Passion and Confidence in Success as Unaccounted Factors for ICB 4.0 IPMA Model

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Abstract

The article proposes to consider an approach to the analysis of complex systems using elements of decision theory and game theory. This approach is a continuation of the comprehensive approach to the analysis of the internal relationships of the structure of the model of individual competencies of project managers, proposed by the International Project Management Association, carried out using various methods and tools by the authors for over 10 years. As a basis for the analysis, the adjacency matrix for the Markov model is used, built on the basis of the analysis of the content of the IPMA ICB 4.0 standard, which is further considered as a «decision matrix». The number of connections between the elements of the model is interpreted as the degree of «power» of the «reaction of nature» to the use of one or another element as a «strategy of the players» in the analysis of cooperative games. It is proposed to consider such criteria for choosing control strategies, which are based on the use of modeling the values of a pair of interrelated parameters «gambler's position» – «cautious gambler's position», used in a number of decision-making criteria in game theory. Under the «passion» is proposed to consider the degree of confidence in the success of the project. The relationship between the degree of such «passion» and the level of significance of specific elements of the competence of the project manager of the ICB model is shown. A hypothesis is proposed about the relationship between emotional and technical intelligence in the success of project management and the importance of taking this parameter into account when forming project teams

Keywords [1]

Emotional intelligence, Decision making under uncertainty, Game theory, Gambling position, Project management, Competency model, Markov models, Graph theory, Modeling

1. Introduction

In today's economic climate, project management is becoming more and more «operationalized», becoming a proven technology for organizations to achieve their strategic goals. «Estimated» metrics such as «time to market» [1] are becoming more and more important; measured «speed» of the project teams [2]. Nevertheless, «decision-making» technologies are spreading and improving, requiring certain skills in this area – from testing hypotheses based on rapid prototyping when creating new products, such as «design thinking» [3] to technology for solving inventive problems «TRIZ» [4]. All this is impossible without using the peculiarities of creative thinking [5], as well as a serious understanding of the features of any «soft factors» in general that affect the potential success of an ongoing project, but are not measurable, predictable and controlled as «hard factors» used in

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management. Understanding (and recognizing) the possible irrationality (from the point of view of classical «rational» methods) inherent in «soft factors» allows one to take into account the influence of such factors as «excitement», «confidence», «passion» in management. Such manifestations of «irrationalgo» in our time are attributed to the manifestation of «emotional intelligence», which, having acquired a «name», has become interesting and at the same time available for research into its influence in various spheres of human activity, including professional project management.

2. Review of existing approaches

The importance of understanding the logic of decision-making both in economics and in other spheres of human activity hardly needs additional substantiation today. Nevertheless, the first studies that would systematize such theories arose relatively recently from the point of view of modern scientific thought, but, nevertheless, even before the spread of such a term as «emotional intelligence» [6], as well as linking the specifics of managerial decision making to conditions of uncertainty. One of the noteworthy models for assessing the possible success (or failure) of actions aimed at changing something (which, by definition, is a project, and, accordingly, is in the sphere of interest of such an area of knowledge as project management), is the famous «formula for change», also known as the Glacier formula [7], whose history dates back to the 1960s [8]. It connects a number of «soft factors», showing their priority over all other «technical» actions in projects aimed at change, simply making the likelihood of successful implementation of such changes to zero. At the same time, the classic variables in this formula like «Dissatisfaction», «Vision», and «First Steps» do not at all describe, perhaps, the entire possible range of «soft factors». One of these «factors» can be considered and «excitement» based on belief in success [9], which is not necessarily backed up by some kind of analytical calculations.

A huge contribution to this «paradigm shift», in our opinion, was made by the work of Daniel Kahneman (in collaboration with the late Amos Tversky), who, despite the fact that he is a psychologist, in 2002 received the Nobel Prize in economics for «for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty» [10]. Since then, all types of research on cognitive prejudices affecting the nature of decision-making have become very popular, and the term «emotional intelligence» has acquired a solid basis among the terms and definitions not only in applied psychology, but also in economics. However, it should be understood that the idea of «emotional intelligence» is a kind of spontaneous insight of genius. The works [11, 12], which are listed on the official Nobel Prize website [13] regarding the relevant decision of the Nobel Committee have been separated for more than 20 years.

It is worth noting that the idea of assessing what we understand today by «emotional intelligence» was noted even earlier – in particular, back in 1958 in the work of such well-known and authoritative authors today as David McClelland and Alfred Baldwin [14]. At the same time, he collaborated with David McClelland and acted as a co-author, and in such works, which later served as the basis for the development of ideas of all kinds of competence models in such a well-known expert in the world of competencies as Richard E. Boyatzis [15], without references to the ideas of which today, perhaps, no serious research in the field of competence management can do. At the same time, other authors have studied the relationship between decision making under uncertainty, the characteristics of human thinking and the economic consequences of such decisions [16]. In particular, the set of factors «Individual», «Organization environment», and «Job demand», cited from [17] could very well be the predecessor of both the PMI Talent Triangle [18] and the «Eye of competencies» Proposed by IPMA in its ICB version 3 [19].

At the same time, it was Boyatzis who, perhaps, was the pioneer in researching models of effective behavior of managers [20], raising, incl. and issues of assessing the impact of personnel competencies on financial performance [21]. In the study of competence models, one way or another, the question will arise not only about their assessment, but also about their development. In particular, through appropriate educational programs. Therefore, there is nothing surprising in the fact that among such a «virtual team» to see the famous today David Kolb [22]. Perhaps, after such a «chain» of bibliographic «discoveries», the presence of the Daniel Goleman (not already mentioned Nobel

laureate Daniel Kahneman) among the co-authors of such an «expanded» group of authors is more a necessity than an accident [23]. Moreover, the methods and tools proposed by Goleman [24] can be seen today in modern systems for assessing and developing competencies, in particular, in the field of project management.

