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Factors of success in information technologies projects: evidence from capital of Turkey, Ankara

Abstract

Nowadays, organizations have to deal with a great number of environmental factors as well as their high speed of change. However, the existing organization structures do not provide such an opportunity to cope with these difficulties. That is why they design projects. Information technologies (IT) are one of the most important tools which allow a high adaptation rate to this complicated setting. Hence, their success directly affects the success of entire organization.

In this respect, the authors conduct a comparative study, where the factors leading to success in IT projects are investigated. To do so, the responses of a questionnaire from 68 project managers are assessed. Then, they are analyzed by logistic regression method. The results are compared with those from Sweden and Australia.

Findings of our study indicate no direct impact of the factors stated below on project success, which are the experience of project management, changing the project manager during the project, supporting for long working, rewarding staff for long hours, usage of a specific method while determining the requirements, defining well the project scope, establishing a project calendar, making good estimates and extra personnel addition, sponsorship support, participation of customer/last user, including manager to cost forecasts and initial risk identification. On the other hand, following factors have influence on project success: completed and accurate requirements at the beginning of the project, allocation of enough time to define and determine the requirements.

Keywords: project, project management, information technologies projects, Turkey.
JEL Classification: M15, L21.

Introduction

As the number of variables affecting to the business environment and their changing speed increase, project management gets more complicated. In such an environment, information technologies which have influence on social and economic systems cause major changes in business life. Naturally, these changes are the basic reason to have a more comprehensive and effective project management in enterprises. It is also suggested that software project management today is an art (Boehm and Ross, 1989: 1). In this case, the importance of project management increases day by day and the usage of project management in the area of information technologies (IT) become widespread. On the other hand, the high rate of failures in projects increase the need to understand the reasons behind the conditions for being successful in projects and IT project management. When the conditions for being successful are taken into account, the projects can be completed as planned before.

In this study, first of all, the definition of successful IT projects and factors of successful IT projects are discussed. Then, we conduct a comparative study, where the factors leading to project success are investigated. In order to determine these factors in Turkey, a questionnaire is prepared and responses from sixty eight project managers are evaluated. The factors affecting the success of the project are analyzed by logistic regression method. The results are compared with the ones obtained for Sweden and Australia, which is realized by Svensson (2006).

1. Project and project management

A project is a temporary endeavor undertaken to create a unique product, service or result (PMI Standards Committee, 2008: 5). In another definition, project is the one time and problem specific process which aims to obtain a group of goals in a definite time (Stevenson, 1993: 776). Projects should have the following characteristics as minimum (Lung-Chun and Horowitz, 1989):

- existence of a defined goal with specific characteristics;
- existence of pre-defined beginning and final dates;
- a specific budget;
- minimum features specifying the usage of resources.

In addition, there are some extra common features seen in projects. These are complexity, not repeating and ambiguity (Slack et al., 1998: 590).

Project management, however, is applying the information, ability, tools and instruments to project activities to satisfy the consumer expectations (PMI Standards Committee, 2004: 6). Hence, it includes planning, organizing, directing and auditing (Kerzner, 1984: 5).

Although some projects may emphasize different needs, usually all projects are limited by the scope of business, time and cost constraints (Albayrak,

2005: 5). These constraints are called the needed three constraints to have a successful project management. In the scope of business constraint, the answer for "which aim will be satisfied"; in the time constraint, the answer for "how much time is needed to complete the projects"; in the cost constraint, the answer for "what will be the cost of completing the project" are sought.

A successful project management is measured by the degree of obtaining the goals for these three constraints and consumer satisfaction. Especially in information technologies projects, it is widely seen that these constraints are not satisfied. This situation can be summarized as "you can have it good (performance), cheap (cost) or fast (time): pick two" (Lai, 1997). However, it should be noted that it is not possible to sacrifice one of the three conditions without affecting the others. As a result, system project management should be considered as a whole, and every managerial action, thus, must be evaluated according to its impact not on any one dimension but on the whole entity.

1.1. Definition of successful information technologies projects. It is not easy to answer the question asking what a successful information technologies project is or how it is defined. There are lots of successful information technologies project definitions in the literature. These definitions can also vary according to the position in the organization. For instance, a project which is found successful according to software developers can be evaluated as a failure by executive directors (Linberg, 1999).

