

The impact of project's position in its environment on determining project strategy

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Abstract

There are different factors that affect on project's role in determining its strategy. Project is facing a changing business environment and it must make precise and on time decisions according to new conditions. On the other hand, the project is surrounded by several organizations with different roles and different organizational goals and strategies that each of them is aiming at aligning project strategy with its own organizational strategies. So it seems that position of project organization within the network of its stakeholders is an important factor in the degree of project's role in determining its strategy.

According to two hypothesis on stakeholders theory and social network analysis, "the density of the network of stakeholders of an organization" and "the centrality of the organization in its stakeholders' network", are two environmental factors that affect on the degree of resistance of the organization against its stakeholders' expectations. According to these two hypotheses, as density of the network increases, the ability of the stakeholders to constrain the organization's actions increases, and on the other hand, as the organization's centrality increases, its ability to resist stakeholder pressures increases.

In this quantitative research, we used survey approach to examine two mentioned hypothesis in the context of construction projects. After identifying project strategy components for estimating "role of project organization in determining project strategy" as dependant variable and indicators for measuring "density of project's stakeholders' network" and "centrality of the project organization in its stakeholders' network" as two independent variables, we distributed ۴۳ questionnaires within ۱۵ projects and examined correlation between variables in these projects.

Keywords: project organization, project strategy, density of project's stakeholders' network, centrality of project organization in its stakeholders' network.

۱. Introduction

Recently, the alignment of project strategy with organizational strategy as well as the project's role as a temporary organization in determining project strategy has been discussed in the area of strategic project management. In many of available resources, the strategic decisions of project are supposed to be made by the parent organization and the project still has a practical role in implementing these decisions. However, in the recent strategic project management studies, applying a more realistic view of the project environment and considering various stakeholders in a project, the project organization has taken a special place as the best mediator and defender of stakeholders' benefits. On the other hand, regarding the business environment changes and the necessity of immediate decisions for new strategies, the project organization as the closest entity to these changes has turned to be the best decision maker. Nevertheless, since several organizations with different aims surround the project and all of them have their own goals and strategies for conducting the project in their desirable path, there is a fundamental challenge in managing the stakeholders and putting them in the way of project goals. One part of this challenge seems to be related to the project's position in its environment.

According to what mentioned above, it seems what Rowley(۱۹۹۷) says about density of organization's stakeholder network and organization's centrality in this network as two environmental factors, in the area of stakeholders theory and social network analysis, that affect the organization's resistance to stakeholders demands, can also be generalized for the project organization. According to his two hypothesis, "the density of the network of stakeholders of an organization" and "the centrality of the organization in its stakeholders' network", are two environmental factors that affect on the degree of resistance of the organization against its stakeholders' expectations. Based on these two hypotheses, as density of the network increases, the ability of the stakeholders to constrain the organization's actions increases, and on the other hand, as the organization's centrality increases, its ability to resist stakeholder pressures increases.

As regard to importance of construction projects and complexity of stakeholders' environment in these projects and since there are some deficiencies in current research in this area, it seems reasonable to focus on it. Determining the role of project organization in identifying and reviewing project strategy is one of the key decisions in construction projects and has an effective role on success or failure of a project, and for this reason many managers and project directors are concerned about it.

In this quantitative research, we used survey approach to examine two mentioned hypothesis in the context of construction projects. After identifying project strategy components for estimating "project's role in determining its strategy" as dependant variable and indicators for measuring "density of project stakeholders' network" and "centrality of the project organization in its stakeholders' network" as two independent variables, we distributed 43 questionnaires within 10 construction projects and examined correlation between variables in these projects.

2. Literature Review

As this research is to study the effect of environmental position of the project organization, as a temporary organization, and its stakeholders on the project strategy, in this section we review the related literature.

2.1. Project strategy

There are different definitions of the project strategy. Lempel(2001), for instance, considers it as a superior plan for achieving the project specified goals. Artto et al.(2008) believe that the project strategy is a direction in a project that contributes to success of the project in its environment. The best definition of the project strategy may be represented by Shenhar et al.(2009). They say that the project strategy is the definition of position, the means, and the guidelines of what to do and how to do it, to achieve the highest competitive advantage and the best value from the project. They conclude that the strategy is that specific twist to a project which can lead the project plan to succeed; and this is the distinction between a strategy and a steady plan. In addition to introduction of seven components of the project strategy, they point to existing questions about every component.

