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Transformational leadership style in the relationship between innovation and efficiency of healthcare units in Poland

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Abstract
Research background: In today's turbulent times, organizations face the challenge of fulfilling many complex requirements while at the same time they have to adjust to ongoing changes. The necessary changes that would allow for resolving these problems should, first of all, involve a new approach to human resource management and, in particular, the role of leadership in healthcare units. Numerous studies conducted over the years confirm the growing importance of leadership in modern organizations, especially in the healthcare sector.
Purpose of the article: The main goal of the project is to identify the relationships between innovative leadership and the organizational efficiency of healthcare units in the context of innovation levels. The article discusses the research hypotheses concerning the existence of a relationship between management innovation and transformational leadership style in healthcare units, the existence of a relationship between transformational leadership style and the efficiency of healthcare units, the existence of a relationship between management innovation and the efficiency of healthcare units.
Methods: The survey was conducted in 100 randomly selected healthcare units in Poland. The analysis of interdependencies was performed, among others, with the use of the Pearson product-moment correlation coefficient, Spearman's rank correlation coefficient, the Kendall rank correlation coefficient, the coefficient of colligation, and a chi-squared test, while the measures were chosen based on their adequacy for correlated variables and their distribu-

tion. In order to verify the hypotheses formulated in the study, a number of statistical methods were applied, e.g. descriptive statistics and correlation analysis
Findings & Value added: The key result of the study identifies the role of transformational leader-ship style in the relationship between the level of innovativeness and efficiency in healthcare units. The article also points to practical implications that may contribute to improved management practices in healthcare units.

Introduction

Innovation, or more precisely — capacity for innovation — is a source of efficiency in healthcare entities (Pearson, 2010). It is worth noting that most literature on innovation in the healthcare sector focuses on product and process innovation, while management innovation is explored to a much lesser degree, although according to a number of authors it increasingly translates into performance and, as a result, improves the competitiveness of entities. The key determinants of innovation-oriented activity in healthcare units comprise organizational factors, in particular human resources (Damanpour, 1991, pp. 555–590). In the case of the emergence of innovative management, the role of higher level managers increases in relation to the creation of an organizational context conducive to experimenting and implementing new processes, practices and structures (Vaccaro *et al*., 2012, pp. 28–51). On the other hand, the changes implemented in the area of management methods and techniques may become a starting point of the change in the leadership style of a given entity. The perspective of top management seems to play the dominant role (Young *et al*., 2001, pp. 935–951). Opportunities are also created by so-called transformational leaders. Organizational leaders have an impact on employee motivation and possess the quality that is referred to as intellectual stimulation, which are the two factors critical to organizational innovation. This stems from the natural role and competences of top executives, who decide about the directions for the development of an organization as a whole and are responsible for seeking new solutions in management, in order to ensure a steady improvement in performance, also through increased innovation and creativity of staff and by creating conditions conducive to the emergence of innovation, particularly technological innovation (Elkins & Keller, 2003, pp. 586–607).

The primary aim of the article is to identify the relationships between management innovation implemented in healthcare entities and the efficiency of these entities, with a particular emphasis on the role of transformational leadership.

The first part of the article presents the basic concepts relating to management innovation, transformational leadership style and the efficiency of

healthcare units. Additionally, the relationships between these factors are discussed. The second part of the article provides the results of empirical research carried out on 100 healthcare entities. This part presents the research tools and the analysis of dependencies between the variables studied. The summary indicates the limitations of research and recommendations for practice.

Literature review

The current state of knowledge on management innovation indicates that it is predominantly understood as the generation and implementation of meaningfully new solutions concerning: processes, rules of operation, methods of operation, organizational management structures, which significantly alter the way in which an organization pursues its goals (Birkinshaw, *et al.*, 2008, p. 825), and are likely to improve its long-term performance. Vaccaro *et al.* define management innovation in a similar way, when they identify it as "the implementation of a management practice, process, or structure that is new to the adopting organization. New practices, processes, and structures that change the nature of managerial work at the firm level" (Vaccaro *et al*., 2010, pp. 28–51). Walker, Damanpour, and Devece define management innovation as new approaches to devise a strategy and structure in the organization, modify the organization's management processes, and motivate and reward its employees (Walker *et al*., 2010, pp. 367–386).