The mostly accepted project definition is the Standish Group one which is known with its researches about successful projects. They define a successful information technologies project as the one which satisfies budgeting expectations and has the needed characteristics due to business objectives (Standish group, 2009). In another research, Houston (2008) states that project management success is delivering a project to the agreed scope, time, cost and quality, while maintaining a customer relationship and not burning out the project team. According to Lewis (2001), it is difficult to define a successful project. Lewis defines a successful project that meets its budget, delivery, and business objectives. Nevertheless, one cannot define all the projects with the specified conditions as successful automatically, nor there are successful projects with missing conditions.

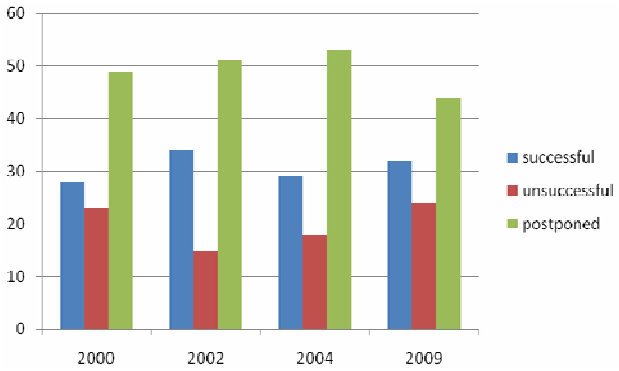
There can be differences between the success of the project and the product resulting of the project. If the project is successful, the product can be successful, but the success of project does not guarantee the success of the product as well in each and every case. The product should produce utility to be qualified as successful (Product Genesis, 2010). If the project is successful but the product is not purchased or cannot produce the utility expected, then the product is a failure. In a similar way, an unsuccessful project does not mean that the product is also unsuccessful. In a research about the relation between project and product conducted by Linberg (1999), the project will be a failure due to schedule delays and cost overruns, but the same project is defined as successful because the product satisfies the utility needs.

1.2. Factors of success in information technologies projects. A research conducted by Standish Group indicates that 61.5% of the projects in the big companies have exceeded the planned budget, have been completed late and have fewer features than specified in the contract (Svensson, 2006). The average exceed in budget in these projects is 189% and the average schedule delays is 222 %. The predefined projects have the 67 % of initially specified characteristics. Jones (1995: 86) demonstrates that 60% of the software projects have reliability and quality problems. According to this study, the main reason behind the failures is the weak project management and it is seen mostly in information technologies industry. The problems in project management are more influential in software industry compared to other sectors. To minimize these problems, software industry needs to use quality controlling, forecasting and planning tools. In addition, previous project experiences should be recorded and be used in the forward ones. Nonetheless, Glass (1998: 75) indicates that projects in software industry are not too unsuccessful, and the reason of failures is mostly new technology usage and performance issues, not the weak management. On the other hand, Standish Group's findings in 2001 about failures are different than those of Glass (1998). Standish Group shows that projects are unsuccessful not only due to technological issues, but also due to weak management (Svensson, 2006).

Another study conducted by Cole (1995) which investigates the perceptions of information system managers about run-away projects points out that managers believe that number of successful projects are increased. They also believe that the most important reason of a failure of projects is the schedule delays, and the failures are mostly detected by employees, not the managers by themselves (Cole, 1995: 3). In the same study, the reasons behind the project failures are the following: project objectives that are not defined clearly, bad planning and forecasting, usage of new technologies for the organization, not applying the management methodologies, lack of experienced staff and low performance.

The findings of Cole (1995) are parallel with Standish Group's research (2001). In this research, it is indicated that the success of software projects is 26% in 1988 and increased from 1994 to 1998 (Svensson, 2006). There are three important reasons of this increase in project management: smaller application parts, better project management and usage of standard methods.

Another study, again conducted by Standish Group in 2000, shows that the success of projects increases compared to 1998 results and it rises to 28%. Examining the cost overruns reveals that the overruns were 189% in 1994 and they were 45% in 2000. While only the 61% of the initially specified features of the project were covered in 1994, in 2000 this ratio was increased 67%. This raise suggests that software industries have developed their abilities to realize successful projects. The dispersion of successful, unsuccessful and postponed projects can be seen in Figure 1 between the years 2000-2009 (Standish Group, 2009).



Source: http://www.standishgroup.com.

Fig. 1. Project performances according to years (%)

The most mentioned factors of success in information technologies projects can be seen.

