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PREDICTIVE ABILITY OF VARIABLES RELATED TO THE ASPECTS OF SCHOOL PRINCIPALS' MANAGEMENT

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ABSTRACT

The authors of this research paper believe that school principals play an irreplaceable role in raising the school efficiency. Their role is rather neglected in the Croatian academic debates on improving the quality of school system. This research intends to enhance the scientific level of their position as irreplaceable factors in a school system. The research aims to identify and illustrate the dominant model of Croatian school principals' leadership and management carried out in 3 Slavonian counties. Furthermore, the aim is to identify which predictor variables anticipate these functions, i.e. what are the reasons for principals choosing the specific module. The sample consists of 94 school principals from both rural and urban schools. For the purpose of this research, a questionnaire composed in 3 parts with 60 statements was constructed. It includes two scales; one studying the prevalence of the traditional management models and the other studying the prevalence of the modern management models. Their reliability is satisfactory being $\alpha=0,784$ for the traditional and $\alpha=0,833$ for the modern scale. Descriptive analysis was used to identify the main characteristics of principals' leadership and management while factor analysis was used to extract 4 components of the traditional and 4 components of the contemporary management: bureaucratization, one-sided relations with employees, meeting the external demands, objectifying employees, distributive and transformational leadership, adaptability and work autonomy. In the final phase, the robust regression was used to study the predictive value of independent variables on the resulting components of the traditional and modern management. The obtained results point out that the traditional model of management is less dominant. The impact of the Ministry of Education, Science and Sports has statistically significant predictive value ($p<0,001$) on two traditional management aspects. Engaging school employees in deciding about school aims has statistical significance ($p<0,001$) being a predictor of transformational and distributive leadership. The principals' work experience is a predictor of work autonomy ($p<0,001$), while a school size predicts bureaucratization ($p<0,05$). The type of communication has negative predictive ability in terms of several traditional management aspects ($p<0,05$ and $p<0,01$) and positive predictive ability regarding two modern management aspects (both at $p<0,001$). Due to the substantial impact the aforementioned Ministry has on schools working principles, the authors suggest the decentralization measures aimed at dispersing the mentioned impact which will result in more autonomy for principals and eventually enable the development and realization of more effective educational management. In addition, it is crucial to engage employees in decision making regarding school working and development policies, modify the patterns of communication and implement specialized assistance for principals in large schools.

Keywords: modern, strategic, sustainable, traditional, transformational

INTRODUCTION

In many contemporary strategies of enhancing school efficiency, the role of a school principal is often unacknowledged. School management greatly determines the course of an educational system in general reforms. Moreover, it determines the development of educational institutions. The available literature concerning school management provides differently described roles of school principals; on the one hand, there are principals initiating changes, whereas on the other, there are ones refusing and fighting against changes. Education is dynamic and risky process which in its institutionalized form requires a willing, competent and capable management to deal with upcoming or omnipresent changes. A school as an institution is especially sensitive to social changes; its role has dramatically changed from an institution that used to educate factory workers towards an institution that creates creative and intellectual people.

Newer perceptions of a school are associated with social circumstances and changes that have been taking place in developed capitalist countries. Further, they are adopted from newer theoretical models of economic management. New social circumstances cause changes in social relations in terms of raising democratization and establishing cooperative relations of all its participants which can be realized by decentralizing public services, thus raising their efficiency. Regarding education, that means more autonomy, better education and effective spending of public resources [9]. Strengthening the schools autonomy is proportional to principals' responsibility for the results and achievements of a school. Hence, a school cannot be run by a person whose aim is to fulfill someone's requests but a person who seeks and conducts demanding changes.

New models of organization reject the old mechanistic perspective of organization based on the Newtonian paradigm [1] that assumes precision, linearity and predictability simultaneously turning towards the complexity theory and new paradigm of organization as an adaptive, nonlinear system in which nothing is predictable and everything is fluid [10].

The current dominating model of a school is bureaucratic being characterized by power, authority, continuing evaluation and rigidly defined boundaries. At the same time, there is a need for a different model characterized by direction, flexibility, fluidity, development, distribution of the knowledge, mentoring and talents induction [14].

The models of school leadership

A formal model of school management is traditional and bureaucratic, marked by "top-down" management [5]. It is characterized by strong hierarchy, normativism, authoritarianism, rigidity and centralization not emerging from a school itself but from the entire infrastructure [15]. A school principal in such system does not take into account employees' opinion; only his own and his superiors. Putting a great emphasis on a technical side of a school, employees and their professional needs are ignored. Principals' communication in this model is entirely one-sided; hence teachers hold their creative ideas for themselves being afraid of stepping up. A principal is engaged with the functional aspects of a school and is afraid of risk-taking due to a possible disruption of a predictability pattern. A school where this model is dominant is exceptionally controlling, inefficient and closed to new ideas. Simultaneously, the pattern of implementing and realizing school plans is enforced. Successful schools are moving

away from this archaic model of school management, which assumes predictability, precision and rigidity [5].

