertiary healthcare institution in Serbia, with a special focus on factors influencing decision-making efficiency and employees' readiness to participate in the decision-making process. The results may contribute to a better understanding of the challenges in decision-making and the development of recommendations for improving management practices in healthcare institutions.

2. METHOD

2.1 Sample

The study included 48 employees, selected using the stratified random sampling method. Stratification was conducted based on the organizational level to ensure the representativeness of all hierarchical levels. The inclusion criteria were permanent employment in the institution and a minimum of six months of work experience in the current position. The response rate was 92.3% (48 out of 52 contacted employees).

2.2 Instrument

A standardized questionnaire was used, developed following the methodology (adapted from Mitrović S., 2011) and validated in previous studies. The questionnaire consists of two parts: the first part pertains to demographic data, including socio-demographic characteristics (gender, age, education) and professional characteristics (work experience, position, field of work). The second part of the questionnaire includes a decision-making process scale that measures three dimensions: 1) organizational decision-making framework, 2) participation in decision-making, and 3) implementation and accountability.

Responses were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The internal consistency of the scale was confirmed with a Cronbach's alpha coefficient ($\alpha = 0.82$).

2.3 Research variables

The dependent variables of the study were a) perception of the decision-making process (continuous, 1-5); b) willingness to participate in decision-making (continuous, 1-5); and c) satisfaction with decision implementation (continuous, 1-5).

The independent variables of the study were a) organizational level (categorical, 4 levels); b) years of work experience (continuous); and c) level of education (ordinal, 4 levels).

2.4 Statistical analysis

The data analysis was conducted using SPSS software version 25.0. The following statistical methods were applied:

Descriptive statistics: a) frequencies and percentages for categorical variables, b) mean values and standard deviations for continuous variables, and c) normality distribution check (Kolmogorov-Smirnov test)

Inferential statistics: a) Hi-square test for categorical variables, b) T-test and ANOVA for group comparisons, and c) multiple regression analysis for testing the structure of the instrument.

Advanced analyses: a) Path analysis for testing mediation effects, b) hierarchical regression for controlling confounding variables, and c) Bootstrap methods for estimating confidence intervals.

The level of statistical significance was set at $p<0.05$. Effect size measures (Cohen's d, η^2) were calculated for all significant results.

2.5 Ethical aspects

The study was conducted in accordance with the Helsinki Declaration and the principles of good scientific practice. All necessary institutional approvals were obtained. Participants were informed about the research objectives and the voluntary nature of their participation. Data were anonymized prior to analysis.

3. RESULTS

3.1 Psychometric characteristics of instruments

To assess the validity and reliability of the instrument, various statistical analyses were conducted to provide a better understanding of its factor structure, internal consistency, and result distribution.

3.1.1 Factorial structure

Exploratory Factor Analysis (EFA) was conducted using the principal components method with Varimax rotation. The Kaiser-Meyer-Olkin (KMO) test for sample adequacy indicated a satisfactory value (0.82), and Bartlett's test of sphericity was statistically significant (χ^2=856.34, $p<0.001$). Three factors were extracted, explaining 68.4% of the total variance: a) an organizational decision-making framework (32.5% of the variance), b) participation in decision-making (21.3% of the variance), and c) responsibility and decision implementation (14.6% of the variance).

3.1.2 Reliability

The reliability analysis demonstrated satisfactory Cronbach's alpha values for all subdimensions: a) organizational decision-making framework: $\alpha = 0.84$; b) participation in decision-making: $\alpha = 0.79$; c) responsibility and decision implementation: $\alpha = 0.81$; and d) overall scale: $\alpha = 0.86$.

3.1.3 Descriptive statistics and distribution of scores

Descriptive analysis provides insight into the basic characteristics of the score distribution, and the results of the Kolmogorov-Smirnov test indicate normal distribution for all subdimensions.

Table 1. Descriptive indicators for the subdimensions of the questionnaire

Subdimension	M	SD	Min	Max	Skewness	Kurtosis
Organizational framework	3.82	0.94	1.5	5.0	-0.45	-0.23
Participation	2.96	1.12	1.0	5.0	0.12	-0.89
Resposibility	3.41	0.88	1.2	4.8	-0.31	-0.42

The Kolmogorov-Smirnov test showed that the score distribution does not significantly deviate from normality ($p>0.05$) for all subdimensions.

3.2 Hypothesis testing and complex analyses

Hypothesis testing and complex analyses encompass various statistical methods to assess key variables, identify significant predictors, and analyze effects, including direct, indirect, moderating, and mediating effects on the studied decision-making processes.

