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# Decision-Making Style of Managers in the Public Sector: Is There a Possibility for Improvement?

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### ABSTRACT

The modern market economy is characterized by turbulence, uncertainty, and an increasing pace of change. In such conditions, decision-making represents a fundamental and dynamic process in which managerial decisions directly influence organizational effectiveness and overall performance. The primary objective of this study is to identify, using a scientifically grounded methodological framework, the key determinants of managerial decision-making styles in public enterprises, with particular emphasis on the organization of work processes, individual demographic characteristics, and economic aspects of management. The research was conducted in public sector enterprises, which have shown insufficient functionality for many years. The study was conducted on a sample of 426 managers across a range of organizations, employing standardized instruments, namely the General Decision-Making Scale (GDMS) and the Work Organization Assessment Questionnaire (WOAQ). The results indicated statistically significant differences in managerial decision-making styles. Furthermore, a significant association was identified between decision-making styles and various dimensions of work organization. In addition, decision-making styles were found to be significantly related to the general demographic characteristics of the participating managers. Based on the research results, improving the decision-making process is necessary in the new digital environment.

## 1. Introduction

Classical decision theories assume that decision-makers possess stable preferences and are capable of ranking alternatives based on their perceived utility or value. This implies that decision-

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makers have a clear understanding of their own preferences and can assign a utility or value to each alternative based on their individual assessments.

By comparing the utility of different alternatives, decision makers can prioritize and rank options in order to make a decision easier.

Neoclassical decision theories represent a departure from the assumptions of classical decision theories by recognizing the cognitive limitations that decision-makers may face. These theories emphasize that decision-makers may have limited rationality, cognitive abilities, and information processing capacities, which can affect their decision-making process. A key aspect of neoclassical decision theories is the recognition of the influence of heuristics, biases, and cognitive shortcuts on decision-making. In contrast to the utility-maximization assumption inherent in classical decision theories, neoclassical approaches suggest that decision-makers aim for satisfaction rather than strict optimization. Contemporary approaches to decision-making have introduced innovative models that incorporate a broader range of factors and considerations. These models acknowledge that decision-makers operate within dynamic environments in which both real and virtual systems provide information and decision support. Decision-making in the public sector is inherently complex and influenced by multiple factors, including legal requirements, political considerations, social values, and economic feasibility.

### *1.1 Decision-Making Styles*

Managerial decision-making is a vital aspect of organizational functioning, as it significantly influences the direction, performance, and long-term sustainability of enterprises across industries [1]. In today's dynamic and unpredictable business environment, characterized by rapid technological advancement, globalization, and economic uncertainty, decision-making has become an increasingly important managerial function and a critical factor for organizational survival, [2] and it is necessary to conceptualize new models and ways of decision-making in public enterprises that will be in line with the new business demands of the modern labor market [3]. A decision may be defined as a selection among two or more alternatives under consideration. Each decision entails specific consequences, and the overarching objective of decision-making is to identify and select the alternative that produces the most favorable outcome. Observation of real-life decision-making situations indicates that the decision-making process is characterized by differences in many segments, including: type of criteria, information and possibility of alternatives [4], [5].

Numerous scholars have emphasized the importance of understanding decision-making and have developed comprehensive theoretical frameworks to explain the cognitive, behavioral, and emotional factors that influence the decision-making process. [6] Managerial decision-making refers to the process through which managers or organizational leaders systematically analyze available information and evaluate alternative courses of action in order to select the option that most effectively aligns with organizational objectives. Managerial decision-making constitutes a key determinant of managerial roles, as it enables the formulation of conclusions regarding specific situations that influence the functioning of the organization [4].

The work of Kahneman and Tversky [7] on heuristics and biases has shown that these heuristics can lead to errors in process, and that people often make decisions that are not optimal or rational and normative approach, and has impact on psychology [8], [9], economics [10], and other social sciences [11], leading to the development of new models of decision-making that take into account the limitations of human cognition.

Decision-making processes in the public sector require careful analysis, evidence-based approaches, and the balancing of competing interests. Public decision-makers must navigate multiple

perspectives, manage conflicts, and make decisions that are aligned with public values and policy objectives [12]. The public sector is often characterized by a bureaucratic structure comprising hierarchical levels of authority and standardized procedures, which can lead to inefficiencies and slower decision-making processes, thereby necessitating greater efforts to improve administrative practices [13].

Management decision-making styles are relatively stable dispositions that differentiate managers' behavior in the decision-making process [14], [15]. Studying managerial decision-making styles in times of uncertainty enhances our understanding of the cognitive, affective, and behavioral processes underlying decision-making, enabling researchers to examine how decision-makers perceive and interpret uncertain situations, evaluate alternatives, and manage risk [4], [5]. Research into decision-making styles has identified cognitive biases, heuristics [7], [16] and other decision-making aids as relevant to the outcome of decision-making.

Each decision-maker brings a unique set of personal characteristics, or their own decision-making style, to problem-solving, or decision-making. One of the conceptualizations of decision-making styles is the [17] conceptualization, which defines five styles of managerial decision-making. These are: rational, intuitive, dependent, avoidant and spontaneous decision-making styles.

According to the aforementioned authors, the following characteristics characterize the aforementioned styles:

Rational decision-making style refers to a systematic approach in which individuals carefully analyze information, consider all available alternatives, and evaluate the advantages and disadvantages before making a decision. Such individuals rely on logical reasoning, objective data, and structured evaluation to arrive at the most appropriate choice. Rational decision-makers strive to minimize the influence of bias and emotion, aiming for consistency and accuracy in the decision-making process. They emphasize the importance of evidence and maintain that decisions should be grounded in facts rather than personal preferences or intuition.

