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Assessing the influence of project management on quality during the early phases of construction projects

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Abstract: Although the quality of a process affects the quality of the end product, there is currently an insignificant amount of knowledge about the quality of project management (PM) processes that directly affect the quality of the delivered product (constructed building). This study presents a proposal for modeling the impact of the quality of the PM process on the quality of the constructed building. The quality of the PM process is represented by the main quality factors and product quality indicators. It presents the results of the interviews that were conducted and study cases that were analyzed in Bosnia and Herzegovina with a variety of project participants (with different managerial perspectives) in terms of the indicators of quality of the delivered product. All participants, regardless of managerial perspective, believe that the most important indicator of the quality of products for each phase of the project is "customer satisfaction in the end phase", the measurement of which is different for each project phase that is presented. The results of the factor analysis of the definition and the planning phases show that 11 variables, namely, the quality factors of the PM process, can be grouped into three new factors, which is described as 66.61% (77.046%) of the basic set of variables.

Keywords: construction project, key quality factor, product quality indicators, modeling results

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1 Introduction

Construction companies live from the production and sale of construction products or from the provision of construction services. In order to achieve success and competitiveness in the market, they must strive for ongoing optimization of the following relation: quality - costs - price - technical/technological progress.

The purpose of project management in construction projects is undoubtedly the delivery of successful projects in terms of the agreed objectives of the project, which contributes to its value. Generally, literature suggests that the project management process is directed toward delivering successful projects (Zulu 2007).

The management of quality has become particularly important in the construction of structures (Hoonakker 2006). If quality is managed in a proper manner, it can improve the project success rate and organizational viability (Ogwueleka 2013).

Quality is considered important for modern organizations because it increases competitiveness and production, reduces costs, and ensures long-term relationships with clients (Raković 2007).

According to the report of the Standish Group, 29.6% of the projects covered by the study have a cost overrun of 51%–100%, 35.5% of projects have exceeded the time line by 101%–200%, and changes are occurring in 39.1% of the projects to the extent of 75%–99% in comparison to the initial plan. The average increase from the original estimated cost for all companies is 189%–222% of the original time estimates. More than a quarter of the projects are finished with only 25%–49% of the originally specified features and functions (Standish Group 2015).

The completion of a construction project within the time, cost, and quality limits should be the ultimate goal of the stakeholders involved in the project (Oke 2016).

Participants in construction (investor, contractor/subcontractor, designer, project manager, and consultant), as well as the end users of the project, will directly benefit from research on the mutual influence of the quality of the project management process on the quality of the end product, i.e., the constructed structure.

The research methodology herein included the following: analysis and synthesis of the literature overview, preparation and sending of the questionnaire, analysis of the results of the completed survey, discussion, and conclusion, which comprised the first step of the research; this was followed by a factor analysis to group those factors of the quality of the project management process that could be used as inputs during the modeling process. The next step was analysis of the results obtained from the interviews related to the quality of products for each phase of the project, which were also used as input data for the process of modeling. Subsequently, all the measured variables were defined in order to be “recorded” through interviews during real projects, and a zero model was created thereafter.

The research was conducted in Bosnia and Herzegovina (BH) in the construction sector, which forms the basis for further research aimed at developing a model that can be easily applied in practice and that will show the impact of project management on the quality.

This research provides an overview of the literature about projects, project phases, and project management, as well as about quality and quality management. Subsequently, the research questions that have a response by the end of the research are presented. The research conducted in the construction companies in BH will then be interpreted and, finally, the results and the subsequent steps in the further continuation of research will be presented.

This article presents the results of the interview and survey conducted in BH and further steps in the research.

2 Literature overview

In the literature, different – but very similar – definitions of the term “project” are present because a project in itself is a venture that is a set of interrelated activities with the included resources (available and limited), all carried out to meet the set goal. A project is a unique, temporary, multidisciplinary operation that attempts to meet the agreed defined delivery (IPMA Competence Baseline 2015). A significant number of companies adopt the techniques of project management (Berssaneti and Carvalho 2015), in addition to investing funds and efforts in the implementation of project management.