Project strategy components	Question	Details
Business perspective/ background	Why do we do it? What is the business perspective? How to match the Needs and the Seeds?	Who is the customer/user? What is the need? How we address this need? What is the business opportunity?
Objective	What do we want to achieve?	What is the ultimate goal to be achieved after project completion?
Product definition	What is the product?	What are we producing? Concept of operation Major product characteristics
Competitive advantage/ value	How good is it? Why is it better? Why would the customer buy? What is the value for us?	What is the advantage to customer/user over: Competitors? Previous products? Alternative solutions? Product cost/effectiveness How would we benefit?
Success and failure criteria	What are the expectations? How to assess success? What can go wrong?	Success dimensions and measures Major risks and their consequences
Project definition	How do we do it? What is the project?	Project scope. Project deliverables. Project type—classification. Project leader, project team. Resources.
Strategic focus	How to behave? What to do to achieve CAV? How to create a relentless pursuit of competitive advantage/value?	Guidelines for behavior Policy for managing and leveraging: <ul style="list-style-type: none"> • Company competencies • Professional expertise • Internal synergy • External alliances

Table 1: Project strategy components; Shenhar et al. (2009)

2.2. Role of project in determining project strategy

In project management, the dominant idea about the project is a practical view and it's often presumed that the project is influenced by its parent organization strategy. Artto et al.(2008) reviewed the literature about the project strategy and identified three main viewpoints that implicitly or explicitly point to the concept of project strategy. The first viewpoint concentrates on project strategy formulation through a top-down process starting from the parent organization's business strategy. Since this strategy formulation process is fixed, the project is not allowed to form its strategy independently, but the project's strategy is an image of its parent organization's strategy and the project is in a role of implementing its parent's strategy. The project strategy is a static plan that is formulated in the front end stage of the project. In the second viewpoint, the project is assumed to be an independent organization but connected to the parent organization. This literature has two distinct conceptions of project strategy. First, a project carries within its boundaries significant responsibility for the business that it is expected to establish, and accordingly, the project is authorized and resourced to choose and implement its directions independently. Second, the project's strategy is considered as project execution strategy, where the project authority is limited to independent strategies in project execution and in project management, but not in the actual overall business content/result that the project is expected to implement. The last viewpoint sees the project as an organization/entity that is positioned in a complex organizational environment with several powerful stakeholders, and not just one powerful parent organization. The strategy of such project relates to the project's adaptation to its environment. This literature assumes that project strategy is self-originated and it is related to the project's own governance structure; the project includes within its boundaries all management levels of any successful and independent enterprise (strategic, middle management, technical-tactical levels).

Since various organizations work together to form and perform a project, the third viewpoint seems to be more comprehensive. It's clear that all of these organizations do not necessarily have the same goals and strategies and their expectations are different. Therefore, the project strategy should not only be restricted to meet one organization's strategy, but should be defined to maximize all stakeholders' benefits.

By defining a project as a temporary organization, formalizing a project and developing a specific project culture is emphasized and by accepting projects as social systems, the importance of project's context and its environment reveals. Thus, it's important to identify different factors that are effective on forming project's position in its environment and to study the impact of these factors on the role of project, as a temporary organization, in determining project strategy.

2.3. Effective factors in forming organization's environmental position

One approach for understanding stakeholder environments is using concepts from social network analysis to examine characteristics of entire stakeholder structures and their impact on organizations' behaviors, rather than individual stakeholder influences. Rowley(1997) in his research, employing the social network concepts, represents an explicit theory of stakeholders' influences based on the structural characteristics of an organization's network of relationships. The theory's logic is derived from oliver's examination of organizational responses to external influences and addresses this question: How does the structure of an organization's stakeholder relationships affect its respond to stakeholder pressures? Rowley(1997) argues that the density of the stakeholder network surrounding an organization and the organization's centrality in the network influence its degree of resistance to stakeholder demands.

