International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

The Role of Risk Management in Technology Transfer Projects Control in the Filed of Electronic Banking

Amir Tayebi
CEO of BMICC
A.tayebi@bmicc.ir
Ahmad Setak
Planning Department Manager of BMICC
A.setak@bmicc.ir
***Fatemeh Moghadasi**
Head of Research & Development of BMICC
Fa.moghadasi@bmicc.ir
Peyman Abbasi
Planning Expert of BMICC
P.abasi@bmicc.ir

Abstract

Due to the continuous growth of technology, the banking industry is entering new phenomena of competition. Recently, with increasing awareness about technology, electronic banking has also become important, so the technology transfer is considered as one of the essential principles of technological development. On the other hand, with the virtual space maturity, there is a strong argument about new methods of assessing and managing risks to increase project's reliability. The purpose of this study is to examine the role of management and risk assessment in controlling technology transfer projects in electronic banking, by collecting descriptive-analytical information. In this research, the importance of risk management as well as the assessment of key risks in the failure of technology transfer projects have been discussed by forming a focus group of technology transfer bank managers through a questionnaire. This research shows that almost 90% of the respondents believed that insufficient knowledge and lack of application of new methods and technologies are among the effective factors in the failure of technology transfer projects in electronic banking. Also, more than 90% of them believed that providing non-expert opinions of project decision makers can be one of the management factors in the failure of these projects.

1-1- Keywords: Technology Transfer, Electronic Banking, Risk Assessment and Management

Due to the ever-increasing speed science and technology progress, the creation of technology is not only possible and economical through research and development, but technology transfer has become one of the integral and necessary principles of the technological development of countries. In other words, developing countries carry out internal technology development and research and development activities during the process of technology transfer and in order to absorb, apply and develop the transferred technology. When there is enough mastery over the technology, its transfer is done successfully. It is not possible to master technology without the ability to absorb all aspects of it as well as customize it. Also, without mastering technology, the ability to reproduce and create innovation in it and create new technology will not be achieved.

Today, technology and its transfer are considered as key drivers for the changes taking place around the world. Due to the pervasive and continuous growth of information and communication technology, the world's banking industry is entering new phenomena of competition that support modern information and communication infrastructures. In the last few years, electronic banking has become a new category for organizations with increasing awareness in the use of computers and the Internet.

With the increasing complexity, pervasiveness and automation of technology systems and the maturity of cyberspace, especially in the discussion of technology transfer, there is a strong argument that we will need new methods to assess risk and build trust. Risk management is one of the most important factors influencing the process of projects, in a way that it can be widely controlled with a comprehensive and principled risk management. This process itself is made up of several smaller parts, which after aggregating, achieve the desired results (Asoucheh et al., 2008) and (Baghrenejad and Melahi, 2008).

Risk management is a process that allows managers in technology transfer projects to protect the organization's systems and data, balance economical costs and protection measures, in order to achieve the desired results (Valizadeh and Akbari, 1400). In this regard, previous studies have tried to address the issue

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

of Internet and security in the discussion of technology and information transfer as well as electronic banking, but choosing a safe technology transfer model based on project control in banking areas has received less attention.

In this study, the proposed solution includes a risk assessment mechanism that determines risks based on real threats and combines them with financial regulations in the banking sector that must be followed. Therefore, in this research, an attempt is made to provide a comprehensive model to control technology transfer projects in the field of electronic banking in banks, which can increase the probability of project success and reduce the risk of project failure. It should be noted that, most of the previous researches on the risk of technology transfer projects have been done in traditional organizations and less researches have focused on risk management in technology transfer projects in the field of electronic banking. Therefore, the main purpose of this study is to investigate the role of risk management and risk assessment in the control of technology transfer projects (based on increasing the success of projects and reducing the risk of their failure) in the field of electronic banking.

1-2- Risk management

Project risk management is one of the main topics in project management, which includes planning, organizing, monitoring and controlling all aspects of a project and includes risk identification, measurement, risk response development and risk response control. (Taleghani et al., 2016). Risk management, like other fields of management knowledge and its performance, uses specific knowledge, rules and principles to achieve predetermined goals and predictions. One of the most important things in this field of management knowledge is helping people to continuously protect themselves, their assets and their activities against the incidents that have always endangered them throughout the history of human life.