The purpose of this research is to look at a project through its different phases. Different methodologies and authors give different phase divisions. Some of them are as follows: initiation, planning, execution, control, and closing (International Organization for Standardization [ISO] 2015); start/concept, planning/defining, performance/execution, monitoring and control, and closing (Project Management Institute [PMI] 2013); or conceptualizing, defining, implementing, and closing/guaranteed deadline (Ljevo and Vukomanović 2013).

The quality is viewed through the process quality and product quality; however, for many years, the quality has been primarily seen as product quality and its definition was aimed at meeting the technical functioning; when viewed as a cost factor, an emphasized control of production and other activities of the company resulted in a reduction of costs. The growing complexity and multiplicity of product variants, in the ’60s and ’70s of the past century, hindered the achievement of the level of quality that meets customers’ requirements at an acceptable cost. Improvement of the quality was mirrored in the complex specifications and tests, which caused additional costs. Today, the concept of quality has a wider coverage. The turning point in determining the notion of quality in business practice was supported by the results of a study conducted by Stern (1995). According to this study, only 18.2% of the companies view “quality” as simply compliance with the technical and functional specifications (which represent product quality); 15.9% of the companies attribute characteristics of sustainability, reliability, and security to quality; and 2.3% of the companies see quality as minimizing the loss for the society. If the right things are done in the right way, 25% of the companies consider this as quality (effectiveness and efficiency), while 38.6% of the surveyed companies consider that the term implies the ability to satisfy quality requirements of customers (which is one of the conditions of total quality management [TQM]).

Each system wants to survive, grow, and continue to grow. Therefore, development of market relations and compliance with the growing consumer demand for better, more functional, and complementary products as well as information are the goals and policies of a company. They are also a prerequisite for the timely development of enterprises and meeting the social needs. thus, there is a need for any manufacturing or service process to comply with quality requirements (Kwak and Anbari 2009).

The quality of a product or service is determined by the relation between desires and needs of the users and their implementation by the manufacturer. The definition that states “Quality is a set of properties that determine the matter or occurrence in comparison to the requirements”, is not ideal, but it allows us to temporarily resolve the problem

Tab. 1: Review of definition.

Author	The quality definition is...
Deming (QP Staff 2010)	solution to the problem
Juran (QP Staff 2010)	suitability for use
Crosby (QP Staff 2010)	free, but not a gift
Wayne (Summers 2009)	customer satisfaction
Tacher (Summers 2009)	when a buyer returns, not a product
Oakland (Oakland 2015)	meeting customer requirements
ISO (ISO 2015)	compliance with the required requirements

of the exact definition and to move on. Perfectionists would disagree here, but most of us know that the absence of a generally accepted definition is not an obstacle for a multitude of activities related to quality (Raković 2007).

Different authors give different definitions of what is quality, and Table 1 shows some of them (Wysocki et al. 2006, QP Staff 2010, Oakland 2015). The American Society of Quality states that the definition of quality of a subjective concept can be defined differently by each person or sector. The quality of the project consists of two dimensions: product quality and process quality (Turner 2014).

Table 2 shows the steps for quality management (PMI 2013), and these are intended to be compatible with that of the ISO (ISO 9001:2015) in terms of quality planning, which has to be based on the following criteria: setting quality objectives, identifying the customer, the customer's need assessment, the development of product features, the development of process features, setting process control, and transfer to the operations. In the next step of ensuring quality, the focus is on selecting the object of control, choice of units of measurement, goal setting, creation of a sensor, measurement of actual effectiveness, interpretation of diversity, and impact on diversity. In the phases of quality improvement, the focus is on proving the needs, identifying the project, organizing the project teams, diagnosing causes, prescribing corrective action, and dealing with resistance to change, as well as overall control the process, in order to have an advantage. Research in China has shown that the availability of resources is extremely important for the quality of construction in developing economies, and greater labor productivity is directly related to better quality of construction. Construction quality has improved over the years due to the mandatory implementation of the supervisory system (Yung and Yip 2010).

