
The Impact of Project Management Uncertainty on Project Management Practices in Family Firms¹

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Abstract

The growing role of family businesses, independently of the economic and cultural context of these enterprises, has been widely confirmed in literature. Important finding from the aforementioned studies is that family firms have to tackle many, dynamically changing obstacles of different character which strongly determine their growth opportunities. The primary objective of this research is to study how Polish family firms, as representatives of Eastern-European emerging economy, evaluate the influence of project environment uncertainty on their project management practices. The results of this study provide broader and better understanding of the impact of project environment over project management success from a family firm perspective.

Keywords: *project environment uncertainty, project management, family firms, emerging economy.*

JEL code: L21, M21, O22

Introduction

There is a common consensus in literature on the importance of family firms in every economy, independent of the development stage. The significance of businesses founded and managed by families results among other from the fact that these entities generate the majority of Gross Domestic Product (GDP). At the same time however family firms have to look for solutions which enable them to overcome many obstacles they encounter in their business activities. For the above reason many family companies have started to employ project management practices. Employing project management facilitates performing business activities by these firms by offering them different methods and tools they can use to support their decisions and activities. As every project is implemented in a specific environment, family firms constantly have to pay attention and react to changes taking place in their environment. To the best knowledge of the author of this paper, there have been little, if any research dedicated to the problem of how Eastern European family firms evaluate the influence project environment has on projects they manage. This paper tries to fill in this gap by asking the research question: how do family enterprises evaluate the impact of project environment uncertainty on management and success of their projects. For the purpose of the paper, family businesses in the emerging economy of Poland have been investigated. This paper provides better understanding of project management practices in family-owned companies in the context of the impact of project environment uncertainty.

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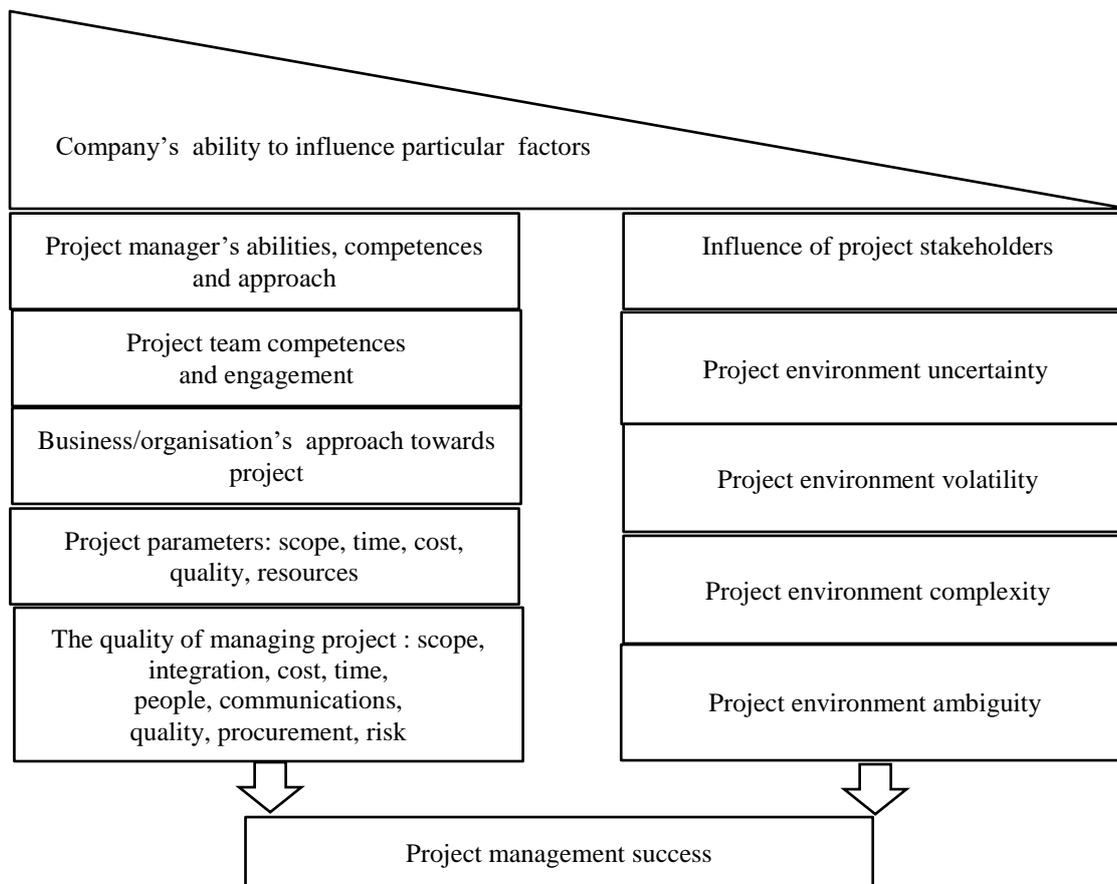
Theoretical framework