On the other hand, it should be noted that a number of Nobel laureates associated with decision theory – game theory, began their history back in 1970 [25], and Kahneman and Goleman can rightfully be attributed to this galaxy of outstanding researchers. Thus, it can be stated that in the middle of the last century, several trends were formed, including mathematical, economic, pedagogical and psychological trends, which by the beginning of the 21st century formed a number of multidisciplinary areas, both in science and in applied fields of activity. Modern project management can be considered one of these areas. Moreover, research on the use of emotional intelligence in project management also has a long history [26-31]. Modern standards in the field of project management can hardly be called «unique documents» containing a kind of «knowledge system», the likes of which are not found anywhere else. If even 30 years ago any framework on this topic would have caused a huge surge of interest, today such interest arises only from the point of view of comparing the «newbie» with already existing approaches. Almost all the leading «providers» of knowledge systems for project management offer their own vision of the «competency sets» required for successful project management. Such models are suggested by the International Project Management Association [32], the American Project Management Institute [33] and even the authors of the SCRUM Guide [34]. One way or another, the blocks or individual elements associated with «soft» factors are clearly identified, the increasing dependence of the success of the project on the accounting and use of the «human factor» in management is noted. And, what is also worth noting, each of these documents, in fact, also offers a system for making decisions in the face of uncertainty. What, nevertheless, still remains relevant - this is an attempt to formalize the influence of emotional intelligence on decision-making in the form of appropriate mathematical models based not on the description of past events and their interpretation, but on the construction of such models that could make it possible to predict behavior of certain systems, taking into account the possible influence of factors inherent in emotional intelligence. In such a problem, of course, there is some challenge and contradiction, since this is an explicit attempt to describe in the language of IQ the logic of the influence of EQ on IQ (moreover, at first glance, an insoluble conflict between IQ and EQ).

3. Problem

In recent years, as noted above, more and more attention has been paid to «soft factors» as opposed to «hard» ones, the possession of which, as a rule, also requires possession of a serious set of analytical tools and methods. Which, of course, requires a very serious investment, at least time and attention, in obtaining such «tough skills». Without in any way belittling the importance of «soft knowledge», we can nevertheless assume that the denial of the only possible path to professional management through the acquisition of «hard knowledge» nevertheless «opened a loophole» for those who do not possess either one or the other knowledge. , but, unfortunately, this relatively «soft skills» can be difficult to verify, in particular, due to a good level of proficiency in a certain set of such «tools». A number of authors have already written about this feature. calling it «The Dark Side of Emotional Intelligence» [35]. Nevertheless, it is worth warning against neglecting «hard knowledge», incl. methods and tools of quantitative analysis, in particular, in risk management. In this regard, it still seems worthwhile to carefully approach the ideas of the unconditional and necessary priority of emotional intelligence [36]. Rather, it is worth combining both such approaches, as it is, in particular, perfectly demonstrated in Fig. 1, which suggests considering in interrelation both the classic (already) «EQ components» («inner circle») and «IQ components in project management», in the no less «classical representation», based on the PMI PMBOK knowledge areas («outer circle») [37].

Modern practice knows examples of both successful and unsuccessful implementation of similar, at first glance, projects being implemented in similar external conditions. For many years, attempts have been made to identify and analyze formal, primarily, unambiguously identifiable and measurable factors that affect the success of a project [38]. Nevertheless, despite the recognized importance of «soft factors», they are not so easy and unambiguous to identify and assess their influence on the final

success or failure of a project, although a number of serious studies have argued for the importance of such factors [39]. It seems useful to create models for assessing the impact of such factors, incl. to adjust existing approaches to project management based on quantitative assessments, and not only on qualitative parameters [40], although it is worth noting the emergence of quantitative studies on the relationship between emotional intelligence and certain aspects of the elements of the model of individual competencies of project managers [41], in ICB terms 4.0 IPMA [42], as well as to what extent the presence of developed emotional intelligence indicates the potential of a manager [43].

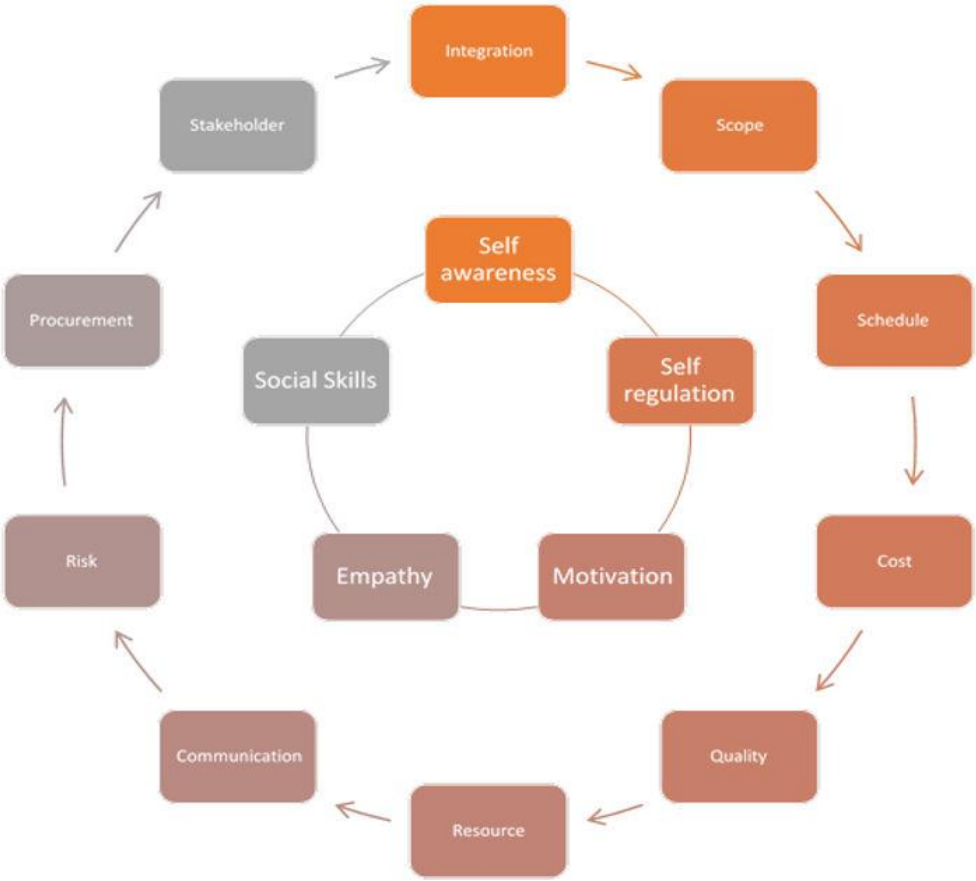

Figure 1: EQ and EQ in project management [37]

Modern researchers in the field of project management also pay attention, albeit perhaps not enough, to the phenomenon of emotional intelligence. Perhaps this is due to the presence in the «picture of the world» of many technical specialists approaches to decision-making based on the use of «analytic-oriented» IQ rather than EQ, to the extent of ignoring everything that cannot be explicitly formalized. As Anthony Mersino writes in his work on self-change: «A big change came when I began to recognize the value of emotions and relationships at work. I learned about feelings and learned to trust them as sources of information. I have learned to acknowledge and reaffirm that I am angry, fearful, or joyful. I also began to pay attention to how the people around me felt and take this information into account when making decisions. Thanks to this, I was able to better manage my projects and become a better leader for people» [44]. On the other hand, it is worth noting such a moment as, from our point of view, insufficient attention, and, accordingly, the spread of approaches associated with the use of decision-making theory in all the diversity accumulated by this developing field of knowledge. But, nevertheless, it is worth noting the recent increase in interest in this area, which is confirmed, in particular, by the appearance of relevant works, in particular as more focused on the use of IQ [45, 46] And considering decision-making systems in conjunction with EQ [47].