1.2.1. Ensuring the user participation. It is a fact that developed software can be different than the real needs of the users. Due to this fact, it is vital to use the users' point of views to determine their needs, and users should be included into the requirement analyzing process. User participation and user oriented risks are important factors that affect the project success (Jiang et al., 2002). In addition, there are studies suggesting inclusion of the users to the project team (Tait and Vessey, 1988). In this way, software developers can get the user support for all kinds of questions.

1.2.2. Analysis of realistic requirements. It is the unrealistic requirements which are one of the common factors of project failures (Glass, 2001). According to different researchers, insufficient requirement analysis is the most important reason of project failure (Hofmann and Lehner, 2001). Hofmann and Lehner (2001), who indicate the critical factor of success for software projects as the determining and gathering the requirements, show that more resources are used in successful projects' requirement analysis comparing to others. To increase the success in software projects, the requirements should be realistic, detailed and specific.

1.2.3. Forecasts with definite and realistic calendar. Optimistic and unrealistic forecasts cause more project failures (Glass, 2001). The reason behind it is to set the project calendar and required time to finish the job before determining the requirements. The study of Glass (2001) points out that the forecasts about timing are done by chief directors or sales department, rather than the ones who develop software or their directors. This indicates that the forecasts are done by the ones who are not included into the software developing process. Software quality is also affected by the unrealistic forecasts. Glass (2001) also demonstrates that software developers, who involved projects with unrealistic forecasts, are not motivated enough to realize the goals.

Another effect of unrealistic forecasts on project success is the increasing work load pressure due to delayed schedules (Brooks, 1995). According to Amabile et al. (1996), low work load pressure has a positive influence on project team while high work load pressure has the reverse effect. The action that the managers take to solve the problem is to hire new employees to project. However, the study conducted by Brooks (1995) which shows the effects of project management on project success, indicates that including new employees to a delayed project increases the possibility of failure. Other studies in following years demonstrate that less circulation among project employees also influences project success (Phan et al., 1995). Newly introducing staff needs time to learn about the project or to understand the codes.

1.2.4. Management support. Management support is a very important factor for project success (Procaccino et al., 2002). It is necessary as well to assign the resources to specific projects (Holland et al., 1999). Assigning resources also includes determining individuals for application and giving enough time to complete the project (Roberts and Barrar, 1992). According to Jiang et al. (2002), it is the management support which is important for project success, rather than processing of the project or team performance.

Procaccino et al. (2002) note that sufficient sponsorship support increases the possibility of success in projects. Therefore, it is important to have a spon-

sorship as soon as possible even if there is not any at the beginning of the project.

1.2.5. Realistic and talented project manager. There are studies stating that projects with experienced and talented managers are more successful. Projects with experienced project managers have a higher chance to be successful in comparison to less experienced managers (Thite, 199: 207). This study also notes that the leadership qualifications of project managers influence the project success. Pressman (1988: 50) indicates that it is the persons who manage the project; the tools and techniques are not the most important factors.

In a different study, it is noted that project managers should have a general knowledge and talents; on the other hand, they do not need to have specific experience on software development and their application (Verner and Evanco, 2005). This result is also compatible with the statement that "successful project managers have knowledge, they are not technical experts" (Jurison, 1999). In addition to general knowledge, another characteristic of project managers is the ability of motivating their team (Covey, 1992). McConnell (1996) notes that motivation is an important factor for productivity and quality. Four significant factors for project managers are communication, accordance, organizing and facilitating the job (Pressman, 1998).

2. Data and methodology

Since the aim of this study is to investigate the success factors of IT projects, a questionnaire form originally used by Svensson (2006) in Sweden and Australia is utilized. The mentioned study of Svensson (2006) covers 33 persons in total, seventeen from Sweden and sixteen from Australia. The questionnaire includes 21 questions: two questions about time of the project and the number of persons who works on project, one question about the past experience of project manager, sixteen questions about the process of her/his last project and two questions about the product provided at the end of the project. The questions are both open end and multiple choice ones.

Questionnaires are sent to 200 randomly selected IT project managers by e-mail, who has completed at least one project in Ankara. Conducting a survey only in Ankara, the capital city of Turkey, may be considered as a limitation. However, we mainly try to reach the project managers working in the defense industry. It is known that the institutions in this area usually have large scoped IT projects with very high budgets. These projects are strategically important for the country as well. Therefore, it is natural to ask the determinants of the success for these projects. Since Ankara is the center of the defense industry, it is selected as the place for performing our study.