In fact, risk management is a process through which the possibility of unexpected losses is controlled and managed (Asouche et al., 2018). Identifying, understanding and preventing risk is one of the main goals of risk management, and the risk management process can be used as a guide in organizations (Baghrenejad and Malahi, 2016), (Marchewka, 2003). In management societies, the risk-taking of financial managers is less; compared with other executive managers. According to the results of a research study, financial managers are ٪۸۰less risk-taking than other executive managers (Marchewka, 2003).

Basically, risk management strategies (risk-taking strategies) are classified into the following four groups:

1. Avoidance: Avoidance strategy means not doing an activity that causes risk. Here, uncertainty must be removed from the project, that is, the occurrence of risk in the project becomes impossible, the probability of its occurrence becomes zero, or that the plan can be implemented in another way, which will ultimately achieve the same predetermined goals. As a result, the project is safe from the effects of risk, in fact, this means zero risk impact on the project. Regarding the avoidance strategy, it seems to be a solution for all risks. Avoiding risk also means losing about potential profits that can be obtained by accepting that risk (Asouche et al., 2018), (Baghrenejad and Malahi, 2018), (Marchewka, 2003)
2. Transfer: The transfer strategy means that another part accepts the risk, this is usually done by signing a contract or taking precautionary measures. Insurance is a type of risk transfer strategy using contracting. In other cases, this is done by verbal contracts that transfer the risk to other departments without paying a premium. On the other hand, the use of adjusting conditions in financial investments is an example of how companies take precautionary measures in order to manage risk from a financial perspective.
3. Risk reduction: The reduction strategy means using methods that reduce the severity of losses. Reducing the amount of risk in order to make it acceptable for the project or organization by reducing the probability of risk or the impact of risk.
4. Acceptance: Risk acceptance is an acceptable strategy for small risks, where the cost of protection against the risk may be greater than all the resulting losses in terms of time. All risks that cannot be avoided or transferred are

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

necessarily acceptable, which include very large risks that either protection against them is not possible or it may not be practical to pay for insurance.

These four types of strategies are only suitable in case of threats, otherwise no manager wants to avoid any opportunities or reduce the impact or probability of the opportunity. Therefore, new strategies are needed to respond to opportunities, and these strategies can be extracted from threat strategies.

In this section, the research method, statistical population, sample and sampling method, research tools and how to check the validity and reliability of the tools, as well as the description of data analysis methods are discussed.

1-3- Technology Transfer

Technology is defined as a combination of artifacts or physical products, product production processes or service delivery, as well as tools combined with physical products. These factors are not separated and separable, but form an integrated network that includes technology. In a more detailed and comprehensive view, technology has three dimensions: hardware (equipment), software (skills), and knowledge ware (knowledge). The hardware dimension refers to the structure, architecture and physical form, and the software dimension refers to the skills of the subject. The need to use technology and the dimension of knowledge refers to the knowledge of why and how of technology (Taleghani et al., 2016). According to the above definition, choosing technology in organizations is a new way to acquire skills and knowledge. In fact, it can be said that technology refers to the components and systems that help every organization to produce more competitive products and services and also offer modern solutions to solve problems. New technologies can create many opportunities for new businesses, and careful selection of technology can guarantee the survival of the organization (Baghrenejad and Malahi, 2016), (Salk Moghadam et al., 2015).

In fact, technology means all the knowledge, products, processes, tools, methods and systems that are used in creating goods or providing services in organizations. Technology transfer is known as one of the most suitable and fastest ways to speed up the industrial development process of countries and economic enterprises through absorbing the capabilities of others. According to the definition of the United Nations, technology transfer is the importation of certain technological factors from developed and advanced countries to developing countries in order to empower these countries, as well as the preparation and use of new tools, the production, expansion and development of existing tools (Kraimi).et al., 2022). Technology transfer can be done in the form of transferring intellectual and technological assets such as skills, knowledge, equipment and manufacturing methods from the place of production or development to another place, through conventional legal methods or defined otherwise. Strengthening the production base and establishing a powerful and dynamic economy requires the expansion and deepening of the industrialization process, in which technology plays an essential role.