From the literature, we found and analyzed factors that affect quality management in consultation with university professors and they were separated as factors that directly affect the quality of the processes of project management (Project Management process). Some of the

Tab. 2: Steps to quality management (PMI; ISO 9001:2015 2013, 2015).

Quality planning	
⇩	Identify the standards and levels relevant to the project; Determine the activities needed to meet the requirements of this standard.
Quality insurance	
⇩	Planned and continuous activity in order to meet quality standards; Provide the required quality of products or services; The achievement of the quality plan and its promotion; Continuous quality assessment.
Improving quality	
⇩	Measuring and comparing basic project results with quality requirements and relevant standards throughout the project; Analyze and report on achieved requirements and standards in performance; Provision of the necessary corrective actions;
TQM, European Foundation for Quality Management (EFQM) model, Kaizen, reengineering, Six Sigma	
Customer orientation; Planning process; Management process; Improvement process; Complete involvement.	

factor indetified in literature are expertise, knowledge and training, incorrect/incomplete invoice, commitment to management, coordination among project participants, changes/variations during the execution of the project, improper planning, inadequate project schedule, project supervision, employee involvement, expertise, the training systems involved in the project, incomplete or incorrect cost estimates, focus on the customer/client, organizational skills, communication, continuous improvement, the interpretation of the expectations of the buyer/customer, quality policy, availability of resources, project environment, the implementation of the relationship between time and cost, the uniqueness of the project, and organizational skills (Ogwueleka 2013, Husin et al. 2008, Joaquin et al. 2008). Eleven of them were implemented (X_1 - planning and control; X_2 - involvement, teamwork; X_3 - expertise, knowledge; X_4 - focus on the customer, customer satisfaction; X_5 - top management support/commitment; X_6 – communication; X_7 - continuous improvement; X_8 - coordination among project participants; X_9 - quality policy; X_{10} - availability of resources; and X_{11} - supplier's quality management), which are further analyzed in the survey conducted in BH and used as inputs for further actions in the research (Ljevo et al. 2015, Ljevo et al. 2017).

When we talk about the quality of the products of each phase of the project, or the project as a whole, it refers to the delivered object. For manufacturers, quality means that the product or service is made in accordance with design specifications. After the product is produced, it undergoes a check to determine whether it is in accordance with the established specifications (Taylor and Russell 2006). This is called quality conformity or the capacity of the production process to meet the set specifications. To observe product quality in construction projects, the statutory obligations, such as complete and revised technical documentation, obtaining a zoning permit, obtaining a building permit, conducting technical inspection, and obtaining the use permit, are taken into account. All factors and measures that have been analyzed through interviews and surveys are supplemented with a model that shows the success of the project through five dimensions with 27 indicators, but only indicators relating to product quality through customer satisfaction in project phases are observed as part of the overall success of the project (Shenhar and Dvir 2007). For example, for the performance/execution phase, the following factors were ranked best by the participants in the project: customer satisfaction at the end phase, the viability of the project, the efficiency (compliance with the scope and arrangement), and contribution for future projects; completion of technical inspection and receipt of a use permit; transfer without errors and shortcomings; and the difference between the planned and the final costs of construction.

Evaluation criteria with the relevant key performance indicators (KPIs), i.e., the success criteria of a particular phase, are presented as product quality factors at the end of one phase.

After reviewing the literature and defining the basic critical factors of the quality management process for projects, the survey in BH was conducted, followed by the analysis of results. The surveys took into account the phases of conceptualizing, defining and planning, execution, monitoring, and control. The factors that are analyzed have a primary impact in the listed phases, so they are not analyzed for the closing phase of the project. For the purposes of further research, the focus is on the phases of conceptualizing, defining and planning, performance, and execution.

After this step, predefined measures that will be used to carry out evaluations (scores) of each individual variable become evident, and then the "recorded" (through structured interviews) data on specific projects were analyzed (for the phases of the projects) in BH to detect the differences in factor analysis of results obtained through interviews and case studies in the field.