In this regard, it is possible to formulate a research task as an analysis of the existing model of individual competencies of project managers for its resistance to the effects of emotional intelligence in the context of a possible propensity to make decisions under conditions of uncertainty based on irrational factors such as passion, confidence, etc.

4. Decision

As a possible toolkit for constructing a model for assessing the impact of «soft factors», it is proposed to consider the method of decision-making under uncertainty, based on the analysis of the «payment matrix» known in game theory [48]. In 2011, Daniel Kahneman released another best-selling book, «Think Slow, Decide Fast», in which he offered to consider two different systems of thought. The first type, which he named System 1, is fast intuitive thinking, such as driving a car after years of practice. The second type – System 2 – long-term, energy-consuming thinking [49]. We propose to draw an analogy between these two types of thinking with the «position of the player» [50] and the «position of extreme caution», directly related to each other. We will also call them «extreme optimism» and «total pessimism» positions, where the first «position» is a state of «confidence in success,» and the second is a lack of such confidence. As the main hypothesis, let us take a direct connection between «confidence» and «passion», as shown in a number of sources [51-53]. This approach is a logical continuation of those studies that were carried out earlier, but, to a greater extent, were aimed at using the classical «IQ-approach» based on formalization in the form of mathematical models of the system of connections inherent in one or another model in project management - from the description «General approach» [54], to the logic of interaction of the project team with the project environment [55], and, further, to a description of the possible role-based interaction of project team members [56].

It is proposed to consider in further analysis precisely such criteria for evaluating alternatives (in our case, the dominant influence of one or another element of the project manager's competence in the implementation of managerial activities), known in decision-making theory and game theory, which include taking into account the so-called «gambling position»: Hurwitz criterion [57]; Hodge-Lehmann criterion [58].

To provide a basis for constructing a «payment matrix», it is proposed to consider an adjacency matrix for a model of individual competencies built on the basis of a model of individual competencies proposed by the International Project Management Association due to the fact that in the text of this standard there are explicit references to the connections of each of the elements with other elements of the system, which allows construct a first-order adjacency matrix (Fig. 2):

Factor name	Elements that are affected (columns)	Strategy	Governance, structure and processes	Compliance, standards and regulations	Power and interests	Culture and values	Self-reflection and self-management	Personal integrity and reliability	Personal communication	Relations and engagement	Leadership	Teamwork	Conflict and crisis	Resourcefulness	Negotiation	Results orientation	Project design	Requirements and objectives	Scope	Time	Organisation and information	Quality	Finance	Resources	Procurement	Plan and control	Risk and opportunities	Stakeholder	Change and transformation
Influencing Elements (Rows)	FID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Strategy	1	0	1	1	1	1	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0
Governance, structure and processes	2	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1	1	1	0	0	1
Compliance, standards and regulations	3	1	1	0	1	1	0	0	0	0	1	0	0	0	1	0	1	1	0	0	1	1	0	0	0	0	1	0	0
Power and interests	4	1	1	1	0	1	0	1	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0
Culture and values	5	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
Self-reflection and self-management	6	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Personal integrity and reliability	7	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Personal communication	8	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0
Relations and engagement	9	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0
Leadership	10	0	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Teamwork	11	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	0	0	1	0	1	0	0	0
Conflict and crisis	12	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	0	0	1	0	1	1	0	0
Resourcefulness	13	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	1	1	0	0
Negotiation	14	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	0	1	1	0	0	0
Results orientation	15	1	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	0	0	0	1	1	1	0

Figure 2: The 1st order adjacency matrix – fragment [59]

As the «payment matrix» itself, it is proposed to consider the adjacency matrix of such a minimum possible order n, when the state of attainability of the influences of each element of the system on any other element of the system through at least one indirect influence through n-1 other elements (or n-1 «nodes» graph if such a system is represented as a directed graph of the Markov model). In our case, let's take an adjacency matrix of order 2 (Fig. 3), although it contains one element equal to zero.

