A Tool for Measuring Institutional Leadership and Its Implementation for the Evaluation of Organizational Leadership Capability

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Abstract

The concept of Institutional Leadership opens up some essential aspects of organizational leadership capability that could be defined as the collective ability of leadership to detect and cope with changes in the external environment by maintaining the primary goals of the organization. The aim of this paper is to design a tool to measure institutional leadership and evaluate organizational leadership capability.

Leadership came under greater focus within the institutional context at the end of the 1990s. On the one hand, this arose from the necessity to transfer leadership capabilities into the strategic assets of institutions, on the other, it is due to other approaches to management (i.e. cascading leadership, intellectual capital, organizational learning, knowledge management and self-organizing systems). The thing that unites all these approaches is their attempt to improve an organization's ability to adapt in a complex environment, and it is proposed that the ability to adapt is based on the knowledge of organizational members and to the extent that this knowledge is embedded in the pattern of organizational structure. Therefore, institutional leadership is an important issue for studying and improving the transformation of knowledge in the structure of an organization.

A total of 445 respondents from six Estonian organizations participated by completing a questionnaire about institutional leadership. Next, a quantitative analysis was performed and sets of factors obtained from a partial least squares (PLS) regression and Cronbach alpha test. Finally, the pattern of individual items (statements) within each of the factors was identified and the results which indicate organizational leadership capability were plotted.

Journal of Economic Literature Classification Numbers: M10

Keywords: leadership, institutional leadership, intellectual capital, knowledge management, organizational learning, organizational structure, self-organizing systems, strategic management

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1. Content of Organizational Leadership Capability

In recent decades, the decisive factor in the new growing knowledge based economy in terms of output for organisations has moved from real capital to knowledge capital. This challenges the management of organizations to secure and improve the performance of organizations in a modern, dynamic environment. As a result of these movements, several new concepts of management have emerged, such as knowledge management, intellectual capital and organizational learning. Vera and Crossan (2000) have shown that these concepts, however, tend to overlap each other.

According to many scholars (Nonaka and Takeuchi 1995; Stewart 1997; Sveiby 1997; Roos *et al*. 1998; Skyrme 2002; Bontis 2002; Edvinsson 2002), the main task that modern management is facing is how to create organizational knowledge and secure its use in the everyday performance and long-term success of organisations. All of them stress the importance of the structural capital of organizations where organizational and management knowledge has become embedded. In addition, Edvinsson (2002) pointed out the increasing returns to scale as a main ability of structural capital in transforming organizational inputs into organizational outputs in a modern economy. Structural capital itself is a complicated phenomenon where the dynamic pattern of organizational structure is interlaced with organizational leadership capability. This interlaced combination is unique for every single organization and it manifests as a structure of the organization. In order to achieve organizational success in the process of reaching long-term organizational goals, managers of organizations should obtain the most suitable structure for the organization within the *tempo labile* dynamic environment – organizational adaptation. This is aimed at the organizational structure as a strategic management tool for attaining long-term organisational goals. Chandler (1962) has already drawn a widely cited conclusion that organizational structure follows business strategy and is determined by it. Also, this has been mentioned by Fincham and Rhodes (2005) as a standpoint of contingency theory.

Leading on from this, it is therefore important to measure the organizational structure, which implicates the value of organizational leadership capability. However, the measurement of the real structure of an organization leads to various problems. Many scholars have discussed different approaches and perspectives. For example, Kallaus and Keeling (1991) have highlighted the organization as a system of compound elements, where some are invisible, such as the informal organisation and the organizational members' psychological adjustment. In a similar vein, Mintzberg and Lampel (1999) have shown this invisibility within the strategic concept of their configuration school. This derives from the transformation process, understandable as the leaping of organizational configurations from one state to another in order to secure the organizations' best possible match with the environment. A similar idea is supported by Wheatley (1999), who described organizations as a system of processes, which become visible in temporary (unstable and living) structures.

One way of measuring the structure of organizations is to use the idea of institutional leadership proposed by Pasternack *et al.* (2001). According to their idea, the management knowledge transformed into the institutional capacity of the organization manifests as institutional leadership. Therefore, the aim of this paper is to design and test such a measurement tool for the structure of organizations in the light of institutional leadership. In the following we will first focus on the factors that may affect institutional leadership and its measurement. The second section summarizes the methodology, while the third section presents the results. Finally, we present the discussion and implications of the results gained.

2. Designing a Measurement Framework for Evaluating Organizational Leadership Capability

Many different aspects of the notion of leadership have emerged in the development of this field over decades. So firstly, leadership was viewed in terms of the "trait" theory of leadership, which essentially proposed that the success of a leader could be attributed solely to their personality and physical characteristics without regard to their manifest behaviour in a given situation. Today, according to the behavioural approach, leadership occurs when the situation demands that an individual influences and coordinates the activities of a group or members of an organization towards the achievement of a common goal. Moreover, all traditional approaches to leadership are based on the effective influence of leaders over their followers, behaviours that encourage the achievement of group objectives and behaviours that allow followers to bind their everyday actions within the context of the group to which they belong. Leadership described in terms of such approaches has from time to time been known as "heroic" leadership. Edvinsson (2002) describes this as one-dimensional leadership, which is insufficient for acting in the modern economic environment. Pasternack *et al.* (2001) share this understanding and have said that leadership must not be a solo act performed by a charismatic CEO. They argue that leadership can be seen as an institutional capacity and a strategic asset. Describing the process of creating the strategy, Mintzberg *et al.* (2005) and Gratton (2000) emphasize the concept of organizational learning, which construes the strategic initiative of organizational members on the different levels of the organization. Mayo (2001) considers this collective leadership and Pasternack *et al.* (2001) have assessed this strength within the framework of the institution's Leadership Quotient (LQ).