Project management success in light of the uncertainty of the project environment

Project management success is perceived in literature in many ways. The authors emphasize different aspects which influence project failure or success. An interesting approach can be observed while studying project management methodologies authored by: Project Management Institute, International Project Management Association and Office of Government Commerce (Project Management Institute 2013; International Project Management Association 2006; OGC 2005).

Project Management Institute in the *Project Management Body of Knowledge (PMBOK)* discusses the concept of project success in relation to both project knowledge areas and project processes (Project Management Institute, 2013, pp. 71-344). Successful completion of a project is seen among others as a consequence of project scope-, human resource-, quality-, cost-, time-, communications-, risk-, integration-, and procurement management. The aforementioned approach, by integrating project processes with particular management areas, builds a stable knowledge platform for a project manager and a project team.

International Project Management Association in the *International Competence Baseline (ICB)* approaches project success as a result of the proper and optimum application of three groups of competences: technical, contextual and behavioural ones (IPMA 2015). Such an approach underlines an important aspect of: the people, the project team and other project stakeholders- as a foundation for establishing processes and procedures in a particular project and further on building the basis for project management. It also underlines the necessity of a project manager to identify and work successfully with project context: organisational, economic and social one (International Project Management Association 2006; IPMA 2015). At the same time however, project is seen as successful when its outcomes finally gain the appreciation of different project stakeholders (International Project Management Association, 2006, p. 16). The idea of relating project success to the satisfaction of its stakeholders brings however certain risks (Compare Sadkowska J., 2016). The aforementioned are related mainly to the fact that, in most cases, projects 'are unable' to satisfy all stakeholder groups. This happens mainly for the reason that particular stakeholders have different expectations and requirements- which are in conflict. While managing projects in such an 'environment'- project managers have to base their choices and decisions on the priorities - agreed according to the defined project objectives. Key project management success factors have been presented in figure number 1.



Source: own study

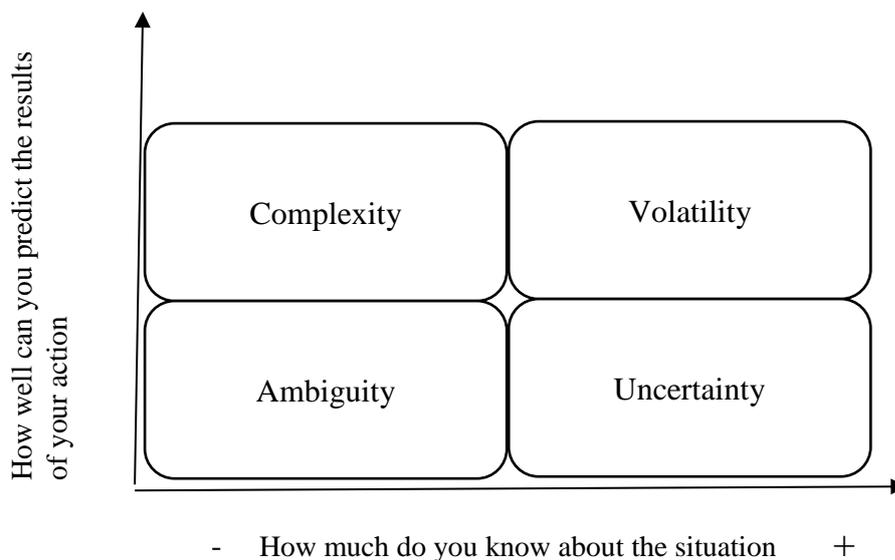
Fig. 1. Selected determinants for project management success

The growing dynamics of changes that take place in business environment causes that project management success starts to be influenced to a higher extent- than in the last decades of the XX century- by external factors. This group is constituted mainly by the specificity of the environment where projects take place and the influence of particular project stakeholders.