A feature of modern management is leading. While management is mostly associated with technical things such as maintaining and performing certain policies, controlling and administration, leading is often understood as a process of building influence on people by caring for their development and raising trust on a school-wide level [2]. A leader is a person who follows one's own intuition and encourages innovation relying on emotions and unifying people by visions and values [15]. In leading, there is less emphasis on force and more on voluntariness, thus principals rely on human resources of their institution.

One of the main aspects of leading is vision. Vision is a mental projection of future in which the fundamental values that a principal is aiming for are contained. Further, using vision, a principal aims to gain teachers' support for its realization. Vision is also the chief construct of transformational leadership by which both an individual and a leader transcend their private interests for a school's efficiency [11]. Hence, they raise the confidence and motivation of employees, so their work efficiency goes beyond all expectations [12].

As a reaction to frequent, short-termed and usually unreasonable school reforms, that eventually lose their effect and cause unsustainability of the system, sustainable leadership model has arisen [8]. Sustainable leadership is a model developing and preserving learning that spreads and becomes permanent. The very idea of spreading is associated with the belief that in complex systems like schools, a principal cannot be a "lone warrior"; instead he needs to distribute his leadership to ensure that everyone shares his vision of improvement. Further, one uses collaboration and cooperation to realize the vision. This approach to leadership is focused on deep learning, which is an authentic learning that encourages intellectual, social and emotional capacities [7]. Special attention in this approach is paid to the role of time which is concretized at the time of school leadership change [6]. Even the most successful school principals have to step down eventually being replaced by someone who does not necessarily need to continue realizing their ideas and might have a different approach towards leadership. That causes a feeling of discontinuity that leads to cynicism and entrenching of teachers in their old proven methods of teaching [6].

Strategic approach to school managing is a conceptual model that is partially, with certain modifications, adopted from the business sector to ensure applicability in education. Strategic leadership is defined as optimal positioning of the organization to achieve optimal goals [13] or as the translation of vision and moral purpose into action [3]. A school that relies on this style has a respectably settled short-term and long-term plan, i.e. a balance of operative and holistic [4], where a short-term plan is detailed, while a long-term is broad and less detailed. A strategic principal has a vision without daydreaming knowing how to concretize it into an action. A strategic principal is a person constantly being unsatisfied with the current state, hence continually searching for new ways of improving the efficiency [3]. One of the significant abilities of such principals is the ability of strategically examining a situation; to put it differently, ascending above the everyday management routines and distancing from a school to get a wider perspective of an organization and its environment. This includes a constant analysis of its context and deep reflection on the possibilities of a school. Such principal is also a model of learning, because constantly searching for new and questioning the old knowledge, a principal models the behavior to be expected from employees [4].

Such principal is also able to harmonize employees and enable their creative activity as a prerequisite of efficiency [3].

Methodology

The authors have decided to determine and describe the models of school management; their main characteristics within the managing styles of Croatian elementary and secondary school principals and to find out the possible internal and external predictors of it. The aim of this paper is to determine the dominant managing model of school principals and to analyze which variables characterize and define the recognized model. Several research questions emerge from the aim: do principals rely more on traditional or modern school management models? Which variables statistically significantly predict the aspects of traditional and modern school management?

The research questions have led to several hypotheses being established: H.1. School principals mostly rely on the traditional models of school management; H.2. Ministry of Education, Science and Sports has a statistically significant predictive value on one or more aspects of traditional school management; H.3. Both style of communication and inclusive establishment of school aims have statistically significant predictive value on one or more aspects of modern school management.

After reviewing the relevant literature, a questionnaire composed in three parts with 60 items was constructed. The first part analyses general socio-demographic variables referring to a principal and a school. The second and the third part consist of a Likert scale with 24 statements in the first scale of traditional management and 22 statements in the second scale of modern management. Cronbach's alpha coefficient of internal consistency for the final scale is $\alpha=0,784$ for the traditional scale and $\alpha=0,833$ for the modern scale being considered satisfactory by the authors.

The sample for this research was made randomly. The researched area consists of three counties, namely Vukovar-Syrmia, Osijek-Baranja and Virovitica-Podravina. According to the statistics provided by the Ministry of Education, Science and Sports, there is a total of 198 elementary and secondary schools in the aforementioned counties. 148 schools or 75% were randomly chosen for this research.

Results and discussion

The results are distributed across both extremes on the traditional scale in comparison to the modern scale. Skewness test on the modern scale, where almost all items have a negative result and several even more than -1, points out to the high level of negative asymmetry.