1-4- The importance of technology transfer in management projects

In the discussion of technology transfer, some researchers define it as "the process of moving or transferring information, knowledge or technical skills and people through the company's technical functions (such as research and development, production and engineering) and non-technical functions (including sales) to create innovative services and products to meet business objectives and customer needs. Technology transfer is also referred to a process during which experience and technology are simultaneously transferred to the receivers so that they can benefit from them in order to improve and develop their performance. (Akbari et al., 2014), (Kraimi et al., 2022) Therefore, according to these explanations, the importance of technology transfer can be understood.

Among the most important advantages and benefits of technology transfer in organizations, we can mention "improvement of product quality" and "cost-effective innovations" (Akbari et al., 2014).

With the increasing role of technology in human life, manufacturers and product developers are always looking for new technologies with the aim of improving the quality of their products. For this purpose, companies can use their internal resources, or external ideas and innovations, to develop new

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

technologies and products (Taleghani et al., 2016), (Vali-zadeh and Akbari, 2014). It is obvious that a set of conditions, including financial capability, the amount of access to resources (human, equipment, etc.), the deadline for access to technology, and most importantly, the costs of endogenous development (internal resources) of technology compared to its transfer from an external source can be effective in choosing one of these two development strategies.

It is necessary to emphasize that in the current business environment, the demand for new products is constantly changing and it is practically impossible to meet all these expectations through the internal resources of the organization. This factor has caused businesses to step towards technological cooperation and participation in research and development activities, and technology transfer has become a key tool in improving product quality and responding to new market demand.

The main goal of technology transfer is to use existing technologies to develop new products in an economical and cost-effective way. If there is no sufficient research and development within the company (for reasons such as lack of sufficient resources or high cost of research and development), technology development will be difficult and impossible. In this situation, it is necessary to take advantage of external facilities and ideas and entrust research and development to outside the organization (active researchers in universities, laboratories). Of course, organizations need a regular and structured process to manage legal, financial issues and procedures related to the use of foreign innovations. Otherwise, the time and monetary cost of foreign innovations usually exceeds the expected value (Akbari et al., 2014), (Walizadeh and Akbari, 2014). However, most manufacturers and organizations lack a systematic technology transfer process, which prevents them from reaching the organization's predetermined goals.

Therefore, according to the above explanations, the results of previous researches indicate that the knowledge, organizational, technological, communication factors, training of human resources and knowledge of the physical environment are the most important components for the successful transfer of technology in management projects (Shakeri. and Shafia., 2010)

The importance of risk management in technology transfer projects

Today, technology is considered as one of the most basic bases for the development and economic growth of countries; So that the remarkable progress of developed and industrialized countries depends on emerging technologies and innovations in these societies. The key to the development of technology in organizations is in the hands of the organization's management, and basically every organization generally needs the knowledge, ability and commitment of managers to achieve organizational goals. In general, organization and management in organizations is directly influenced by the type of technology used in the organization and the culture and ability of its employees. The use of new technology will necessarily be accompanied by changes in the organization and management in harmony with it.

The stages of risk management of technology transfer projects according to Figure 1 include seven stages, which are: risk planning, risk identification, risk estimation, risk management strategy, risk control and monitoring, risk response and evaluation Risk.

Figure١ : Seven stages of risk management of IT transfer projects

threats and deal with risks that have been prioritized over other risks in the risk assessment stage. At this stage of risk management planning, maximum attention

According to the seven stages of risk management, the first step for risk management is risk planning, which includes the process of developing plans to reduce

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

plans. For this reason, at first glance, it is necessary to make sure that the considered actions are consistent with the schedule determined to deal with the risk. Also, at this stage, it is necessary to monitor the amount of risk reduction based on initial expectations.

Risk assessment and measurement is a process that is obtained from comparing the estimated risk with the organization's risk criteria and helps to determine the importance of the mentioned risk for the organization. The organization can determine these criteria numerically, linearly or in a matrix based on risk assessment methodology; this is done using inputs such as legal and regulatory requirements, management decisions, available resources, requirements and expectations of stakeholders in the field of information security, etc. Based on this, it is possible to determine which risks are acceptable and which are unacceptable from the organization's point of view (Asouche et al., 2018), (Mousykhani et al., 2019).

should be paid to risks that are more important and more effective. The next step is identifying the risk. In this step it is necessary to estimate the type of risk, whether the risk is of a profitable type or a dangerous risk. In the next step, the systematic use of information to identify and estimate risk is considered.