Uncertainty is defined as ‘a lack of certainty sense’ (Jaafari A., 2001, p. 98). In projects this term is most often associated with risks. Some authors argue however that in the processes related to project risk management more focus should be forwarded towards uncertainty than risk as a threat (Jaafari A., 2001, p. 97). Such an approach shall indicate a significant difference in perspective where more attention is paid to opportunities than threats. What is crucial however is the fact that in literature uncertainty was so far in most cases related to variability in project’s ‘internal factors’ such as: cost, scope, and/or time (Compare Jaafari A., 2001, p. 99) as the key determinants for project management success. According to the author of this paper the same attention should be forwarded to factors of ‘external type’, firstly to project environment. The aforementioned is caused mainly by the fact that project as a ‘social construct’ has to higher extent than previously ‘take into account’ phenomena and processes taking place outside.

Project environment uncertainty can be sometimes associated with lack of information. Some authors however relate uncertainty to the situation when the organization has some knowledge concerning some situation but lacks the influence to predict results of the actions taken (Bennett N.& Lemoine G.J., 2014, p. 27).

The phenomenon of the uncertainty of the project environment has been also reflected in the tools used to describe the external conditions in which companies were performing their business activities. One of such approaches is presented in the VUCA matrix where the environment was described using four criteria: volatility (V), uncertainty (U), complexity (C) and ambiguity (A) (figure 2).



Source: (Bennett N. & Lemoine G.J., 2014, p. 5)

Fig. 2. Uncertainty versus volatility, complexity and ambiguity

As already mentioned before, in case of projects, the uncertainty of the project environment is 'created' first of all by the influence of project stakeholders defined, as proposed by Freeman, as 'any group or individual who can affect, or is affected by the achievement of a corporation's purpose' (Freeman R.E., 1984). This complexity of influences generated by 'a number of influencing factors' has also been underlined by Jaafari in terms of factors which cause uncertainty (Jaafari A., 2001, p. 99). Family firm studies emphasize that nowadays family firm managers should take responsibility for managing all stakeholders, not just key shareholders of a company (Berrone P. & Cruz C., 2014). Some studies show that keeping effective relationship with the local stakeholders even strengthens environmental performance of family businesses (Berrone P., Cruz C., Gomez-Mejia L.R., & Larraza-Kintana M., 2010, pp. 260-275).

In light of the above arguments, stakeholders should be seen as those people, organizations and other entities who are helpful to understand that every project is first of all a set of social relations (Sadkowska J., 2016, pp. 317-318). Summing up, it should be emphasized that although external factors play a very significant role in shaping project outcome, the final result cannot be built without keeping up with main project assumptions expressed in project triangle such as project scope, schedule and budget. Those, by enabling determining the project duration in an accurate way (Oomen O. & Ooztaso A., 2008, p. 49), facilitate controlling project progress and allocating project resources in an optimum way.

The methodology and dataset

The objective and methods

The objective of this paper is to study how family enterprises evaluate the uncertainty of project environment in terms of its influence on their project management practices and project success.

For the purpose of the study the definition of a family firm by Olson et al. has been employed. According to the above definition, family company is a business which is owned and managed by one or more members of a household. This household is built by two or more people who are related by blood, marriage or adoption (Olson P.D. et al., 2003). Project management has been defined, following Kerzner, as an endeavour with a definable objectives, which consumes resources, operates under the constraints of time, cost and quality (Kerzner D., 2004, p. 1).

In order to reflect the specificity of both project management and family enterprises, the methods used in the study were designed twofold. In the first stage of the research, the structured literature analysis was used (Svejvig P. & Andersen P., 2015). This analysis covered three basic knowledge areas: family firms functioning, project management and project environment uncertainty. In the second, empirical stage, a structured on-line questionnaire was employed (Salant & Dilman 1994).

In the analysis of the results the descriptive statistics was used. The analysis was performed using Spearman rank correlation analysis. Finally, due to the character of the explained variable, ordinal logistic regression was employed.