To formulate our measurement framework of institutional leadership, three main concepts – the institutional LQ model proposed by Pasternack *et al.* (2001), characteristics of the Adaptive Organization's Structure (AOS) by Fulmer (2000), and Reynolds' (1987) Distributed Behavioural model – have been used (Table 1). All these concepts view organizations in terms of an open system operating in a complex dynamic environment. At the same time, organizations are complex adaptive systems existing on the edge of chaos.

The institutional LQ model by Pasternack *et al.* (2001) includes twelve contingent systems (vision/strategy, goal-setting/planning, capital allocation, group measurement, risk management, recruiting, professional development, performance appraisal, incentives/compensation, decision-making, communication, knowledge transfer). By using these systems, organizations are able to create alignment and adaptability, widely regarded as prime attributes for long-term success (Pasternack *et al.* 2001). The alignment and adaptation of organizations in the institutional LQ model by Pasternack *et al.* (2001) represents the main operating principles of open systems. The

adaptation by Fulmer (2000) is directly linked to the structure of the organization, and its specification includes five general characteristics: relative decentralisation, high span of control, an extensive use of temporary structures, powerful information systems, and a constant evolution of the structure. Considering the characteristics of Fulmer's (2000) AOS, the organisation as a social system could be understood as a complex adaptive system with a dissipative structure determined by a variable environment. Reynolds (1987) has described such a system in his Distributed Behavioural model. This model provides three main behavioural rules for a complex distributed system. These rules could be taken as the main principles of a distributed system and they are as follows: alignment (velocity matching), cohesion (flock centring) and separation (collision avoidance).

Table 1. The Main Concepts and Their Elements according to the Principal Dimensions of Institutional Leadership

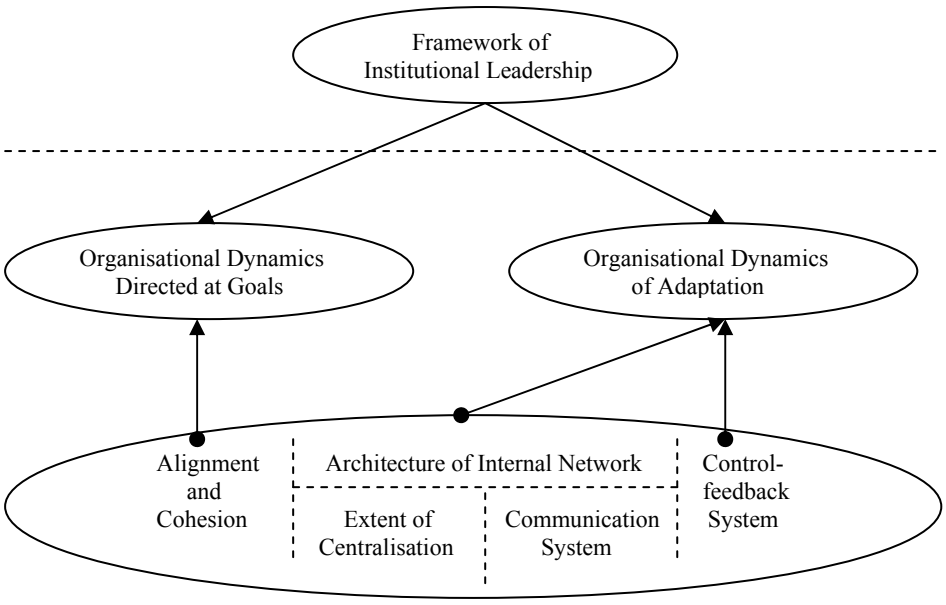
Concept / Dimension	Institution's Leadership Quotient model *(Pasternack et al. 2001)*	Adaptive Organization's Structure Characteristics *(Fulmer 2000)*	Distributed Behavioural Model *(Reynolds 1987)*
Dynamics Directed to Goals	Vision / strategy Goal-setting / planning		Alignment Cohesion
Dynamics of Adaptation	Group measurement Risk management Performance appraisal Incentives/compensation	High span of control	Separation
	Communication Knowledge transfer	Powerful information system	
	Capital allocation Decision-making Recruiting Professional development	Decentralisation Temporary structure Constant evolve the structure	

Considering the elements of the main concepts, the prime attributes from the institutional LQ model by Pasternack *et al.* (2001) encompass two dimensions in our framework for measuring institutional leadership: organizational orientation or direction to goals and organisational adaptation (Table 1). These two dimensions are interrelated with organizational structure, organizational leadership capability and organizational dynamics. Organizational structure is determined by an organizational movement towards goals, on the one hand, as we discussed earlier; on the other, it is determined by the adaptation process in the changeable environment described by Fulmer's (2000) AOS characteristics. Also, organizational leadership capability is revealed differently from the dimensions of our measurement framework. If orientation to the goals relates well to the traditional concept of leadership, then the adaptation connects better to the concept of institutional leadership. At the same time, both the organizational leadership activities and the processes that create the structure of organizations are dynamic by nature.