In fact, all activities related to the identification, classification and valuation of information assets as well as the identification of risk scenarios, which are usually the result of the investigation of vulnerabilities and threats, can be included in this phase. In the next step, the purpose of risk management strategy is to deal with different risks. At this stage, the strategy and how to deal with the risk should be determined. In total, there are four types of strategies for dealing with risk, which are: accepting or rejecting risk, avoiding risk completely, reducing the probability of occurrence or effect of risk, and transferring risk. In the stage of risk control and monitoring, the most focus is placed on the control and follow-up of risk management

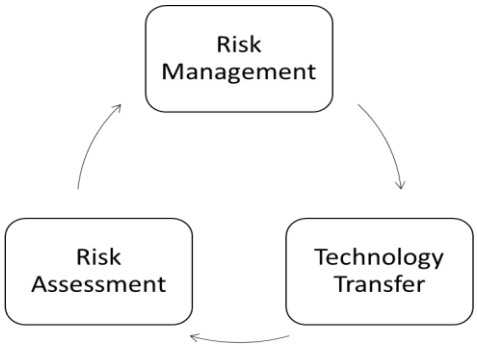

Figure۲ : The role of risk assessment and management in controlling technology transfer projects

success or failure of organizational projects. Figure 2 shows the relationships of the variables in this research.

1-5- Research method

In terms of its practical purpose and in terms of the method of collecting descriptive-analytical information, the present research is a case study of the multi-case study type. In this part, in order to collect information in the field

Risk management and risk assessment in technology transfer projects and specifically in the field of electronic banking in this research is one of the most important activities in security design in terms of success and failure of management projects and it has a cycle that is necessary for survival. A system must be repeated regularly throughout the life of the organization. Therefore, checking the risks of projects and evaluating them in the organization guarantees and confirms the

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

of criteria and influencing factors (risk assessment and risk management) on the failure of technology transfer projects.

1-6- Questionnaire analysis

By studying and investigating factors affecting risk management and assessment in the field of technology transfer in electronic banking, this research examines the success and failure factors of similar projects and finally deals with the prioritization of risk assessment factors. Therefore, in the following, the factors or risks mentioned, which, according to the respondents to the questionnaires, played an essential role in the failure of technology transfer projects, these criteria along with their percentage of importance are as described in Table No. 1.

of theoretical foundations and research literature, library sources, articles, required books and also the internet were used and in order to collect data and information for analysis and the risk assessment questionnaire was used for analysis. The standard project risk assessment questionnaire has 20 items and the purpose of this questionnaire is to measure project risk. SPSS software was used for data analysis in this research, and Cronbach's alpha was 0.75 for the risk questionnaire.

In this survey, 18 questionnaires have been provided for specialists, managers and experts in the field of risk management, electronic banking and managers of technology transfer projects. Therefore, the level of analysis in this research is the organization. According to their backgrounds and experiences, the respondents have evaluated the importance and relevance

Table١ : Factors affecting the failure of technology transfer projects

Row	Effective factors in the failure of technology transfer projects	Importance percentage
1	Increase in the estimated costs of the project	75%
2	Inappropriate response to the risks identified in the project	80%
3	Dissatisfaction of customers due to the decrease in the quality of service delivery as a result of the organization's focus on technology transfer projects	70%
4	Lack of transparency in defining project goals	79%
5	Lack of separation and understanding of the duties of the project team	89%
6	Failure to use new methods and technologies	92%
7	Inadequate skills and knowledge of team members	96%
8	The impact of other parts of the organization on the failure of the technology transfer project	80%
9	The effect of unsuccessful experiences of similar projects on the failure of a new project	73%
10	Incorrect estimation of project elements (time, budget and resource allocation...)	87%
11	Incompatibility of technology with the needs of the banking industry	87%
12	Incompatibility of the previous systems of the organization with the new technology	83%

As can be seen in table number ١, "insufficient skills and knowledge of team members", " Failure to use the methods of new technologies " and " Lack of separation and understanding of the duties of the project team " by assigning the highest percentage of importance to themselves, are three key factors in The failure of technology transfer projects in the banking

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

industry and from the point of view of the respondents have been raised. On the other hand, "customers' dissatisfaction due to the decrease in the quality of service delivery as a result of the organization's focus on technology transfer projects" is the least important in the failure of technology transfer projects in the banking industry and from the respondents' point of view.

