Enterprise Resource Planning Systems and Users’ Satisfaction
- A study of French companies

Authors: Simon Hénoc
Alejandra Rivera

Supervisor: Kim Ittonen

Student
Umeå School of Business and Economics
Spring semester 2014
Master thesis, 15 hp
Abstract

The main goal of our thesis was to study the impact of an ERP system implementation on accounting and IT user’s satisfaction. For this purpose, we have used several variables such as the number and type of modules, the cost of the implementation, the difference between the budgeted cost and the actual cost and finally the accounting benefits. All these variables were included in our conceptual model. We wanted to make theoretical and experimental contributions to the ERP sector in France. We have studied what was done before and we have concluded that there was an important knowledge gap in this sector. That is why we decided to choose this topic. One similar study was done in Greece in 2013. Then, we formulated the following research question:

At an individual level, how do the number and type of modules, the ERPS total cost, the variance between budgeted and actual amount and the accounting benefits generated by the ERP system implemented influence accounting and IT users’ satisfaction?

One of our main goals was to study if it was possible to generalize the results found in Greece to France. We did a conceptual model in order to illustrate our study. We have used a quantitative data collection method and have sent a survey to French companies using an ERP system (ERPS). We led an important research about our different variables, especially ERPS user’s satisfaction. Regarding our lack of knowledge in B2B theories, we have also conducted a study in order to understand more precisely the customer’s needs. The results found were analyzed with regressions and Cronbach’s alpha tests by using SPSS software.

We concluded that our findings have similarities with those in the article we are based on. Indeed, the same predictor variables have a strong correlation with users’ satisfaction in France and in Greece. We contributed to the theory in this field by showing the significant variables in the French workplace. We also did practical contributions and recommendations, especially to ERPS providers.
Acknowledgments

We would like to thank warmly a number of people who have supported and helped us during our Master Thesis. To begin with, we would like to thank our supervisor Kim Ittonen for his advices and supports during these two months. He has helped us to organize our work and to make the good choices regarding especially our survey and our research method. He has contributed to improve the quality of our thesis.

We also would like to thank all the graduated people of Grenoble Ecole de Management who have answered our survey or who have helped us to forward our survey in their respective company. It is always really difficult to obtain data from companies, and we managed to obtain more than 30 answers thanks to the alumni network of our home university; so a big thank-you to all of them.

Finally, we would like to thank our family and friends for their support during this process with a special thanks to Gégé, Philippe, Léon, Selim and Bruno for their unconditional support.

Umea 2014-05-11

Simon Hénoc & Alejandra Rivera
Summary

1. INTRODUCTION .................................................................................................................. 1
   1.1 Choice of Subject .............................................................................................................. 1
   1.2 Problem Background ...................................................................................................... 2
      1.2.1 Enterprise Resource Planning Systems ...................................................................... 2
      1.2.2 ERP and Users Satisfaction ....................................................................................... 3
   1.3 Research Question ......................................................................................................... 4
   1.4 Purpose ........................................................................................................................... 5
   1.5 Definition of Concepts .................................................................................................... 6

2. SCIENTIFIC METHOD ......................................................................................................... 7
   2.1 Scientific Approach ........................................................................................................ 7
   2.2 Choices of Theories ........................................................................................................ 8
   2.3 Choices of Theoretical Sources ...................................................................................... 9

3. THEORETICAL FRAMEWORK .......................................................................................... 10
   3.1 Business to business (B2B) ......................................................................................... 10
   3.2 User satisfaction and Customer Satisfaction ............................................................... 10
   3.3 Groups of Users .......................................................................................................... 11
   3.4 Price or Cost ................................................................................................................ 12
   3.5 Quality ........................................................................................................................ 12
   3.6 Accounting benefits .................................................................................................... 14
   3.7 Modules ........................................................................................................................ 15
   3.8 ERPS total cost ............................................................................................................ 16
   3.9 Theories ...................................................................................................................... 16
      3.9.1 Customer Satisfaction ............................................................................................ 17
      3.9.2 User satisfaction .................................................................................................... 18
   3.10 Conceptual Model ..................................................................................................... 20

4. PRACTICAL METHOD ......................................................................................................... 21
   4.1 Data Collection Method ............................................................................................... 21
   4.2 Survey Construction ..................................................................................................... 22
   4.3 Ethical considerations ................................................................................................. 24
   4.4 Sampling Construction ............................................................................................... 25
   4.5 Motivations ................................................................................................................ 27
   4.6 Errors .......................................................................................................................... 28
   4.7 Data Analysis .............................................................................................................. 28
Hénoc & Rivera, 2014