3 Methodology of the research

Project case studies, throughout the interviews with direct participants of each phase with predefined measures, analyze the projects' quality management process factors and the quality factors of each phase.

4 Results

The research was conducted through surveys (surveys and interviews) regarding the factors related to the quality of the project management process and the product quality; the participants were investors in construction projects, civil engineers, and architects (101 – project management process; 91 – product). Data show (Figure 1) that the subjects have the following working experience in project management process and product, respectively: <5 years (6%); 5–10 years (25% and 23%); 11–15 years (30% and 33%); between 16 and 20 years (15% and 16%); and >21 years (24% and 22%). This reveals that a large part of the respondents have >10 years of experience in the construction industry, and their experiences are of great value in this study. Results (surveys and interviews) show that 64% (60%) of respondents are experienced in building construction projects and engineering also. Throughout the interviews, 75 construction projects were assessed in the field (structural engineering – 76%; water and traffic infrastructure – 24%).

The importance of the factor/variable "quality of project management process and product" was evaluated based on the Likert scale of assessment (1 - not at all

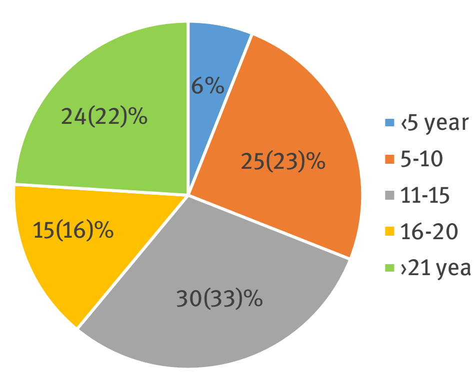

Fig. 1: Working experience of participants in the research on the factor "quality of the product and project management process".

important; ... 6 - most important), this scale of 1–6 was used to avoid having a neutral answer.

The next step was to assess the suitability of the data (through the correlation matrix) for the application of factor analysis where the key factors/variables of the quality of processes would be grouped into new factors. Using factor analysis, the grouping of the 11 variables "quality factors of the project management process" and the four variables "quality factors of the product" into new factors was conducted, as shown in the following paragraphs. The condition that the sample size of the minimum number of respondents of the studied variables is 5:1 was satisfied (Hair et al. 2009).

Examination of the correlation matrix confirmed the appropriateness of data for performing the methods of factor analysis. Kaiser–Meyer–Olkin measure was the criterion by which the suitability of the data for the application of factor analysis can be examined. The value of the Kaiser–Meyer–Olkin measure in this case is 0.827, derived using SPSS 20.0; moreover, the Bartlett's test of sphericity was also conducted (tests the null hypothesis that the variables are not correlated, $P < 0.001$, and there is a reasoning behind the factor analysis). Value of the chi-square for the observed collection is 481.195, which indicates that the observed collection does not represent a unit matrix.

Measure of sampling adequacy (MSA) is another method to quantitate the degree of correlation between the variables and the justification for the factor analysis. The index ranges from zero to one. The closer the MSA is to the unit, the easier it is to predict the specified variable with the help of other variables. MSA is observed according to the following scale: >0.80 - very strong correlation; between 0.70 and 0.80 – strong; between 0.60 and 0.70 – medium; between 0.50 and 0.60 – weak; and <0.50 - unacceptable. The value of MSA is 0.718–0.887 for the survey and 0.629–0.847 for the case study), which represents strong–to-very-strong and medium-to-very-strong correlation, respectively, and the collection is suitable for the application of the factor analysis (Table 3).

The factor model with three factors is used to describe 66.61%, i.e., 77.046%, of the elementary set of variables (Table 3), and the Kaiser method was used, which is a measure for choosing the number of factors that use the value of the eigenvalue (representing the variance of all the variables included by the factor) >1.

Tab. 3: Total variance explained (questionnaire and case study).