Leadership as a research subject occupies a prominent position in sociological and political studies. According to Morris and Seemann, leadership is any activity that affects the attitude of a group (Morris & Seeman, 2005, p. 19). Yet another definition states that leadership means that certain persons with particular motivations and goals, in competition or conflict with others, activate institutional, political, psychological and other resources in order to engage and fulfill the motivations of their proponents. On the other hand, M. De Pree proposes an alternative explanation, which claims that the art of leadership entails giving people an opportunity to do what they are required to do in a humane and effective way. Leadership, in the opinion of some scholars, is management by approval. This means the right to issue instructions in an organization, yet based on the approval of and in cooperation with the persons performing the tasks for a leader. Summing up leadership involves the creation of psychological states of an organization's members, which engage them in the pursuit of goal together with a leader, who formulated the goal and who inspires them to pursue its achievement with the power of his influence. Management science offers a variety of leadership

concepts. Following the review of literature on leadership in healthcare, two distinct approaches can be identified — transactional leadership, in particular transformational style (Overall, 2015, pp. 41–54; Thakur *et al*., 2012, pp. 562–569; Nusair *et al*., 2012, pp. 182–201, Choi *et al*., 2016, Echevarria *et al*., 2017).

The transformational model has been considered influential and fitting the dynamic environment. Transformational leadership, in which many scholars and practitioners are increasingly interested, is one of the new styles of leadership, first described by James Burns in 1978. Transformational leadership is a higher-order construct comprising several components. A leader's idealized influence entails serving as a role model and sacrificing self-gain for collective gain, thereby stimulating followers to do the same. Inspirational motivation involves expressing an energizing vision. Intellectual stimulation is expressed by encouraging followers to question the status quo and the final component individualized consideration entails providing support for the individual development needs of followers (Pieterse, 2010, pp. 609–623).

The universal use of the concept of efficiency in the characteristics and evaluation of a variety of aspects concerning the functioning of healthcare units causes that providing its precise definition and scope is not a simple task. The need for the analysis of efficiency in healthcare may be perceived from a number of different perspectives. A variety of possible approaches is related to the choice of the efficiency category under study. The criteria used to assess the efficiency of healthcare units include technical efficiency, cost efficiency and the efficiency of satisfying patient needs. The assessment of the performance efficiency of healthcare units, similarly to commercial enterprises, can be conducted from different perspectives. In practice, the performance efficiency of healthcare units is measured in financial and technical terms (Department of Health and Human Services, 2006).

The literature review points to numerous studies, both theoretical and empirical in nature, which deal with the relationships between leadership style and organizational innovation. Some authors imply that leadership styles based on employee empowerment promote innovation more effectively, others identify transformational leadership as a style that is ideal for promoting innovation (Bass, 1985). Transformational leaders use motivation and intellectual stimulation, which are of crucial significance for innovation implementation in organizations (Elkins & Keller, 2003, pp. 587–606). It is the leader who develops confidence in his subordinates, the sense of their efficiency and self-assessment. Increased levels of employee motivation and self-esteem may lead to higher numbers of innovations imple-

mented in organizations (Mumford *et al.*, 2002, pp. 705–750). The positive impact of leadership style on innovativeness is the subject of numerous empirical studies (Keller, 1992, pp. 489–501). Jung *et al.*, for example, claimed that transformation leadership considerably affected the number of implemented organizational innovations. In addition to its positive effect on an organization's innovativeness, transformational leadership may also have a positive impact on the market success of innovations (Jung *et al.*, 2003, pp. 525–544). It is evident that the leadership style has a significant influence on innovativeness levels in organizations (Gumusluoglu & İlsev, 2009, pp. 461–473). Transformational leaders have an interactive vision, while at the same time they enable effective knowledge exchange to ensure the success of the innovation process in organizations (Adair, 1990). Accordingly, there are grounds for the formulation of Hypothesis 1:

Hypothesis 1: *There is a relationship between management innovation and transformational leadership style in healthcare units.*