Factor name	Elements that are affected (columns)	Risk and opportunities	Resourcefulness	Time	Power and interests	Personal communication	Quality	Strategy	Negotiation	Self-reflection and self-management	Project design	Personal integrity and reliability	Stakeholder	Relations and engagement	Compliance, standards and regulations	Scope	Resources	Governance, structure and processes	Culture and values	Organisation and information	Teamwork	Conflict and crisis	Results orientation	Procurement	Leadership	Change and transformation	Finance	Requirements and objectives	Plan and control	Rows Min	Rows Max	1-V	V	Hurwitz	
Influencing Elements (Rows)	FID	26	13	19	4	8	21	1	14	6	16	7	27	9	3	18	23	2	5	20	11	12	15	24	10	28	22	17	25	min	max	P	O	R	Rmax
Leadership	10	21	17	21	17	16	17	15	15	16	15	14	15	14	14	13	15	12	12	11	12	12	12	12	10	11	10	10	8	8	21	0,6	0,4	13,2	13,2
Project design	16	16	21	15	16	15	13	16	16	15	16	15	15	15	13	10	11	13	13	8	12	12	7	8	11	7	6	6	4	4	21	0,6	0,4	10,8	
Stakeholder	27	16	18	15	14	17	15	15	14	17	16	14	15	14	13	12	9	13	13	10	12	12	9	6	10	7	6	6	4	4	18	0,6	0,4	9,6	
Organisation and information	20	16	16	16	16	17	13	14	15	13	13	14	12	13	14	11	8	13	13	9	12	12	9	7	9	6	7	5	5	5	17	0,6	0,4	9,8	
Scope	18	16	18	15	16	14	13	16	16	14	14	14	13	14	13	10	9	13	13	8	13	12	7	6	9	7	6	4	4	4	18	0,6	0,4	9,6	
Plan and control	25	16	17	15	17	14	13	16	15	13	14	14	13	13	14	11	9	13	13	9	12	12	9	6	8	7	4	4	4	4	17	0,6	0,4	9,2	
Requirements and objectives	17	16	17	15	15	15	13	15	16	14	14	14	13	13	11	7	13	13	9	12	12	9	6	8	7	6	4	4	4	4	17	0,6	0,4	9,2	
Resources	23	15	17	15	16	15	12	14	15	12	14	14	13	14	15	9	10	13	13	9	12	12	8	7	10	5	6	5	4	4	17	0,6	0,4	9,2	
Procurement	24	15	17	15	15	15	12	14	15	13	14	15	13	14	13	9	10	13	13	9	12	12	8	5	10	7	6	5	4	4	17	0,6	0,4	9,2	
Risk and opportunities	26	15	17	14	15	15	14	17	14	14	15	14	14	13	14	12	9	13	13	8	12	12	8	6	9	6	3	4	3	3	17	0,6	0,4	8,6	
Change and transformation	28	14	17	14	14	15	13	14	13	15	15	14	16	13	13	10	8	13	14	8	12	12	8	7	9	6	5	5	3	3	17	0,6	0,4	8,6	
Finance	22	15	17	15	16	14	12	15	16	13	13	14	12	14	13	9	9	14	13	7	12	12	6	6	10	7	6	4	4	4	17	0,6	0,4	9,2	
Time	19	15	16	15	15	15	12	14	15	13	13	14	12	13	13	10	7	13	13	8	12	13	8	6	9	7	6	4	4	4	16	0,6	0,4	8,8	
Quality	21	16	16	14	15	14	13	14	14	12	14	12	13	15	13	8	9	12	12	8	11	11	5	6	11	4	5	4	3	3	16	0,6	0,4	8,2	
Results orientation	15	14	9	14	10	10	12	9	8	9	7	8	8	6	9	11	10	7	7	11	7	7	12	9	5	9	10	8	8	5	14	0,6	0,4	8,6	
Resourcefulness	13	12	6	13	8	8	11	6	6	8	4	6	5	6	7	8	9	5	5	9	5	5	9	8	5	8	10	8	8	4	13	0,6	0,4	7,6	
Negotiation	14	12	6	12	8	8	13	8	6	8	4	4	5	6	7	9	9	5	5	8	5	5	9	9	4	8	9	8	8	4	13	0,6	0,4	7,6	
Teamwork	11	11	9	11	7	6	11	7	7	8	5	6	6	6	4	8	11	4	4	7	4	4	8	10	4	11	9	10	8	4	11	0,6	0,4	6,8	
Conflict and crisis	12	11	9	11	7	8	10	5	7	8	5	6	6	6	4	8	10	4	4	8	4	4	8	10	5	9	11	10	8	4	11	0,6	0,4	6,8	
Personal communication	8	10	8	10	8	5	9	6	6	5	4	5	5	5	5	8	13	3	3	8	3	3	8	11	4	9	8	10	8	3	13	0,6	0,4	7	
Relations and engagement	9	10	8	10	8	5	9	6	6	5	4	5	5	5	5	8	12	3	3	8	3	3	8	12	4	9	8	10	8	3	12	0,6	0,4	6,6	
Governance, structure and processes	2	9	10	7	6	8	8	9	8	9	11	7	9	9	6	7	4	6	6	5	7	7	3	3	6	2	1	2	0	0	11	0,6	0,4	4,4	
Compliance, standards and regulations	3	6	10	7	8	7	5	6	6	8	8	9	9	6	7	6	6	7	7	6	6	6	5	4	6	4	3	4	2	2	10	0,6	0,4	5,2	
Personal integrity and reliability	7	9	7	8	6	6	9	5	5	5	3	3	2	4	3	8	10	1	1	8	1	1	8	10	4	8	8	11	8	1	11	0,6	0,4	5	
Power and interests	4	9	7	7	5	7	8	6	5	6	7	4	8	6	5	9	5	5	5	9	4	4	5	5	5	4	3	3	3	3	9	0,6	0,4	5,4	
Strategy	1	6	9	6	7	7	4	5	7	5	6	7	6	7	5	6	6	5	5	7	4	4	3	6	8	3	4	5	3	3	9	0,6	0,4	5,4	
Self-reflection and self-management	6	8	6	8	6	5	8	4	4	5	2	3	3	3	3	7	10	1	1	7	1	1	8	10	3	8	8	10	9	1	10	0,6	0,4	4,6	
Culture and values	5	6	5	5	3	7	6	4	3	6	5	4	6	2	3	9	3	3	3	7	2	2	6	3	4	4	3	3	3	2	9	0,6	0,4	4,8	

Figure 3: The 2nd order adjacency matrix – fragment [59]

Considering the resulting matrix as a «payment matrix» or «decision matrix», where the rows of the matrix are considered as «strategies» of influence on the system, and the columns as «reactions» of the elements of «nature» to the effects exerted. For better visualization of the system of interconnections in the matrix shown in Figure 3, we transform it into the system landscape, as it was proposed in [59], and it is this resulting matrix that will be considered as a «decision matrix». By supplementing it with columns with maximum and minimum values in each row, as well as columns with values for the probabilities of positions of «extreme caution» («pessimism» P) and «gambler» («optimism» O), one can calculate for the necessary criteria (Fig. 4).

Factor name	Elements that are affected (columns)	Strategy	Governance, structure and processes	Compliance, standards and regulations	Power and interests	Culture and values	Self-reflection and self-management	Personal integrity and reliability	Personal communication	Relations and engagement	Leadership	Teamwork	Conflict and crisis	Resourcefulness	Negotiation	Results orientation	Project design	Requirements and objectives	Scope	Time	Organisation and information	Quality	Finance	Resources	Procurement	Plan and control	Risk and opportunities	Stakeholder	Change and transformation
Influencing Elements (Rows)	FID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Strategy	1	8	6	6	7	6	3	5	6	6	6	3	4	6	4	3	9	7	4	4	7	7	5	5	7	7	5	5	5
Governance, structure and processes	2	6	11	9	5	7	0	2	4	3	9	2	1	7	8	3	10	8	7	7	8	9	6	6	7	6	9	9	6
Compliance, standards and regulations	3	6	8	9	6	6	2	4	6	4	6	4	3	7	5	5	10	6	6	6	7	6	7	7	9	8	6	8	7
Power and interests	4	5	7	8	9	9	3	3	5	5	9	4	3	7	8	5	7	5	4	4	7	6	5	5	4	5	6	6	5
Culture and values	5	4	5	6	7	9	3	3	3	3	6	4	3	5	6	6	5	3	2	2	7	2	3	3	4	3	4	6	3
Self-reflection and self-management	6	3	2	3	7	7	9	10	10	10	8	8	8	8	8	8	6	4	1	1	5	3	1	3	3	6	4	5	1
Personal integrity and reliability	7	4	3	2	8	8	8	11	10	10	9	8	8	8	9	8	7	5	1	1	6	4	1	3	3	6	5	5	1
Personal communication	8	4	4	5	8	8	8	10	13	11	10	9	8	10	9	8	8	6	3	3	5	5	3	5	5	8	6	5	3
Relations and engagement	9	4	4	5	8	8	8	10	12	12	10	9	8	10	9	8	8	6	3	3	5	5	3	5	5	8	6	5	3
Leadership	10	10	15	15	11	13	8	10	15	12	21	11	10	21	17	12	17	15	12	12	16	14	12	14	14	17	15	16	12