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
Questionnaires/surveys									
1	4.931	44.828	44.828	4.931	44.828	44.828	3.015	27.413	27.413
2	1.209	10.995	55.824	1.209	10.995	55.824	2.225	20.226	47.639
3	1.186	10.781	66.605	1.186	10.781	66.605	2.086	18.966	**66.605**
4	0.797	7.248	73.853						
5	0.653	5.935	79.788						
6	0.601	5.460	85.249						
7	0.432	3.930	89.178						
8	0.406	3.688	92.867						
9	0.305	2.773	95.639						
10	0.292	2.655	98.294						
11	0.188	1.706	100.000						
Case study									
1	4.498	44.977	44.977	4.498	44.977	44.977	2.704	27.041	27.041
2	1.879	18.789	63.766	1.879	18.789	63.766	2.550	25.503	52.544
3	1.328	13.280	77.046	1.328	13.280	77.046	2.450	24.502	**77.046**
4	0.628	6.280	83.326						
5	0.581	5.811	89.138						
6	0.474	4.744	93.881						
7	0.291	2.913	96.794						
8	0.198	1.978	98.772						
9	0.098	.984	99.756						
10	0.024	.244	100.000						

Tab. 4: Factor structure matrix after varimax rotation.

Factor	Surveys				Case studies			
	Rotated component of matrix			Communalities	Rotated component of matrix			Communalities
	1	2	3		1	2	3	
X_1	**0.804**	−0.085	0.090	0.662	**0.829**	0.200	0.143	0.747
X_2	**0.771**	0.175	0.226	0.676	**0.790**	0.157	0.193	0.685
X_3	**0.743**	0.323	0.067	0.661	0.173	0.140	**0.950**	0.952
X_4	0.109	−0.088	**0.853**	0.747	0.442	**0.778**	−0.061	0.804
X_5	0.144	0.228	**0.668**	0.520	0.355	**0.847**	0.090	0.852
X_6	**0.581**	0.236	0.551	0.697	0.584	0.079	**0.665**	0.789
X_7	0.190	**0.628**	0.433	0.618	MSA < minimum excluded			
X_8	**0.720**	0.422	0.201	0.737	0.156	0.111	**0.963**	0.964
X_9	0.489	**0.605**	0.242	0.663	0.119	**0.665**	0.275	0.532
X_{10}	0.073	**0.846**	−0.104	0.732	**0.805**	0.086	0.173	0.686
X_{11}	0.232	**0.559**	0.498	0.614	−0.120	**0.821**	0.064	0.693

R1 - Planning and involvement
- Planning and control
- Involvement, teamwork ...
- Expertise, knowledge ...
- Communication
- Coordination among project participants.

R2 - Resource
- Continuous improvement
- Quality policy
- The availability of resources
- Supplier's quality management

R3 - Customer
- Focus on the customer
- Top management support/commitment

Q1 - Quality of product
- Complete technical documentation
- Acquiring urban and building permits
- Difference between predicted and planned budgets, sustainable budget of the build
- Customer's satisfaction at the end of the phase

Fig. 2: Quality factor of the project management process and quality factor of product: definition and planning phase – surveys.

The factor loadings for the three factors and 11 variables after the varimax rotation (maximizing the sum of variances of the square of the factor loading) are shown in Table 4.

Factor R1 (surveys) consists of the following variables: planning and control; involvement and teamwork; expertise and knowledge; communication; and coordination among project participants. Factor R2 consists of the following variables: continuous improvement; quality policy; the availability of resources; and supplier's quality management. The factor R3 consists of the following: focus on the customer and top management support/commitment (Figure 2).

After analysis of data collected on projects (study case), factor R1 consists of the following variables: planning and control; involvement; and the availability of resources. Factor R2 consists of the following variables: focus on the customer; top management support/commitment; quality policy; and supplier's quality management.The factor R3 consists of the following: expertise and knowledge; communication; and coordination among project participants (Figure 3).

Analysis of the survey results and interviews related to the quality of the products in the phases is described hereafter.

For the phase of defining and planning, 57.1% respondents consider that the key factor of quality is customer satisfaction at the end of the phase (use of new processes, methods, or technologies), and 42.9% state that the key factors are complete technical documentation (main project, a study of occupational safety and other legally required documentation) and receipt of urban planning and construction approval.