The variables

In the study one dependent variable and seven independent variables were used. The dependent variable was defined as 'uncertainty of the project environment'. The independent variables were the following: 1. the number of employees (fewer than 9, 10-49, 50-249, more than 250 employees) 2. the sector (as defined in sample description) 3. the organizational and legal form (self-employment/civil law partnership/registered partnership/professional partnership/limited partnership/limited liability company/other) 4. firm's location (village/town with fewer than 20 000 citizens/town with 20 001-50 000 citizens/city with 50 001-100 000 citizens/it with more than 100 000 citizens) 5. the age of the company measured by firm's presence in a market (less than 1 year/1-5 years/6-10 years/11-24 years/25 years and more) 6. generation managing the enterprise 7. the range of business activities (local/regional/domestic/global).

The studied sample

The survey was conducted with 154 Polish family firms. Such a sample reflects the specificity of family owned businesses in an Eastern-European emerging economy. Each company had 'to go through' two stage selection process in order to be qualified to take part in the study. First each company, as a family one, was selected from the existing registers of family enterprises in Poland, second every study participant had to confirm that he perceived himself as a family firm. Each company taking part in the study fulfilled both criteria.

The sample was constituted by the following respondents. The majority of the studied enterprises were active in services (51,8%), while 14,1% were working in trade. 8,2% were manufacturing companies. The studied family firms represented the following sectors according to Polska Klasyfikacja Działalności Gospodarczej: Agriculture, Forestry and Fishing (A),

Manufacturing (C), Electricity, Gas, Steam and Air Conditioning Supply (D), Construction (F), Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles (G), Transportation and Storage (H), Accommodation and Food Services Activities (I), Information and Communication (J), Financial and Insurance Activities (K), Real Estate Activities (L), Professional, Scientific and Technical activities (M), Education (P), Human Health and Social Work Activities (Q), Arts, Entertainment and Recreation (R), Other Service Activities (S). The companies were located both in villages (28,2%), as well as in cities of different size. The majority of them were micro enterprises with fewer than 10 employees (76,5%). They were in most cases 'older' than 1 year. Only 3,5% of the studied enterprises were founded during the last year. Likewise, the sample was dominated by the firms managed by the founding generation. This finding is interesting to compare with results of other studies on family firms. For example Villalonga et al. (Villalonga & Amit 2006) studying family firms from the list of Fortune- 500 have found that 32% of the studied family firms were in their first generation, 32% in the second, while 21% in the third and only 14% in the fourth generation. This variance might indicate that family businesses in mature economies, on the contrary to the emerging ones with Poland being example of them, are more eager to go into the succession process. It also confirms the natural development process of Polish family businesses being currently at an earlier stage of development which is confirmed by the structure referring to the generation managing particular companies.

The research results and discussion

In the first part of the study family firms employing project management practices were identified. Out of the investigated 154 family firms, only 69 confirmed that at the time of the survey they performed their business work by managing projects.

Table number 1 presents how the studied family firms evaluate the influence of project management uncertainty on their project management practices.

Table 1

Degree of influence of project environment uncertainty on the studied family firms²

Degree of influence	Family firms (N=154)				Test for difference	
	currently not managing projects (n=85)		currently managing projects (n=69)		cc	p
	frequency	percentage,%	frequency	percentage,%		
uncertainty of the project environment					,251	,169
no	4	13,3	5	7,2		
small	10	11,8	13	18,8		
medium	9	10,6	29	42,0		
significant	3	3,5	15	21,7		
very significant	4	4,7	4	5,8		

Source: own study.

Though the differences between the studied groups of firms are not statistically significant ($p=,169$), differences are large in terms of the effect size. The majority of the studied family firms which managed projects evaluated the influence of the uncertainty of the project environment either as medium (42%) or as significant (21,7%). On the contrary, the majority of firms not managing projects evaluated the influence of this factor as none or small. This difference is meaningful and underlines the difference in approaches of these two groups.

² In case of some companies no answer in this field in the questionnaire was obtained.