Figure 4: The «Decision Matrix», created on the basis of the 2nd order adjacency matrix for the IPMA ICB4.0 competency model - an example of calculating the Hurwitz criterion for the value V = 0.4 (source: own development)

Now let's calculate the Hurwitz (Fig. 5) and Hodge-Lehman (Fig. 6) criteria with a variable step V = 0.1 in the range from 0 to 1. Accordingly, V = 1 will correspond to the position of the «gambler» with the maximum degree of «optimism», and V = 0 correspond to the position of «extreme caution». The rules for calculating these criteria will not be cited in this article due to the availability of their description both in the cited sources and on the Internet, as well as in the calculation file [60] located by the authors in the Researchgate network. Further, according to the data presented on Fig. 5 and Fig. 6, we construct Fig. 7 and Fig. 8, which represent the dynamics of changes in the values of the indicators of these criteria for each of the model elements, depending on the level of «pessimism» (on the graphs, the values of the horizontal axis correspond to 1 = maximum caution («complete pessimism), 0 = maximum excitement («minimum caution», «maximum confidence in success» or «extreme optimism»).

Hurwitz		pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm
Influencing Elements (Rows)		1	0,9	0,8	0,7	0,6	0,5	0,4	0,3	0,2	0,1	0
Leadership	10	8	9,3	11	11,9	13	14,5	15,8	17	18	19,7	21
Project design	16	4	5,7	7,4	9,1	11	12,5	14,2	16	18	19,3	21
Stakeholder	27	4	5,4	6,8	8,2	9,6	11	12,4	14	15	16,6	18
Organisation and information	20	5	6,2	7,4	8,6	9,8	11	12,2	13	15	15,8	17
Scope	18	4	5,4	6,8	8,2	9,6	11	12,4	14	15	16,6	18
Plan and control	25	4	5,3	6,6	7,9	9,2	10,5	11,8	13	14	15,7	17
Requirements and objectives	17	4	5,3	6,6	7,9	9,2	10,5	11,8	13	14	15,7	17
Resources	23	4	5,3	6,6	7,9	9,2	10,5	11,8	13	14	15,7	17
Procurement	24	4	5,3	6,6	7,9	9,2	10,5	11,8	13	14	15,7	17
Risk and opportunities	26	3	4,4	5,8	7,2	8,6	10	11,4	13	14	15,6	17
Change and transformation	28	3	4,4	5,8	7,2	8,6	10	11,4	13	14	15,6	17
Finance	22	4	5,3	6,6	7,9	9,2	10,5	11,8	13	14	15,7	17
Time	19	4	5,2	6,4	7,6	8,8	10	11,2	12	14	14,8	16
Quality	21	3	4,3	5,6	6,9	8,2	9,5	10,8	12	13	14,7	16
Results orientation	15	5	5,9	6,8	7,7	8,6	9,5	10,4	11	12	13,1	14
Resourcefulness	13	4	4,9	5,8	6,7	7,6	8,5	9,4	10	11	12,1	13
Negotiation	14	4	4,9	5,8	6,7	7,6	8,5	9,4	10	11	12,1	13
Teamwork	11	4	4,7	5,4	6,1	6,8	7,5	8,2	8,9	9,6	10,3	11
Conflict and crisis	12	4	4,7	5,4	6,1	6,8	7,5	8,2	8,9	9,6	10,3	11
Personal communication	8	3	4	5	6	7	8	9	10	11	12	13
Relations and engagement	9	3	3,9	4,8	5,7	6,6	7,5	8,4	9,3	10	11,1	12
Governance, structure and processes	2	0	1,1	2,2	3,3	4,4	5,5	6,6	7,7	8,8	9,9	11
Compliance, standards and regulations	3	2	2,8	3,6	4,4	5,2	6	6,8	7,6	8,4	9,2	10
Personal integrity and reliability	7	1	2	3	4	5	6	7	8	9	10	11
Power and interests	4	3	3,6	4,2	4,8	5,4	6	6,6	7,2	7,8	8,4	9
Strategy	1	3	3,6	4,2	4,8	5,4	6	6,6	7,2	7,8	8,4	9
Self-reflection and self-management	6	1	1,9	2,8	3,7	4,6	5,5	6,4	7,3	8,2	9,1	10
Culture and values	5	2	2,7	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9

Figure 5: The Calculation of the Hurwitz criterion (source: own development)

HL		pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm	pessimizm
Influencing Elements (Rows)		1	0,9	0,8	0,7	0,6	0,5	0,4	0,3	0,2	0,1	0
Leadership	10	8	8,6	9,2	9,75	10	10,9	11,5	12	13	13,2	14
Project design	16	4	4,8	5,7	6,5	7,3	8,16	8,99	9,8	11	11,5	12
Stakeholder	27	4	4,8	5,6	6,46	7,3	8,11	8,93	9,8	11	11,4	12
Organisation and information	20	5	5,7	6,3	7,01	7,7	8,36	9,03	9,7	10	11	12
Scope	18	4	4,8	5,5	6,3	7,1	7,84	8,61	9,4	10	10,9	12
Plan and control	25	4	4,8	5,5	6,28	7	7,8	8,56	9,3	10	10,8	12
Requirements and objectives	17	4	4,8	5,5	6,27	7	7,79	8,54	9,3	10	10,8	12
Resources	23	4	4,8	5,5	6,27	7	7,79	8,54	9,3	10	10,8	12
Procurement	24	4	4,8	5,5	6,26	7	7,77	8,52	9,3	10	10,8	12
Risk and opportunities	26	3	3,9	4,7	5,56	6,4	7,27	8,12	9	9,8	10,7	12
Change and transformation	28	3	3,8	4,7	5,53	6,4	7,21	8,06	8,9	9,7	10,6	11
Finance	22	4	4,7	5,5	6,21	6,9	7,68	8,41	9,2	9,9	10,6	11
Time	19	4	4,7	5,5	6,18	6,9	7,63	8,35	9,1	9,8	10,5	11
Quality	21	3	3,8	4,6	5,36	6,1	6,93	7,71	8,5	9,3	10,1	11
Results orientation	15	5	5,4	5,8	6,22	6,6	7,04	7,44	7,9	8,3	8,66	9,1
Resourcefulness	13	4	4,3	4,7	5,03	5,4	5,71	6,06	6,4	6,7	7,09	7,4
Negotiation	14	4	4,3	4,7	5,03	5,4	5,71	6,06	6,4	6,7	7,09	7,4
Teamwork	11	4	4,3	4,7	5,01	5,3	5,68	6,01	6,4	6,7	7,02	7,4
Conflict and crisis	12	4	4,3	4,7	5,01	5,3	5,68	6,01	6,4	6,7	7,02	7,4
Personal communication	8	3	3,4	3,8	4,14	4,5	4,89	5,27	5,7	6	6,41	6,8
Relations and engagement	9	3	3,4	3,8	4,14	4,5	4,89	5,27	5,7	6	6,41	6,8
Governance, structure and processes	2	0	0,6	1,3	1,88	2,5	3,13	3,75	4,4	5	5,63	6,3
Compliance, standards and regulations	3	2	2,4	2,8	3,26	3,7	4,11	4,53	5	5,4	5,79	6,2
Personal integrity and reliability	7	1	1,5	2	2,44	2,9	3,39	3,87	4,4	4,8	5,31	5,8
Power and interests	4	3	3,3	3,5	3,8	4,1	4,34	4,61	4,9	5,1	5,41	5,7
Strategy	1	3	3,3	3,5	3,77	4	4,29	4,54	4,8	5,1	5,31	5,6
Self-reflection and self-management	6	1	1,4	1,9	2,33	2,8	3,21	3,66	4,1	4,5	4,99	5,4
Culture and values	5	2	2,2	2,5	2,69	2,9	3,14	3,37	3,6	3,8	4,06	4,3