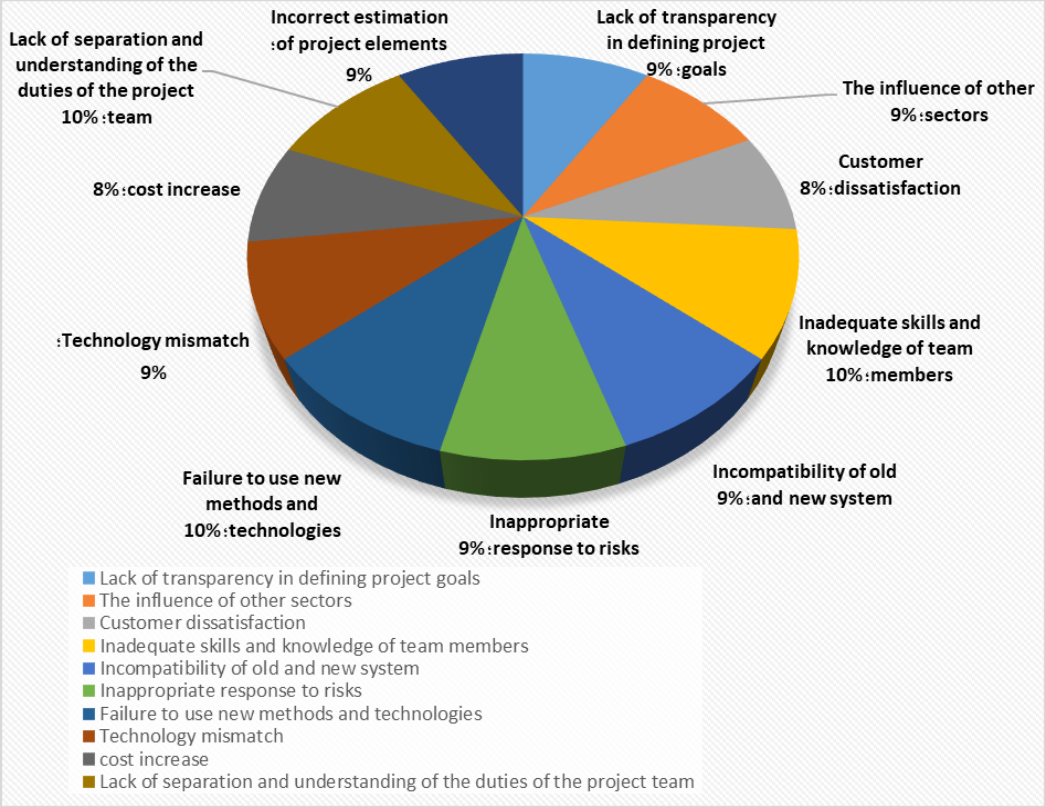

Figure۳ : The percentage of importance of factors influencing the failure of technology transfer projects

Among the factors that are important in organizing and how to communicate and make decisions in an organization is management and its impact on organizational projects. In fact, management is an element that its ability improvement is considered necessary for any technological change and development. Therefore, it can be said that in developing countries, the main issue in the development of technology is the management method. For this reason, 8 out of 20 questions of this questionnaire examine the impact of management (project leadership) on the failure and success of technology transfer projects. The obtained results indicate that basically the development of technology in the organization depends on the style of management and leadership in creating environmental conditions, allocation of resources and facilities available in the organization to the project. Therefore, management has a significant impact on the optimal use of resources.

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

Table٢ : Management impact criteria on failure or success of technology transfer projects

Row	Measures of management's impact on the success or failure of IT transfer technology projects	Importance percentage
1	Lack of project leadership commitment	90%
2	Weakness in determining the scope of the project (management and leadership weakness)	80%
3	Providing non-expert opinions of project decision makers	93%
4	Cumbersome requirements of overhead institutions	78%
5	Inappropriate interactions between team members	84%
6	Inability to assess project risks by the project team	90%
7	Project failure due to problems related to security and information protection	62%
8	Political and social factors	76%

As it can be seen in Table No. ٢and Figure No. ٤, "Providing non-expert opinions of project decision makers" with the highest percentage of importance assigned to themselves is one of the factors in the field of leadership and management in the failure and success of technology transfer projects. It has been raised in the banking industry and from the point of view of the respondents.