The first dimension (organizational dynamics directed to goals) has been formed from the institutional LQ model by Pasternack *et al.* (2001) and the Distributed Behavioural model by Reynolds (1987). Vision/strategy and goal-setting/planning from the LQ model responds to alignment and cohesion in the Distributed Behavioural model (see Table 1). Vision/strategy with alignment represents external focus and vision/strategy with cohesion represents the context of the organisation. At the same time, goal-setting/planning compounds both of them (external focus and context of the organization) into one main dynamic process, which all together is the first main dimension (organizational dynamics directed to goals) of the measurement framework of institutional leadership.

The second dimension (organizational dynamics of adaptation) provides the stability of the adaptation of the organization by processing the information – its registration, transition and interpretation. These information processes take place in the social interactions between members of the organization where the number and quality of these social interactions marks the architecture of the internal network of the organization. In order to handle the huge volume of information inside this internal network, the best pattern for the structure of the organization is a separated structure. For these purposes, the separation from the Distributed Behavioural model by Reynolds (1987) has been compounded with Fulmer's (2000) AOS characteristics and the remaining enabling systems from the institutional LQ model (see Table 1). Key factors of these internal information processes are the architecture of the internal network and the control-feedback system (see Figure 1). Together they are able to process the information in the proper way – while the architecture of the internal network secures the transaction of information flow throughout the organization on the one hand; on the other, the control-feedback system simultaneously provides the right interpretation of this information flow.

Figure 1. Factors That Form the Two Main Dimensions in the Framework for Measuring Institutional Leadership



Information itself, as described in the processes above, could be "action oriented" or merely background or contextual information. Each part of the organization needs all of the action-oriented information that applies to its area of concern; in addition, each section needs some of the background information to keep abreast of what is happening within the organization as a whole. Overall, information flow inside the organization is a complicated phenomenon; it follows both the formal and informal networks of the organisation. This formal and informal information flow imitates the pattern of the organisational network, where the ties of networks are channels of information flow.

Information flow throughout the informal network manifests as a communication system in our framework for measuring institutional leadership (Figure 1). Informal networks are usually more complex and less organized than formal networks. While using informal networks, individuals share different types of information throughout the organization across functional and hierarchical levels. Also, messages pass through informal networks more rapidly, and members often regard them as more accurate and trustworthy than those of formal systems. Therefore, the communication system is one of the subparts of the architecture of the internal network (Figure 1) and it corresponds to the powerful information system from Fulmer's (2000) AOS characteristics and to the communication and knowledge transfer from the institutional LQ model (Table 1).

The other subpart of the architecture of the internal network is the formal network, and information flow through this network manifests as centralisation in our framework for measuring institutional leadership (Figure 1). Ties within the formal network express the institutional resources of organization used among organizational members. Therefore, the subpart of the architecture of the internal network (the extent of centralisation) has been described by relative decentralisation, extensive use of temporary structures and constant evolution of the structure from Fulmer's (2000) AOS characteristics and capital allocation, decision-making, recruiting, and professional development from Pasternack's institutional LQ model (Table 1). All the AOS characteristics and enabling systems from the LQ model mentioned above, describe the formal structure of the internal network of the organisation and includes the supervisory relationship, work groups/teams, permanent and *ad hoc* committees and management information systems. Through this internal network the organisation provides organizational members with information and access to organizational resources – what they need in their everyday work.

Access to organizational resources is directly connected to power (mostly legitimate power) in an organisation, where the distribution of power is one of the most important structural attributes. Examining power in our framework for measuring institutional leadership, we use the concept of centralisation. In accordance with Hall (1982), centralisation is the degree to which power is differentially distributed within an organisation. The maximum degree of centralisation would exist if all the power in an organisation were exercised by a single individual; the minimum degree of centralisation would exist if all the members of the organisation shared equally in the exercise of power. To evaluate the distribution of power, the traditional idea of centralisation as the extent to which power is concentrated in an organization has been used. However, the centralisation and decentralisation of an organization are opposing poles when estimating the extent of centralisation in our framework for measurement of institutional leadership (Figure 1).

