

**THE ROLE OF ABSORPTIVE CAPACITY, COMMUNICATION AND  
TRUST ON INTENTION TO USE ERP SYSTEMS:**

**STUDY ON IRANIAN ERP USERS**

By

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تقدیم به پدر و مادر عزیزم که همراه همیشگی ام بوده‌اند...

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## **Abstrak**

Sistem Perancangan Sumber Perusahaan (Enterprise Resource Planning, ERP) telah menjadi begitu populer di seluruh dunia, maka kadar kegagalan pelaksanaannya yang tinggi memerlukan agar para pengguna memahami proses penggunaan serta penerimaannya dengan sebaiknya. Kajian ini menyelidik kesan daripada keupayaan penyerapan pengguna, komunikasi dan amanah terhadap kepercayaan utama dalam Model Penerimaan Teknologi (Technology Acceptance Model, TAM) (Davis, 1989), yang ditanggap mudah digunakan dan amat berguna. Seterusnya, hubungan di antara kedua-dua tanggapan ini dan tujuan penggunaan sistem ERP dalam kalangan para pengguna ERP Iran dibangunkan. Penyelidikan ini merupakan suatu kajian korelasi yang datanya dikumpul hasil daripada tinjauan lapangan. Unit analisis adalah pengguna ERP di organisasi yang menggunakan sistem ERP di Iran. Soal selidik dihantar ke organisasi yang terpilih dan sebanyak 184 soal selidik telah dianalisis. Keupayaan penyerapan terdiri daripada tiga komponen utama, iaitu, pemahaman, asimilasi, dan aplikasi pengetahuan ERP. Ketiga-tiga komponen ini ditakrifkan dalam dua dimensi yang dipercayai terhadap keupayaan sistem ERP dan amanah kepada vendor ERP. Walau bagaimanapun, keputusan analisis faktor menunjukkan bahawa amanah seharusnya dianggap sebagai satu konstruk. Kajian ini merumuskan bahawa semua pembolehubah luaran yang digunakan dalam kajian ini merupakan faktor penting yang dapat digunakan bagi meramal perlakuan pengguna semasa melaksanakan ERP. Dapatan kajian menunjukkan bahawa amanah bersama dengan tanggapan yang ia mudah digunakan dan kebergunaan mempunyai kaitan positif yang signifikan dengan penggunaan ERP. Tambahan pula, keupayaan penerimaan dan komunikasi mempunyai kesan langsung terhadap tanggapan yang

ia mudah digunakan. Tanggapan ini juga menjadi pencilah yang mengaitkan hubungan di antara asimilasi dengan tujuan penggunaan ERP. Namun demikian, ia bukannya pencilah yang mengaitkan hubungan di antara pemahaman ERP dan tujuan penggunaan ERP, yang hanya merupakan hipotesis yang tidak disokong dalam kajian ini. Di samping itu, amanah juga mempunyai kesan positif terhadap tanggapan yang ia amat berguna, serta mempunyai kesan tidak langsung terhadap tujuan penggunaan ERP. Komunikasi dan tanggapan yang ia mudah digunakan, mempunyai kesan langsung terhadap amanah. Kedua-dua tanggapan menjadi pencilah dalam hubungan di antara komunikasi dan tujuan penggunaan ERP. Beberapa implikasi berkaitan teori dan penyelidikan dikemukakan.

## **Abstract**

While Enterprise Resource Planning (ERP) systems are getting more popular all over the world, the high failure rate of implementation calls for better understanding of the process of its adoption and acceptance by users. This study examines the effect of absorptive capacity of users, communication and trust on key beliefs in Technology Acceptance Model (TAM) (Davis, 1989) which are perceived ease of use and perceived usefulness and eventually the relationship between these two constructs and intention to use ERP systems among Iranian ERP users. This research is a correlation study where a field survey was employed for data collection. The unit of analysis is Iranian individuals who are ERP user in Iranian organizations. The questionnaires were sent to selected organizations and a total of 184 questionnaires were used for the analysis. In this study, absorptive capacity consists of three main components, namely, understanding, assimilating, and applying ERP knowledge and trust is defined in two dimensions which are trust to ERP systems' capabilities and trust to ERP vendors. However, the results of factor analysis indicated that trust should be considered as one construct. This study concluded that all external variables used in this research are important factors to predict users' behavior when implementing ERP. Findings indicate that trust together with perceived ease of use and perceived usefulness have positive significant relationship with intention to use ERP. Furthermore, absorptive capacity and communication have direct effect on perceived ease of use. Perceived ease of use also mediates the relationship between absorptive capacities for assimilating and applying with intention to use ERP but it does not mediate the relationship between absorptive capacity for understanding ERP and intention to use which is the only hypothesis that is not supported in this study. Moreover,

trust also has positive effect on perceived usefulness and indirect effect on intention through mediating role of perceived usefulness. Communication and perceived ease of use have direct effect on trust. Both perceived usefulness and perceived ease of use fully mediate the relationship between communication and intention to user ERP. Some implications for theory and research are forwarded.