Based on the literature review, it was established that a leadership style directly affects organizational efficiency, although the outcomes tend to be equaled to productivity (as measured with the performance of hospitals). Garcia-Morales *et al.* showed in their study that transformational leadership has an impact on organizational efficiency (Garcia-Morales *et al.*, 2006, pp. 21–42). Other studies also recognize the positive relationship between leadership style and efficiency, seen in terms of productivity (Wang *et al.*, 2011, pp. 223–270). These positive links are identified at different organizational levels and according to different criteria. Outcome-related variables are, for example, efficiency (Dionne *et al.*, 2004, pp. 179–193), financial performance (Boerner *et al.*, 2007, pp. 15–26) and commitment (Arnold *et al.*, 2001, pp. 315–320). Other studies, in turn, point to the influence of transformational leadership on employee efficiency shared vision, committed team, organizational culture (Xenikou & Simosi, 2006, pp. 566–579), which all have a positive impact on organizational efficiency. In view of the above, there are grounds for the formulation of the second hypothesis:

Hypothesis 2: *There is a relationship between transformational leadership style and the efficiency of healthcare units.*

In business practice, the link between innovation and organizational efficiency is no longer questioned. In the case of healthcare units, however, it is not so evident. The analysis of literature reveals a number of studies con-

firming the above relationship. Nybakk emphasizes the relationship between enterprise innovativeness and financial efficiency (Nybakk, 2012, pp. 1–28). McNally *et al.* argue that product innovation positively affects the profitability of newly launched products, while the characteristics of an innovative product are strongly and significantly related to the sales a given product generates and, in consequence, an enterprise's organizational efficiency (McNally *et al.*, 2010, pp. 991–1006). Kim *et al.* indicate that enterprise innovativeness has a direct impact on the value delivered to the customer (Kim *et al.*, 2015, pp. 201–213). Other studies reveal a clear link between innovativeness, expressed as the number of implemented innovations, and organizational efficiency (Zahra *et al.*, 2000, pp. 925–950; Gopalakrishnan, 2000, pp. 137–153). Innovation seen as an attribute of entrepreneurial orientation has an immediate effect on organizational efficiency (Zahra *et al.*, 2000, pp. 925–950).

As a conclusion of the considerations presented above, it can be argued that a management innovation is related to its efficiency. In consequence, Hypothesis 3 can be formulated:

Hypothesis 3: *There is a relationship between management innovation and the efficiency of healthcare units.*

Research methodology

The research results presented here are part of a more extensive study into the innovativeness of healthcare entities. This article discusses the results concerning the relationships between leadership style, management innovation and the efficiency of healthcare entities. The survey was conducted in healthcare entities in October and November 2016 and it was followed by coding and statistical analysis. The sample selection was made on a random basis. The survey questionnaire was completed mostly by executive employees. The characteristics, according to selected criteria, of the healthcare entities where the survey was conducted are presented below. The survey was held in 100 healthcare entities

The sampling frame was derived from the database of registered health care entities included in the National Health Fund list. The sampling frame consisted of 957 hospitals and over 20,000 other units (Primary Health Care and Out-patient Healthcare). At the first stage of the sample selection process, entities with an annual level of revenues over PLN 500,000 were identified. At this stage, the target group was less than 12,000 units. Then, on the basis of random selection, we have extracted a separate group of 100

entities, to which a questionnaire with a request to complete it was sent. In the case of refusal, another unit was drawn from the sample until 100 completed questionnaires were gathered. A company specializing in this type of research carried out the research process.

Another criterion for classifying the respondent entities is their organizational and legal form. A vast majority of the entities (80) are run as SPZOZ (the Polish equivalent of a health maintenance organization). The remaining entities are commercial companies with a majority stake held by a public finance sector unit (8). Other entities adopted a mixed form of activity (civil law partnerships). The breakdown of the respondent entities by the number of employees is shown in Figure 1. 67 units employing 250 or more employees. The smallest group of entities is employing less than 9 employees.

Another characteristic of the sample is the type of activity. The largest proportion of entities in the sample comprises provincial hospitals (27) and university hospitals (26). There are also 16 county hospitals and 14 municipal hospitals among the respondents. The breakdown of the entities participating in the survey by the type of activity is presented in Figure 2.