Organizations behave in response to available information and interpretations of that information, and understanding that this process can help them modify their

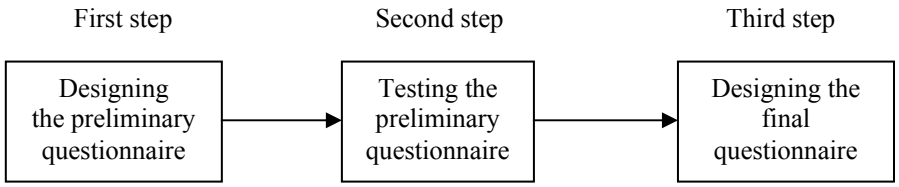
behaviour in the future. To this end, organizations need proper metric systems that allow them to monitor and regulate both short-term and long-term performance. The high span of control from Fulmer's (2000) AOS characteristics, which responds to group measurement, risk management, performance appraisal, and incentives/compensation from the institutional LQ model (Table 1), sketch out the design of an organizational metric system. All these enabling systems form the control-feedback system in our measurement framework (Figure 1). The control-feedback system itself consists of three different types of feedback loops; one of them is positive and two of them are negative feedback loops. The negative feedback loops have a regulative function on two different levels – the individual-operational level and the organizational-goals level. The positive feedback loop has an amplifying function, which secures the detection of new things, innovation and organizational changes. The positive and negative feedback loops determine the dynamic behavioural patterns of the organization, and all together they form certain tools of the organizational system for interpreting the information inside the organization. Moreover, the positive feedback loop with information processing across all of the main parts (alignment and cohesion, architecture of internal network, and two negative feedback loops of control-feedback system) of the institutional leadership measurement framework sets up the self-regulation of organization. This self-regulation affords organizations the capability to adapt with the changing environment – dynamic stability in a changing environment.

Finally, the design of the framework for measuring institutional leadership using the two dimensions includes three main factors (Figure 1).

3. Methodology

In order to measure the institutional leadership, a questionnaire has been formulated. The designing process was divided into three steps (Figure 2).

Figure 2. The Questionnaire Design Process



In the first step, the questions for the preliminary questionnaire were developed and then tested in turns by two groups of experts and corrected after each test by the authors of this paper (Figure 3).

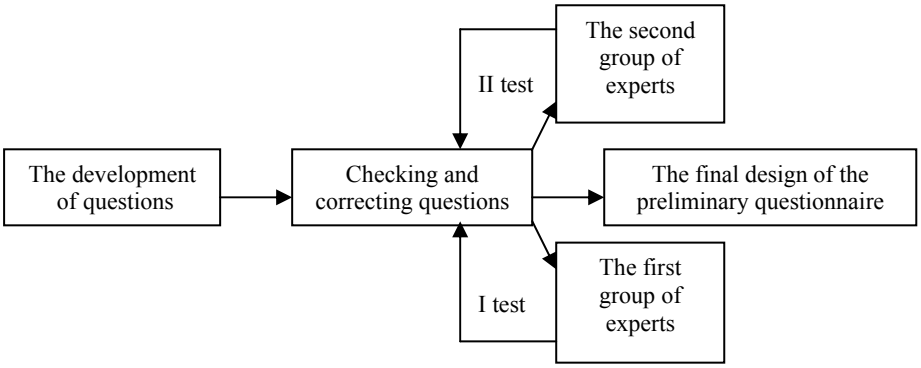
The questionnaire itself has been designed as a path model with latent variables and consists of dependent and independent variables (equation 1).

$$f(Y_i) = \beta_0 + \beta_1 f(X_{1,i}) + \beta_2 f(X_{2,i}) + \beta_3 f(X_{3,i}) + \beta_4 f(X_{4,i}) + u_i \qquad \text{(eq.1)}$$

The design of the independent variable questionnaire is based on the framework for measuring institutional leadership (Figure 1). The composition of this questionnaire includes four constructs (X_1, X_2, X_3, X_4) according to equation 1. These constructs are: X_1 for alignment and cohesion; X_2 for the communication system as a subpart of the architecture of the internal network; X_3 for the extent of centralisation as

a subpart of the architecture of the internal network; X_4 for the control-feedback system. Altogether, the independent variables questionnaire included 62 questions. The dependent variable questionnaire has been worked out to estimate the validity and reliability of the independent variables questionnaire. The composition of this questionnaire consists of one construct and included 6 questions. All in all, the full preliminary questionnaire included 68 questions.

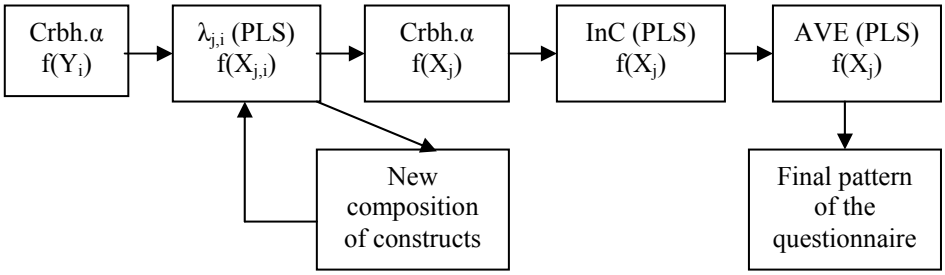
Figure 3. First Step in the Process of Designing the Questionnaire



In designing the questionnaire, a seven-point scale (strongly disagree to strongly agree) has been used as suggested by Osgood *et al.* (1957), and all these questions are closed questions. The validity of all these questions was tested using two groups of experts: the first group included employees from the Lääne-Viru School of Applied Sciences; the second group included PhD students and faculty members from the Faculty of Economics and Business Administration at the University of Tartu.