4.7.1 Descriptive statistics ................................................................. 29
4.7.2 Cronbach’s alpha ........................................................................ 29
4.7.3 Regression analyses ................................................................. 29

5. EMPIRICAL FINDINGS ........................................................................ 30
  5.1 Demographics .............................................................................. 30
  5.2 Cronbach’s alpha .......................................................................... 32
  5.3 Descriptive statistics ...................................................................... 32
    5.3.1 Mean and Standard Deviation ................................................. 32
    5.3.2 Pearson Correlation ............................................................. 33
  5.4 Regressions .................................................................................... 35
    5.4.1 Standard regression .............................................................. 35
    5.4.2 Stepwise regression ............................................................... 36
  5.5 Cross Tabulation ............................................................................ 37
  5.5 Interviews ....................................................................................... 38

6. ANALYSIS AND DISCUSSION .......................................................... 42
  6.1 Regression 1 - Standard Method ................................................. 42
  6.2 Regression 2 - Stepwise Method ................................................. 42
  6.3 Modules ......................................................................................... 43
  6.4 ERPS total costs and the Difference between Budgeted and Actual Cost .... 43
  6.5 Accounting Benefits ..................................................................... 44
  6.6 Users’ Satisfaction ........................................................................ 46
  6.7 Cross tabulation ........................................................................... 47
  6.8 Interviews ...................................................................................... 48
  6.9 Discussion ..................................................................................... 49
  6.10 Final conceptual model ............................................................. 50

7. CONCLUSIONS AND RECOMMENDATIONS ..................................... 51
  7.1 General conclusions ..................................................................... 51
  7.2 Theoretical contributions ............................................................ 52
  7.3 Practical implications ..................................................................... 53

8. TRUTH CRITERIA .............................................................................. 54
  8.1 Validity ........................................................................................ 54
  8.2 Generalizability / External validity ............................................. 54
  8.3 Reliability ...................................................................................... 55

VII
8.4 Replication

9. LIMITATIONS AND FUTURE RESEARCH

Sources

Appendix 1: Theories
Appendix 2: Questionnaire
Appendix 3: Phone questionnaire
Appendix 4: Standard regression
Appendix 5: Stepwise regression
Appendix 6: Cross Tabulation
Appendix 7: Modules Implemented
Appendix 8: Interviews
Appendix 9: ERPS Software Market Share 2013
List of Figures

Figure 1: The process of deduction ................................................................. 8
Figure 2: Value and Satisfaction model .......................................................... 63
Figure 3: IS success model .............................................................................. 63
Figure 4: User Satisfaction Research Stream Approach .................................. 63
Figure 5: Integration of User Satisfaction and Technology Acceptance ............ 64
Figure 6: Model for Measuring End-User Computing Satisfaction .................... 64
Figure 7: Proposed Conceptual Model .......................................................... 20
Figure 8: Users’ Satisfaction Components ....................................................... 47
Figure 9: Final Conceptual Model ................................................................. 51

List of Tables

Table 1: Demographic Characteristics .............................................................. 31
Table 2: Cronbach’s Alpha Coefficients .......................................................... 32
Table 3: Mean and Standard Deviation ........................................................... 33
Table 4: Mean and Standard Deviation by Group ............................................ 33
Table 5: Pearson Correlation ........................................................................... 35
Table 6: Standard Method – Model Summary ................................................ 69
Table 7: Standard Method – ANOVA ............................................................... 69
Table 8: Standard Method – Coefficients ......................................................... 70
Table 9: Standard Method – Collinearity ........................................................ 71
Table 10: Stepwise Method – Model Summary ............................................... 72
Table 11: Stepwise Method – ANOVA ............................................................. 72
Table 12: Stepwise Method – Coefficients ....................................................... 72
Table 13: Cross tabulation type of Company .................................................. 73
Table 14: Cross tabulation number of employees .......................................... 74
Table 15: Cross tabulation type of user ........................................................... 75
Table 16: Cross tabulation age at current position ......................................... 76
Table 17: Cross tabulation years of total experience ................................................................. 76

Table 18: Modules Implemented in the ERPS ........................................................................... 78
1. INTRODUCTION

In this chapter, we will first explain the choice of our research subject and the background associated to the chosen research problem. Second, we will state the research question and describe thoroughly the purpose of this study and therefore its theoretical and practical contributions. Finally, we will define in-depth the related concepts.