## CHAPTER 1: INTRODUCTION

### 1.1 Introduction

Competitive business environment and globalization jeopardize organizations' existence and force them to seek new ways to sustain in the market. Making effective decisions is not possible without effective information systems which enable managers to have right information in the right time (Zabjek, Kovacic, & Stemberger, 2009). Data acquired from external and internal operational environments, lessens threats while enabling firms adapt proper strategies based on real situation (Longinidis & Gotzamani, 2009).

Enterprise resource planning (ERP) systems are the most powerful enterprise information systems as they are organizational wide (Amoako-Gyampah & Salam, 2004; Zabjek et al., 2009) and useful tools to build strong capabilities, improve performance and achieve competitive advantages (Al-Mashari & Al-Mudimigh, 2003). They integrate operations in different departments or enhance the existing integration which leads to cost and working capital reduction, inventory decline and business processes improvement via transferring best business practices (Zabjek et al., 2009). Because of these reasons and many other benefits of ERP systems, their implementation is growing rapidly and ERP is perceived as a strategic resource by firms (Bueno & Salmeron, 2008).

Implementing a new technology in an organization always comes with difficulty and a lot of endeavor for organizations as well as deployers' team. Implementing ERP systems is not an exception as they are complex software and challenging and lengthy projects to fully implement. ERP affects the whole organization and employees' routine tasks. They have to unlearn what they knew and

learn new methods. In addition, the implementation puts pressure on organizational relationships and structure by increasing stress in firms (Lowe & Locke, 2008).

ERP implementation projects should be considered as a process of organizational change. Sometimes these unwanted changes lead to negative impacts on end-users toward the system (Bueno & Salmeron, 2008). Aladwani (2001) noted that during ERP implementation, top management encounters an unwanted attitude from potential users who resist the implementation process. That is the integrative nature of ERP systems which intensifies difficulties of implementation (Youngberg, Olsen, & Hauser, 2009) in comparison with previous traditional and stand-alone packages (Wang & Chen, 2006).

Despite many benefits that ERP systems can bring to firms, many of them may fail to be accepted by organizations and users (Aladwani, 2001). Therefore, ERP implementation and its success, strongly depends on end users' behavioral intention to use (Bueno & Salmeron, 2008). Previous researches report that firms spend between 1.5 to 6.0 percent of their annual revenues on ERP implementation (Ke & Wei, 2008) in addition to valuable time and resources involved.

ERP is not only about IT (Information Technology) or software (Ling, 2008), although Software quality, its technical aspects and compatibility with firms' requirements is crucial for successful implementation. It is more about how business is performed (Ling, 2008) and how it delivers meaningful business values (2010 ERP Report, 2010). Achieving desired goals and outcomes of implementation depends on organizational aspects and techniques. As reported by Panorama Consultant Group (2010), ERP success is largely depend on the strategy and actions of the project team implementing the software both from inside and outside of the organization. Furthermore, high cost of ERP systems, in addition to the high failure rate of ERP

projects, increases the importance of effective usage (Amoako-Gyampah & Salam, 2007), successful implementation and careful monitoring during implementation. In this study, researcher focuses on end users' acceptance and intention to use ERP systems and its determinants.