The second step in testing and designing a preliminary questionnaire of institutional leadership was carried out in six organizations in Estonia. The employees from two of the largest banks, the two largest retail organizations, one small school, and one medium-sized industrial company participated in the empirical study. Finally, a total of 445 questionnaires were completed.

Figure 4. Analysis Process for Designing the Final Questionnaire



Note: Crbh.α – Cronbach's alpha, PLS - Partial Least Squares, λ – loading of individual question (item), InC – internal consistency, AVE – Average Variance Extracted

In the third step, the results from the six organizations were analysed in order to formulate the final design of a questionnaire of institutional leadership (Figure 4). The results were treated according to the Student t-test, Cronbach's alpha, and *Partial Least Squares* (PLS) tests: loading (λ) calculation of items (questions); internal consistency (InC); and Average Variance Extracted (AVE). The Student t-test was performed to estimate whether the variety of the tests' results corresponded with the actual variety inside each organization tested. For the next test, the composite reliability of constructs Cronbach's alpha test was used. It is important to test the dependent variable at the beginning, because only a positive result there would allow us to continue with the PLS tests. The loading values calculation using the PLS test allows us to estimate the reliability of individual questions inside each construct. The values of the loadings (λ) from all tests of six organizations have been compared with each other and their common pattern of reliable questions has been used for a new composition of the construct. The new composition of questions has been tested once more using PLS loadings (λ) in each construct and the procedure described above has been followed successively until the right composition for each construct has been found. To evaluate the composite reliability of each single construct an InC test has been used. The AVE test is the most suitable test in PLS for estimating how the constructs suit the whole model and it is understood as an estimation of discriminant validity. Following this procedure, the final pattern of the questionnaire of institutional leadership was developed in accordance with the four-construct model (equation 1) and it includes 22 questions altogether (6 questions in the dependent construct and 16 questions in the independent constructs).

In order to measure the organizational leadership capability using the final questionnaire, the questions in constructs X_2 and X_3 have been compounded to form construct X_{23} – the architecture of the internal network. Construct X_{23} satisfied the three-construct model (equation 2) in accordance with our framework for measuring institutional leadership (Figure 1). To design the composition of construct X_{23}, PLS tests for construct X_{23} have been applied once more (Figure 4) and this has resulted in the final questions.

$$f(Y_i) = \beta_0 + \beta_1 f(X_{1,i}) + \beta_{23} f(X_{23,i}) + \beta_4 f(X_{4,i}) + u_i \qquad \text{(eq.2)}$$

4. Results

A total of 445 observations with sample sizes of N=45, N=111, N=73, N= 82, N=109, and N=25 were represented in six organisations, where tests of the preliminary questionnaire were carried out. Observations in the samples were divided into several groups except in the smallest organizational sample – the industrial company. This sample includes only specialists and administration staff. In the remaining organizational samples the respondents were chosen from different hierarchical levels or different geographical locations in the organization. This distribution within the samples allows us to analyse the validity and reliability of single questions with distinct variety between different groups in that entire organizational level.

Student t-test

The student t-test was applied in order to examine the differences in the real distribution of different groups in the samples compared to the planned (estimated) distribution within the samples before carrying out the tests in the organizations (Table 2). The real distribution inside the samples, which is close to the planned distribution in the samples of organizations, allows the best selection of individual questions for the final

composite of constructs on the basis of analyses of the reliability and validity of the test result in the next step. The t-test was carried out for every item in the preliminary questionnaire. For this purpose, the results of earlier planned groups in the samples in five organizations were used in pairs according to the numbers of groups in each organization. According to the t-test statistical hypothesis, "that between the results of the groups in pairs no significant difference of the level $\alpha = 0.05$ ($p>\alpha$)" was found.

Table 2. Inner Distributions of Samples in Five Organizations

Indicator	Org. n=45	Org. n=111	Org. n=73	Org. n=82	Org. n=109
Number of questions with t-test results ($p<0.05$) from 68 questions in the preliminary questionnaire	15	26	42	10	21
Number of questions with t-test results ($p<0.05$) from 22 questions in the final questionnaire	7	7	15	3	6
Number of different groups in sample (planned)	3	2	4	2	2
Number of different groups in sample (real)	2	2	2	1	2

The t-test in five organizations (Table 2) indicated differences between the planned and the real distribution of different groups inside the sample in three organizations. Finally, from test samples in all six organizations, two were homogeneous and the remaining four were divided into two different groups.

Cronbach alpha test

In the third step, the Cronbach alpha test to estimate the composite reliability of the questionnaire has been used. First of all, the Cronbach alpha test was calculated for the dependent construct (equation 1 and 2). To estimate the reliability of the independent constructs, the Cronbach alpha test was used after individual questions had been analysed by using the PLS loadings test (Figure 4). In the early stages of the research, the Cronbach alpha test values were 0.7 as a benchmark, as suggested by Nunnally (1994). But a Cronbach alpha value of 0.85 and greater indicates the internal reliability of the construct (Bontis 2002). Also, the Cronbach alpha test is sensitive to the length of the test. According to Nunnally (1994), individual items may correlate poorly with true scores, but a 10-item test might correlate at 0.50 with true scores, and a 100-item test might correlate at 0.90 with true scores. Table 3 summarises the results of the Cronbach alpha test, where the results of the samples of the dependent construct are fine, even with a small 6-item (questions) test of the dependent construct.