The breakdown of the respondent entities by the period of their existence reveals that the majority have been operating for more than 10 years (68). 25 entities have been active for 6–10 years, while the remaining 7 entities have been in the market for no longer than 5 years.

One of the questions in the background information section of the questionnaire concerned revenue generated in 2016. It was answered by 65 entities. 28 of them had revenue of PLN 10–50 million, 17 generated revenue of PLN 1–5 million. Table 1 shows the breakdown of the respondent entities by revenue.

The final criterion was the position of the person who was interviewed. In 18 entities the questionnaire was completed by the president/managing director of the entity. In over the half (55) it was a middle manager who provided responses, while in the remaining entities (27) — persons holding other positions (e.g. hospital department head, a nurse manager).

In order to evaluate transformational leadership style, the tool developed by Harris-Boundy (Harris-Boudny, 2015) was used. The measurement of transformational leadership style involved responding to 25 statements describing selected situations and a superior's behaviors. Management innovation was measured with the tool proposed by G. Vaccaro, *et al.* (2012, pp. 28–51). The tool comprises 5 questions about innovative solutions, applied in organizations, in the area of management procedures and rules. The efficiency of healthcare entities, based on their financial performance, was assessed with the use of Antoncic and Hisrich's concept embracing 6

scales. They concerned: an average annual employment growth rate, an average annual total sales growth rate, share market dynamics (measured based on total sales), an average return on sales (ROS), an average return on equity (ROE), profitability compared with the competition.

The background information section comprises 6 questions concerning the type of activity, ownership of an entity, sector, employment, positions of respondents, the period of existence.

Results

The results of implemented management innovation

The study concerns meaningful changes that are new to an entity (they have not yet been applied/implemented) and that have occurred in the last 3 years within the indicated areas of management. The changes:

- were implemented upon the initiative of the senior executive management or with their significant involvement;
- affect the entire organization or its substantial part; their consequences go beyond a given functional area (they are not limited to one functional area, e.g. logistics or finance).

The first stage of statistical analysis involved testing the reliability of the tool. Internal consistency analysis was conducted, using Cronbach's alpha and factor analysis (the Kaiser-Meyer-Olkin statistic). In the classification of items to particular components we have followed Hinkin (1998, pp. 104–121) criteria, which assume that items should load into a dimension exceeding 0.4 and at least twice as strongly as to another component.

The Kaiser-Meyer-Olkin test yielded the value of 0.652, which allowed for the application of exploratory factor analysis (Table 2).

The own value criterion revealed two factors. The share — what percentage of variance in a variable was explained by a given factor (the total of the two areas was 71.30%).

Table 3 presents the values of Cronbach's alpha coefficient for particular statements used in the research tool. These statements constituted the first dimension of management innovation, which — in the further stages of the analysis — is referred to as the dimension of communication policy and remuneration rules.

Table 4 introduces the statements constituting another dimension of management innovation and presents the Cronbach's alpha statistics. The statements make up the second dimension of management innovation further referred to as the dimension of organizational rules and procedures.

Table 5 shows the summary of the results (the means of the answers on a 7-item scale) for particular statements concerning management innovation implemented in the respondent entities.

Based on the results, it can be concluded that the respondent organizations implement changes in the existing rules and procedures on a regular basis. On the other hand, changes concerning remuneration policies and communication structures scored the lowest.

Evaluation of transformational leadership style

Transformational leadership style was measured with the tool developed by Harris-Boundy. As in the case of innovation management, factor analysis was applied (K-M-O = 0.938, the test for sphericity was statistically significant). The value of the K-M-O statistic allows for the application of exploratory factor analysis. Table 6.

Its results indicate that there are grounds for distinguishing five factors constituting the scale. The first factor comprises 10 statements, the second one — seven, the third one — four, the fourth one — three statements, while the fifth factor is described by one statement. Accordingly, in further analysis it was assumed that transformational leadership style was described by five factors — dimensions — referred to as:

- I – support of personal development through the skilful use of the organization's and own resources,
- II – stimulation of creativity,
- III – use of failures in the learning process,
- IV – personal support in the learning process,
- V – delegation of responsibility.