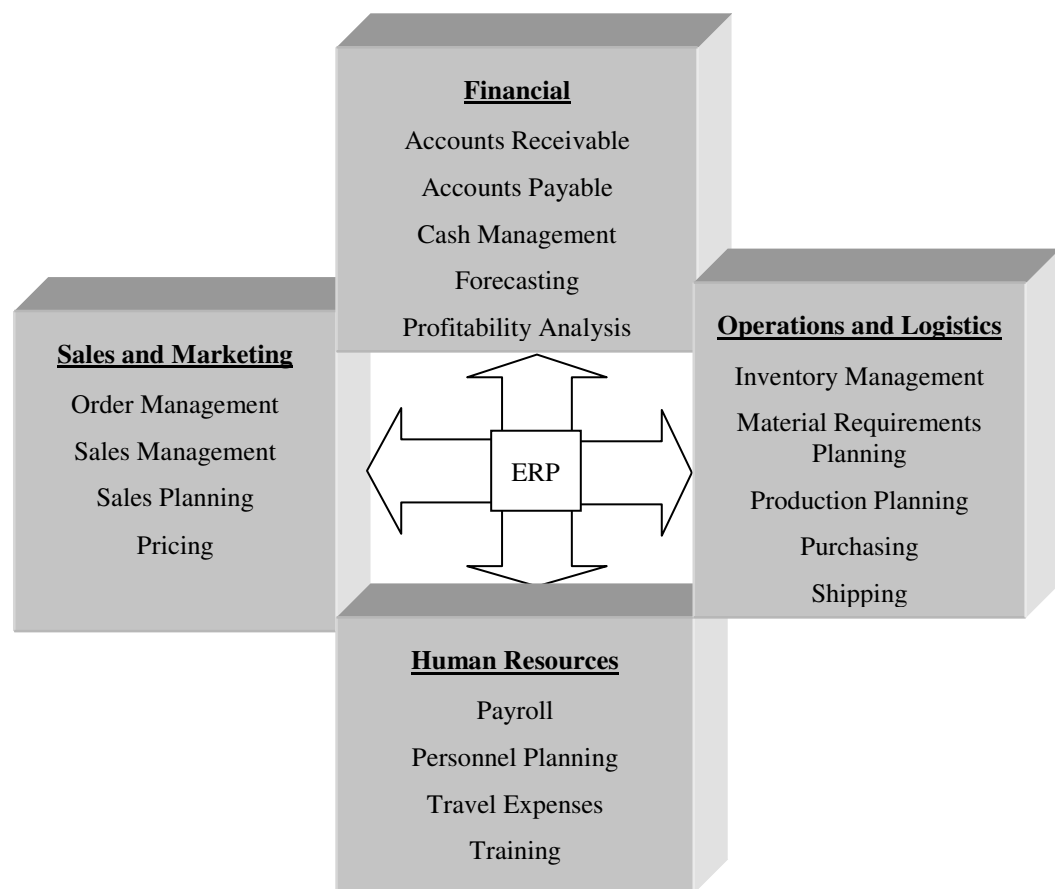
## **1.2 What is ERP?**

ERP is configurable (Ifinedo, 2007) and multidimensional (Al-Mashari, 2001) packaged business software system (Ramayah & Lo, 2007) which integrates information and processes (Al-Mashari, 2001; Moon, 2007; Ramayah & Lo, 2007; Amoako-Gyampah & Salam, 2007; Ifinedo, 2007; Ke & Wei, 2008; Youngberg et al., 2009; Zabjek et al., 2009) among different functional departments. It provides support for core organizational activities such as sales and marketing, human resource, accounting and finance, distribution as well as manufacturing (Aladwani, 2001). ERP system is an industry-driven concept (Moon, 2007) and has been implemented in different industries since 1990s.

ERP helps organizations to respond faster to customers, increase productivity, reduce cycle times (Amoako-Gyampah & Salam, 2007) and costs (Aladwani, 2001), optimize their business processes (Al-Mashari, 2001; Moon, 2007), manage resources (e.g. materials, human resources, finance and the like) efficiently and effectively (Ramayah & Lo, 2007) and share knowledge across departments to achieve enterprises' competitive goals (Youngberg et al., 2009). It aids organizations to concentrate on core competencies while transfer best practices (Al-Mashari, 2001) and unifies relative organization tools and data by means of a database (Moon, 2007; Bueno & Salmeron, 2008).



Due to its complexity, the outcome of ERP implementation is a dynamic concept while it depends on the level of success gained in implementation. It varies from operation metrics (e.g., labor costs, orders shipped without errors) and information capabilities (e.g., information quality, user satisfaction with information) to increase in profit in considerable amount (e.g., ROI) (Ke & Wei, 2008). Figure 1-1 depicts some of ERP's subsystems.



*Figure 1-1: Overview of ERP system (Haag & Cummings, 2008)*

### **1.3 Background of Study**

#### **1.3.1 The Evolution of ERP Systems**

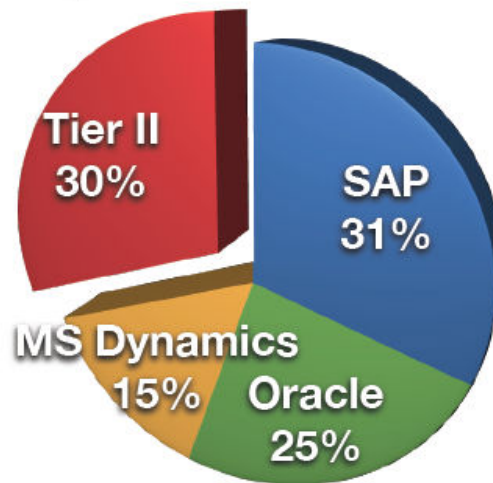
The idea and evolution of ERP systems came from rising demand for re-engineering business processes, along with the introduction of client/server technologies (Al-Mashari & Al-Mudimigh, 2003). ERP systems first emerged in the 1970s through a system called material requirements planning (MRP) to aid businesses for internal production planning, calculating time requirements components, procurement and material planning. MRP II advanced MRP by extending to accounting and financial management systems. MRPs had some deficiencies such as not supporting multiple plants, multiple suppliers and multiple currencies, and did not include functions such as inventory control and order processing (Al-Mashari & Al-Mudimigh, 2003). Therefore, ERP systems developed as a next generation of MRPs (Haag & Cummings, 2008; Ngai, Law, & Wat, 2008; Nikookar, Safavi, Hakim, & Homayoun, 2009).