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

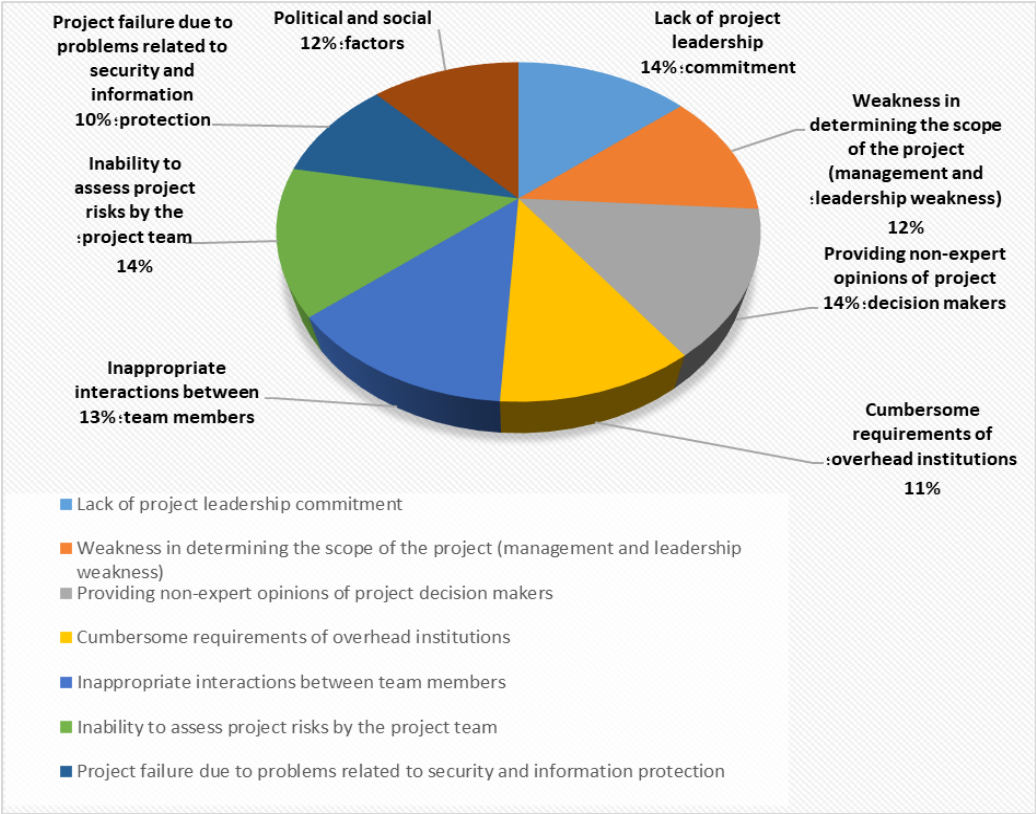

Figure۴ : The percentage of importance of management criteria on the failure or success of information technology transfer technology projects

1-7- Summary and conclusion

Risk management and risk assessment in technology transfer projects in organizations is one of the important activities in designing security in organization projects. Therefore, examining project risks and evaluating them in the organization has a significant impact on the success or failure of organizational projects. These days, in the competitive environment of organizations and also due to the importance of electronic commerce and banking on knowledge and technology transfer, the need to increase the probability of success and decrease the probability of failure of such projects has been widely considered. Therefore, it can be said that study and research in this field can lead to a significant increase in productivity and new services, as well as improving the competitive environment in the organization.

In the field of electronic banking, the success of technology transfer projects is evaluated in such a way that the project be able to reach the desired "goal" with the expected cost and time. In the field of electronic banking, the failure of technology transfer projects means that the bank has incurred more costs, or completed the project in a longer time, or has not achieved the specific goal of the desired project, such as reducing costs. As can be seen, several factors have been identified in the success and failure of technology transfer projects in order to assess and manage risk. Since technology transfer projects account for a large part of management projects, risk analysis of these types of projects is very important for their successful implementation.