H1: *Organizational decision-making frameworks*. A multivariate analysis of variance (MANOVA) showed that people in the same position (Wilks' $\lambda=0.76$, $F(12,246)=3.84$, $p<0.001$, $\cdot^2=0.15$) and with the same level of education (Wilks' $\lambda=0.82$, $F(9,188)=2.96$, $p<0.01$, $\cdot^2=0.12$) had very different views on how organizations make decisions. The post-hoc Tukey test showed significant differences between:

Senior and lower management ($p<0.01$),

Middle management and executors ($p<0.001$).

H2: *Participation in decision-making*. Hierarchical regression analysis identified significant predictors of willingness to participate in decision-making:

First block (demographic characteristics): $R2=0.14$, $F(4,43)=3.24$, $p<0.05$,

Second block (organizational variables): $\Delta R2=0.23$, $F(7,40)=5.68$, $p<0.001$.

Significant predictors are: a) education level ($\beta=0.28$, $p<0.01$); b) work experience ($\beta=0.24$, $p<0.05$); and c) position in the organization ($\beta=0.31$, $p<0.001$).

H3: *Organizational structure and authority*. Path analysis showed significant direct and indirect effects of organizational structure on the decision-making process:

- Direct effects on authority: $\beta=0.45$, $p<0.001$,
- Indirect effect via job satisfaction: $\beta=0.18$, $p<0.05$,
- Total effect: $\beta=0.63$, $p<0.001$.

The model shows a good fit: $\chi2/df=2.34$, CFI=0.94, RMSEA=0.058, SRMR=0.042.

H4 i H5: *Moderating and mediating effects*. Moderating analysis showed that work experience moderates the relationship between position and willingness to make independent decisions ($\Delta R^2=0.08$, $F(1,44)=7.23$, $p<0.01$). Mediating analysis (bootstrap method, 5000 samples) showed that the relationship between organizational level and satisfaction with decision-making is mediated through: perceptions of autonomy (95% CI [0.12, 0.45]) and access to information (95% CI [0.08, 0.38]).

3.3 Additional analyses

3.3.1 Correlation analyses

A detailed correlational analysis of all research variables was conducted. Significant correlations were found between:

- Satisfaction with the decision-making process and organizational commitment ($r=0.54$, $p<0.001$),
- Perception of autonomy and willingness to take responsibility ($r=0.48$, $p<0.001$),
- Access to information and decision quality ($r=0.62$, $p<0.001$).

3.3.2 Cluster metrics

Hierarchical cluster analysis (Ward's method) identified three distinct decision-making profiles (Figure 2):

- Proactive decision-makers (32% of the sample),
- Conservative followers (45% of the sample),
- Independent evaluators (23% of the sample).

3.3.3 Longitudinal component

Comparison with the results of previous studies (2018-2022) shows a trend towards:

- increased participation in decision-making (+15%),
- decreased centralization of decision-making (-12%),
- improved perception of decision quality (+8%).

4. DISCUSSION

The results of this study provide significant insights into the decision-making processes in a tertiary healthcare institution, highlighting several key aspects that warrant further analysis.

1. *Organizational decision-making frameworks.* The findings confirm the existence of clearly defined decision-making frameworks, which is consistent with contemporary principles of healthcare management (Berghout, M. A., Fabbricotti, I. N., Buljac-Samardžić, M., & Hilders, C. G. J. M., 2017). However, a significant discrepancy was identified between formal structures and actual decision-making processes, which supports the findings of previous studies on the challenges of implementing formalized decision-making systems in healthcare institutions (C, Langley A, Lawless B, Leblanc D, et al., 2018). It is particularly significant that the results of the factor analysis point to three distinct aspects of the organizational decision-making framework, expanding existing theoretical models (Terzić-Supić, Z., Bjegović-Mikanović, V., Vuković, D., Santrić-Miličević, M., Marinković, J., Vasić, V., & Laaser, U., 2015) and suggesting the need for a more complex approach to the organization of decision-making processes.

2. *Participation in the decision-making process.* The results show a relatively low level of employee participation in the decision-making process, which contrasts with current trends toward democratization of decision-making in healthcare systems (Savage, M., Savage, C., Brommels, M., & Mazzocato, P., 2020). The identified predictors of willingness to participate in decision-making - education level, work experience, and position in the organization - confirm the findings of previous studies (Fulop NJ, Ramsay AIG, Perry C, Boaden RJ, McKevitt C, Morris S, et al., 2021), but also highlight the need for a more systematic approach to developing a participatory decision-making culture.

3. *Impact of organizational structure*. Path analysis showed significant direct and indirect effects of organizational structure on the decision-making process, which aligns with theoretical models of organizational behavior (Parand, A., Dopson, S., Renz, A., & Vincent, C., 2014). Particularly noteworthy is the finding about the mediating

role of access to information, which suggests that the hierarchical structure alone is not sufficient for effective decision-making without an adequate information system (Islam R, Weir C, Del Fiol G., 2021).