Specific features of ERP such as a common-database, single entry-single source (Ling, 2008), companywide and integrated which distinguished it from previous similar products appeared in 1990s. Nowadays, ERP II which is more expanded than ERP has begun to develop into its neighbor's markets, such as CRM (Customer Relationship Management), SCM (Supply Chain Management), data warehousing and business intelligence and e-business (Ngai et al., 2008; Haag & Cummings, 2008). Along with rapid change in business, the future expectancy from ERP systems is to improve in the area of business intelligence and decision making modules (Haag & Cummings, 2008).

### **1.3.2 ERP in the World**

Companies gradually adopt and employ ERP systems as competitive weapon (Zabjek et al., 2009). ERP market is reported to be in the top of IT spending list (Haag & Cummings, 2008). In Western Europe, more than half of the software licenses and maintenance revenues come from ERP software (Zabjek et al., 2009) with growing rate two times more than the overall application software market. More than 60 percent of Fortune 1000 companies have completely implemented ERP systems and the rest are in the process (Haag & Cummings, 2008).

According to Zabjek et al. (2009), ERP market continues to grow at a compounded annual growth rate of 11 percent by 2011. ERP providers target all companies in the world in different sizes (Haag & Cummings, 2008). Therefore, there is a guaranty that ERP continues to be the largest, fastest-growing, and most influential player in the application software industry in the next decade (Zabjek et al., 2009). SAP, Oracle eBusiness Suite, Oracle JD Edwards, Oracle Peoplesoft and Microsoft Dynamics are among the largest and most successful ERP vendors in the world which they are categorized as Tier I vendors in Panorama Group Consultants' Report. Epicor, Sage, Infor, IFS, QAD, Lawson and CDC Software are categorized in Tier II vendors. Some other vendors also categorized in Tier III vendors (2010 ERP Report, 2010). Figure 1-2 presents major vendors' market share in 2009. As it is shown in the figure, SAP was the market leader in 2009.



*Figure 1-2: Major vendors' market share in 2009 (2010 ERP Report, 2010)*

As reported by Panorama Group Consultants' Report (2010), 35.5 percent of projects took longer than expected, 43.0 percent was as expected and 21.5 percent was shorter than expected. Average duration on project implementation reported was 13.2 months for Tier I, 11.1 months for Tier II vendors and 13.1 months for Tier III vendors. For other vendors it was 10.3. Finally, the overall average is 12.3 months. Furthermore, it is reported that 40 percent of implementation was on budget, 8.6 percent was finished under budget, while 51.4 percent went over budget. It is one of the most reported complains for ERP implementation projects.

### **1.3.3 ERP in Iran**

Iranian companies, it is just like other companies in the World, where they get acquainted with ERP, training the organizations and implement it. Some Iranian software companies started to produce ERP since 10 years ago and some others started to join with foreign vendors as a partnership or licensing agreements. There

are many international ERP vendors in Iranian markets such as SAP, Oracle, SAGE, IFS and Epicor-Escala and many more (Nikookar et al., 2009). Due to sanction against Iran, Iranian companies are not allowed to directly buy the license from some original producers. However, some of international vendors have their exclusive distributor in Iran (Nikookar et al., 2009).

There are also many Iranian ERP producers in Iran with a lot of customers all over the nation. Namely like: Sabz Dadeh Afzar (Green dataware), Madaar Gostaresh, Raay Dana, Douran and Pars Royal System (Members of Iran ERP Association, 2010). ERP vendors are getting more experienced in implementation in recent years while absorbing best practices through frequent implementation in industries.

Although Iranian ERP producers are not as experienced as foreign producers, but most of Iranian organizations buy ERP from Iranian producers as foreign ERP vendors were not very successful in recent years (Asemi, 2009). In addition, due to increasing sanction against Iran, there is a fear among Iranian organizations that if they buy ERP from foreign companies, there is a high probability that they might leave the project uncompleted as it happened in some cases.

On the other hand, most of Iranian firms are small and medium sized and they are not strong enough to afford huge costs of foreign ERPs. Therefore, in this research, the focus is on Iranian ERP producers and the behavior of individuals is examined in organizations that implemented Iranian ERP.

#### **1.4 Problem Statement**

While organizations are spending considerable amount of money on implementing ERP systems, many researchers are discussing about the low rate of usage among potential users (Calisir & Calisir, 2004). Without technology acceptance, users use system as minimum as they need to enter/store necessary data for their daily tasks but not to explore its full features to achieve desired goals which lead to competitive advantage (Youngberg et al., 2009).

ERP adoption is around 80 percent in Fortune 500 companies, while failure rate lies between 60 to 90 percent (Kwahk & Lee, 2008; Zabjek et al., 2009). Moreover, 44 percent of Fortune 1000 companies who had implemented ERP, spent at least four times more than license fee in implementation (Nikookar et al., 2009). Youngberg et al. (2009) asserted that ERP failure rates exceeded 50 percent. On the other hand, Ke and Wei (2008) asserted that only 10 to 15 percent of surveyed firms in their study reached their desired performance and the rest of them experienced far from their initial goals and results. Therefore, organizations should consider ERP implementation as one of the riskiest investment (Zabjek et al., 2009), with potential outstanding outcomes and benefits.