The questionnaire is answered by 68 project managers. Thus, the return rate is 34 %. Response rates for e-mail have been found to vary from 6% to 73% in the previous literature (Weible and Wallace, 1998: 21). In this respect, our study has an acceptable rate.

Because most of the questions are "yes-no" type, we design binary variables, where the answer "yes" is coded as 1 and "no" coded as "0". In fact, only the first three questions are in metric measurement scales, namely, in ratio scales. Remaining part is nominal scale type. The questions and their coding can be seen from the following table.

Table 1. Model variables and definitions

Variables	Description of the variables
Person	The number of people working on the project
Time	Duration of the project
Experience	Experience of the project manager
Change	Whether there is a change in project manager during the project
Overwork	Whether long working hours on project is possible
Reward	Whether rewarding long working hours exists
Method	Whether a method is used in determination of the requirements
Specified	Whether the requirements are determined before the project starts
Enough time	Whether there is enough time to determine the requirements before the project starts
Scope	Whether the scope of business is well defined
Cost predict	Whether the cost forecasts are done together with project manager and with his/her team
Calendar	Whether the project calendar is initially determined
Calendar success	The success of calendar forecasts
Add staff	Whether new employees are included to project team to catch the project calendar
Sponsor	Whether a sponsorship support exists
Participation	Whether customer or the last user participate to project process
Risk	Whether risks are determined before the project starts
Manager	Whether the project manager finds the projects successful

It is well known that when the dependent variable is in nominal scale, ordinary least squares (OLS) technique is not appropriate in order to assess the relations between variables, because its most basic assumptions cannot be satisfied. Binary variables represent the probability of existence and non existence. To evaluate such a data, well-known techniques are logistic regression and discriminant analysis. Discriminant analysis, however, has strict assumptions, for example, multivariate normality and equal variance covariance matrices across groups. These assumptions are very unlikely to be met. Therefore, logistic regression is chosen as the appropriate methodology for our study. Since we

have only two groups to separate, the feature of the logistic regression that is suitable only for two-group discrimination is not a limitation. We have no missing values, thus 68 observations are included in the process.

Here, our dependent variable represents the success and the failure of the project; independent variables are given in the Table 1.

3. Findings

In this section, first of all, a quick glance at the answers of the questionnaire is given. Second, the main results from a logistic regression which explores the relation between project success and the independent variables defined above are presented.

From the answers, one may observe that at least 2, at most 100 persons are employed in the projects evaluated in this study. The average number of employees in the project is 17. On average, projects are completed in 23 months. The shortest project lasts 2 months, whereas the longest one lasts 84 months.

Participants have a project experience at least 1 year, at most 15 years and on average 5 years. It is found that project manager's experience is at least 1 year and at most 15 years (on average 4.83 years) in successful projects, while in unsuccessful ones these are 2, 15 and 6.38 years, respectively. Despite the previous researches which show the effect of project managers' experiences on project success (Standish Group, 2009; Thite, 1999: 207), we cannot detect such an effect in our study. Besides, it seems that the years of experience does not have an influence on project success, since managers of unsuccessful projects have more years of experience on average than those of successful ones. Svensson (2006), also indicates that project management experience has no significant effect on project success or failure.

We also detect that in all projects, 32.3% of project managers are changed on average. This number is 75% for unsuccessful projects, while in successful ones, it is only 26.7%. It is observed that there is a circulation of managers in both successful and unsuccessful projects. Nonetheless, it is observed that the circulation of project managers is higher in unsuccessful projects. To be able to understand the effect of project manager changes on project success, it is necessary to test the reason behind these changes by different questions. This is because the changes might be due to resignation of the manager or being assigned a more critical project, rather than only a failure. Svensson (2006) shows that 31% of unsuccessful projects have a manager change in Sweden, while this rate is 100% in Australia. The higher rates of manager changes in unsuccessful projects in Turkey show similarities with the results of Australia. The manager changing rate in Sweden, on the other hand, is higher and different than Turkey and Australia.