Density is a characteristic of the whole network and it measures the relative number of ties in the network that link actors together and is calculated as a ratio of the number of relationships that exist in the network (stakeholder environment), compared with the total number of possible ties if each network member were tied to every other members. A complete network is one in which all possible ties exist. Two characteristics of density are relevant to examining organizational responses to stakeholder pressures. First, as density increases (and the number of ties between network members grows), communication across the network becomes more efficient. By virtue of having many ties, the network structure facilitates information exchange among all its regions. Second, diffusion of norms is the result of a dense network structure and expectations are shared among members through vast communications of the network members. The networks with high density cause many restrictions for focal organization activities since these networks make stakeholders able to monitor the focal organization activities more efficiently and also to put pressure to conform its activities to their expectations. Thus, as the density of stakeholders' network increases, focal organization resistance to stakeholder requests will decrease.

Whereas density characterizes a network as a whole, centrality refers to an individual actor's position in the network relative to others. Centrality refers to power obtained through the network's structure. Three types of centrality commonly are discussed in the social network literature, with each corresponding to a different aspect of an actor's positional status. "Degree", "closeness", and "betweenness" centrality are measures of an actor's number of direct ties to other actors, independent access to others, and control over other actors,

respectively. One can define an actor's degree centrality by the number of ties it has with other actors in the network. The intuition behind degree centrality is that players "well connected"-in terms of having many relations- in their local environment will have access to many alternative sources of information, resources, and so forth. Closeness centrality defines an actor's ability to access all other members of the network independently. One can measure an actor's closeness centrality by summing the lengths of the shortest paths (geodesic) from it to all other actors. The most central actors have the shortest aggregate distances to all other actors. An actor possessing low closeness centrality is highly dependent on other actors (intermediaries) to access other regions of the network. Freeman associates closeness centrality with efficient communication, stating that closeness means fewer message transitions, shorter times and lower costs. Betweenness centrality is similar to closeness centrality, since both measures consider access to other actors, but it is based on the viewpoint of an intermediary actor who is positioned between other actors, rather than the standpoint of the "sending" and "receiving" actors who must form exchanges via third parties. Betweenness centrality measures the frequency with which an actor falls on the geodesic paths between pairs of other actors. Freeman conceptualizes betweenness centrality as the extent to which an actor has control over other actors' access to various regions of the network. Whereas closeness centrality indicates an actor's degree of independence (the ability to access other nodes through the least number of intermediaries), betweenness centrality captures an actor's ability to control others. Actors with high betweenness centrality are brokers or gatekeepers in the sense that they facilitate exchanges between less central actors. Each centrality measure attempts to identify actors occupying important or prominent positions from which they can exert influences on other actors, but each measure describes and measures a different property of an actor's location. Central actors are considered brokers or gatekeepers, since they exchanges between other actors and are able to manipulate information, either by preventing or biasing communications across the network. Thus, when the focal organization is in a central position, it is able to influence behavioral expectation and manage information flows so that its actions either go unnoticed or are presented in a self-serving fashion. Thus, as the focal organization's centrality increases, its ability to resist stakeholder pressures increases. According to previous sections, if we take the project organization a temporary organization surrounded by several permanent organizations every of which has special expectations, determination of project strategy, the role of project organization in determining strategy components, and the role of surrounding organizations will be affected by the network formed around project organization. In this paper we intend to understand the relation of project's stakeholders' network features with the role of project organization in determining project strategy.