As ERP systems affect many aspects of a company's internal and external operations, their successful implementation and effective usage are critical to organization's performance (Boonstra, 2006). The high failure in the adoption of ERP and low success rate, calls for a better understanding of the process by researchers to theorize the significant determinants of success in implementation practices (Ngai et al., 2008; Ke & Wei, 2008) to indirectly reduce failure rate of these complex projects (Zabjek et al., 2009).

To get a great result in ERP implementation, ERP systems should transfer the knowledge embedded in them to the recipient organization. As ERP systems are very complicated and to absorb their embedded knowledge is challenging, yet the quality of knowledge transfer is also crucial. Therefore, both source and the recipient companies should have the capabilities needed. According to Xu and Ma (2008), source' motivation, trust, and communication ability and recipient' absorptive capacity, motivation, and communication ability are among the important factors in the knowledge transfer process.

Park et al. (2007) asserted that the individual users' absorptive capacity impact their performance of ERP usage, as if they fail to understand the concept and functions of the system, their usage gives minimum benefits and outcomes to the organization. According to Asemi (2009), technology is not sufficient enough to solve the problems of the companies if the company does not acquire the knowledge which is needed to implement the technology. He mentioned this issue as what is happening in Iran in recent years where they misuse the technology without acquiring knowledge needed to use the technology.

The researcher conducted interview with ERP experts (facts about ERP environment in Iran in this section is based on their opinion). Based on them, ERP is almost new in Iran and most of Iranian users do not know much about it before usage and they do not have prior experience using ERP. Some others, especially top and middle managers, have very unreal expectations about ERP outcomes which lead to never ended projects and they never consider it successful as their expectations never fulfill. In addition, Iranians are also reluctant to share their knowledge which makes knowledge transfer process slower and more difficult.

Moreover, software is an intangible asset and one of the most challenging aspects of selling software is that sellers need to convince buyers of software benefits and outcomes. Therefore the customer can have a clear understanding about the software that their buying yet a peace of mind on the product. Therefore, trust is also one of the most crucial factors. In addition, high differences in ERP prices (especially in a bid form sales) causes distrust from the customers to vendors. In addition, almost all ERP producers in Iran are private companies and they are not supported by government. As ERP projects are lengthy and needs long-term relationship between vendor and customer, this is another reason which causes customers do not trust vendors as they are not financially strong companies and customers expect vendor's sustainability in terms of financial to support the project. Furthermore, high failure and low satisfaction rate of ERP users and organizations implemented because of the low quality of some of products in addition to lack of expertise in this area, results in lack of trust to ERP vendors and their products in Iran.

In addition, corruption and bribery is a common behavior is Iranian firms. Therefore, some users may doubt whether the persons in charge of purchasing the software selected the best vendor or not. Therefore, this perception also leads to lack of trust to vendor as well as the software provided. Furthermore, trust building process takes considerable time during ERP implementation, while management life cycle is very short in Iran. This is another reason that whenever management is changed, it means that trust building process should start again. This problem even causes to longer pay back periods to Iranian ERP vendors which weakens their firm's power as well.



Furthermore, due to lack of supervision by government or any other organization on ERP producers' in Iran, there are lots of ERP Vendors, where actually, they do not meet the criteria to be the ERP Vendor and customers who are not aware with this situation can easily engaged with them, and at the end it turns into wrong vendor selection which may lead to failure in the project. This problem also causes trust to be lost in the ERP market in Iran (Asemi, 2009). Lack of trust as one of the most important factors which is needed to enhance in Iran ERP market is mentioned by some others also (Abdolalipour, 2009).

Al-Mashari and Zairi (2000) related ERP projects' failure to lack of communication. Iran is a country where there is a high power distance, the communication between higher level managers and lower level employees is very limited especially in governmental organizations. Therefore, in majority of the cases employees which happen to be the ERP users will get the confirmation of the project once they have bought. Even after implementation, communication between vendor and customer is limited to firms' managers and the representatives of each department during implementation process.

All factors mentioned above affect individuals' perception and consequently their intention to use system to perform their tasks. In addition, ERP systems are highly integrated and when they are implemented in organizations, all users become like a chain. As if one of them does not perform his or her job in the system (e.g. feeding data) properly or on-time, he or she will impede the whole process and give a great impact toward the whole organization. There is what so called words of mouth phenomenon, when it comes to intention to use software. It means that, whenever, one of the employees inside the firm is satisfied with the system or vice versa, he or she is likely to convince others to use the software better than external promoters.

Therefore, this study focuses on the role of absorptive capacity, trust and communication on intention to use ERP systems in Iran as they are among most important failure reasons of other countries as well and determinants of usage behavior as mentioned in the literature.