Since technology transfer projects have a high probability of failure, for the successful completion of these projects, among the most important and main management concerns in today's complex and competitive organizational environment are risk identification in the first place and its management and evaluation in the next stages. The purpose of risk management is to increase

International Journal of Innovative Research In Humanities
Vol.4, NO.2 , P:94 - 103
Received: 08 December 2023
Accepted: 11 August 2024

the probability of success and the impact of positive events and reduce the probability of failure and the impact of negative events in projects (and Shakeri Shaifa, ۲۰۱۰). Scope management, quality and human resources are among the solutions that are applied against various risks. Risk management in technology transfer projects includes planning, identifying, analyzing, responding to risk, controlling and monitoring them. Another important risk in some technology transfer projects is managing customer expectations, which is evaluated and prioritized with the help of several other key risks (including the allocation of time and sufficient budget) in technology transfer.

Risk management is a process that allows the managers of the organization to protect the systems and data of the organization, balance the economic and practical costs of protection measures and achieve the desired achievements in the project. Managers of organizations allocate a lot of money to the implementation and protection of technology transfer projects. Therefore, "providing non-expert opinions of project decision-makers", "lack of leadership commitment" and "inability to assess project risks by the project team" are among the main and fundamental issues that lead managers to create a successful management process.

Risk management process includes prioritization and risk assessment. Risk assessment includes the process of implementing control proposals to reduce risk and its desired effects. It is clear that eliminating all risks in organizational projects is usually impossible and impractical, therefore it is important that specialists, experts and managers of organizations rely on science, knowledge and choose the most suitable controls to reduce risk in projects based on their experiences as well as the application of minimum cost and profit.

References

آسوشه عباس، دیواندری علی، کرمی امیر، یزدانی حمیدرضا. شناسایی عوامل حیاتی موفقیت در مدیریت ریسک برون سپاری سیستم های اطلاعاتی در بانکهای تجاری ایران. نشریه مدیریت فناوری اطلاعات۱۳۸۸ ؛ (۳).

اکبری مرتضی، مهرابی فیروزآبادی لیلا، مبین دهکردی علی. ارزیابی و اولویت بندی مولفه های موثر بر انتقال موفق نانو فناوری. فصلنامه مدیریت نوآوری ۱۳۹۴؛ (۴).

باقری نژاد جعفر، ملاحی محمدرضا. جایگاه مدیریت پروژه در فرآیند انتقال فناوری. فصلنامه مطالعات مدیریت ۱۳۸۶ (۵۵).

طالقانی محمد، پوران منجیلی هاجر، ملک اخلاق اسماعیل، مهدی زاده مهران. تعیین مؤثرترین عامل اثربخشی انتقال فناوری در توسعه میادین نفتی ایران با استفاده از مدل اثربخشی مشروط انتقال فناوری. فصلنامه توسعه فناوری صنعتی ۱۳۹۶ ؛ (۲۹).

سالک مقدم علیرضا، محمدیان محمود، ناصحی فر وحید، تقوی فرد محمدتقی. ارایه الگویی از عوامل مؤثر بر بانکداری شرکتی دیجیتال در بانکهای تجاری کشور با استفاده از رویکرد کیفی ۱۴۰۰؛ (۱۵).

موسی خانی محمد، محمدی شهریار، مدیری آثاری ماندانا. تعیین عوامل کلیدی موفقیت در مدیریت ریسک پروژههای فناوری اطلاعات در سازمانهای مجازی. نشریه مدیریت فناوری اطلاعات ۱۳۹۰؛ (۳).

ولی زاده مجتبی، اکبری زهرا. انتقال تکنولوژی و راهکارهای موفقیت آن در کشورهای در حال توسعه. چهارمین کنفرانس ملی مدیریت فناوری ایران ۱۴۰۰.

Bozeman, B.; Rimes, H.; Youtie, J.; “The evolving state- of- art in technology transfer research: Revisiting the contingent effectiveness model”, Research Policy. 44, 2015.

Chen, T. Y. Knowledge sharing in virtual enterprises via an ontologybased access control approach. Department of Electronic Commerce Management 32; 2007.

Marchewka, J. Information Technology Project Management, John Wiley & Sons; 2003.

Kraimi, S. S.; Sohrabi. T; Tork, A. B. Providing a secure technology transfer model to assess and manage financial and banking risks based on internet of things. 13; 2022.

Shafia, A, M.; Shakeri, A. Introducing a Project Management Framework for Transfer of Technologies. International Journal of Industrial Engineering & Production Research 2010.