Long working hours are supported in 26.7% of successful projects and in 12.5% in unsuccessful ones. A possible reason for this situation, overtime workings is widely used to be able to prevent the delays from the schedule in Turkey. However, it is not possible to determinate if project employees do overdue in reality, since it is only asked in questionnaire whether overtime workings are supported or not. Svensson (2006) indicates that project managers support more overtime workings in unsuccessful projects. In successful projects, overdues are rewarded by 33%, whereas this ratio is 12.5% for unsuccessful projects. In Sweden, there is not any rewarding for unsuccessful projects, while in Australia, rewarding in successful projects is less than in unsuccessful ones, (30% and 67%, respectively). Hence, findings are in line with Sweden results.

It is also observed that a method is used to determine the requirements in 95% of successful and all of the unsuccessful projects. In this context, the effect of method usage on project success cannot be detected.

In our study, we find that in 39.7% of all projects, they are started without satisfying the requirements. The tendency for meeting the requirements before is 66.7% for successful projects and 12.5% for unsuccessful ones. Thus, it can be suggested that determining and meeting the requirements initially have influence on project success. Neither of the unsuccessful projects in Sweden and Australia has met the requirements before the project starts (Svensson, 2006).

It is observed that there has been enough time to satisfy the requirements initially in 53% of the successful and 50% of the unsuccessful projects. In Svensson' study (2006), for successful projects, this ratio is 33% in Sweden and 78% for Australia. It is observed that there is not enough time to determine the project requirements in both countries.

In our study, in 85% of the successful projects, the scope of business is well defined as good, while it is 37.5% for unsuccessful projects. Svensson (2006) also reaches the same results in Australia. This result is in line with the study of Jurison (1999). Jurison (1999) notes that badly defined scopes can cause defects while determining the requirements, unrealistic project goals, and project plans which are not reflecting the real situation.

In our research, in 71.4% of unsuccessful projects, cost forecasts are done by persons other than project

manager. Projects, whose cost forecasts are done together with project manager and his/her team, have a higher ratio (67.2%) to be successful. Svensson (2006) indicates that in 70% of projects, cost forecasts are done together with project manager and his/her team. Our findings are in line with Svensson's results.

Our study demonstrates that in 97% of successful projects and in 87.5% of the unsuccessful projects, calendar is initially determined. Therefore, one may deduce that initially determined calendar has no effect on project success. Svensson (2006) also has the same inference.

It is also found in our study that calendar forecasts are better in successful projects, in comparison to unsuccessful ones. The correct forecasts of calendar in successful projects are 58.3%, whereas this ratio is 37.5% in unsuccessful ones. There are studies in the literature which supports that good forecasts have a positive impact on project success (Svensson, 2006; Glass, 2001; Verner and Evanco, 2005; DeMaro and Lister, 2003). Glass (2001) underlines that unrealistic forecasts are one of the main reasons behind the unsuccessful projects.

We also observe that in 75% unsuccessful projects and, 46.7% of successful projects, new employees are included to project team to catch the project calendar. These findings indicate a higher rate of inclusion of new employees in unsuccessful projects. The results of Svensson (2006) is in line with our findings as well. In this study, it is observed that new employees are included to project team in all unsuccessful projects. This situation is also noted in Brooks' study (2005). Brooks notes that inclusion of new employees may cause a delay in schedule since it raises the failure risk, rather than having a positive impact (Brooks, 1995). This hypothesis of Brooks, however, is not valid for successful projects, although it is correct for unsuccessful ones. Both in our research and Svensson (2006), it is observed that newly included employees also exist in successful projects.

A sponsorship support exists in 30% of the successful and 62.5% the unsuccessful projects. Hence, it cannot be inferred that sponsorship support has an impact on project success. On the other hand, sponsorship support is the second most important factor which affects the project success according to Standish Group (2009) research. Cafasso (1994:20) emphasized the senior management support on project success. Another study (Proccacino et al., 2002) notes that sponsorship support increases the possibility of successful projects. According to Svensson (2006), sponsorship support is higher in successful projects. The same study states that successful projects have a sponsorship with a ratio of 75% in Sweden and 90% in Australia.

We observe that in 96% of all projects, clients or the last user participate to project process. This ratio is 95% in successful projects and 100% in unsuccessful projects. Thus, client or the last user participation has no impact on project success. In the literature, the positive effect of the participation of last user to project process is highlighted (Standish Group, 2009; Jiang, 2002, Procaccino, 2002). Svensson (2006) also indicates that last user participation rate in successful projects is higher than unsuccessful ones.