### **1.5 Research Objectives**

Information systems research dominated by the topic of information technology usage/operation is focused on technology transfer, which includes innovation, acceptance, adoption, and diffusion (Youngberg et al., 2009). ERP complexity usually causes an extensive refusal within the organization and its users (Bueno & Salmeron, 2008). To reduce the risk of rejection or to encourage acceptance (Bueno & Salmeron, 2008), this study attempts to identify the factors that influence the intention to use ERP systems by end users in different functional areas in Iranian organizations. Researcher used Technology Acceptance Model (TAM) to understand end users' intention to use ERP systems. Therefore, objective of this study is as followed:

- To study the role of communication, trust and absorptive capacity on perceived ease of use (PEU) and perceived usefulness (PU) and eventually on intention to use ERP systems

The focus of this study is on Iranian ERP users. There is few or even no study in this area in Iran that enhances the motivation to do this research there.

### **1.6 Research Questions**

To achieve the objectives of this study, the following questions are answered:

- Do PU, PEU and trust have a positive effect on users' intentions to use ERP systems?
- Does PU **mediate** the impact of PEU, communication and trust on intention to use ERP systems?
- Does absorptive capacity of users for understanding, assimilating and applying ERP and communication have a positive effect on PEU?
- Do communication and PEU have a positive effect on trust?
- Do PEU, communication and trust have a positive effect on PU?
- Does PEU **mediate** the effect of absorptive capacity for understanding, absorptive capacity for assimilating, absorptive capacity for applying and communication on intention to use?

## 1.7 Significance of the Study

Beside technical factors, organizational and social factors are the most important reasons of ERP projects failure (Pan, Hackney, & Pan, 2008). In some cases, it is reported that failure of ERP deployment projects even lead to bankruptcy (Boonstra, 2006; Zabjek et al., 2009). User acceptance of information technology, especially complex technology such as an ERP system, is an extremely important phenomenon that is worthy of study by information systems researchers (Amoako-Gyampah & Salam, 2007). Therefore, this study examines factors in users' perspective that lead to the acceptance and use of the technology.

Integration of absorptive capacity in TAM model in complex IT systems like ERP has not been studied before. In addition, ERPs' popularities in Iran, especially in recent years, and lack of literature about it, triggered the researcher to conduct this study among Iranian individuals. ERP is a new concept in Iran, although as a

managerial tool, it is essential for Iranian firms to implement this to avoid from low performance and productivity. The cost of Iranian ERP systems is much lower than other countries', but failure percentage is almost the same and it is considered a crucial issue.

## **1.8 Contribution to Sustainability**

ERP implementation contributes to sustainability through environmental, economical and technological impact on organization. ERP brings innovation capabilities to the firm. Supply and value chain of the firms also is affected and would be further improved. ERP also enables firms to perform their international activities more effectively. Each of these aspects is discussed below.

### **1.8.1 Economical**

ERP systems, if implemented successfully, could absolutely be critical for the company to secure financing. ERP systems would cover the high cost of implementation through increasing productivity and eventually increasing the revenue and profit. Furthermore, competitive position of a firm depends on the advantages obtained from acquiring and using external information (Haro-Domínguez, Arias-Aranda, Llore'ns-Montes, & Moreno, 2007). Therefore, through developing competitive advantages result in ERP implementation, companies would further enhance their competitive position in the market which eventually leads increasing in market share.

### **1.8.2 Technological**

Firms obtain the so-called technological stock through investment in R&D and in the technological imports performed (Haro-Domínguez et al., 2007). Therefore, firms would further enhance their technological position through wide usage of information systems which ERP was the most effective ones in recent years. Furthermore, resources needed for data entry would be reduced due to integration which ERP brings to organization through single database for all parts of the firm.

### **1.8.3 Environmental**

Implementing ERP systems cause organizations to consume lesser papers as information is saved in a digital format in a central database. Therefore, lesser trees are needed to cut in the long-term.

### **1.8.4 Innovation**

The growing attention to organizational innovation in firms especially in manufacturing sector further emphasizes the sustainable competitive advantage created by superior dynamic capabilities. This force firms to constantly search for new tools and management opportunities that would provide these competencies. As mentioned by Cohen and Levinthal (1990) outside sources of knowledge and the ability of organizations to exploit external knowledge are crucial elements of innovative process. Supply chain management, total quality management, business process reengineering, enterprise resource planning (ERP), customer relationship management, e-commerce, and knowledge management are some of these tools (Daghfous, 2004).

### **1.8.5 Global Strategies**

Implementing ERP systems further improve companies' capabilities to easily handle their international activities. Therefore international coordination will be improved. Working with multiple currencies and languages is taken to account in many ERP systems which able different branches in all over the world to work with a single database, but different user interface.

### **1.8.6 Supply and Value Chain**

Supply chain management (SCM) is one of the most important modules of ERPs which exploiting its capabilities able organizations to respond faster to customers and suppliers, reduce production cycle, and on-time completion (Chien & Tsaur, 2007).

## **1.9 Definition of the Key Terms**

### **1.9.1 ERP (Enterprise Resource Planning)**

ERP stands for "Enterprise Resource Planning". It is software system for business management which integrates information and processes among different functional departments and support areas such as planning, manufacturing, sales, marketing, distribution, accounting, finance, human resource management, project management, inventory management, service and maintenance, transportation, and e-business (Haag & Cummings, 2008).