Table 3. Cronbach Alpha Test Results for the Dependent Construct (Y)

Indicator	Org. n=45	Org. n=111	Org. N=73	Org. n=82	Org. n=109	Org. n=25
Average	5.62	5.39	6.48	6.11	5.74	6.10
SD	1.07	1.40	0.84	1.13	1.15	0.89
Crbh. α	0.90	0.89	0.87	0.87	0.85	0.87

Note: Crbh.α – Cronbach's alpha

Analysis and design of the composition of questions in independent constructs of the questionnaire

To design the composition of questions in independent constructs, a PLS (*Partial Least Squares*) as a proper method of analysis was employed. Barclay *et al.* (1995), Chin and Newsted (1999), and Bontis *et al.* (2002) suggest PLS as a technique that works well with small numbers of samples and suits exploratory research contexts. In our study it was used to assess the reliability and validity of the measurement model.

First, the reliability of each individual item (questions) was assessed by examining the loadings of the measures with their respective construct. According to Hulland (1999), 0.7 or more is an acceptable loading value and items with loadings of less than 0.4 or 0.5 should be dropped. A low loading may be the result of: a poorly worded item; an inappropriate item; or an improper transfer of an item from one context to another. The final composition of the independent constructs corresponds to the four-construct model (equation 1) using the PLS item-loading test on the results from six organizations samples. The test was carried out using sub-constructs (Table 4) and the loading value for each item (question) in the six sample organizations was calculated. Items with a loading value of less than 0.5 or equal to 0.5 ($\lambda \leq 0.5$) at least in one sample organization were dropped from the construct and a new composition for each construct was found (Table 4). The new composition of the constructs was then tested using the PLS item-loading test once more. In this test most of the loading values were higher than 0.7 and some single lower loading values were between 0.5 and 0.7 ($0.5 < \lambda < 0.7$).

Table 4. Second Composition Designs for the Independent Constructs

Construct	Preliminary composition	New (final) composition
Alignment and cohesion	$X_{1,(1\text{-}7)}$; $X_{1,(8\text{-}13)}$	$X_{1,(8,9,10,11)}$
Communication system	$X_{2,(1\text{-}6)}$; $X_{2,(7\text{-}11)}$; $X_{2,(12\text{-}16)}$	$X_{2,(7,8,9,11)}$
Extent of centralisation	$X_{3,(1\text{-}6)}$; $X_{3,(7\text{-}12)}$; $X_{3,(13\text{-}20)}$	$X_{3,(2,3,4,5)}$
Control-feedback system	$X_{4,(1\text{-}6)}$; $X_{4,(7\text{-}13)}$	$X_{4,(4,8,9,11)}$

Note: $X_{1,(1\text{-}7)}$ – main elements of strategy; $X_{1,(8\text{-}13)}$ – strategic activity; $X_{2,(1\text{-}6)}$ – horizontal flow of communication; $X_{2,(7\text{-}11)}$ – informal flow of communication; $X_{2,(12\text{-}16)}$ – climate of communication; $X_{3,(1\text{-}6)}$ – organisational centralisation; $X_{3,(7\text{-}12)}$ – organisational autonomy; $X_{3,(13\text{-}20)}$ – organisational environment; $X_{4,(1\text{-}6)}$ – individual processes; $X_{4,(7\text{-}13)}$ – whole processes

At the next stage, the new composition of the constructs (Table 4) was subordinated to composite reliability tests: the Cronbach alpha and internal consistency (InC) measure developed by Fornell and Larckler (1981). Hulland (1999) suggested an InC value of 0.7 as a benchmark and to avoid extremely low internal consistency (i.e., less than 0.5). He argues that low internal consistency can result from a variety of underlying causes, including poor construct definition and/or construct multidimensionality. The Cronbach alpha and InC tests confirm the composite reliability of the new composition of each of the constructs in our study (Table 5). All results of InC test are higher than 0.7 (Table 5) and only two samples have a Cronbach alpha result a little lower than the benchmark: 0.69, and 0.68 (Table 5) respectively. This might be caused by the small number of items (4 questions) in the test.

At the last stage, the discriminant validity of the independent constructs with their new composition for the dependent construct was tested. To assess discriminant validity, Fornell and Larcker (1981) suggested the use of Average Variance Extracted (i.e., the average variance shared between a construct and its measures). Bontis *et al*. (2002) use this Average Variance Extracted (AVE) for the estimation of convergent validity and square root AVE for the estimation of discriminant validity. In this test, the value of the square root AVE should be at least 0.7 according to Hulland (1999). Square root AVE test results for each construct with their new composition in all six sample organizations were equal to 0.7 or higher than 0.7 (Table 5).