In 80% of successful projects, risks are determined before the project starts. This ratio is 75% for unsuccessful projects. Therefore, the impact of initially determined risks on project success cannot be observed. There are different points of views about the impact of risk management on project success in the literature. While one of these studies (Procaccino, 2002) relates the risk management with project success, a different one (Verner and Cerpa, 2005) states no relationship between them. On the other hand, Svensson (2006) points out that initial risk determination rate is higher in successful projects.

It is observed that 88.2% of project managers find their projects successful. In our study, the criterion to differentiate the project as successful or unsuccessful is the project managers' point of view, as in Svensson (2006). To define a project as successful, project managers state the following conditions: (1) projects should be realized through requirements; (2) customer satisfaction should be met under the cost and time constraints; (3) projects should help to increase the knowledge of the company; and (4) projects should provide experience which is used in future projects. According to Svensson (2006), the project success rate is found as 80% for both Sweden and Australia.

After examining the frequencies, this study continues with the findings from the logistic regression analysis, which are presented as follows.

Table 2. Beginning block

Observed			Predicted		
			Manager		Percentage correct
			0	1	
Step 0	Manager	0	0	8	.0
		1	0	60	100.0
	Overall percentage				88.2

Table 2 gives the model including only the intercept, and where the cut point is 0.50. Here, one may observe that none of the unsuccessful projects are correctly classified. However, the successful projects are in the correct class. Therefore, the classification accuracy is 88.2%.

The second block describes the situation, where all the independent variables enter to the model. The next table, in this respect, presents the overall significant test of the model with all variables. As one may observe, the null hypothesis that adding the explanatory variables have not significantly increased the ability of predicting the success is rejected at 10% significance level. Here, the coefficients of independent variables are estimated by using the maximum likelihood procedure.

Table 3. Omnibus tests of model coefficients

		Chi-square	df	Sig.
Step 1	Step	22.487	13	.048
	Block	22.487	13	.048
	Model	22.487	13	.048

The next step is to examine the estimation of fit, which is given in Table 4.

Table 4. Model summary

Step	-2 log likelihood	Cox & Snell R square	Nagelkerke R square
1	26.774	.282	.546

This table indicates goodness of fit of maximum likelihood estimation procedure to the likelihood value. In other words, by evaluating the -2 log likelihood (-2LL), one may interpret the low values of -2LL as a better fit, which is found to be 26774 for this analysis. Cox and Snell R^2 and Nagelkerke R^2 are identical in interpretation of R^2 in OLS, which are 0.282 and 0.546, respectively. These statistics demonstrate a fairly high value of explanatory power for the independent variables.

Another overall fit measure is Hosmer and Lemeshow test, which looks at association of the actual and predicted values of the dependent variable. Therefore, a smaller difference is interpreted as a better classification. In other words, the null hypothesis states that the factors in the model have a discriminating power. We find the chi-square value as 0.829, whose p-value is 0.999. Hence, we conclude that the difference between actual and predicted values is insignificant, the model's fit is acceptable.

Table 5 shows the new classification rate of the model after including the explanatory variables. It is clear that now the model classifies 5 of the unsuccessful projects in the correct place, but 2 of the 60 observations in the successful class are misclassified. Overall, the classification rate increase to 92.6%. Again, the cut value is 0.50.

Table 5. Classification table

	Observed		Predicted		
			Manager		Percentage correct
			0	1	
Step 1	Manager	0	5	3	62.5
		1	2	58	96.7
	Overall percentage				92.6

Since we have found that the overall model is significant and have a higher discrimination power, we can investigate the significance levels of independent variables. The findings in Table 6 point out these individual tests. Here, the Wald test statistics can be interpreted as t-values in OLS method. From this table, the only significant independent variables are found to be specified and enough time. These factors are only significant at 10% level. In other words, only specified requirements and having enough time to determine these requirements have a significant impact on success in IT projects mainly realized in defense industry, in Ankara. For the insignificant explanatory variables, we can only suggest the relatively low response rate to our survey.