### **1.9.2 TAM (Technology Acceptance Model)**

TAM is an abbreviation for “Technology Acceptance Model” which argues that intention to use technology is impacted positively by PU and PEU (Davis F. D., 1989).

### **1.9.3 Perceived of Usefulness**

According Davis (1989) perceived usefulness is defined as the degree to which a person believes that using a particular system would help to improve his or her job performance.

### **1.9.4 Perceived Ease of Use**

According to Davis (1989), PEU is “as the extent to which a person believes that using a certain technology will be free of effort”.

### **1.9.5 Communication**

According to Ngai et al. (2008), “Communication includes the formal promotion of ERP project teams and advertisements on the project’s progress to the rest of the organization”

### **1.9.6 Trust**

Lee (2009) explained trust as one's belief that the other party will behave in a dependable, ethical, and socially proper way.

### **1.9.7 Absorptive Capacity**

Cohen and Levinthal (1990) described the absorptive capacity as the ability of an organizational member “to value, assimilate, and apply new knowledge”.

### **1.10 Organization of Remaining Chapters**

The rest of the study is organized as follows: Chapter two gives a comprehensive literature review of theories used in technology acceptance concept and followed by a review of studies in TAM, especially in ERP context that is related to this study. At the end of chapter two, we describe our research model and develop our hypotheses. Chapter three describes details of the research methodology, sampling and questionnaire design. Chapter four presents the results and findings of data analysis via SPSS. Chapter five drives conclusion based on results found from data analysis in chapter four.



## **CHAPTER 2: LITERAURE REVIEW**

### **2.1 Introduction**

There are several researchers which investigated how and why individuals adopt and accept new technologies. Their focus generally was in two broad areas. Some investigated how individuals accept new technologies and what are the determinants that affect on their intention to use new technologies while others focused on critical success factors during implementation in organization from users' perspective.

For decades, information technology (IT) researchers have studied human-computer interactions and their behavior when interacting with technology. They tried to find ways to measure the acceptance of technology by end users and improve it. In this section, a comprehensive literature review is provided from previous studies in this area in addition to models and theories utilized. The purpose of this part of study is to understand those studies and theories. The wide use of technology, particularly in organizations and business, and the need for individuals to accept and use it, continues to increase research of technology acceptance (Youngberg et al., 2009).

### **2.2 Models and Theories for Adoption of New Technology**

Before proposing the research model and hypotheses of this study, previous studies in technology acceptance have been reviewed. It is found that theory of reasoned action (TRA), the theory of planned behavior (TPB), technology acceptance model (TAM), Combined TAM-TPB (C-TAM-TPB), diffusion of innovation theory (DOI), motivation model (MM), model of PC utilization

(MPCU), social cognitive theory (SCT), unified theory of acceptance and use of technology (UTAUT) are the most used theories in this area.

### 2.2.1 Theory of Reasoned Actions (TRA)

Theory of reasoned action (TRA) is one of the leading and fundamental theories of human behavior in social psychology context (Venkatesh et al., 2003). TRA first introduced by Fishbein and Ajzen in 1975. TRA postulates a person's specified behavior is determined by his or her behavioral intention which is determined by the person's attitude and subjective norms (Fishbein & Ajzen, 1975).

Attitude and subjective norms are the main constructs which lead to behavioral intention. Attitude toward behavior is an individual's positive or negative feelings about acting the target behavior. Whereas, subjective norm is the person's perception that people around him suppose he should or should not perform the specific behavior in the question (Venkatesh et al., 2003).

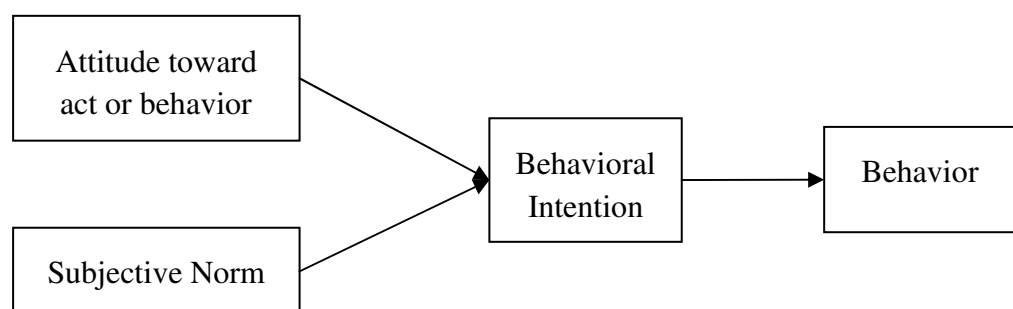


Figure 2-1: Theory of Reasoned Action (Fishbein & Ajzen, 1975)

### **2.2.2 Theory of Planned Behavior (TPB)**

The theory of planned behavior (TPB) is a broad theory of human behavior that proposed by Ajzen in 1985. The theory was developed based on the theory of reasoned action (TRA) which added a new construct to TRA that is perceived behavioral control. The basic pattern of the TPB postulates that an individual's attitude, subjective norms, and perceived behavioral control are likely to affect behavioral intention and eventually the action itself. The theory provides a comprehensive model to cover volitional behaviors for predicting behavioral intention and actual behavior (Venkatesh et al., 2003).