1.1 Choice of Subject

We are two master students in accounting at Umeå School of Business Economics (USBE). Our home university is Grenoble Ecole de Management in France. During our studies, we have acquired theoretical knowledge thanks to lectures and courses, but also practical knowledge, thanks to the internships we have done. Alejandra did an internship in auditing at Mazars, a French auditing firm and at the accounting share service center of the group RTL. Simon did an internship related to management accounting at Valeo. At RTL, Alejandra worked on an Enterprise Resource Planning system (ERPS), for the accounts payable department. During his internship at Valeo, Simon participated to the implementation process of an ERPS. According to Esteves and Pastor (1999), the life-cycle of an ERPS has 6 phases: adoption and decision phase, acquisition phase, implementation phase, use and maintenance phase, evolution phase and retirement phase (Esteves & Pastor, 1999, p.4; 5). Simon took part in the implementation phase, the use and maintenance phase and in the evolution phase to a lesser degree. This implementation is very complex and time-consuming.

Nowadays, ERPS are mostly implemented by companies of important size and turnover. According to Raymond and Uwizeyemungu (2007), an increasing number of Small and Medium size Enterprises (SME) start to implement ERPS (Raymond and Uwizeyemungu, 2007, p.2). Companies which decide to buy an ERPS know that they are supposed to have an important return on investment. In fact, Dowlatshahi explains that by adapting correctly the ERPS to the company’s characteristics and by waiting some years, a company can expect an important return on investment (Dowlatashi, 2005, p. 3752).

As ERPS progressively replaced other Information Systems (IS) softwares, we thought that it would be interesting to study and assess the performance of these new systems. We strongly believe that it is important to know and to interpret the feedbacks about the satisfaction of ERPS users regarding in particular the cost of the product or its accounting benefits. Moreover, through our internships we notice that these systems have become essential for different business operations carried out by the company. Through these professional experiences, we have detected some advantages and drawbacks of ERPS and we wanted to go further and to study these products in France.

We found an interesting study conducted by Kanellou and Spathis (2013) about accounting benefits and user’s satisfaction in an ERP environment. This study was conducted in Greece and only concerns Greek companies.

Greece is in the middle of an economic turmoil. Its economic situation is very different from other countries of the Eurozone such as France or Germany. In fact, France and Germany are the two driving forces of the European Union whereas Greece is one of the countries struggling not to be left behind. Before its entry to the Eurozone, Greece has experienced a strong inflation for several years. For mature countries, such as France or Germany, the unique currency was restrictive and did not have a harmful impact on the economy. On the
contrary, the adoption of the Euro had been expansionist for Greece and other countries such as Spain or Portugal. Thus, in these countries, companies and couples were encouraged to invest and to borrow money, which have amplified the inflation. Therefore, France and Greece have different economic characteristics. (Mathieu & Sterdyniak, 2007, pp.1-8)

We consider that it would be interesting to do the same study in France in order to compare both countries and try to reduce the geographical gap. We believe that it is relevant to study whether the results found in Greek companies can be generalizable to France. That is why we decided to develop this topic and to study the impact of an ERPS implementation on user’s satisfaction in France.

1.2 Problem Background

1.2.1 Enterprise Resource Planning Systems

Enterprise Resource Planning System (ERPS) is an enterprise-wide computer system created to integrate and optimize the business processes and transactions in an organization (Moon, 2007, p. 235). An ERPS integrates all the information flowing through a company – such as financial and accounting information, supply chain information, human resources information, and customer information - and creates one single database in order to provide real-time operating and financial information (Davenport, 1998, p.121; 127).

ERPS provide access to information used to support strategy, operations, management analysis, and decision-making functions in a corporation (Matende & Ogao, 2013, p. 519). In fact, the main objective of an ERPS is to create value and reduce costs by providing the relevant information to the employees who need it, when they need it. This real-time information will help them to make informed decisions in managing resources productively and proactively (McGaughey & Gunasekaran, 2007, p. 24).

According to Spathis and Constantinides (2004), the three main reasons why companies decide to implement an ERPS are:
- Increased demand for real-time information;
- Information generation for decision making;
- Integration of applications.