15 statements on the traditional scale and 17 statements on the modern scale have a positive kurtosis, meaning that there is mostly a positive deviation from the Gaussian curve together with higher steepness.

High results followed by high modes ($M=4,19$) are noted on the modern scale, while somewhat lower than their theoretical average ($M=2,67$) results are noted on the traditional scale.

H.1. In the analysis of the collected indicators, the examinees achieve significantly lower results on the traditional ($M=2,67$) than on the modern scale ($M=4,19$), therefore there is no evidence that could support the first hypothesis of the authors, hence H.1. is rejected.

On the traditional scale, the following statements were observed: **1.** My school management style is pragmatic; **2.** I am mostly focused on the present; **3.** I rely on

rationality; 4. I put emphasis on material and technical issues; 5. I consider my school principal position influential; 6. In everyday work, I exclusively rely on legislation; 7. I personally know what is best for my school; 8. I do not consult my employees when bringing important decisions; 9. My school is firmly directed towards a goal I personally set; 10. It is unimportant whether employees approve of my decisions; 11. I often reject employees' proposed solutions of school issues; 12. I am by far the best expert for school issues; 13. I expect unquestioning obedience of my decisions; 14. Every employee has an exact role in my school; 15. All employees are available to me at my request; 16. I solve conflicts in a way I am satisfied with the solution; 17. I mostly issue commands and demands to employees; 18. My employees are a resource for realization of my school aims; 19. I mostly rely on legitimate authority; 20. Professional issues of my employees are unimportant; 21. I maintain firm relations with formal educational bodies; 22. I rely mostly on guidelines provided by the Ministry of Education, Science and Sports; 23. Cooperation of my school and parents is mostly formal; 24. Governing Ministry guidelines are essential to my work.

On the modern scale, the following statements were observed: 1. My management style can be described as innovative; 2. I rely on emotions; 3. I encourage my employees to provide innovative solutions; 4. I am mostly focused on the future; 5. I have a long-term vision of my school's development; 6. I delegate responsibilities in complex projects; 7. I value my employees' opinion regarding school issues; 8. I consult most employees before making important decisions; 9. I consider my employees exceptionally important for optimal functioning of a school; 10. I lead my employees towards goals reached through consensus; 11. Employees cooperate with me on realizing school aims; 12. My school is focused towards a shared goal; 13. Employees inform me on their professional issues without hesitation; 14. Interpersonal relations in my school are cordial and collegial; 15. I have a friendly attitude towards my employees; 16. My employees are highly motivated; 17. I rely mostly on professional authority; 18. I try to gain support of my employees for important projects without using force; 19. I solve conflicts in a way that makes everyone satisfied with the solution; 20. Cooperation of my school and parents transcends the borders of formality; 21. Guidelines of the governing educational body are not especially important to me; 22. I consider steering from the formal educational bodies unimportant in my work.

Table 1. Likert scale analysis regarding traditional and modern management

Traditional Scale					Modern Scale				
Item	M	SD	Skewness	Kurtosis	Item	M	SD	Skewness	Kurtosis
1	4,59	,599	-1,593	3,582	1	3,57	,951	-.382	,140
2	3,49	,969	-.852	,730	2	2,81	1,125	-.308	-1,121
3	4,52	,606	-1,271	2,632	3	4,73	,533	-2,485	8,524
4	3,48	,896	-.639	,423	4	4,40	,575	-.325	-,754
5	2,28	1,185	,276	-1,261	5	4,33	,674	-.817	,790
6	4,20	1,000	-1,258	,966	6	4,45	,671	-1,125	1,334
7	3,17	1,089	-.628	-,592	7	4,83	,377	-1,805	1,293
8	1,49	1,012	2,187	3,975	8	4,56	,691	-1,568	2,081
9	2,46	1,039	-.021	-1,153	9	4,92	,308	-4,807	24,658
10	1,26	,696	2,720	6,763	10	4,67	,500	-1,116	,041
11	1,19	,576	3,666	14,779	11	4,70	,518	-1,532	1,501
12	1,69	,994	1,383	1,170	12	4,43	,731	-1,126	,667

13	2,11	1,128	,510	-1,166	13	4,29	,834	-,913	-,070
14	3,81	1,046	-1,084	1,097	14	4,28	,973	-1,651	2,698
15	3,60	1,152	-,957	,171	15	4,33	,860	-1,413	2,262
16	1,84	1,129	1,110	-,020	16	3,66	,877	-1,101	2,007
17	1,43	,805	1,897	2,861	17	3,98	,783	-,891	2,039
18	2,01	1,409	,920	-,823	18	4,74	,499	-1,842	2,682
19	2,30	1,214	,558	-,800	19	4,54	,712	-1,517	1,705
20	1,21	,504	2,404	5,098	20	4,16	,940	-1,090	,900
21	3,44	1,175	-,162	-,934	21	2,81	1,312	-,002	-1,170
22	3,32	1,131	-,492	-,445	22	3,01	1,356	-,027	-1,309
23	1,62	,903	1,423	1,763					
24	3,70	1,000	-,583	,026					