Perceived behavioral control measures "how well one can execute or control the action by examining the availability of resources to engage in the behavior and one's confidence in his/her ability to perform the act" (Ajzen, 1991). Huh et al., (2009) mentioned perceived behavioral control reflects perceptions of internal and external restrictions on behavior.

TPB posits that the more positive an individual evaluates a particular behavior, the more likely the individual will be determined to behave on that way (Huh et al., 2009). The more an individual perceives that others significantly think he/she should perform the specific behavior, the more he/she is encouraged to act in accordance with those others.

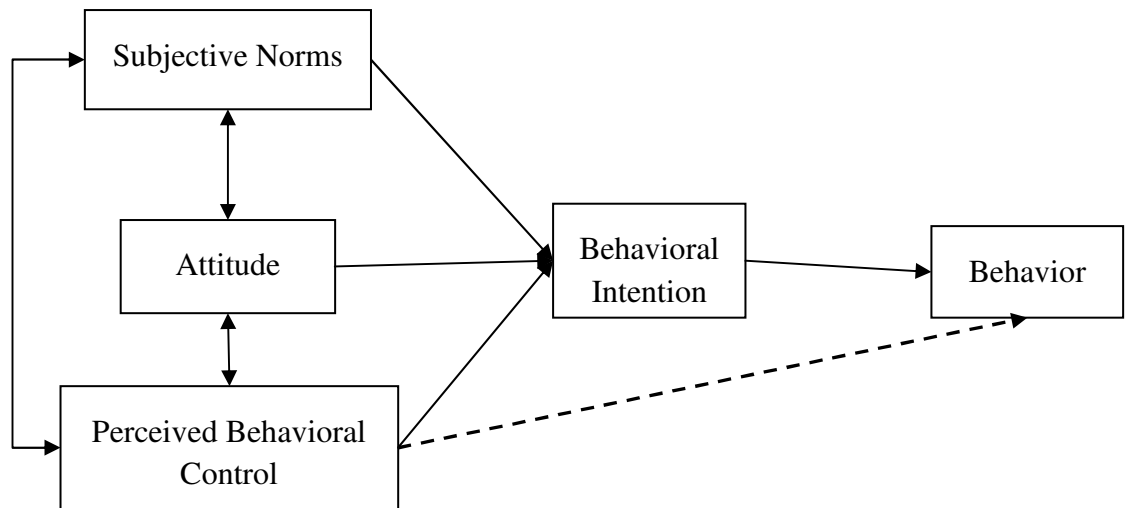


Figure 2-2: Theory of Planned Behavior (Ajzen, 1991)

### 2.2.3 Technology Acceptance Model (TAM)

TAM is introduced by Davis in 1989. It has been used by many researchers in the area of IS to study users' intention to adapt technology and predict their behavior, especially information technology (online banking, B2C e-commerce, technology-based self check-in services and so on) (Calisir, Altin Gumussoy, & Bayram, 2009; Bueno & Salmeron, 2008; Al-Somali, Gholami, & Clegg, 2009; Lingyun & Dong, 2008; Lu, Chou, & Ling, 2009). It is based on the TRA and it especially explains computer usage behavior (Lee & Byung, 2009) and posits that "usage behavior is driven by instrumentality and cognitive complexity beliefs" (Agarwal & Karahanna, 2000). The model describes the relationship between perceived ease of use (PEU) and perceived usefulness (PU) which are the most important determinants of behavioral intention to use technology (Hwang, 2005). With these constructs, TAM can be considered a special case of TRA, with two perceptions (PU and PEU). Subjective norm does not have any place in TAM (Lee & Byung, 2009).

TAM posits that intention to use technology is impacted positively by PEU and PU (Davis, 1989). In addition, intention to use is linked to subsequent behavior (Venkatesh, 2000). First, they considered attitude towards using a technology as one of the determinants but it was deleted by Davis (1989) in the last model. That was because of partial mediation of the influence of beliefs on intention by attitude, a weak direct link between PU and attitude, and a strong direct link between PU and intention (Venkatesh et al., 2003). In other words, some people use technology just because they perceive that it is useful, however they do not have a positive attitude toward using that (Venkatesh et al., 2003).

According to Davis (1989) that ease of use is “the degree to which a person believes that using a particular system would be free of effort”. In other words, the easier a technology is the more people use it and the resistance is less. In addition, PU is “the degree to which a person believes that using a particular system would enhance his or her job performance”. PU is related to efficiency and effectiveness, the more effective and efficient the technology is the more people use it (Ramayah & Lo, 2007). TAM also suggests that the PEU has positive effects on PU, and the relationship between PEU and intention to use is mediated by PU (Hwang, 2005). Remind that in this context, acceptance and usage are used interchangeably.