Therefore, the results of this study show that the advantages of ERPS are the main driving forces to implement this kind of systems. Moreover, companies that adopt an ERPS are primary concerned with the integration of their accounting processes. (Spathis & Constantinides, 2004, p. 239). According to a study among hundreds of stakeholders in ERPS, Roman (2009) stresses that a company chooses to implement an ERPS because it has a positively impact on efficiency, access to data and user-friendliness. Enhancement of technology and customers are also key elements in the implementation of an ERPS. (Roman, 2009, p.1; 3)

The empirical research concerning ERPS is very limited. As stressed by Sutton (2006), the extension and growth of empirical research concerning ERPS and its impact on the various disciplines of accounting is dramatically needed (Sutton, 2006, p.1). According to Esteves and
Pastor (1999), the ERP market is a new area and needs research since this market is going to grow faster than the software market as a whole. (Esteves & Pastor, 1999, p.1).

1.2.2 ERP and Users Satisfaction

First, we need to define what is implied by “user satisfaction” in the research field related to ERPS. According to Doll and Torkzadeh (1988) End –user satisfaction is defined as “the affective attitude towards a specific computer application by someone who interacts with the application directly” (Doll & Torkzadeh, 1988, p. 261). More precisely, concerning the Information Systems such as ERPS, “user information satisfaction refers to the extent to which users perceive that the IS available to them meets their information requirements” (Somers et al., 2003 p.597).

Research on IS focuses on user satisfaction because this element is one of the most important determinants of the success of an IS implementation (Somers et al., 2003 p.595). In fact, user satisfaction issues have a semantic impact on ERPS’ success (Longinidis & Gotzamani, 2009, p.628). According to DeLone and McLean (1992), user satisfaction is widely used to assess the success of IS implementations because of its high degree of face validity, the development of relevant and reliable measurement tools for measuring user satisfaction and finally, because of the conceptual and empirical weaknesses of alternative measures (DeLone and McLean, 1992, p. 69).Wu and Wang (2007) present user satisfaction as an evaluation mechanism for determining system success. This study is focused on key-user satisfaction as a mean of determining ERPS success. (Wu & Wang, 2007, p. 1582). Law and Ngai (2007) analyzed the relationships between the success of ERPS implementation and business improvement and organizational performance. Using the 12-item instrument developed by Doll and Torkzadeh’s (1988) they measured end-user computing satisfaction (Law & Ngai, 2007, p.422).

Previous research concerning user satisfaction is focused on IS in general. Doll and Torkzadeh (1988), based on the work of Ives et al. (1983) and Bailey and Pearson (1983) developed a 12-item survey used as an instrument to measure IS user satisfaction. The 12 items presented in this survey were summarized in five dimensions: content, accuracy, format, ease of use and timeliness (Doll & Torkzadeh, 1988, p 266). In 2003, Somers et al. tested Doll and Torkzadeh’s (1988) instrument and they confirmed that the psychometric stability of this instrument is maintained when applied to users of ERPS (Somers et al., 2003 p.595).

DeLone and McLean (1992) designed an IS success model presenting six dimensions: system quality, information quality, use, user satisfaction, individual impact and organizational impact. Their model describes how “system quality and information quality singularly and jointly affect both use and user satisfaction. Use and user satisfaction are direct antecedents of individual impact; and, lastly, this impact on individual performance should eventually have some organizational impact.” (DeLone & McLean, 1992, p. 83; 87). In 2003, DeLone and McLean modified their original model and showed how “information quality, system quality and service quality influence intention to use/use and user satisfaction” (DeLone & McLean, 2003, p. 24). They added one new variable to their original model: “net benefits”. “Net benefits” encompass all the possible impacts of the IS. The additional impacts measured can be: work group impact, inter-organizational and industry impacts, consumer impacts and societal impacts (DeLone & McLean, 2003, p. 19). This new variable is influenced by “intention to use/use” and “user satisfaction” (DeLone & McLean, 2003, p. 24). Based on a
case study, Longinidis and Gotzamani (2009), identify three main factors that influence the level of ERPS users’ satisfaction: “interaction with IT department, pre-implementation processes” and “ERP product and adaptability” (Longinidis & Gotzamani, 2009, p.628).