Intuitive decision-making style refers to an approach in which individuals rely on instincts, feelings, and prior experiences when making decisions. Such decision-makers typically demonstrate a high level of self-confidence and trust in their ability to assess situations quickly and accurately. Intuitive decision-makers tend to perform effectively in complex, uncertain, and rapidly changing environments, where time constraints and limited information may hinder the application of purely rational approaches. They possess the ability to recognize patterns, identify opportunities, and make rapid judgments based on intuition and a holistic understanding of the situation.

Dependent decision-making style refers to a pattern in which individuals seek guidance, input, and validation from others before making decisions. Such individuals often exhibit lower levels of self-confidence and prefer to rely on the expertise and opinions of others. Decision-makers with this style frequently consult mentors, colleagues, or domain experts, valuing collaboration, consensus, and group-based decision-making. While this approach can enhance decision quality by incorporating diverse perspectives, it may also lead to delays, indecision, and an increased reliance on others for accountability.

Avoidant decision-making style refers to a tendency to postpone or avoid making decisions. Individuals who adopt this style often feel overwhelmed by the complexity or potential consequences of available options, which leads to reluctance in taking action. Avoidant decision-makers may engage in procrastination, delegate decision-making authority to others, or passively wait for circumstances to resolve themselves. They are often concerned about making incorrect choices and tend to avoid responsibility for outcomes. This style may result in missed opportunities, limited progress, and increased stress due to prolonged decision-making processes.

Spontaneous decision-making style refers to a tendency to make quick and impulsive decisions based on immediate reactions, preferences, and personal inclinations. Individuals who adopt this style trust their instincts and rely on their ability to adapt to changing circumstances. Spontaneous decision-makers prioritize speed and simplicity, often making choices without extensive analysis or careful consideration of long-term consequences. While this approach may enhance agility and the ability to seize emerging opportunities, it can also result in hasty decisions and the neglect of important information, particularly in high-risk situations.

The functioning of public enterprises is essential for the success of both the social and economic indicators of a country. Previous research in public enterprises has indicated the existence of a gap between the demands of reality and responses that are a product of existing positions or political beliefs. Opportunities for improving their role in economic life are imperative, especially in modern conditions of continuous change.

## **2. Empirical Research**

The research problem focuses on developing a decision-making model that integrates the influence of organizational culture and dimensions of work organization on decision-making styles, and examines how such a model can be applied to enhance the efficiency of decision-making in public enterprises.

### *2.1 Research hypotheses*

The paper sets out one general and three specific research hypotheses:

H1: Managerial decision-making in the public sector is in a function of the organization of work processes;

H2: It is expected differences in the styles of managerial decision-making in public enterprises depending on the demographic characteristics of decision-makers.

### *2.2 Research sample*

Public enterprises are organizations established to provide public services, which are owned by the state or local authorities [18]. Public enterprises are therefore often subject to various types of regulation and oversight to ensure that their activities are in line with social goals [19].

The public sector operates with a primary focus on serving the public interest [20] and public sector entities are responsible for formulating and implementing public policies to address social challenges [21].

The research sample is of 426 managers of different levels, working in public enterprises of different characteristics in the territory of AP Vojvodina.

According to gender, two groups of respondents were identified-male and female categories. The research included 188 (44.1%) male managers and 238 (55.9%) female managers. The age of the respondents ranged from 27 to 70 years ( $AS = 47.84$ ;  $SD = 9.111$ ), and work experience ranged from 2 to 45 years ( $AS = 21.48$ ;  $SD = 9.839$ ).

According to the variable level of education, the respondents were divided into four categories-high school, college, university (bachelor), while the last group includes respondents who have completed master's (MA), specialist or doctoral studies. Based on the results of the frequency analysis, it was determined that the research included 46 (10.8%) managers with a high school diploma, 56 (13.1%) managers who had completed college, while the largest percentage of managers included in the research had completed college, up to the bachelor's (BA) level-242 (56.8%), and

slightly less than a quarter of managers had completed master's, specialist, or doctoral studies-82 (19.2%).

In terms of educational orientation, about half of managers have a social science educational orientation-214 (50.2%), 178 (41.8%) managers have a technical sciences orientation, while 34 (8%) managers included in the research have a natural sciences educational orientation.

In the context of the organization in which the respondents work, the sample structure was determined according to the variables of the respondents' length of service in the current organization, position status-in terms of whether the manager has advanced, or whether he has remained in the same position throughout his entire work, as well as according to the level of management to which he belongs-lower, middle, or top (the highest level).

In terms of length of service in the current organization, it was determined that 28 (6.6%) managers have been employed in the observed organization for between 1 and 2 years, then 36 (8.5%) managers have been employed in the current organization for between 3 and 5 years, while the majority of managers-362 (85%) have been employed for more than 5 years.

### *2.3 Research Instruments*

The General Decision-Making Scale [17] was developed as a measure of decision-making style. The items were originally formulated for a study on career transition. The items were then modified to expand the scope of career decisions to all important decisions, and the instrument was reduced to 25 items. Through factor analysis, 5 managerial decision-making styles were identified (each style measures 5 statements) named as:

Rational style: rational decision-makers are analytical and pragmatic in their approach to decision-making. They gather all relevant information, weigh the pros and cons, and make a calculated decision, based on the available data;

Intuitive style: Intuitive decision-makers rely on their instincts to make decisions. They may not always be able to explain the reasons for their decisions, but they often have a strong sense of what the right course of action is;

Dependent style: Dependent decision-makers rely on the opinions and guidance of others to make decisions;

Avoidant style: Avoidant decision makers procrastinate or postpone making decisions;

Spontaneous style: Spontaneous decision-makers are impulsive and tend to make decisions quickly without much thought.

Responses are formatted using a five-point Likert scale ranging from 1 to 5 (1 = strongly disagree to 5 = strongly agree).