The factor model with one factor of variables, namely, quality factors of product, and the Kaiser method were

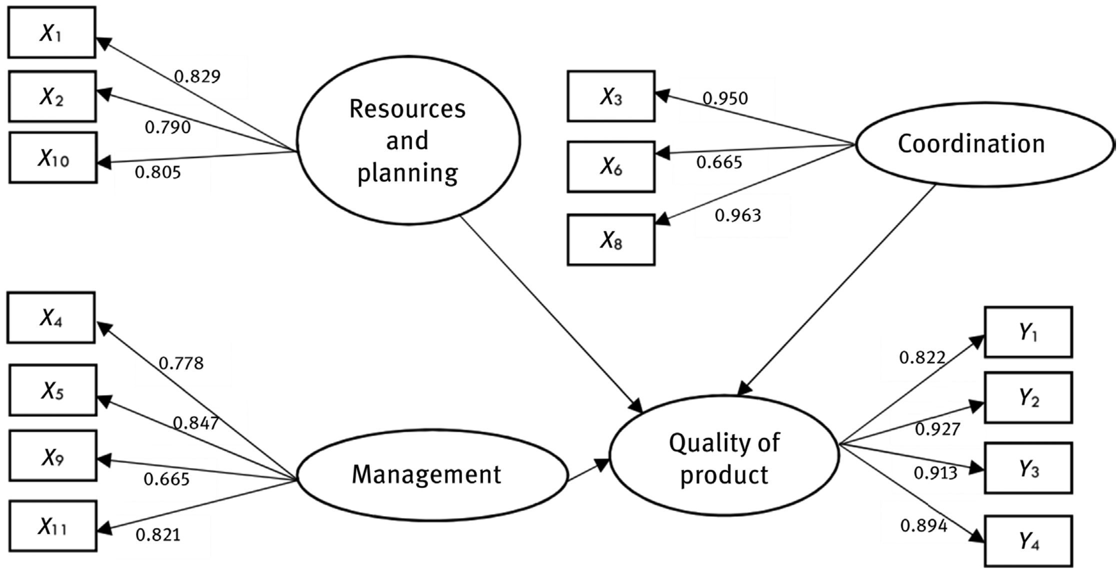

Fig. 3: Quality factor of the project management process and quality factor of product: definition and planning phase – model and case study.

used, which are measures of choosing the number of factors using the value of the eigenvalue >1, and the communalities are >0.5. The number of respondents increased by ten and received acceptable results for factor analysis.

The factor loading (surveys) for one factor and four variables after the varimax rotation (maximizing the sum of variances of the square of factor loading) showed the following results: $Y_1 - 0.788$, $Y_2 - 0.735$, $Y_3 - 0.746$, $Y_4 - 0.788$. Furthermore, $Y_1 - 0.822$, $Y_2 - 0.927$, $Y_3 - 0.913$, and $Y_4 - 0.894$ are the results of factor loading for project management process for one factor and four variables (quality factors of the product).

5 Findings and conclusion

Examination of the correlation matrix confirmed the appropriateness of data for performing the methods of factor analysis (for project management process). The value of Kaiser–Meyer–Olkin's measure is 0.827 (0.721), which is >0.5; moreover, the Bartlett's test of sphericity was conducted (which tests the null hypothesis that the variables are not correlated, $P < 0.001$, which justifies the performance of factor analysis). Value of the chi-square for the observed collection is 481.195 (574.188) (which indicates that the observed collection is not a unit matrix; thus, the hypothesis can be dismissed with probability >99%) (Field 2005).

Factor analysis of variables (surveys) showed that Factor 1 has a high positive loading for variable X_1 (planning and control), for which the loading is 0.804; and X_2 (involvement and teamwork), for which the loading is 0.771; it also consists of variables X_3 (expertise and knowledge) with loading of 0.743, X_6 (communication) with loading of 0.581, and X_8 (coordination among participants) with loading of 0.720.