Figure 6: The Calculation of the Hodge-Lehmann criterion (source: own development)

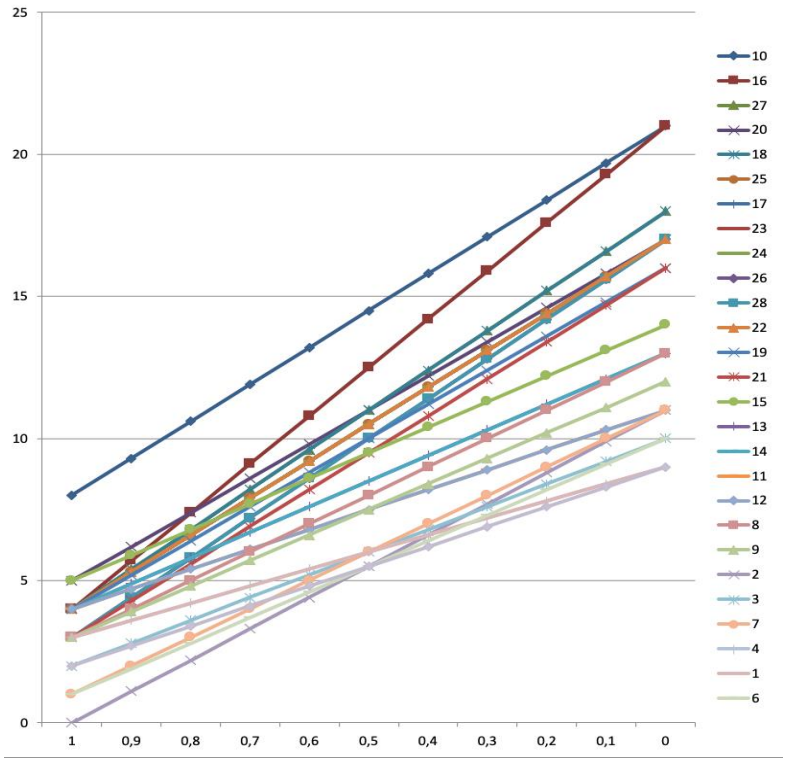

Figure 7: The Dynamics of changes in the influence of elements of the competence model IPMA ICB 4.0 – an example of calculation to take into account the Hurwitz criterion