It is also very interesting to analyze the systemic lack of data referring to the studied aspect of project management. In case of the firm's managing projects, only 3 companies did not provide answer to the above question. However, in the group of the family owned firms which confirmed they did not manage projects, the answers were given only by 30 companies with a lack of data in case of 55 firms. This might lead to interesting conclusions including those that these companies, due to the fact that they did not manage projects, might have had no knowledge concerning the potential influence of the uncertainty of the project environment.

Table number 2 presents Spearman rank correlation for the first group of the studied family enterprises.

Table 2

Descriptive statistics and correlation matrix- the family firms currently not managing projects

Variable	1	2	3	4	5	6	7	8	9	10
Influence of the project environment uncertainty	1									
Number of employees	,277	1								
Range of activities	-,015	,325**	1							
Generation managing the firm	,475**	,201	,057	1						
Firm's location	,058	,228*	,161	-,19	1					
Firm's development in the last year	,485**	-,028	-,116	,132	-,222*	1				
Intention to leave the firm in family's 'hands'	-,205	-,272*	-,176	,067	-,251*	,185	1			
Age of the firm	,216	,426**	,271*	,212	,09	,021	-,385**	1		
Construction ³	,519**	,098	,262*	,189	-,129	,249*	,116	,313**	1	
Other service activities	-,415*	-,132	-,294**	-,09	-,095	,053	,251*	-,229*	-,316**	1
M	2,767	1,271	1,941	1,353	2,847	1,506	1,882	3,035	,176	,318
SD	1,223	,543	,980	,702	1,384	,610	,993	1,096	,383	,468

*. Spearman's correlation coefficient is statistically significant at $p < 0,05$ (2-tailed)

**.. Spearman's correlation coefficient is statistically significant at $p < 0,01$ (2-tailed)

Source: own study.

For the group of family firms currently not managing projects the analysis revealed statistically significant relationships between the influence of the project environment uncertainty and four variables: the generation managing the firm, company's development during the last year and the sectors of 'construction' and 'other service activities'. The weaker was the development of the studied companies during the last year- as perceived by these entities, the higher the influence of the uncertainty of the project environment on their project management practices

³ For the purpose of the correlation analysis, only those sectors which were most often represented by the studied family firms were included.

(rho= ,485). Furthermore, in perception of the firms representing sector of 'construction' the influence of the uncertainty of project environment had higher significance on projects they managed- compared to the companies from other sectors.

The next table shows results of the Spearman rank correlation analysis for those family businesses which employed project management practices.

Table 3

Descriptive statistics and correlation matrix- the family firms currently managing projects

Variable	1	2	3	4	5	6	7	8	9	10
Influence of the project environment uncertainty	1									
Number of employees	,145	1								
Range of activities	,056	,211	1							
Generation managing the firm	-,04	,399**	-,095	1						
Firm's location	-,229	,292*	,151	,271*	1					
Firm's development in the last year	,24	-,072	-,089	-,114	-,101	1				
Intention to leave the firm in family's 'hands'	,015	-,002	,152	-,148	,147	,336**	1			
Age of the firm	,119	,312**	,122	,218	,035	,064	,067	1		
Construction	-,028	,088	-,065	-,153	,117	,224	,144	,069	1	
Other service activities	-,417**	-,214	,025	,082	,031	-,175	-,154	,112	-,19	1
M	3,000	1,464	2,191	1,412	3,250	1,449	1,449	3,435	,159	,159
SD	,992	,584	1,069	,652	1,262	,654	,631	1,144	,369	,369

*. Spearman's correlation coefficient is statistically significant at $p < 0,05$ (2-tailed)

**.. Spearman's correlation coefficient is statistically significant at $p < 0,01$ (2-tailed)

Source: own study.

The results of the Spearman rank correlation analysis performed for the second group of family firms which managed projects are significantly different compared to the findings in the first group (with no project management activities). The main outcomes of the analysis are summarized in table 4.

Table 4

Results of the correlation analysis for the studied family companies

Correlation between the explained variable and	Family firms currently not managing projects	Family firms currently managing projects
The generation managing the firm	rho= ,475**	No statistically significant correlation
Firm's development in the last year	rho= ,485**	No statistically significant correlation
Construction sector	rho= ,519**	No statistically significant correlation
Other service activities	rho= -,415	rho= -,417

*. Spearman's correlation coefficient is statistically significant at $p < 0.05$ (2-tailed)

**.. Spearman's correlation coefficient is statistically significant at $p < 0.01$ (2-tailed)

Source: own study.