After analyzing the data collected on the projects (case studies), factor analysis of variables showed that Factor 1 has a high positive loading for variable X_1 (planning and control), for which the loading is 0.829, and X_2 (involvement and teamwork), for which the loading is 0.790; it also contains the variable X_{10} (availability of resources) with loading of 0.805.

Variable X_4 has 74.7% of the total variable variation covered with three common factors, and the remaining 23.3% of the variable variations are related to the specificity of the variable plus a certain amount of error in the measurement.

After analyzing the data collected through interviews and surveys, which have been included in further research for the phase of definition and planning, the quality factors of the products are as follows: Y_1 - complete technical documentation; Y_2 - acquiring urban and building permits; Y_3 - difference between predicted and planned budgets; sustainable budget of the building; and Y_4 - customer's satisfaction at the end of the phase (use of new processes, methods, or technologies). Factor analysis of variables (surveys) showed that Factor 1 has a high positive loading for all four variables.

Factor analysis of variables showed that Factor 1, Q1, has a high positive loading for the following variables: Y_1 (complete technical documentation) – 0.788 (0.822); Y_2 (acquiring urban and building permits) – 0.735 (0.927); Y_3

(difference between predicted and planned budgets, as well as sustainable budget of the building) – 0.746 (0.913); and Y_4 (customer's satisfaction at the end of the phase) – 0.788 (0.894).

The quality of project management processes is dependent on three latent (three new factors) values obtained after factor analysis. The first latent value includes the following measured variables: X_1 - planning and control, X_2 - involvement and teamwork, X_3 - expertise and knowledge, X_6 - communication, X_8 - coordination among project participants, which constitute a new factor R1. The second latent value includes the following variables: X_4 - the focus on the customer and customer satisfaction and X_5 - top management support/commitment, which makes up a new factor R2. The third latent value includes the following variables: X_7 - continuous improvement, X_9 - quality policy, X_{10} - availability of resources, and X_{11} - supplier's quality management, which make up a new factor R3. On the other side of the model is one latent variable (new factor), which includes four variables manifesting for this phase: Y_1 - complete technical documentation, Y_2 - acquiring urban and building permits, Y_3 - difference between predicted and planned budgets, as well as sustainable budget of the building, and Y_4 - customer's satisfaction at the end of the phase (the number of new processes, methods, or technologies that are envisaged at this phase), which constitute a new factor Q1.

Data collected on projects show different results, and the quality of project management processes is determined by three latent (three new factors) values obtained after factor analysis. The variable X_7 is excluded because the MSA value was less than the minimum. The first latent value includes the following variables: X_1 - planning and control, X_2 - involvement and teamwork, and X_{10} - availability of resources, which constitute a new factor R1. The second latent value includes the following variables: X_4 - the focus on the customer and customer satisfaction, X_5 - top management support/commitment, X_9 - quality policy, and X_{11} - supplier's quality management, which make up a new factor R2. The third latent value includes the following variables: X_3 - expertise and knowledge, X_6 - communication, and X_8 - coordination among project participants, which make up a new factor R3.

In the survey, the participants evaluated the variables with scores of 1–6, and in the case studies, the measures for measuring the variables were concrete.

The survey involved all three groups of participants in the projects for all phases, while in the case studies, interviews were targeted at the direct participants of each phase.

The projects that were recorded were selected randomly with the condition that they were not completed a long time ago (in order for the recorded data to be as credible as possible), so that the phase of execution has not been still completed or is still in progress. Projects involving both buildings/industries and bridges/roads were analyzed, without including the ratio of their participation in the research. After factor analysis of the data, the zero model suggests the impact of the process quality (project management) on product quality (Figure 3). Subsequently, these results will be analyzed by the structural equation modeling methodology and a zero model is optionally modeled.

In order to even talk about the quality of project management and the quality of products, finished projects should be thoroughly and carefully reviewed and the lessons learned should be documented and included in the next project to avoid repetition of errors (Dogbegah et al. 2011).

The methods, techniques, and tools for project management are available to participants of construction projects in BH, but the legislation absolutely does not cover this area, so it is left to the companies and direct participants in the projects to decide whether they will use and apply them or not.

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