The instrument used to assess work organization is the Work Organization Assessment Questionnaire (WOAQ) [22]. The instrument consists of 26 items, with responses measured using a five-point Likert-type scale. The scale comprises the following dimensions: Workload, which assesses the extent to which job demands are reasonable and manageable; Reward and recognition, which evaluates the extent to which employees perceive acknowledgment for quality work; Quality of relationships with management; Quality of relationships with colleagues; and the Physical environment, which may influence employee behavior.

### *2.4 Research procedure*

Data were collected anonymously, thereby ensuring the confidentiality of all respondents participating in the study. Furthermore, all relevant data protection protocols were implemented. The study received approval from top management.

### 2.5 Data analysis

Data analysis was performed in the statistical program SPSS (SPSS-Statistical Package for Social Science), version 24. The statistical techniques used within the program were: Missing data analysis, Frequency analysis, Descriptive statistics, Reliability measures, Pearson correlation, Multiple regression analysis, Multivariate analysis of variance (MANOVA), Testing for differences in arithmetic means

## 3. Results

### 3.1 Descriptive Statistics and Scale Reliability

Table 1 shows measures of central tendency, measures of variability, and data reliability.

**Table 1**  
 Descriptive statistics and reliability of managerial decision-making styles

	*AM	**SD	Skewness	Kurtosis	Reliability
Rational type	4.32	0.526	-0.768	0.537	0.735
Intuitive type	3.51	0.819	-0.494	0.063	0.746
Dependent type	3.31	0.682	-0.314	0.017	0.629
Avoidant type	2.21	0.755	0.642	0.063	0.706
Spontaneous type	2.63	0.756	0.287	0.063	0.714

\*AM – arithmetic mean; \*\*SD- standard deviation

Data on mean values (AM), standard deviations (SD), skewness and kurtosis for the five types of managerial decision-making (Rational, Intuitive, Dependent, Avoidant and Spontaneous) included in the study are presented, based on the General Decision-Making Scale. Also, the last column provides data on the reliability of these measurements, which is satisfactory in all cases, as all scales exceed the acceptable reliability level of 0.6 [23]. The mean values show how often these decision-making types are present in the sample of managers. Skewness and kurtosis indicate the normality of the data distribution, as all values range from -/+2 [24].

In Figure 1, below the text, a graphical representation of the radar diagram of the expressiveness of managerial decision-making styles in the total sample of managers is given.

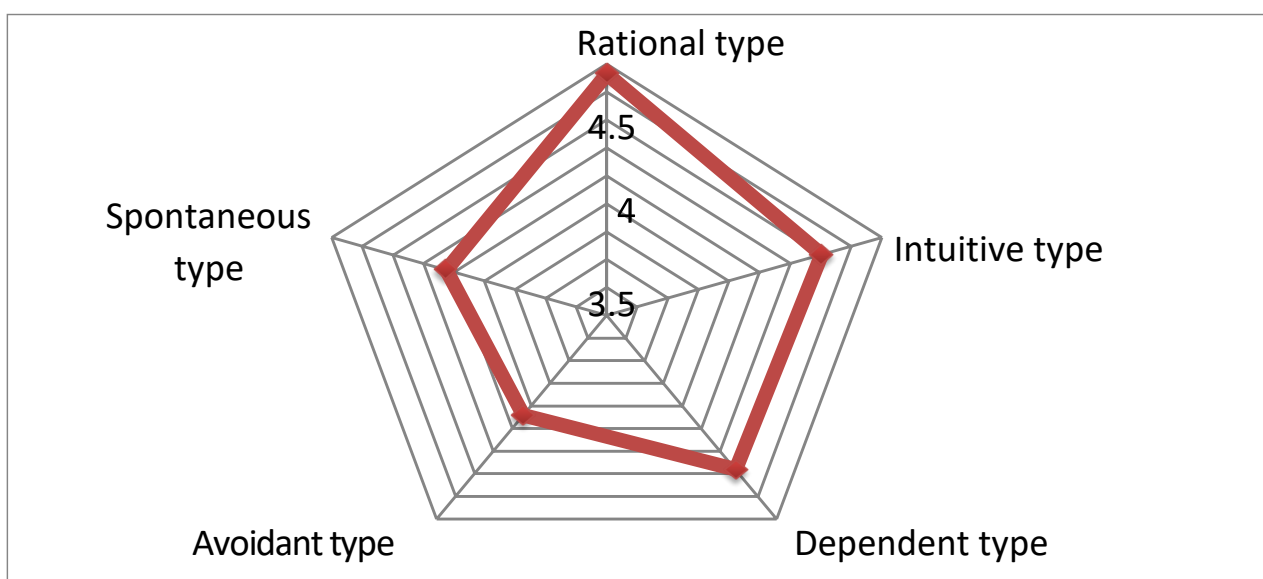


Fig. 1. Graphical representation of managerial decision-making styles

The data suggest that Rational (AM = 4.32; SD = 0.526) and Intuitive (AS = 3.51; SD = 0.819) decision-making styles are most pronounced in the sample of managers, while Dependent, Avoidant and Spontaneous are less pronounced.

According to the expression of variables shown in Table 2, the analysis of descriptive statistics shows that the most expressed work organization variable is the Quality of relations with colleagues (AM = 4.03; SD = .603), while the least agreement was found with the variable Quality of relations with management (AM = 3.13; SD = 0.362).

**Table 2**  
 Descriptive statistics and reliability of dimensions of the work organization scale

	AM*	SD**	Skewness	Kurtosis	Reliability
Quality of physical environment	3.28	0.603	0.104	0.149	0.665
Quality of relationships with colleagues	4.03	0.749	-0.813	0.847	0.675
Quality of relationships with management	3.13	0.362	-0.431	-0.038	0.876
Awards and recognition	3.62	0.451	0.033	-0.494	0.778
Workload	3.41	0.714	-0.494	0.811	0.678

\*AM – arithmetic mean; \*\*SD- standard deviation

According to the results presented in Table 3 showing the correlations between various determinants of work organization in public enterprises and managerial decision-making styles, it can be concluded that the work organization dimension Quality of the Physical Environment is positively correlated with four managerial decision-making styles – Rational ( $r = 0.146$ ;  $p = 0.002$ ), Intuitive ( $r = 0.173$ ;  $p < 0.001$ ), Dependent ( $r = 0.129$ ;  $p = 0.008$ ) and Spontaneous ( $r = 0.188$ ;  $p < 0.001$ ).