Moreover, previous research analyzes how usability factors influence user satisfaction. Based on the results of their quantitative research conducted, Calisir and Calisir (2004) showed that “perceived usefulness” and “learnability” are determinants of ERPS “end-user satisfaction”. In their model, on the one hand, “user guidance” affects “perceived usefulness” and “learnability”; on the other hand, “perceived ease of use” and “system capability” influence “perceived usefulness”. (Calisir & Calisir, 2004, p. 505)

There are very few studies focused on the measurement of the ERPS satisfaction among users from different departments. One of these studies is conducted by Longinidis and Gotzamani (2009). They point out that users from different departments use different modules and interact with different interfaces of the ERPS. They found that the employees from the network department are less satisfied of the information system than users from “sales or “supportive” departments. (Longinidis & Gotzamani, 2009, p. 633; 638)

Finally, Kanellou and Spathis (2013) developed a whole new model in which ERPS accounting benefits, the number of modules installed and ERPS total cost affect user satisfaction. The survey was submitted to accountants and IT professionals in Greece. No significant differences were found between the perceptions for these two groups concerning ERP accounting benefits. (Kanellou & Spathis, 2013, p.209). None of these studies has been conducted in France. Very little has been done concerning the influence of the cost, the accounting benefits and the number of modules on ERP user’s satisfaction. This is a research gap that we are going to try to fill.

1.3 Research Question

As mentioned in the first part of the introduction, Kanellou and Spathis (2013) conducted an empirical study of ERPS and users satisfaction in Greece. This study was unique in that its main objective was to identify the relationship between accounting benefits generated by an ERPS and IT and accounting users’ satisfaction. In addition, this study aims to identify if there is any difference between IT and accounting users’ satisfaction. The conclusion drawn from this study is that “the empirical evidence confirms a number of accounting benefits derived from ERPS particularly for accounting process. No statistically significant differences were found between the perceptions of accountants and IT professionals concerning ERPS accounting benefits.”(Kanellou & Spathis, 2013, p. 209).

The study has one main limitation that is addressed in our study. Only Greek companies have participated in this empirical study (Kanellou & Spathis, 2013, p.230). As mentioned before, Greece is a country with very specific characteristics. We think that it will be relevant to adapt this study to another European country such as France. France has different characteristics concerning the working environment and the cultural values in the workplace than Greece. Anyway, these two countries are members of the Eurozone. Moreover, any empirical ERPS research has been conducted in France before. Therefore, we think it is interesting to compare the results of these two different countries. So, the main objective of our study is to understand and define to what extent, the results can be generalizable to other national context. Then, thanks to our past experiences, we want to investigate whether the difference
between the budgeted ERPS total cost and the actual ERPS total cost have an influence on users’ satisfaction.

The following research question is addressed in this thesis:

**At an individual level, how do the number and type of modules, the ERPS total cost and the variance between budgeted and actual amount and the accounting benefits generated by the ERP system implemented influence accounting and IT users’ satisfaction?**

### 1.4 Purpose

The main purpose of our study is to investigate whether results found in a previous study conducted by Kanellou and Spathis (2013) can be generalized to other national context and to test the impacts of the number and type of modules, the ERPS total cost and the accounting benefits generated by the ERPS implemented on accounting and IT user’s satisfaction, in France.

To clarify the purpose of our study, we formulated four sub-purposes:

- To identify the relationship between accounting and IT users’ satisfaction and the accounting benefits generated by this system.
- To analyze whether ERPS total cost and the difference between actual and budget cost have an influence on accounting and IT users’ satisfaction.
- To investigate the relationship between accounting and IT users’ satisfaction and the number and type of modules implemented.
- To identify if there is any difference between the accounting user’s satisfaction and IT users’ satisfaction.

From a practical point of view, this kind of study is valuable to companies that will include their accounting operations in an ERPS. In fact, given that users’ satisfaction is one of the most important determinants of the success of ERPS (Somers et al., 2003 p.595), it is important for the companies to identify ERP users’ satisfaction determinants as well. By identifying the determinants of ERP users’ satisfaction, we will help companies to identify what are the key points that need further attention during the implementation process of an ERPS. Our practical contribution can be extended to ERPS providers; we will try to identify which characteristics of ERPS influence users’ satisfaction and what can be improved in this kind of softwares. By making possible improvements, ERPS providers can improve the satisfaction of their customer.

From a theoretical point of view, by generalizing the finding of the study conducted by Kanellou and Spathis (2013), this study will try to cover the need for empirical research in the field of ERPS. It will stimulate further research in this field in order to examine in-depth the accounting benefits rising from the implementation of an ERPS and whether or not these benefits have impact on ERP users’ satisfaction (Kanellou & Spathis, 2013, p. 211).
1.5 Definition of Concepts

ERPS: “An Enterprise Resource Planning system is a packaged business software system that allows a company to:
- Automate and integrate the majority of its business processes
- Share common data and practices across the entire enterprise
- Produce and access information in a real-time environment.”
(Deloitte Consulting, 1998, p.2)

Modules: business applications that support business activities such as finance, human resources, materials management, production and operations, and sales and distribution (Kavanagh, 2011, p. 10; Nicolaou, 2004, p. 82).