Table 6. Variables in the equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Change	-2.011	1.813	1.230	1	.267	.134
	Overwork	.189	1.657	.013	1	.909	1.208
	Reward	3.101	3.128	.983	1	.322	22.230
	Method	-15.569	20723	.000	1	.999	.000
	Specified	3.862	2.256	2.931	1	.087	47.555
	Enough time	-3.391	2.009	2.849	1	.091	.034
	Scope	1.873	1.506	1.548	1	.213	6.509
	Calendar	2.174	2.121	1.050	1	.305	8.790
	Calendar success	.907	1.373	.436	1	.509	2.477
	Adding staff	.391	1.351	.084	1	.772	1.478
	Sponsorship	-.010	1.365	.000	1	.994	.990
	Participation	-16.197	19707	.000	1	.999	.000
	Risk	.531	1.720	.095	1	.757	1.701
	Constant	30.689	28598	.000	1	.999	2.129E13

These findings may imply that completing and clarifying requirements at the beginning of the project make the project team to focus on project target and aim. This may lead high motivation for the employees. Hence, it is followed by an immediate success.

Allocation of enough time to define and determine the requirements is also found to be important, because it enables efficient and effective planning.

Therefore, one can conclude that good time planning is a necessary condition to achieve the purposes.

The results obtained from logistic regression analysis can be supported by the project managers' opinion as well. In this paper, we ask to project managers to rank the most important three factors in project success based on their own experience and opinion. They indicate these factors as follows: (1) well defined requirements (24%); (2) customer/last user participation (11.8%); and (3) understanding problems of customers (10.3%). In particular, the first specified factor is in line with the logistic regression results.

We compare these findings with those obtained from Svensson (2006), in which the managers underline the factors for the same question as follows: (1) understanding problems of customers; (2) completed and accurate requirements; (3) participation of customer/last user. The most important three factors in Sweden are to understand the problems of customers, to have good relations between individuals and completed and accurate requirements. These factors for Australia are respectively as follows: participation of customer/last user, completed and accurate requirements, and committed sponsor. By comparing two studies, one may observe that project managers from different countries state similar factors, but with different order. This finding emphasizes the consistency between these studies.

The last question in our survey looks for opinions of managers about the three most important characteristics with respect to success in projects. The responses demonstrate the ranking below: (1) meeting business requirements (24%); (2) completing the project on time and within budget (23.5%); (3) lessons learned in order to use in the next projects (15.2%).

The mentioned characteristics in the paper of Svensson (2006), however, are: (1) meeting business objectives; (2) on time and within budget project completion; (3) meeting quality requirements. It is found that the three characteristics of successful projects in Sweden and Australia are alike with the general results. These comparisons also show that managers define two of the three characteristics of project success the same for different countries. Here, even the ranking is identical, implying a common point of view about project success for these countries. From these comparisons, the major role of meeting the requirements is clear. We also note this vital factor as one of the significant determinants in our logistic regression.

Conclusion

The increasing competition requires elasticity in organization structure and coordination in the management of all the departments of the company. By this way, it is aimed to increase the productivity. Project management has significant advantages in this area. Through project management, companies can work goal focused and provide high motivation, make easy the inside firm auditing and have evident quality increase.

Findings of the logistic regression indicate that there is no direct impact of the factors stated below on project success. These factors are the experience of project management, changing the project manager during the project, supporting for long working, rewarding staff for long hours, usage of a specific method while determining the requirements, defining well the project scope, establishing a project calendar, making good estimates and extra personnel addition, sponsorship support, participation of customer/last user, including manager to cost forecasts and initial risk identification. The low return rate can be one of the reasons of the lack of relations between project success and these factors.

On the other hand, following factors have impact on project success: completed and accurate requirements at the beginning of the project, allocation of enough time to define and determine the requirements. This finding, in fact, is not very different from the previous literature results. For example, in 1995, the Standish Group surveyed IT executive managers asking their opinions about why projects succeed. They state one of the three major factors is the clear statement of requirements, which is highly consistent with our analysis results. Moreover, the other factors proposed are user involvement and executive management support. Since the answers in the last questions highlight the substantial effect of customer/last user participation, one may infer that our results are consistent with the Standish Group survey, in this manner.

Our analysis may imply that completing and clarifying requirements at the beginning of the project make the project team to focus on project target and aim, which is followed by high motivation and success. Allocation of enough time to define and determine the requirements is also crucial, since it provides efficient and effective planning. Therefore, good time planning is a necessary condition to achieve the purposes.

In this context, the people responsible for managing the information technologies project should take these factors into account to solve the problems and to achieve success.

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