**Table 3**  
 Relationship between managerial decision-making styles and dimensions of work organization

		P*	In	D	A	S
Quality of physical environment	r**	0.146**	0.173**	0.129**	0.062	0.188**
	p***	0.002	0.000	0.008	0.201	0.000
Quality of relationships with colleagues	r	0.270**	-0.048	0.161**	-0.095*	-0.069
	p	0.000	0.325	0.001	0.050	0.154
Quality of relationships with management	r	0.092	-0.033	0.040	0.007	-0.036
	p	0.057	0.500	0.408	0.893	0.457
Awards and recognition	r	0.303**	0.053	0.055	-0.053	-0.057
	p	0.000	0.274	0.259	0.278	0.238
Workload	r	0.133**	-0.062	0.107*	-0.005	0.059
	p	0.006	0.200	0.028	0.925	0.227

\*R – Rational style; In – Intuitive style, D – Dependent style; A – Avoidant style, S – Spontaneous style;

\*\*r-Pearson correlation coefficient; \*\*\*p-significance

The dimension of work organization – Quality of relationships with colleagues is positively related to the Rational ( $r = 0.270$ ;  $p < 0.001$ ) and Dependent styles ( $r = 0.161$ ;  $p = 0.001$ ) of managerial decision-making, while it is negatively related to the Intuitive ( $r = -0.095$ ;  $p = 0.050$ ) style.

The quality of relationships with management is not related to any of the managerial decision-making styles. The dimension of work organization – Rewards and recognition – is positively correlated with the Rational managerial decision-making style ( $r = 0.303$ ;  $p < 0.001$ ), this is also the strongest correlation. Finally, the work organization dimension Workload is positively correlated with

Rational ( $r = 0.133$ ;  $p = 0.006$ ) and Dependent ( $r = 0.107$ ;  $p = 0.028$ ) styles of managerial decision-making.

Based on the presented results, statistically significant correlations of low intensity are determined between the work organization of public enterprises and managerial decision-making styles, thus confirming the hypothesis.

Based on the significance testing of the regression model according to the criterion Rational decision-making style shown in Table 4, it is determined that the set of predictors consisting of indicators of organizational culture and dimensions of work organization significantly predict Rational decision-making style ( $p < 0.001$ ).

**Table 4**

Testing the significance of the regression model according to the criterion Rational decision-making style

Model	*SS	Df	MS	F	p
Regression	570,814	17	33,577	5,780	0,000 <sup>b</sup>
Residual	2358,620	406	5,809		
Total	2929,434	423			

\*SS – sum of squares; df – degrees of freedom; MS – mean square; F – statistic; p – significance

Based on individual predictor contributions shown in Table 5, it was determined that 2 dimensions of work organization are statistically significant predictors of the Rational style of managerial decision-making: Quality of relationships with colleagues ( $\beta = 0.148$ ;  $p = 0.045$ ) and Awards and recognition ( $\beta = 0.259$ ;  $p < 0.001$ ).

**Table 5**

Partial contributions of individual predictors according to the criterion Rational managerial decision-making style

Variables	Non-standardized coefficient		Standardized coefficient	**t	***p
	B	*S.E	Beta		
Quality of the physical environment	0.010	0.048	0.014	0.211	0.833
Quality of relationships with colleagues	0.260	0.129	0.148	2.014	0.045
Quality of relationships with management	-0.076	0.051	-0.094	-1.478	0.140
Awards and recognitions	0.215	0.048	0.259	4.442	0.000
Workload	-0.061	0.063	-0.066	-0.973	0.331

\*S.E – standard error; \*\*t – statistic; \*\*\*p – significance

Based on the coefficient of determination shown in Table 6, it is determined that the set of predictors explains 12.7% of the variance of the variable Intuitive decision-making style.

**Table 6**

General regression model – determination of the coefficient of determination by the criterion Intuitive decision-making style

Model	*R	**R <sup>2</sup>	Customized R <sup>2</sup>	***S.E
1	0.356 <sup>a</sup>	0.127	0.090	3.902

\*R – multiple correlation coefficient; \*\*R<sup>2</sup> – coefficient of determination; \*\*\*S.E – standard error

Based on the significance testing of the regression model according to the set criterion Intuitive decision-making style shown in Table 7, it is determined that the set of predictors consisting of indicators of work organization dimensions significantly predict Intuitive decision-making style ( $p < 0.01$ ).

**Table 7**

Testing the significance of the regression model according to the criterion Intuitive decision-making style

Model	*SS	Df	MS	F	p
Regression	899.945	17	52.938	3.476	0.000 <sup>b</sup>
Residual	6183.932	406	15.231		
Total	7083.877	423			

\*SS – sum of squares; df – degrees of freedom; MS – mean square; F – statistic; p – significance

Based on the individual predictor contributions shown in Table 8, it is determined that two dimensions of work organization are statistically significant predictors of the Intuitive style of managerial decision-making: the quality of the physical environment ( $\beta = 0.256$ ;  $p < 0.001$ ) stood out as a positive predictor, while the volume of work ( $\beta = -0.154$ ;  $p = 0.031$ ) stood out as a negative predictor of the Intuitive style of managerial decision-making.