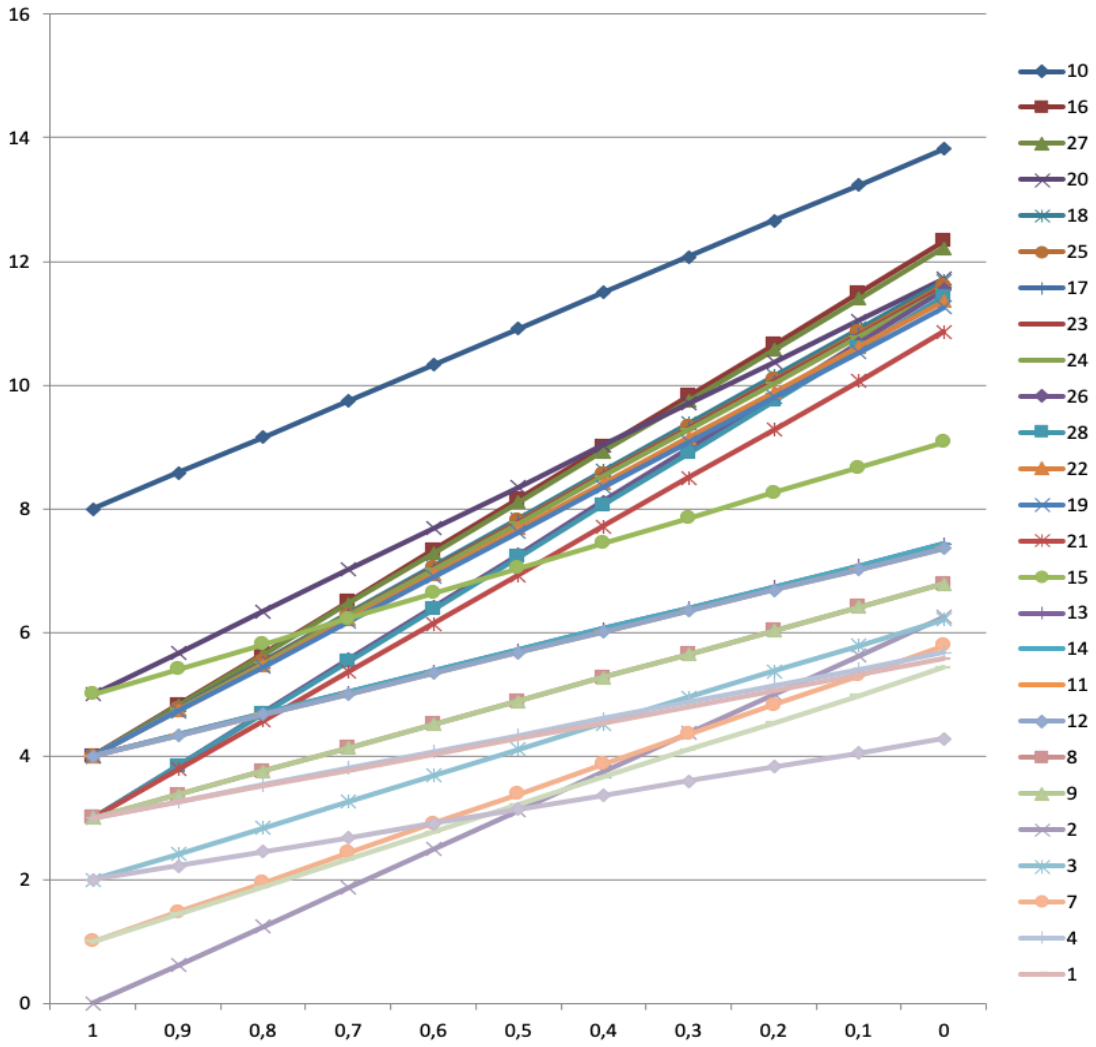

Figure 8: The Dynamics of changes in the influence of the elements of the competence model IPMA ICB 4.0 – an example of calculation for taking into account the Hodge-Lehmann criterion

As can be seen in the presented Fig. 7 and Fig. 8, with such visualization, it is clearly seen that when calculating by both methods, with a value of V = 0.5, a redistribution of the «demand» of a part of the competency element occurs, which allows us to put forward a hypothesis that different situations within the project in particular, the representation of certain factors in the mentioned Beckhardt formula, which can be interpreted as the presence of «internal confidence» in the success of the project, will require maximizing the use of a slightly different subset of competency elements by both the project manager and the project team members.

5. Discussion

As can be seen in Fig. 9, the priority of using certain elements of the competence model of project managers for the position of a «gambler» at V = 1 by the method of the Hodge-Lehman criterion corresponds to the LL criterion proposed by the authors, based on the logic of taking into account the total number of influences, both direct and mediated (through chains of related elements of competence).

Factor name	Elements that are affected (columns)	Rows Min	Rows Max	1-V	V	HL		LL		Priority
Influencing Elements (Rows)	FID	min	max	P	O	R	Rmax	R	Rmax	RpHL(V=0)
Leadership	10	8	21	1	0	8	8	387	387	1
Organisation and information	20	5	17	1	0	5		328		2
Results orientation	15	5	14	1	0	5		254		3
Project design	16	4	21	1	0	4		345		4
Stakeholder	27	4	18	1	0	4		342		5
Scope	18	4	18	1	0	4		327		6
Plan and control	25	4	17	1	0	4		325		7
Requirements and objectives	17	4	17	1	0	4		324		8
Resources	23	4	17	1	0	4		324		9
Procurement	24	4	17	1	0	4		323		10
Finance	22	4	17	1	0	4		318		11
Time	19	4	16	1	0	4		315		12
Resourcefulness	13	4	13	1	0	4		208		13
Negotiation	14	4	13	1	0	4		208		14
Teamwork	11	4	11	1	0	4		206		15
Conflict and crisis	12	4	11	1	0	4		206		16
Risk and opportunities	26	3	17	1	0	3		323		17
Change and transformation	28	3	17	1	0	3		320		18
Quality	21	3	16	1	0	3		304		19
Personal communication	8	3	13	1	0	3		190		20
Relations and engagement	9	3	12	1	0	3		190		21
Power and interests	4	3	9	1	0	3		159		22
Strategy	1	3	9	1	0	3		156		23
Compliance, standards and regulations	3	2	10	1	0	2		174		24
Culture and values	5	2	9	1	0	2		120		25
Personal integrity and reliability	7	1	11	1	0	1		162		26
Self-reflection and self-management	6	1	10	1	0	1		152		27
Governance, structure and processes	2	0	11	1	0	0		175		28

Figure 9: The priority of the influence of the elements of the IPMA ICB 4.0 competency model - an example of calculation to take into account the Hodge-Lehmann criterion at V = 1 (source: development of the authors)

But, if we consider the diametrically opposite position, where V = 0, the situation is already somewhat different (Fig. 10):

the influence of «soft factors» – the «People» block in the terminology of IPMA ICB 4.0, increases. The influence of such elements as «Result orientation», as well as «Resource», «Negotiation», «Teamwork», «Conflict and crisis» from the point of view of IPMA ICB 4.0 [42] becomes very important. Perhaps this conclusion is critically important for ensuring the success of the project - first of all, it is important to achieve first a «increase in the level of optimism» of the entire project team, an understanding of its importance, despite the awareness of the difficulties that may be associated with its further implementation, achievement and overcoming of the required «threshold «. The level of «confidence in the success» of such a project, and only then the transition to the «standard» model of the project team. In our opinion, this may be a kind of analogue of the creation of a «single mental space of the project», or «BA», which is a prerequisite for the successful implementation of a project in such a project management methodology as P2M PMAJ. [61]. On the other hand, the previously mentioned two types of thinking according to Kahneman, perhaps it is worth correlating the corresponding ranges of states of «optimism» – «pessimism» as a balance of «confidence» and «caution», where the complete rejection of «System 1» in favor of «System 2» (

and vice versa) can hardly be considered a good solution in any case. As the analysis of the above dynamic data shows for assessing the importance of the entire set of elements of the competency model, it is worth

Factor name	Elements that are affected (columns)	Rows Min	Rows Max	1-V	V	HL		LL		Priority
Influencing Elements (Rows)	FID	min	max	P	O	R	Rmax	R	Rmax	RpHL(V=1)
Leadership	10	8	21	0	1	13,82143	13,82143	387	387	1
Project design	16	4	21	0	1	12,32143		345		2
Stakeholder	27	4	18	0	1	12,21429		342		3
Organisation and information	20	5	17	0	1	11,71429		328		4
Scope	18	4	18	0	1	11,67857		327		5
Plan and control	25	4	17	0	1	11,60714		325		6
Requirements and objectives	17	4	17	0	1	11,57143		324		7
Resources	23	4	17	0	1	11,57143		324		8
Procurement	24	4	17	0	1	11,53571		323		9
Risk and opportunities	26	3	17	0	1	11,53571		323		10
Change and transformation	28	3	17	0	1	11,42857		320		11
Finance	22	4	17	0	1	11,35714		318		12
Time	19	4	16	0	1	11,25		315		13
Quality	21	3	16	0	1	10,85714		304		14
Results orientation	15	5	14	0	1	9,071429		254		15
Resourcefulness	13	4	13	0	1	7,428571		208		16
Negotiation	14	4	13	0	1	7,428571		208		17
Teamwork	11	4	11	0	1	7,357143		206		18
Conflict and crisis	12	4	11	0	1	7,357143		206		19
Personal communication	8	3	13	0	1	6,785714		190		20
Relations and engagement	9	3	12	0	1	6,785714		190		21
Governance, structure and processes	2	0	11	0	1	6,25		175		22
Compliance, standards and regulations	3	2	10	0	1	6,214286		174		23
Personal integrity and reliability	7	1	11	0	1	5,785714		162		24
Power and interests	4	3	9	0	1	5,678571		159		25
Strategy	1	3	9	0	1	5,571429		156		26
Self-reflection and self-management	6	1	10	0	1	5,428571		152		27
Culture and values	5	2	9	0	1	4,285714		120		28