Tables 7–11 present partial results of Cronbach's alpha test for particular statements in the dimensions adopted. The inclusion in the particular dimensions of transformational leadership style was performed based on the value of Cronbach's alpha at above 0.5.

The evaluation of the leadership style was based on the measurements that the statements obtained on a Likert 7-item scale: 1 — I completely disagree, 7 — I completely agree). According to the means, the highest scores were assigned to the following statements:

- the leader delegates responsibility – 5.5,
- the leader demonstrates impressive confidence – 5.4,
- the leader seeks new opportunities for the organization – 5.4.

The lowest sores, on the other hand, were given to the following aspects of the leadership style:

- the leader causes that mistakes are accepted as long as the employees are trying and learning – 3.6,
- the leader helps the employees learn from mistakes – 3.6,
- the leader perceives errors as opportunities to develop – 3.4.

The efficiency of healthcare entities

As it was mentioned in the research methodology section, the efficiency of healthcare units was measured based on Antoncic and Hisrich's concept, comprising 6 scales. They concerned: an average annual employment growth rate, an average annual total sales growth rate, share market dynamics (measured based on total sales), an average return on sales (ROS), an average return on equity (ROE), profitability compared with the competition.

In the case of nearly 59% of entities, employment did not increase. In 30 entities, a slight growth was reported (up to 4%). The detailed breakdown of the respondent entities by an increase in employment is presented in Table 12.

The next indicator used to measure the efficiency of the entities was a growth in services provided to the population. 41% entities did not report a growth in sales. 33 entities reported a slight growth in sales (up to 4%). The detailed breakdown of the respondent entities by a growth in sales is presented in Figure 3.

Another subjective variable in the evaluation of the performance of the entities is market share dynamics. In this case, only a small proportion of the respondents reported a decrease in services provided to the population in market share — 7 entities. The majority of respondents comprises the entities whose market share remained unchanged — 52 units. 25 entities reported a slight increase, while 11 — a moderate increase. A significant growth was reported in 5 entities from the sample. In accordance with the adopted tool for measuring the performance of the entities in the study, the respondents were asked to determine a return on sales and a return on equity. Both in the case of the return on sales and the return on equity, the highest percentage of the entities reported a growth of 0-4% (54% for ROS and 57% for ROE).

The last indicator used to measure the efficiency of the entities was their profitability. Two entities reported a drop in profits. In the majority of the entities, profitability remained unchanged or grew slightly (95). The detailed breakdown of the entities by profitability is presented in Table 13.

In order to investigate the relationships between the implemented management innovation and transformational leadership style, the Pearson correlation coefficient was applied. In addition to the correlation analysis, four stepwise regression models were calculated to examine how much of independent variable (innovation management) explain the variation of the dependent variable (transformational leadership). Analysis of data was conducted with SPSS-PC. Tables 14 and 15 show the values of relevant statistics. Based on the results presented in Table 14, it can be concluded that Dimension I of management innovation — communication policy and remuneration rules — has the greatest effect on transformational leadership style in Dimensions I and V — communication policy and remuneration rules and delegation of responsibility. On the other hand, Dimension II of management innovation is the most strongly correlated with Dimensions II and III of transformational leadership — stimulation of creativity and the use of failures in the learning process.

Table 15 presents an overview of the results, with management innovation as one variable. The results from the test of Model 1 show that management innovation was a predictor for transformational leadership — Dimension I (adjusted $R^2 = 0.222$, $p = 0.001$). In the case of Model 2, management innovation explains 0.178 of change in Dimension II of transformational leadership style (adjusted $R^2=0.178$, $p=0.002$). Management innovation explains Dimensions III and V of transformational leadership style on a similar level (adjusted $R^2=0.264$, $p=0.000$ and adjusted $R^2=0.278$, $p=0.001$, respectively).

The statistical analysis does not offer grounds for rejecting Hypothesis H1 proposing that: *relationships occur between management innovation and transformational leadership style*.