**Table 8**

Partial contributions of individual predictors according to the criterion Intuitive managerial decision-making style

Variables	Non-standardized coefficient		Standardized coefficient	**t	***p
	B	*S.E	Beta		
Quality of the physical environment	0.290	0.077	0.256	3.747	0.000
Quality of relationships with colleagues	-0.215	0.209	-0.079	-1.027	0.305
Quality of relationships with management	-0.012	0.083	-0.009	-0.141	0.888
Awards and recognitions	0.016	0.078	0.013	0.206	0.837
Workload	-0.220	0.101	-0.154	-2.169	0.031

\*S.E – standard error; \*\*t – statistic; \*\*\*p – significance

Based on the coefficient of determination shown in Table 9, it is determined that the set of predictors explains 12.7% of the variance of the dependent decision-making style variable ( $p < 0.001$ ).

**Table 9**

General regression model – determination of the coefficient of determination by the criterion Dependent decision-making style

Model	*R	**R <sup>2</sup>	Customized R <sup>2</sup>	***S.E
1	0.357 <sup>a</sup>	0.127	0.091	3.256

\*R – multiple correlation coefficient; \*\*R<sup>2</sup> – coefficient of determination; \*\*\*S.E – standard error

Based on the significance of testing of the regression model according to the criterion Dependent decision-making style as shown in Table 10, it is determined that the set of predictors consisting of indicators of work organization dimensions significantly predict Dependent decision-making style ( $p < 0.01$ ).

Based on individual predictor contributions shown in Table 11, it is determined that one dimension of work organization statistically significantly predicts the Dependent style of managerial

decision-making. The indicators of work organization stood out as positive predictors of the Dependent style of managerial decision-making. The quality of relationships with colleagues stood out as a positive significant predictor of the Dependent style of managerial decision-making ( $\beta = 0.242$ ;  $p = 0.002$ ).

**Table 10**

Testing the significance of the regression model according to the Dependent decision-making style criterion

Model	*SS	df	MS	F	p
Regression	628.120	17	36.948	3.483	0.000 <sup>b</sup>
Residual	4306.474	406	10.607		
Total	4934.594	423			

*S – sum of squares; df – degrees of freedom; MS – mean square; F – statistic; p – significance*

**Table 11**

Partial contributions of individual predictors according to the criterion dependent management decision-making style

Variables	Non-standardized coefficient		Standardized coefficient	**t	***p
	B	*S.E	Beta		
Quality of the physical environment	0.028	0.065	0.029	0.429	0.668
Quality of relationships with colleagues	0.550	0.174	0.242	3.156	0.002
Quality of relationships with management	-0.099	0.069	-0.094	-1.421	0.156
Awards and recognitions	-0.043	0.065	-0.040	-0.659	0.510
Workload	0.086	0.085	0.072	1.018	0.309

*\*S.E – standard error; \*\*t – statistic; \*\*\*p – significance*

The fourth regression model determines whether the group of predictors consisting of indicators of work organization dimensions significantly predicts the Avoidant style of decision-making.

Based on the coefficient of determination shown in Table 12, it is determined that the set of predictors explains 14.5% of the variance of the variable Avoidant decision-making style ( $p < 0.001$ ).

**Table 12**

General regression model – determination of the coefficient of determination by the criterion Avoidant style of decision-making

Model	*R	**R <sup>2</sup>	Customized R <sup>2</sup>	***S.E
1	0.380 <sup>a</sup>	0.145	0.109	3.571

*\*R – multiple correlation coefficient; \*\*R<sup>2</sup> – coefficient of determination; \*\*\*S.E – standard error*

Based on the significance of testing of the regression model according to the criterion Avoidant decision-making style as shown in Table 13, it is determined that the set of predictors consisting of indicators of work organization dimensions significantly predict Avoidant decision-making style ( $p < 0.001$ ).

Based on individual predictor contributions shown in Table 14, it is determined that one dimension of work organization is a statistically significant predictor of the Avoidant style of managerial decision-making - Quality of relationships with colleagues ( $\beta = -0.200$ ;  $p = 0.009$ ).

**Table 13**

Testing the significance of the regression model according to the criterion Avoidant decision-making style

Model	*SS	Df	MS	F	p
Regression	876.290	17	51.546	4.041	0.000 <sup>b</sup>
Residual	5178.304	406	12.754		
Total	6054.594	423			

\*SS – sum of squares; df – degrees of freedom; MS – mean square; F – statistic; p – significance

**Table 14**

Partial contributions of individual predictors according to the criterion Avoidant managerial decision-making style

Variables	Non-standardized coefficient		Standardized coefficient	**t	***p
	B	*S.E	Beta		
Quality of the physical environment	0.071	0.071	0.068	1.006	0.315
Quality of relationships with colleagues	-0.504	0.191	-0.200	-2.639	0.009
Quality of relationships with management	0.005	0.076	0.004	0.063	0.950
Awards and recognitions	-0.095	0.072	-0.079	-1.321	0.187
Workload	0.042	0.093	0.032	0.454	0.650

\*S.E – standard error; \*\*t – statistic; \*\*\*p – significance

Based on the coefficient of determination shown in Table 15, it is determined that the set of predictors explains 17.3% of the variance of the variable Spontaneous style of managerial decision-making.

**Table 15**

General regression model - determination of the coefficient of determination by the criterion Spontaneous decision-making style

Model	*R	**R <sup>2</sup>	Customized R <sup>2</sup>	***S.E
1	0.416 <sup>a</sup>	0.173	0.138	3.509

\*R – multiple correlation coefficient; \*\*R<sup>2</sup> – coefficient of determination; \*\*\*S.E – standard error

Based on the significance of testing of the regression model according to the criterion Spontaneous managerial decision-making style as shown in Table 16, it is determined that the set of predictors consisting of indicators of organizational culture and dimensions of work organization significantly predict Spontaneous decision-making style ( $p < 0.001$ ).