Figure 10: Priority of the influence of the elements of the competence model IPMA ICB 4.0 – an example of calculation to take into account the Hodge-Lehmann criterion at V = 0 (source: authors development)

As can be seen from the Figure 10, in the situation of «primary pessimism» the significance of considering the IPMA ICB 4.0 model as the model most likely corresponding to the type of thinking inherent in «System 1». As can be seen in Figure 6, the quantitative criterion LL, corresponding to the «total power» calculated for each of the model elements, without taking into account the influence of such» emotional factors «as excitement and confidence in success, and the rating of the model elements built on its basis corresponds the rating calculated using criteria based on «player position» is the «player position». From this point of view, the type of thinking inherent in «System 2» will be ignored - simply because it is closer to the position of «extreme caution» or «pessimism». Perhaps it is worth considering the areas of application of each of the types of thinking and their combination, for example, on a scale between such «extremes» as the classical model of «waterfall», which, from our point of view, is quite close to prevalence. thinking type «System 2» and «projects of flexible management technologies», rather related to the type of thinking «System 1». One way or another, with this approach, it is worth making an «additional comment» or, rather, a «warning» regarding the

scope of such competency models, depending both on the type of methodology used in the project and, possibly, on the level of «risk appetite» specific to the customer and contractor in a specific project. On the other hand, it's worth noting that the EQ concept continues to evolve as well. In particular, all the same well-known authors Goleman and Boyatzis offer already more complex models, which include more elements than the models presented in the «inner circle» in Fig. 1 [62]. With «coming out of the shadows», EQ has become a subject of research in organizations. In particular, in [43] presents the results of the study, which are of undoubted interest both in relation to which levels of the organization are most in demand for EQ (regarding the logic of project management systems in relation to role-based certification models, from our point of view it could correlate with the respective levels of both the certification model offered by PMI and IPMA – from project team members to project portfolio managers) – Fig. 11:

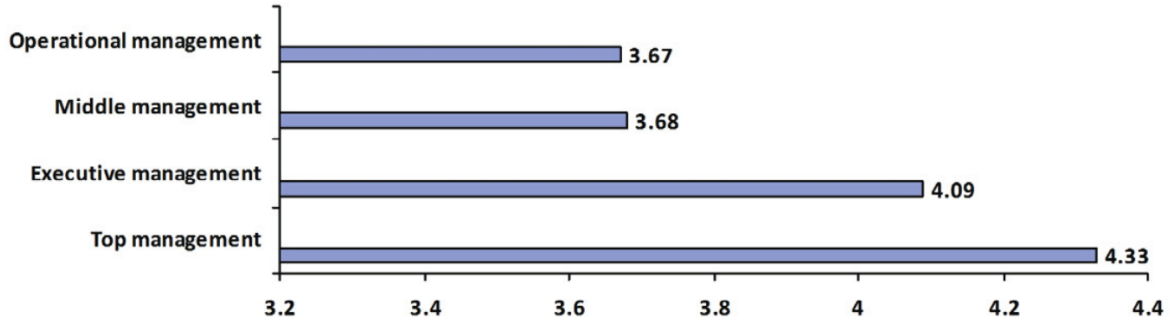

Figure 11: Coefficient of EI in relation with position in organizational hierarchy [43]

and, just as interestingly, it is the high EQ level of those who are traditionally viewed as more likely to have a high IQ level – Fig. 12:

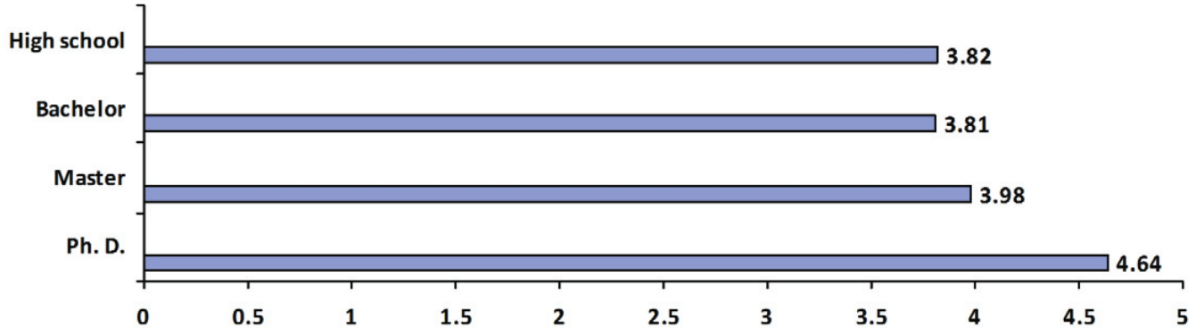

Figure 12: Respondent's average EI coefficient in relation with education level [43]

As the authors interpret the results of their study, the maximum efficiency can still be expected when there is a balance between IQ and EQ (as well as other types of «intelligences» [63], At the same time, perhaps, among successful project managers, it will really be possible to meet those who will have both high IQ and EQ levels at the same time, but, perhaps, will «pay» for such a combination with less outstanding indicators of some other types of «Q».

6. Conclusion

The presented model, according to the authors, can be used in the analysis of other complex systems, where not only the influence of «soft factors» can be identified, but it can also be argued that there is a strong emotional component that affects the potential success of the project. Maybe, such an approach, will allow a more «instrumental» approach to assessing the importance of such a component as «emotional intelligence» and the recognition of such a phenomenon as «failure» of projects, at first glance, «technically» doomed to success, and, conversely, the success of «failed» projects «pulled out» by teams emotionally «charged for success». At the same time, perhaps, the

failure can be ensured by the fact that in a situation of objective «lack of confidence» (pessimism), tools were used that were more suitable for the position of a «gambler» and vice versa. According to the authors, further research in this direction could provide a good theoretical basis for the analysis of such relationships [64], as well as useful practical recommendations for planning the use of decision-making logic based on emotional intelligence as the ability to create both «opportunities» and «threats» for the implementation of specific projects in any fields of practice including information technologies and software development.

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