Factor analysis

Factor analysis was conducted with the aim of determining the components of traditional and modern school management. Kaiser-Meyer-Olkin test in first iteration provided a result of 0,609 for the traditional and 0,713 for the modern scale, while Bartlett's test of sphericity is statistically significant for both scales ($p < 0,001$). On both scales, a total of 3 iterations of factor analysis were conducted per scale. A Varimax rotation was used since it gives the highest possibilities of obtaining parsimonious structure. In each iteration, statements with less than 4 strong communalities (min $> 0,40$) and with weak correlations were removed.

The final iteration of factor analysis achieved a respectable result on KMO test (0,664 for the traditional and 0,781 for the modern scale). On the traditional scale, communalities range from 0,453 to 0,794, while on the modern scale, they range from 0,434 to 0,845. The final factor analysis was carried out on 14 statements from the traditional scale and 16 from the modern scale. 4 components were extracted on the traditional scale, following Kaisers cut-off criterion of eigenvalue $\lambda > 1$. They explain 67,77% of variance. In comparison, 5 components were extracted from the modern scale explaining 61,84% of variance.

Table 2. Final iteration of component matrix for both scales

Traditional Scale					Modern Scale				
Item	Comp 1	Comp 2	Comp 3	Comp 4	Item	Comp 1	Comp 2	Comp 3	Comp 4
15	,848				15	,737			
14	,805				16	,717			
1	,688				13	,711			
3	,672				14	,686			
16		,771			11	,603	,508		
17		,768			12	,541	,439		
10		,635			10		,838		
24			,837		5		,655	,402	
22			,714		18		,618		
13		,424	,611		3		,562		
6				,741	17			,846	
7				,679	6			,606	
20					20			,547	
18		,436			19			,528	
					22				,897
					21				,890

The authors defined the traditional management factors as bureaucratization, one-sided relations with teachers, carrying out external demands and objectification of teachers.

The modern management factors were identified as distributive leadership, transformational leadership, resourcefulness and work autonomy.

Two extracted traditional factors match the assumed factors. The fourth component is identified as the objectification of employees where they are observed as a technical object by a principal. Further, the other dominant factor is fulfilling superiors' external demands.

Using factor analysis, 4 modernity factors were extracted one of which closely matches the assumed factors of modernity. It presents the second component identified as transformational leadership based on the aspect of school vision existence. The second proposed factor in this group is the dialogue with employees which cannot be proven according to the conducted results.

Observing the predictive power of the school related variables on management

In the further analysis, only statements that are parts of the dominant factors were used. With their unification accompanied by summing up the statements into composite variables, subscales were constructed. Precisely, eight subscales were made. For the purpose of finding out the predictive value of the variables from the socio-demographic first part of the questionnaire on the obtained aspects of school management, a hierarchical regression was intended to be done; however, due to violation of normality assumption, a robust regression was conducted instead. The assumptions were checked with the Spearman correlation, the variance inflation factor, the Shapiro-Wilk test, Breusch-Pagan and Cook-Weisberg test. All assumptions were met with the exception of normality.

11 variables from the first part of the questionnaire were included in order to determine their predictive value on the aspects of traditional and modern school management. The results are summed up and shown in the table 3. An empty cell means that the authors were not able to obtain a statistically significant predictive value for a given variable on a given subscale. A model was declared final when at least two variables statistically significantly predict the researched phenomenon.

Table 3. A cross table of socio-demographic variables predictive power

	Bureac. ¹	Relation.	Exter.	Object.	Distr.	Trans.	Resour.	Auto.
1	-.121** ²		-.144*	-.185**				.433***
2	.226*							
3						.099*		
4		-.187*		-.391**	.265***		.234*	
5	.248*	-.225*	-.568**		.323***	.305***		

¹ Columns legend (left to right) – bureaucratization, one-sided relations with employees, satisfying external demands, objectifying employees, distributive leadership, transformational leadership, resourcefulness and autonomy. Rows legend (top to down) – 1. work experience on a school principal position (in mandates); 2. size of a school by the number of students; 3. perception of material equipment; 4. perception of personnel resources; 5. style of creating school aims; 6. perception of school aims; 7. principals' style of communication; 8. perception of city educational bodies impact on school managing; 9. perceived impact of the Ministry of Education, Science and Sports on school principals' management

² Statistical significance *= $p < 0,05$, **= $p < 0,01$, ***= $p < 0,001$

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