**Table 16**

Testing the significance of the regression model according to the criterion Spontaneous style of decision-making

	*SS	Df	MS	F	p
Regression	1043.972	17	61.410	4.987	0.000 <sup>b</sup>
Residual	4999.537	406	12.314		
Total	6043.509	423			

\*SS – sum of squares; df – degrees of freedom; MS – mean square; F – statistic; p – significance

Based on the individual predictor contributions shown in Table 17, it is determined that all dimensions of work organization are statistically significant predictors of the Spontaneous managerial decision-making style. Quality of the physical environment ( $\beta = 0.275$ ;  $p < 0.001$ ) and

Workload ( $\beta = 0.142$ ;  $p = 0.049$ ) were shown to be positive predictors of this managerial decision-making style, while Quality of relationships with colleagues ( $\beta = -0.235$ ;  $p = 0.002$ ), Quality of relationships with management ( $\beta = -0.182$ ;  $p = 0.005$ ) and Rewards and recognition ( $\beta = -0.147$ ;  $p = 0.013$ ) were shown to be negative predictors of the Spontaneous managerial decision-making style.

**Table 17**

Partial contributions of individual predictors according to the criterion Spontaneous managerial decision-making style

Variables	Non-standardized coefficient		Standardized coefficient	** t	*** p
	Beta	*S.E	Beta		
Quality of the physical environment	0.287	0.070	0.275	4.131	0.000
Quality of relationships with colleagues	-0.591	0.188	-0.235	-3.146	0.002
Quality of relationships with management	-0.211	0.075	-0.182	-2.828	0.005
Awards and recognitions	-0.176	0.071	-0.147	-2.497	0.013
Workload	0.175	0.091	0.142	2.218	0.049

\*S.E – standard error; \*\*t – statistic; \*\*\*p – significance

### 3.2 The Influence of Demographic Characteristics on Decision-making

Based on the results, it is determined that gender differentiates the decision-making method of managers into three styles of managerial decision-making – Intuitive ( $t = 2.135$ ;  $p = .033$ ), Dependent ( $t = 2.961$ ;  $p = 0.003$ ) and Avoidant ( $t = 4.317$ ;  $p < 0.001$ ) managerial decision-making styles. Based on the arithmetic means, it is determined that the aforementioned 3 styles are more characteristic of women, while the tendencies towards Spontaneous and Rational in relation to gender were equal ( $p > .05$ ). Age and experience, as variables that are highly correlated ( $r = 0.901$ ;  $p < 0.000$ ), achieve significant correlations with the three managerial decision-making styles. Specifically, age is positively correlated with Intuitive ( $r = 0.100$ ;  $p = 0.038$ ), Dependent ( $r = 0.097$ ;  $p = 0.045$ ) and Avoidant ( $r = 0.208$ ;  $p < 0.001$ ) managerial decision-making styles. Total work experience is positively correlated with Intuitive ( $r = 0.102$ ;  $p = 0.035$ ), Dependent ( $p = 0.116$ ;  $p = 0.016$ ) and Avoidant ( $p = 0.182$ ;  $p < 0.001$ ) managerial decision-making styles. No significant correlations of age and work experience were observed with Rational and Spontaneous managerial decision-making styles ( $p > 0.05$ ). The MANOVE results indicate that education has a statistically significant high effect on managerial decision-making styles (Wilks' Lambda = 0.872;  $p < 0.001$ ;  $\eta^2 = 0.045$ ).

According to the results of the between-group effects test, there are statistically significant differences in all managerial decision-making styles included in the study – Rational ( $F(3,28.420) = 4.200$ ;  $p = 0.006$ ;  $\eta^2 = 0.029$ ), Intuitive ( $F(3,56.384) = 3.422$ ;  $p = 0.017$ ;  $\eta^2 = 0.024$ ), Dependent ( $F(3,56.384) = 5.564$ ;  $p = 0.001$ ;  $\eta^2 = 0.038$ ), Avoidant ( $F(3,74.4230) = 5.370$ ;  $p = 0.001$ ;  $\eta^2 = 0.037$ ) and Spontaneous ( $F(3,99.012) = 7.251$ ;  $p < 0.001$ ;  $\eta^2 = 0.049$ ) with identified large effects on all variables included styles.

The results indicate the prevalence of the Rational style of managerial decision-making in relation to educational categories. The rational style of managerial decision-making is more pronounced in managers with a college degree ( $p = 0.011$ ) and completed master's, specialist and doctoral studies, than in managers who have completed high school ( $p = 0.037$ ). The intuitive style of managerial decision-making is more pronounced in managers with a high school degree compared to those who have completed high school ( $p = 0.017$ ). The dependent style of managerial decision-making is more pronounced in managers with a high school degree compared to those who have completed master's, specialist or doctoral studies ( $p = 0.003$ ). The avoidant style of managerial decision-making is more pronounced in managers with a college degree compared to those who have completed high

school ( $p = 0.034$ ) and master's, specialist or doctoral studies ( $p = 0.013$ ). Also, this style of managerial decision-making is more pronounced among managers who have completed secondary school compared to those who have completed master's, specialist or doctoral studies ( $p = 0.009$ ). The spontaneous style of managerial decision-making decreases linearly with education, being most characteristic among managers with secondary school education, then among managers with university ( $p < 0.001$ ) and college ( $p = 0.021$ ), while managers who have completed master's, specialist or doctoral studies have the least tendency towards this style ( $p < 0.001$ ).

#### **4. Discussion**

Based on the distribution of variables related to managerial decision-making styles, the rational decision-making style was identified as the most dominant among managers in public enterprises. This finding is consistent with results reported in previous studies conducted under conditions of turbulence and uncertainty. The rational decision-making style implies that decisions are based on the analysis and consideration of relevant information and data [17] This style is often associated with the process of rationalization, which means that decisions are made based on facts, analysis and logical reasoning [25].

The intuitive decision-making style is based on instinct, experience and assessment of the situation [17]. Intuition can be useful because it allows managers to make decisions in the short term, when there is not enough data, or when the situation is uncertain [26], [27], [28]. This decision-making style proves particularly useful in situations that require short-term decisions and rapid responses to changing conditions. The findings indicate that, within a sample of managers in public enterprises operating under conditions of uncertainty, the identified dominant styles can complement one another within the existing organizational environment.