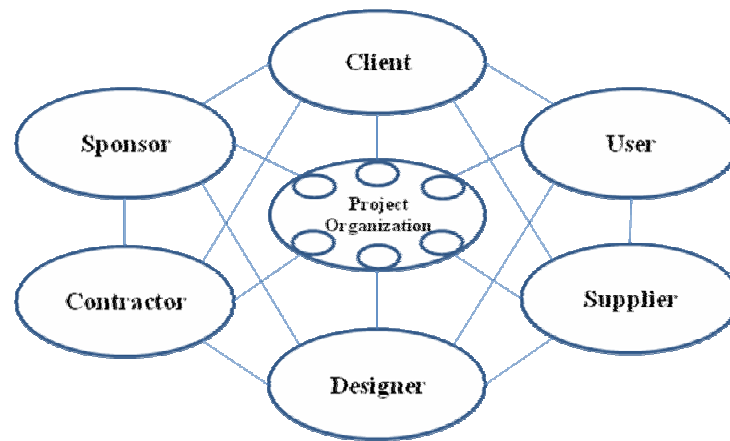


Fig. 1: Project's stakeholders' network

2. Research methodology

Assuming the project as a temporary organization, consisting of agents from different stakeholders, "density of project's stakeholders' network" (A) and "centrality of project organization in its stakeholders' network" (B) were defined as two independent variables that these variables describe project's position in its environment. Also "role of project organization in determining project strategy" (C) was considered as dependent variable that represents the authority of the project organization in making strategic decisions. Fig. 2 shows the relationship between these variables.

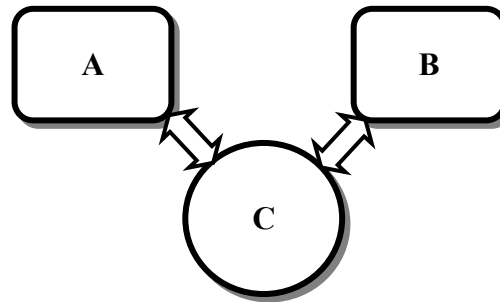


Fig. ٢: Relationship between variables

After defining the variables and their relations, research questions were developed:

- What is the effect of density of project's stakeholders' network on the role of project organization in determining project strategy?
- What is the effect of centrality of project organization on the role of project organization in determining project strategy?

Research hypotheses include:

١. An increase in density of project's stakeholders' network will decrease the role of project organization in determining project strategy.
٢. An increase in centrality of project organization will increase the role of project organization in determining project strategy.

The unit of analysis in this research is the project's stakeholders' network. ١٥ construction projects were studied. Two questionnaires were applied for collecting data. Questionnaire ١ follows the measurement of each stakeholder's and project's role in determination of every component of the project strategy. In fact, this questionnaire was applied for measuring the dependent variable of research. Thus, seven strategy components introduced by Shenhar et al.(٢٠٠٧) were used and the role of every project's stakeholder in determination of each component was specified comparatively. In order to measure the independent variables questionnaire ٢ was conducted.

٤٢ questionnaires were filled out. Due to some restrictions, we tried to use projects that enjoy individuals playing their role jointly. Totally, ٤٢ questionnaires were filled out by ٢١ persons.

One of the validity evaluations utilized in this research is the validity based on factor analysis. This method is to realize the components correlation level. The factor analysis of project strategy variable confirmed that the variables considered for each project strategy have the values bigger than ١.

In order to understand whether the selected components of project strategy are efficiently precise and have reliability for next researches, the components correlation was evaluated by calculating Cronbach's Alpha with SPSS software. The results show that components correlation is almost high and this represents that the components were properly selected. In order to analyze the answers of research questions, null hypothesis was assumed for each answer. Then, by using Spearman correlation test through SPSS software, the correlation between independent and dependent variables was evaluated.

٤. Discussion

Based on data collected from questionnaire ١, the role of project organization and other project's stakeholders' organizations in determining project strategy is represented as below table (table ٢).

Project	Role of project org.	Role of client	Role of sponsor	Role of designer	Role of contractor	Role of supplier	Role of user
Project 1	2.0%	82.3%		10.4%	5.3%		
Project 2	2.4%	55.3%		13.6%	7.3%		21.3%
Project 3	7.7%	53.3%		30.8%	8.3%		
Project 4	15.0%	45.2%		34.8%	5.0%		
Project 5	19.5%	47.5%			33.1%		
Project 6	20.6%	48.5%			19.8%		11.1%
Project 7	21.5%	52.0%			26.4%		
Project 8	23.8%	46.4%	5.3%		11.9%		12.6%
Project 9	25.3%	56.8%	9.2%		6.9%		1.8%
Project 10	26.4%	58.6%	5.0%		9.9%		
Project 11	27.1%	59.0%					13.9%
Project 12	35.5%	52.6%					12.0%
Project 13	36.7%	47.4%		13.6%	2.3%		
Project 14	57.9%	32.8%		3.8%	5.5%		
Project 15	64.1%	27.7%		3.8%	4.4%		