The results of the Spearman rank correlation analysis lead to the following conclusions. First of all, it is interesting to observe that that the test confirmed different relationships in case of the family-owned firms not managing projects and those employing project management practices. In case of the first group there is statistically significant, positive correlation between the influence of the uncertainty of the project environment and two family related factors: the generation managing the company ($\rho = ,475$) and this firm's development during the last year ($\rho = ,485$). In case of the second group of the family entities which managed projects, none of the above relationships was confirmed.

The above results might suggest that the younger generations who manage these enterprises, having more knowledge and consciousness regarding the influence of the environment, pay more attention to this factor. The fact that the above results were not confirmed for the group of the firms which managed projects can be explained by the fact that implementing project management methods and tools gives these businesses a chance to reduce the negative influence of the uncertainty which is generated by the project environment.

It is also interesting to see that firms not using project management which evaluated their development during the last year negatively also evaluated the influence of the project environment uncertainty as more significant ($\rho = ,485$). Likewise, this relationship was not observed in the businesses which managed projects ($\rho = ,24$). This can again be explained by the opportunities that employing project management practices creates for the firms.

In order to verify the obtained results, the ordinal logistic regression analysis was used (table 5).

Table 5

Results of the regression analysis- the family firms not managing projects

Predictors	Estimator (B)	Standard Error	Level of Significance	Lower bound	Upper bound	Exp(B)
The generation managing the firm	1,917	1,363	,160	,470	98,316	6,800
Firm's development in the last year	,990	,803	,218	,558	12,982	2,691
Sector: construction	18,837	18363	,999	,000		1516338
Sector: other activities	-1,983	1,039	,056	,018	1,055	-,138

Source: own study.

Table 6

Results of the regression analysis- the family firms managing projects

Predictors	Estimator (B)	Standard Error	Level of Significance	Lower bound	Upper bound	Exp(B)
The generation managing the firm	,088	,538	,871	,380	3,136	1,092
Firm's development in the last year	,485	,567	,392	,535	4,934	1,624
Sector: construction	-,244	,907	,788	,132	4,638	,784
Sector: other activities	-2,829	,886	,001	,010	,336	,059

Source: own study.

What is worth underlining is the fact that in case of both groups, regression analysis revealed that firm's belonging to the 'other activities' sector was particularly significant in explaining the studied phenomenon. Firm's belonging to this sector noticeably decreased the influence of the uncertainty of the project environment on project management. This relationship was identified both: in the firms managing projects as well in those not doing this. The test revealed also that in case of both studied groups of the family firms, factors such as: the generation managing the firm and firm's development during the last year, though not statistically significant, would increase the influence of the project environment uncertainty- as evaluated by the studies companies. Again this relationship was independent of the fact whether the company employed project management or not.

Conclusions

It is of importance to deeply understand behaviour of family-owned enterprises in the context of their project management practices. Due to the fact that the growing number of family firms are managing projects in an environment which is characterized by a high uncertainty, it is of significance to recognize particular mechanisms which influence this phenomenon.

The results of this study allow us to draw the following conclusions. The first one is that the performed analyses revealed different results for the two studied groups of family businesses: those employing project management and those not managing projects. In case of firms which declared they were not using project management there can be observed a higher influence of factors related to the family influence, such as the generation who currently managed the company. For the firms which used project management practices this relationship was not confirmed which might suggest that these business entities are more task and objective focused than the first group. Furthermore, those enterprises which did not manage projects and which evaluated their development during the last year negatively also evaluated the influence of the project environment uncertainty as more significant ($\rho = ,485$). As the above relationship was not observed in businesses which managed projects ($\rho = ,24$) it can again lead us to the initial, conclusion that employing project management practices might have a positive influence on how these companies develop. An interesting result concerns also the relationship between firm's belonging to a particular sector and how it perceives the influence of the project environment uncertainty. In case of both studied groups this factor has a significant, facilitating influence- as confirmed by the results of the ordinal logistic regression.

Proper identification of the influence of the uncertainty of the project enjoyment can make a significant contribution to facilitate project management and, by early elimination of threats, increase the probability of project success.

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