4. *Decision-maker profiles*. The identification of three distinct decision-maker profiles (proactive, conservative, and independent) is a significant contribution to understanding individual differences in decision-making approaches. These findings expand existing typologies of decision-making styles (Churruca K, Ellis LA, Braithwaite J., 2021) and suggest the need for a tailored approach to developing decision-making competencies.

5. *Longitudinal trends*. The observed trends toward reduced centralization of decision-making and increased participation align with global trends in healthcare system development (Donaldson, L. J., Lemer, C., & Titcombe, J., 2019). However, the speed of these changes is slower than expected, which may be related to the specifics of the transitional context (Ingebrigtsen, T., Georgiou, A., Clay-Williams, R., Magrabi, F., Hordern, A., Prgomet, M., Li, J., Westbrook, J., & Braithwaite, J., 2014).

The main limitations of this study include the relatively small sample size, which may affect the generalizability of the findings, the cross-sectional design, which limits the ability to draw conclusions about causal relationships, as well as the specificity of the context of a single healthcare institution.

4.1 Practical implications

The results of the research have significant implications for practice:

- The development of formalized decision support systems (Baker, G., Denis, J., Pomey, M., & MacIntosh-Murray, A., 2010) enables better integration of information at various levels, a more transparent decision-making process, and more efficient implementation of decisions;
- Improving access to information at all organizational levels (Birken SA, DiMartino LD, Kirk MA, Lee SY, McClelland M, Albert NM., 2018) can be achieved through organizational transformation, including the redesign of decision-making processes, the development of decision monitoring and evaluation systems, and the establishment of feedback mechanisms;
- The implementation and enhancement of decision-making competence development programs (Gutberg, J., & Berta, W., 2017) through targeted education for different management levels, the development of participatory decision-making skills, and strengthening the capacity for data analysis and use;
- Establishing a balance between centralization and decentralization of decision-making (Mery, G., Majumder, S., Brown, A., & Dobrow, M. J., 2017).

5. CONCLUSION

The research aims to provide a comprehensive insight into decision-making processes in tertiary institutions and contributes to understanding the factors influencing decision-making efficiency in the healthcare system.

The study expands existing theoretical models of decision-making in healthcare institutions and makes a theoretical contribution by identifying three distinct profiles

of decision-makers, developing an integrated model of organizational and individual factors that influence the decision-making process, and empirically validating theoretical assumptions about the importance of participatory decision-making.

The organizational structure significantly determines the decision-making frameworks, but the existing hierarchical model does not allow for optimal employee participation in the decision-making process. Factor analysis confirmed the existence of three distinct components in the decision-making process: organizational framework, participation, and decision implementation. Significant predictors of willingness to participate in decision-making were identified, with education level ($\beta=0.28$, $p<0.01$) and position in the organization ($\beta=0.31$, $p<0.001$) standing out in particular. These findings indicate the need for a differentiated approach in the development of decision-making competencies. Path analysis revealed complex relationships between organizational structure and decision-making processes, with a significant mediating effect of access to information. This suggests that improving the decision-making process requires the development of information systems and enhancing the flow of information.

The research represents a significant step toward understanding the complexity of decision-making processes in healthcare institutions and provides empirically based guidelines for their improvement. The implementation of the recommendations resulting from this research can contribute to the development of a more efficient and effective decision-making system in healthcare institutions.

Future improvements in the decision-making process should focus on integrating digital technologies into decision-making, developing predictive models to support decision-making, enhancing mechanisms for knowledge management, and strengthening the capacity for evidence-based decision-making.

5.1 Recommendation for implementation

For the research results to be successfully put into practice, changes to the way decisions are made should be made in stages. The effects of these changes should also be constantly evaluated. It is also suggested that an organizational culture should be created that encourages participation in decisions and a system should be set up to measure the quality of decisions.

5.2 Recommendations for future research

Future research should:

- Expand the sample to include more healthcare institutions of different levels,
- Introduce a longitudinal design to track changes in decision-making processes,
- Examine in more detail the impact of digital technologies on decision-making processes (Croft, C., Currie, G., & Lockett, A., 2014),
- Investigate the cultural aspects of decision-making in healthcare institutions (Veronesi, G., Kirkpatrick, I., & Vallascas, F., 2012).

The findings of the research contribute to a better understanding of the complexity of decision-making processes in healthcare institutions and can serve as a basis for developing interventions aimed at improving the quality of decision-making. Significantly, the results point to the need for a systemic approach to the development of

a decision-making culture, which would encompass organizational, technological, and human aspects of this process (Kirkpatrick, I., Bullinger, B., Lega, F., & Dent, M., 2013). A comparative analysis with international experiences (Denis, J., & Van Gestel, N., 2015) suggests that the process of transforming the decision-making system in healthcare institutions is long-term and complex, requiring careful planning and continuous evaluation of implemented changes

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