Table ٧ : Role of project and project's stakeholders' organizations in determining project strategy

The first four projects in which the project organization has the minimum role are based on traditional contract. The next six projects have EPC contracts. The next two projects are performed with In-house system. The last three projects also have traditional contracts, but the client established a virtual organization and assigned its authority to that organization. So the network pattern of these projects confirms that a decrease in the number of decision makers will increase the role of project organization in decision making. As it was mentioned, density of stakeholders' network and centrality of project organization in the analyzed projects was evaluated using questionnaire ٧. Tables ٧ and ٨ show the resulted values for these two variables. Based on the table ٧ and SPSS output, the correlation level for the two variables "density of stakeholders' network" and "role of project organization in determining project strategy" is equal to -0.٧٨٨ representing a good approximation (0.٩٩) for this correlation.

Project	Role of project org.	Density of stakeholders' network
Project 1	2.0%	0.833
Project 2	2.4%	0.767
Project 3	7.7%	0.722
Project 4	15.0%	0.611
Project 5	19.5%	0.556
Project 6	20.6%	0.611
Project 7	21.5%	0.667
Project 8	23.8%	0.533
Project 9	25.3%	0.567
Project 10	26.4%	0.500
Project 11	27.1%	0.444
Project 12	35.5%	0.333
Project 13	36.7%	0.611
Project 14	57.9%	0.500
Project 15	64.1%	0.500

Table ٧: Correlation between "role of project organization in determining project strategy" and "density of stakeholders' network"

Also, the correlation level for the two variables "centrality of project organization in stakeholders' network" and "role of project organization in determining project strategy" is equal to 0.٤٧٣ representing an acceptable approximation (0.٩٥) for this correlation. These results correspond to what Rowley(١٩٩٧) says in the area of

stakeholder theory and social network analysis about the effect of two environmental factors, density and centrality.

Project	Role of project org.	Centrality of project org.
Project 1	2.0%	0.556
Project 2	2.4%	0.625
Project 3	7.7%	0.667
Project 4	15.0%	0.556
Project 5	19.5%	0.667
Project 6	20.6%	0.667
Project 7	21.5%	0.750
Project 8	23.8%	0.681
Project 9	25.3%	0.583
Project 10	26.4%	0.667
Project 11	27.1%	0.583
Project 12	35.5%	0.500
Project 13	36.7%	0.778
Project 14	57.9%	0.778
Project 15	64.1%	0.778

Table 4: Correlation between "centrality of project organization in stakeholders' network" and "role of project organization in determining project strategy"

These results show that an increase in density of project's stakeholders' network will increase the efficiency of communications. Thus, the network structure facilitates the information exchange and the expectations and viewpoints about the project strategy are shared among members through vast communications of network members. As a result, the networks with high density cause many restrictions for the project organization activities since these networks make stakeholders able to inspect the project activities more efficiently and to put pressure to match the project organization activities with their expectations and strategies. In contrast, in the networks with low density it is hard to exchange information among stakeholders due to restricted communicative channels. As a result, stakeholders are under pressure for expressing their expectations and observing the project organization activities. This condition allows the project organization to adjust its activities and strategies more independently.

The results also show that the centrality of the project organization is an important factor in getting resistant against stakeholders pressures.

9. Conclusion

Based on the results, it may be perceived that in a process as the density of the project's stakeholders' network increases, the role of project organization in project strategy determination decreases and as the centrality of project organization increases, its role in determining project strategy increases. These results confirm Rowley's hypotheses in the area of stakeholder theory and social network analysis. These hypotheses represent that two environmental factors, density of the focal organization's stakeholders' network and focal organization's centrality in that network, are effective in independence of focal organization for decision making.

In fact, after forming the stakeholders' communication network in a project, we can determine the project organization situation and evaluate the role of project organization in strategic decision making. On the other hand, by supposing a certain role for project organization in determining project strategy, we can design a network of communications between main stakeholders that is in accordance with our expectations.

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