Specifically, the rational decision-making style provides structure and systematic analysis, while the intuitive style enables rapid assessment and timely responses in uncertain situations. The combination of these two styles may enable managers in public enterprises to make more effective decisions in complex and uncertain situations. The dimensions of work organization indicate that the Quality of relationships with colleagues contributes most significantly to the overall organization of work in public enterprises. This finding further underscores the importance of the human factor and highlights those fostering high-quality interpersonal relationships among employees is crucial for the effective functioning of public enterprises.

Based on the results, significant correlations were found between these variables, which confirmed the general hypothesis of the research. Based on the initial premises of the results, it can be emphasized that the development of a model of managerial decision-making through dimensions of work organization through multiple linear regression in further analysis was justified.

Within the framework of work organization, two dimensions stood out as significant-Quality of the physical environment as a positive and Workload as a negative predictor of the Intuitive style of managerial decision-making. High scores on the Quality of the physical environment dimension suggest that managers in this model value the environment in which they work and believe that it can influence their productivity. Based on testing of the significance of the regression model according to the set criterion of Dependent decision-making style, it is determined that the set of predictors consisting of indicators of work organization dimensions significantly predict Dependent decision-making style. As positive predictors of Dependent decision-making style of managerial decision-making, indicators in terms of work organization stood out, the quality of relationships with colleagues stood out as a positive significant predictor of Dependent decision-making style of managerial decision-making. The spontaneous style of managerial decision-making is characterized

by rapid decision-making without detailed consideration of possible options [17]. High scores on the dimensions Quality of the Physical Environment and Workload indicate an environment that stimulates spontaneous decision-making. The quality of the physical environment refers to the climate, ambiance, equipment, and other factors that contribute to productivity [22]. A higher workload usually requires faster decision-making, which can lead to the adoption of a spontaneous style. On the other hand, low scores on the dimensions Quality of Relationships with Colleagues, Quality of Relationships with Management, and Rewards and Recognition indicate a lack of motivation and support that would encourage careful decision-making. The lack of quality relationships and rewards can lead to frustration and a lack of interest in detailed analysis of the situation, which is characteristic of the Spontaneous style. Although the Spontaneous style can be useful in situations that require quick decisions, this style can also lead to undesirable consequences, especially in complex and uncertain situations. The lack of quality relationships with colleagues and management can lead to disagreements and a lack of support in the decision-making process. This can lead to isolation and a lack of information exchange, which is crucial for effective decision-making with favorable outcomes. The scientific literature discusses the existence of individual differences in decision-making styles or response patterns that people use in decision making [29], [30]. Understanding these styles is important, as it has been found that the way a person approaches decisions has important consequences for work performance [31].

This study found that gender determines three styles of managerial decision-making in public enterprises – Intuitive, Dependent, and Avoidant, under conditions of uncertainty. The results indicate that the three aforementioned styles are more characteristic of the female sub-sample of managers.

Gender stereotypes refer to the prejudices and expectations that society has towards men and women, which are reflected in different spheres of life, including work [32]. However, little research has addressed the question of whether men rely more on reason and women on intuition when it comes to decision-making. Although there are several studies that show that women are more inclined to be intuitive [33], there are also other studies that do not find significant differences between men and women in this regard [34]. In addition, several studies have addressed the question of whether women are more likely to seek social support than men and whether this leads to women being dependent on other people in the decision-making process [35]. Research has shown that women are relatively more willing to seek help and support from others [36], [37]; but this does not mean that women are necessarily more dependent on other people when making decisions, while male managers tend to use a more rational approach to the decision-making process [38].

Research has shown that there is a difference in decision-making styles between male and female managers, with female managers more often inclined to the Avoidant decision-making style, compared to male managers. The Avoidant decision-making style is characterized by a cautious approach and risk avoidance. This style is often associated with a lack of self-confidence, poor decision-making, and a tendency to avoid conflict.

Models of aging and decision-making assume that older individuals rely more on emotions and experience and less on reason than younger people [39]. Fluid cognitive abilities and working memory support the decline in rational decision-making in old age [40]. Emotional and affective skills that support intuition may remain stable or even improve with age.

The fact is that older managers have more experience in dealing with different situations, which means they have more information available to them that they can use to make decisions. Also, after many years of experience, older managers become more sensitive to “signals” and intuitively recognize certain patterns and trends in business. In the context of the Dependent style of managerial

decision-making, there are two possible directions of explanation. The first certainly lies in the managers' awareness of the decline in their abilities. One possible reason may be that older managers are more aware of their limitations and shortcomings than their younger colleagues. [40] Over the years, these managers have had more opportunities to face failures and mistakes, and to learn that cooperation with others is often necessary to avoid mistakes or achieve goals. Another factor that may contribute to the Dependent style of decision-making of older managers is the greater attention they pay to ethical and moral issues. Senior managers are often in a position to make decisions that can have long-term consequences for the organization and society as a whole. Therefore, they may be more cautious in their decisions and more likely to consider other people's opinions, to ensure that their decisions are ethically correct and will not harm the organization or society. Finally, the positive association between the Avoidant management decision-making style may be related, in addition to low self-confidence and insecurity, to the tendency of older and more experienced managers to delegate and empower colleagues.

Also, a significant effect of education has been established in all styles of managerial decision-making. The Rational style of managerial decision-making is more pronounced in managers with higher levels of education, compared to lower managers. Higher education managers often possess the necessary knowledge and skills for analytical opinion, which they acquired during schooling, as well as through work experience. They are familiar with the methods of collecting, analysis and interpretation of data and have the ability, to understand complex information and problems. They also usually have access to more complex and more extensive sources of information, such as scientific studies, economic reports and other professional publications [41]. Higher education managers often work in demanding and complex environments, where they are expected to bring rapid, but also more thoughtless decisions. As a result, they often rely on a rational style of decision-making, to ensure that decisions they make, are fact-based [42].