In order to investigate the relationships between transformational leadership style and the efficiency of healthcare entities, the Pearson correlation coefficient was applied. In addition to the correlation analysis, four stepwise regression models were calculated to examine to what extent the independent variable (transformational leadership) explains the variation of the dependent variable (the efficiency of the healthcare units). The analysis of data was conducted with SPSS-PC. The presentation of the results (Table 16) was limited to the presentation of the regression analysis results. Based on the statistics, it can be observed that transformational leadership has the strongest impact on the efficiency measures with a growth in sales, an increase in employment, and profitability. Accordingly, there are no grounds to reject Hypothesis H2 proposing that: *the relationship occurs between transformational leadership style and the efficiency of healthcare entities*.

Based on the statistical analysis (Pearson correlation coefficients and regression analysis), no relationship was confirmed between the implemented management innovation and the efficiency of healthcare entities. Accordingly, hypothesis H3 should be rejected.

Discussion

The study indicates that leadership style seems to play a crucial role in achieving organizational efficiency by healthcare entities. Based on the analysis of the results of the empirical survey, the existence of the relationship between management innovation and the efficiency of healthcare units was not confirmed. The survey confirmed that management innovation affects leadership style. Accordingly, it can be concluded that incremental changes in organizational communication as well as existing rules and procedures have a fundamental effect on a change in leadership style in the respondent entities. Innovations in the area of management methods and techniques have an impact primarily on stimulating the personal involvement of a manager in the processes implemented in an organization, encouraging organizational learning both on an individual and team level. Above all, they inspire delegating tasks and responsibilities. The remaining factors determining the effective operation of the entities, however, should not be neglected either, as they also have an influence on leadership style adopted in an organization.

Conclusions

The study presented above had several limitations. The fact that the survey was exclusively quantitative in nature was one of the most significant limitations. Further research should embrace in-depth qualitative surveys in order to address the questions on how innovation implemented in an organization affects its leaders and, on the other hand, what actions are taken by the leaders aiming to reinforce innovative behaviors among employees. Furthermore, only one leadership style was examined, while, in general, this style is compared with transactional leadership style. Therefore, future research should examine the impact of both transformational and transactional leadership styles so that it can be determined which is more influential in the innovativeness and efficiency of respondent entities. Additionally, it would be worthwhile to include variables mediating in these relationships, for example, job satisfaction, commitment, and organizational learn-

ing. An interesting research direction might also be an attempt at the comparison between the public and private sector.

Further studies in this area should also apply advanced statistical tools, e.g. structural equation modeling. The introduction of moderating and mediating variables in the context of leadership and innovation could be considered, because this technique may be suitable for the analysis of the relationship between leadership, innovation and efficiency.

In today's turbulent times, organizations face the necessity of meeting a great number of complex requirements, while at the same time adapting to constantly changing environments. These changes call for a new approach to organizational management, particularly in the area of healthcare. The reforms in the healthcare sector, implemented in Poland so far, have neither yielded expected results nor resolved multiple problems in this area. The study indicates that the necessary directions of changes that will help solve these problems should comprise a new approach to human resource management and, in particular, the role of leadership in healthcare entities. A new perspective on leadership style should embrace complex organizational roles and the ability to limit a variety of behaviours triggered by the organizational or environmental context. Confronted with the expectations, the modern leader should be equipped with specific capabilities enabling him to adapt to dynamic changes occurring inside and outside an organization. As a result, it seems justified to conduct both theoretical and practical research into the themes relating to leadership in healthcare and the issues linking leadership with the efficiency of healthcare entities.

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Annex

Table 1. The breakdown of the respondent entities by revenue

Revenue	Number of entities
PLN 0-1 million	5
PLN 1-5 million	17
PLN 5-10 million	6
PLN 10-50 million	28
Above PLN 50 million	9
Total	65

Table 2. Factor analysis statistics

Factor	eigenvalue	Explanation of variance	Aggregate % explanation of variance
1	2.786	46.43	46.43
2	1.493	24.87	71.30

Table 3. Dimension I of innovation management — Communication policy and remuneration rules