Table 5. Test Results for Independent Constructs

Construct	Indicator	Org. n=45	Org. n=111	Org. n=73	Org. n=82	Org. n=109	Org. n=25
X_1	Average	5.19	4.53	5.70	5.70	4.86	5.82
	SD	1.41	1.52	1.25	1.31	1.39	1.09
	Crbh. α	0.80	0.82	0.76	0.75	0.76	0.81
	InC	0.87	0.88	0.86	0.84	0.86	0.90
	root AVE	0.80	0.80	0.77	0.76	0.77	0.81
X_2	Average	4.26	4.42	5.38	4.83	4.33	4.91
	SD	1.67	1.61	1.51	1.67	1.69	1.52
	Crbh. α	0.73	0.82	0.87	0.69*	0.70	0.71
	InC	0.82	0.88	0.92	0.80	0.80	0.78
	root AVE	0.74	0.81	0.87	0.71	0.72	0.70
X_3	Average	4.90	4.61	5.58	5.39	4.69	5.60
	SD	1.59	1.57	1.21	1.50	1.47	1.18
	Crbh. α	0.79	0.81	0.83	0.68*	0.79	0.88
	InC	0.87	0.87	0.89	0.81	0.86	0.91
	root AVE	0.79	0.80	0.81	0.71	0.78	0.85
X_4	Average	4.90	4.74	5.90	5.54	4.77	5.53
	SD	1.63	1.55	1.21	1.37	1.48	1.33
	Crbh. α	0.80	0.79	0.72	0.81	0.80	0.86
	InC	0.87	0.87	0.82	0.88	0.87	0.90
	root AVE	0.79	0.79	0.73	0.80	0.79	0.84

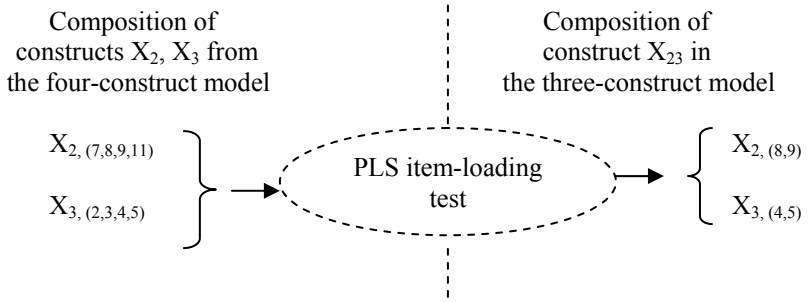
*Note: Crbh.α – Cronbach's alpha; InC – internal consistency; AVE – average variance extracted; * – benchmark is 0.7.*

Using the above described PLS tests, the final composition of the questionnaire of institutional leadership was made in accordance with the four-construct model (equation 1). Altogether, the independent constructs of the questionnaire include 16 questions: the construct of alignment and cohesion (X_1), included 4 questions; the construct of the communication system (X_2), included 4 questions; the construct of the extent of centralisation (X_3), included 4 questions; and the construct of the control-feedback system (X_4), included 4 questions (see Appendix 1).

Finally, to evaluate organizational leadership capability, a three-construct model (equation 2) was designed in accordance with the main parts of our framework for measuring institutional leadership (Figure 1). Therefore, questions from constructs X_2 (communication system) and X_3 (extent of centralisation) from the final questionnaire of the four-construct model (equation 1) were united to form the construct (X_{23}) referred to as the architecture of the internal network (Figure 1). In order to design

the final composition of construct X_{23}, eight questions were united together from constructs X_2, X_3 and examined using the PLS item-loading test again on several occasions with different combinations of questions. The best combination of questions for construct X_{23} was chosen and its PLS item-loading test values were mostly higher than 0.7 – several (6 pc.) were between 0.62 and 0.69, and a couple (3 pc.) were between 0.44 and 0.52 from all 24 items. In this combination, construct X_{23} includes two questions from construct X_2 and two questions from construct X_3 (Figure 5).

Figure 5. Composition Design for Construct X_{23} (architecture of internal network)



The composition of construct X_{23} for composite reliability was examined using the InC test and the Cronbach alpha test, and for discriminant validity using the square root AVE test. The results of these tests for the six organizational samples are summarised in Table 6. One sample (organization with n=45) out of six shows critical values, but the remaining sample test values comply with the level of reliability and validity demanded (Table 6).

Table 6. Test Results for Construct X_{23} (architecture of internal network)

Indicator	Org. n=45	Org. n=111	Org. n=73	Org. n=82	Org. n=109	Org. n=25
Average	4.78	4.39	5.50	4.96	4.56	5.50
SD	1.48	1.48	1.34	1.58	1.54	1.07
Crbh. α	0.60*	0.75	0.73	0.73	0.71	0.69*
InC	0.77	0.84	0.83	0.83	0.82	0.78
root AVE	0.68*	0.76	0.74	0.74	0.73	0.70

*Note: Crbh.α – Cronbach's alpha; InC – internal consistency; AVE – average variance extracted; * – benchmark is 0.7.*

Having passed through all the tests in the process of developing the questionnaire of institutional leadership, we designed the final version of the questionnaire using 22 statements, altogether divided into independent constructs with 16 statements and a dependent construct with 6 statements. All tests in our study confirmed the reliability of the individual questions, the composite reliability of the constructs and the validity of the composition of the questionnaire. The final design of the questionnaire satisfied both the three-construct (equation 2) and four-construct model (equation 1). This allows us to evaluate organizational leadership capability using the three-construct model (equation 2), and two important dimensions of the

architecture of the internal network using the four-construct model (equation 1). The final questionnaire is presented in Appendix 1.