Managers with completed high school have a more pronounced, intuitive style of managerial decision-making compared to those who finished college. Potentially there are several reasons why intuition is more common among managers with lower education. First, lower education managers usually have lower formal training in management, which means that they must rely on their instincts and experience in decision-making [43]. Second, higher education managers, tend to be more analytically oriented and use empirical data in decision-making, while managers with lower education often do not have access to the same types of data, or do not have time for analysis. Managers with lower education can face fewer complex decisions than those with higher education, which means that they need less analytical skills and more intuitions when making a decision. Finally, lower education managers can be more inclined to rely on their instincts and experience, as they can consider them valuable and relevant resources in decision-making.

Dependent style of managerial decision-making, is more pronounced in managers with completed high school, compared to those who have completed master, specialist or doctoral studies. Research has shown that managers with lower education, more often, rely on other people, in decision-making. This characteristic often associates with dependence on others and a lack of confidence in its own decision-making skills [44].

Higher education managers, on the other hand, often have more independence in decision-making and are less prone to seek other people's opinion. One of the reasons for this difference can be related to education and different ways in which self-confidence is developed. Managers with higher education usually have more opportunities for independent decision-making and practical application of their knowledge, while managers with lower education, often work on jobs that involve less independence and a greater need for the support of others [45]. Another possible difference is

related to personality. Managers with lower education often have a greater need for support of others and are less prone to risk. This can be connected with a higher tendency to depend on other people when making decisions. On the other hand, managers with higher education, often have more self-confidence and decision-making independence.

The avoidance style of managerial decision-making is more pronounced in managers with completed higher education compared to those, who finished higher educational levels, master, specialist and doctoral studies. Also, this style of managerial decision-making is more pronounced in managers, who graduated from high school, compared to those who finished master, specialist or doctoral studies. The avoidance style is characterized by delaying decision making, avoiding dealing with the problem or transfer of responsibility to others.

Research has shown that this decision style is more commonly used by managers with lower education, compared to those with higher education [45]. One explanation for this trend is that managers with lower education can feel less secure in their ability to make good decisions and face challenges.

Spontaneous style of managerial decision-making linearly decreases with education, it is a mostly characteristic of managers with high school, then managers who obtained college diplomas, while least tendencies towards this style of managerial decision making have the ones who completed master, specialist or doctoral studies.

There is research that indicate that younger and less educated people are more inclined to spontaneous decision-making style, while older and more educated prefer a rational or analytical approach. However, this can be interpreted in different ways and there is no unequivocal evidence, which support these conclusions. Therefore, they can rely more on their instinct and first reaction to the situation, instead of relying on thinking and analysis [46]. On the other hand, more educated people can be better trained for critical thinking, which could lead to a greater inclination towards the rational approach to decision-making.

The next characteristic of the decision makers for which it has been assumed to have an effect on the decision-making style is the status of a position, in the sense whether the manager progressed, i.e. did not progress, in his career. Position status statistically significantly differentiated the Avoidance style of managerial decision-making-characteristic of managers who have not progressed during their career. Managers with Avoiding style of decision-making often avoid decision-making, which can prove to be risky. When faced with complex problems or decisions, they can remain in the analysis and planning phase, without taking concrete actions. In addition, managers with this decision-making style often avoid taking responsibility for their actions, which can lead others to lose confidence in their ability to manage situations. As a result, managers with Avoiding decision-making style can be perceived as indecisive and incompetent, which may interfere with their progress in the organization. Establishing a balance between consideration of potential risks and action undertaking, can be critical to the success of managers in the organization.

## **5. Conclusions**

Any decision-making process has long-term implications for the functioning of the organizational system; therefore, it requires a thorough understanding of both organizational and individual variables, as well as the establishment of a balance between them [6], [47].

This process is particularly demanding in the context of a turbulent environment in which contemporary organizations operate. Decision-making that results in negative outcomes poses risks to all actors within the organizational system and may contribute to the development of psychological distress among employees [48]. The study aimed to examine the relationship between

decision-making styles and work organization in public organizations. The results revealed a statistically significant relationship between decision-making styles and work organization within the organizational context. By identifying the specific dimensions of work organization that predict various decision-making styles, organizations can adapt their efforts to solve specific challenges and opportunities associated with each style with multi-criteria decision-making model [49].

A limitation of the study lies in the use of a cross-sectional design, which involved data collection at a single point in time. As a result, it is not possible to establish causal relationships or determine the directionality of the observed associations under conditions of uncertainty. Ability to understand how the organization of work influences different decision-making styles, managers can proactively adjust their strategies and processes to better harmonize with the requirements of a dynamic and complex environment in which public companies operate [50].

The shortcomings of the research are reflected in the limitations of the research sample and the methodological concept that somewhat guided the research results. Since public sector organizations are very often under the patronage of political parties, it was not possible to expect completely honest answers from the respondents, there is a high possibility of socially desirable answers. Also, it is necessary to measure the duration of individual processes, which would make management, and therefore decision-making, much easier and more successful [51]. Despite all the limitations of the research, we believe that it is necessary to work research on the overall improvement of the functioning of public enterprises.

### **Author Contributions**

Conceptualization, S.M.V. and M.S.; methodology, I. Đ. R.; software, D.N. and M.S.; formal analysis, A. N. T.; writing—original draft preparation, S.M.V., B.D., M.S.; writing—review and editing, D.N. and A. N. T.; visualization, S.M.V., M.S., B.D and L.S.; supervision, I. Đ. R., D.N. and B.D. All authors have read and agreed to the published version of the manuscript.

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### **Data Availability Statement**

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding authors.

### **Conflicts of Interest**

The authors of the paper have no conflict of interest related to this research.

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