Statement	Cronbach's alpha
Our organization regularly implements new management systems.	0.546
The remuneration policy has been changed in the last three years.	0.876
Communication structures inside the organization are undergoing regular change.	0.891
We are constantly modifying/changing selected elements in the organizational structure.	0.687

Table 4. Dimension II of innovation management — Organizational rules and procedures

Statement	Cronbach's alpha
Rules and procedures followed in our organization are reviewed on a regular basis.	0.847
Our organization regularly implements changes concerning performed tasks and positions held by our employees.	0.888

Table 5. The means of the answers to particular statements on management innovation

Statement	Mean
Rules and procedures followed in our organization are reviewed on a regular basis.	5.51
Our organization regularly implements changes concerning performed tasks and positions held by our employees.	4.70
Our organization regularly implements new management systems.	4.57
The remuneration policy has been changed in the last three years.	3.62
Communication structures inside the organization are undergoing regular change.	3.83
We are constantly modifying/changing selected elements in the organizational structure.	4.36

Table 6. Factor analysis statistics

Factor	eigenvalue	Explanation of variance	Aggregate % explanation of variance
1	11.078	26.116	26.116
2	3.364	16.403	42.519
3	1.943	16.044	58.563
4	1.551	8.430	66.993
5	1.013	5.889	72.882

Table 7. Dimension I of transformational leadership style — Communication policy and remuneration rules

Statement	Cronbach's alpha
The leader facilitates skills development.	.817
The leader allows the employees to manage their work the way they want.	.791
The leader helps the employees develop their strengths.	.790
The leader develops the talents of the employees through trainings.	.787
The leader allocates (assigns) time for creative activity.	.775
The leader creates a wide range of opportunities for employees to pursue their individual goals.	.775
The leader assigns time for brainstorming in order to generate new ideas.	.758
The leader invites external experts to offer learning opportunities during lectures and workshops.	.676
The leader allocates time for learning and coaching.	.661
The leader causes that, in our organization, we have a sense of being a family.	.537

Table 8. Dimension II of transformational leadership style — Stimulation of creativity

Statement	Cronbach's alpha
The leader allows the employees make decisions.	.738
The leader requires that the employees generate new ideas.	.716
The leader promotes creativity as a norm to be followed by everybody.	.700
It establishes high norms relating to employee creativity.	.653
The leader finds time for individual meetings with the employees.	.609
The leader works in an energetic manner.	.599
The leader maintains good relationships with the employees.	.553

Table 9. Dimension III of transformational leadership style — Use of failures in the learning process

Statement	Cronbach's alpha
The leader causes that mistakes are accepted as long as the employees are trying and learning.	.902
The leader helps the employees learn from mistakes.	.865
The leader perceives errors as opportunities to develop.	.854
The leader rewards creative initiatives even if they end in failure.	.751

Table 10. Dimension IV of transformational leadership style — Personal support in the learning process

Statement	Cronbach's alpha
The leader demonstrates impressive confidence.	.850
His actions are driven by ideas.	.682
The leader seeks new opportunities for the organization.	.617

Table 11. Dimension V of transformational leadership style — Delegation of responsibility

Statement	Cronbach's alpha
The leader delegates responsibility.	.861

Table 12. An increase in employment in the respondent entities

Increase in employment	Number of entities	Share %
It did not increase	59	59%
It increased slightly (up to 4%)	30	30%
It increased from 5% to 9%	3	3%
It increased from 10% to 19%	6	6%
It increased by 20% and more	2	2%
Total	100	100%

Table 13. Profitability of the entities

Profitability of sales	Number of entities
Lower	2
Unchanged	54
Moderately high er	41
Considerably high er	3
Substantially high er	0
Total	100

Table 14. Pearson correlation coefficients between management innovation and transformational leadership style

Pearson Correlation	TL (Dimension I)	TL (Dimension II)	TL (Dimension III)	TL (Dimension IV)	TL (Dimension V)
Management innovation I	0.434**	0.267**	0.205*	0.205	0.428**
Management innovation II	0.301**	0.391**	0.451**	0.147	0.332**

Note: TL -Transformational leadership, ** - Correlation is significant at the level of 0.01; * - Correlation is significant at the level of 0.05