5. Discussion

A contribution this paper made was an elaboration of a measurement tool for evaluating organizational leadership capability. The interpretation of our result involves two central considerations. First, on the theoretical side, this paper outlines – to the authors' knowledge – the theoretical framework that encompasses the main factors in our framework for measuring institutional leadership. Only a few authors, such as Pasternack *et al.* (2001), Mayo (2001) and Edvinsson (2002), have viewed leadership from the perspective of the organizational level. According to them, we interpret leadership as the capability of organizations revealed through organizational behaviours in terms of organizations as a complex open system that detect and cope with changes in the external environment. However, our understanding is based on the perspective of strategic management where leadership activity has become embedded in the structural pattern of organizations. The same idea is viewed by Pasternack *et al.* (2001) as institutional leadership in their institutional LQ model. Two dimensions (alignment and adaptability) from their institutional LQ model have also been used as the main dynamic dimensions in our framework. In addition, we stress those factors that create these two dimensions and allow us to develop our tool for measuring institutional leadership.

Secondly, on the practical side, a measurement tool for evaluating organizational capability was developed. Our management tool (questionnaire) includes 22 statements (questions from the independent and dependent constructs), which makes it possible to measure organizational leadership capability. The reliability and validity of these statements were tested statistically. Earlier, Pasternack *et al.* (2001) have measured organizational leadership capability using their institutional LQ measurement tool. Their measurement tool includes 65 statements, which have been drawn into 12 enabling systems. Our measurement tool is shorter and only includes 16 statements in independent constructs and these statements have been drawn into 3 main factors. From the practical point of view, the shorter measurement tool has many advantages: it is easier to collect answers from a large sample of respondents; it is simple to calculate and analyse the collected answers; it is also possible to measure organizations as a whole or by separate areas or management levels. Also, the measures in our measurement tool provide support to help managers increase the quality and efficiency of management in everyday practice. The size and number of gaps between the main factor values measured by the measurement tool provide the managers with signals and information about the kind of managerial and organizational processes that should be taken into focus.

There are some limitations to the current study that also need to be addressed. Our study took place within service-oriented industries except one organization – a single industrial company. This one organization, especially considering that the respondents from this organization had been chosen only from among managers and specialists, is not sufficient to confirm the validity of our measurement tool for production-oriented industries. To confirm the validity of our measurement tool within production-oriented industries, the tool should be tested separately in organizations in these industries.

The other limiting factor deals with national/cultural issues. Our measurement tool has been elaborated and tested within the context of the Estonian culture. The nature of organizational leadership may be different in different cultures and this may

directly influence interpretations of the statements in our measurement tool. Misalignments in interpretation could arise from differences in power distance, uncertainty avoidance, and communication between and across organizational levels in different cultures. These factors should be considered when implementing our measurement tool.

The result of our study also has implications in the field of strategic management. The important issue here is to what extent the leadership in an organization has been embedded into the structure of the organization in order to secure long-term organizational success. Our measurement tool is able to visualise this embedded leadership capability within the structural pattern of the organization. However, there are aspects that are not covered in the present study, such as: the balance between the tool for measuring institutional leadership factors and their relationship with business performance indicators. Future investigations should consider these and other implications.

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Appendix 1
Final Questionnaire of the Institutional Leadership (approximate translation)

Alignment and cohesion (X_1)

$X_{1,8}$ We have a common understanding and knowledge of operational plans and programmes (business strategy)
$X_{1,9}$ We have set the main purpose and interim objectives
$X_{1,10}$ My personal objectives collide with the long-term objectives of the company
$X_{1,11}$ I am actively involved with setting our objectives and putting them into practice

Communication system (X_2)

$X_{2,7}$ We socialize with our co-workers after business hours
$X_{2,8}$ Our organization arranges gatherings that are not work related*
$X_{2,9}$ Our organization arranges work related gatherings*
$X_{2,10}$ We have restrooms in our organization where we gather to socialize with our co-workers

Extent of centralisation (X_3)

$X_{3,2}$ We are regarded as equals at work
$X_{3,3}$ All of our employees have a sufficient degree of latitude
$X_{3,4}$ We make important decisions using the process of common discussion*
$X_{3,5}$ In making decisions we take into consideration expertise and competence, not the position*

Control-feedback system (X_4)

$X_{4,4}$ I consider our control methods to be fair
$X_{4,8}$ Good results are noticed
$X_{4,9}$ Good results are acknowledged enough
$X_{4,11}$ In our organization employees and employers discuss together the expectations of employees

Organisational performance (Y)

Y_1 Our organization uses the full abilities and potential of its workers
Y_2 Our organization offers good developmental opportunities
Y_3 Our organization is forward-looking
Y_4 Our organization deals with increasing work performances
Y_5 Our organization is successful
Y_6 Our organization successfully withstands competition in the future

*Note: * – questions included in the main construct X_{23} – architecture of internal network*