Table 15. The impact of management innovation on transformational leadership using regression analysis

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.471[a]	**.222**	.206	.96296	.222	13.822	2	97	**.001**

a. Predictors: (Constant), Management innovation I, Management innovation II; Dependent Variable: Leadership style – dimension I

Table 15. Continued

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
2	.422[a]	**.178**	.161	.90321	.178	10.505	2	97	**.002**
a. Predictors: (Constant), Management innovation I, Management innovation II; Dependent Variable: Leadership style – dimension II									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
3	.513[a]	**.264**	.248	1.29185	.264	17.354	2	97	**.000**
a. Predictors: (Constant), Management innovation I, Management innovation II; Dependent Variable: Leadership style – dimension III									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
4	.224[a]	.050	.031	.88800	.050	2.572	2	97	.082
a. Predictors: (Constant), Management innovation I, Management innovation II; Dependent Variable: Leadership style – dimension IV									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
5	.527[a]	**.278**	.263	1.00962	.278	18.681	2	97	**.001**
a. Predictors: (Constant), Management innovation I, Management innovation II; Dependent Variable: Leadership style – dimension V									

Table 16. The impact of transformational leadership on the efficiency of healthcare units using regression analysis

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,456[a]	**,308**	**,288**	,66882	,208	4,929	5	94	**,000**
a. Predictors: (Constant), Leadership style – Dimensions I-V; Dependent Variable: Increase in employment									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
2	,463[a]	**,342**	**,311**	,79804	,214	5,079	5	93	**,000**
a. Predictors: (Constant), Leadership style – Dimensions I-V; Dependent Variable: Growth in sales									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
3	,358[a]	**,256**	**,223**	,62071	,128	2,738	5	93	**,024**
a. Predictors: (Constant), Leadership style – Dimensions I-V; Dependent Variable: Market share dynamics									

Table 16. Continued

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
4	,424[a]	**,180**	**,135**	,72904	,180	4,071	5	93	**,002**
a. Predictors: (Constant), Leadership style – Dimensions I-V; Dependent Variable: Return on equity									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
5	,352[a]	**,321**	**,276**	,96351	,124	2,658	5	94	**,027**
a. Predictors: (Constant), Leadership style – Dimensions I-V; Dependent Variable: Profitability									

Figure 1. The breakdown of the respondent entities by the number of employees

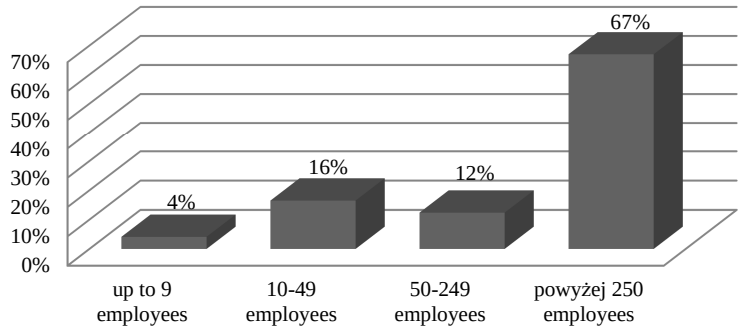

Figure 2. The breakdown of entities by the type of activity

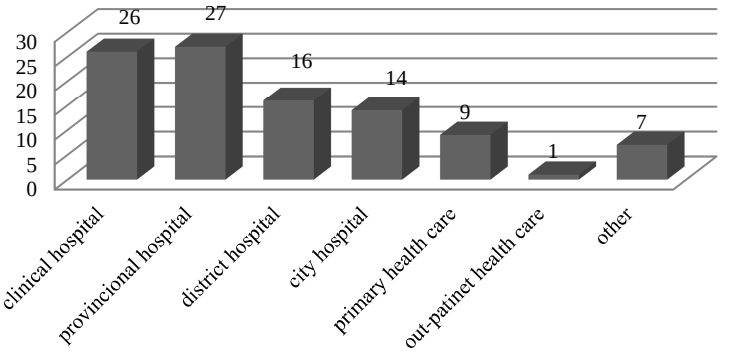

Figure 3. A growth in sales in the respondent entities