ERPS total cost: purchase cost and implementation cost of an ERPS. (Kanellou & Spathis, 2013, p. 221). The purchase cost concerns the acquisition phase during which the customer compares the different ERPS and finally opts for the most interesting and appropriate system. The implementation cost refers to the implementation phase. During this important phase, the customer usually hires a consulting company and together they adapt the ERPS to the needs and special features of the organization. (Esteves & Pastor, 1999, p.4;5)

Accounting benefits: positive impact on the accounting processes rising from the implementation of an ERPS (Spathis & Constantinides, 2004, p.241).

End–user satisfaction: “the affective attitude towards a specific computer application by someone who interacts with the application directly” (Doll & Torkzadeh, 1988, p. 261). For us, end-user satisfaction is equivalent to users’ satisfaction given that the users of this system in a company are the end-users of this system.
2. SCIENTIFIC METHOD

In this chapter, we will describe and explain our scientific approach and the influence it has on the place given to theory in our research method and on our choice of method for collecting data. In addition, we will describe and explain our choice of theoretical source.

2.1 Scientific Approach

According to Bryman & Bell (2011 p. 15-23), a research strategy refers to the ontological and epistemological considerations chosen by the researcher.

On the one hand, ontological considerations concern the nature of reality, and therefore, of social entities. There are two main ontological positions: objectivism and constructivism. (Bryman & Bell, 2011 p. 20)

Objectivism states that social phenomena and their meaning can be viewed as objective entities that exist in reality independent or separate from social actors. The organization is a constraining force that influences its members. (Bryman & Bell, 2011 p. 21)

Constructionism maintains that social phenomena are social constructions built up by the social actors through their perception and their social interactions (Bryman & Bell, 2011 p. 22). Social phenomena are in a constant state of revision given that social interactions between social actors are in continual process (Saunders et al., 2009, p. 132).

For this research, we choose the ontological position of objectivism. We perceive the variables studied - as objective entities that exist in reality independent or separate from social actors.

On the other hand, epistemology is concerned with what is or should be accepted as knowledge in a specific discipline (Bryman & Bell, 2011 p. 15). There are three epistemological considerations; positivism, realism and interpretativism.

Positivism advocates for the application of the principles, procedures and ethos of the natural science to the study of the social reality (Bryman & Bell, 2011 p. 15). Positivism is based on five principles (Bryman & Bell, 2011 p. 15).

- Phenomenalism: Only phenomena and therefore knowledge confirmed by the sense can be considered as knowledge.
- Deductivism: theory is used to generate hypotheses that can be tested and that will provide explanations of laws to be assessed.
- Inductivism: knowledge rises from the collection of facts that provide the basis for theories.
- Objective research: the research must be value free.
- Distinction between normative and scientific statements. In fact scientific statements are the true domain of the scientist.

According to interpretivism it is required to adopt a strategy that takes into account the differences between social actors and object of natural science and the researcher must seize the subjective meaning of social actions (Bryman & Bell, 2011 p. 17).
Finally, realism is related to positivism given that knowledge is also viewed as arrived through the use of scientific methods. Moreover, realism considers there is a reality different from our description of it (Bryman & Bell, 2011, p. 17).

For this study, we decided to adopt a positivism point of view. Our main objective is to study the relationship between, on one side the number and type of modules implemented, the ERPS total cost and the ERPS accounting benefits rising and, on the other side accounting and IT users’ satisfaction. We will use existing theoretical insights to deduce hypothesis that can be empirically scrutinized and will allow explanations of laws to be assessed. The findings of our study will be the base of the discussion of the theory and the design of new theories. We will do our best to undertake our research in a value-free way. By doing this we will apply the main principles of positivism stressed by Bryman & Bell (2011, p. 15).

So, based on our research general orientations, we will adopt a deductive approach following the process of deduction described on figure 1. The point of departure of a deductive research process is theory. This process aims at elaborating hypothesis that will be tested. The findings of this test will be the bases for the revision of the theory. A deductive approach is usually related to quantitative data collection methods that will be measured and tested. (Bryman & Bell, 2011, p. 27).

On the contrary an inductive approach aims to develop a new theory by collecting qualitative data (Bryman & Bell, 2011, p. 27).

For our research, we believe that a deductive approach is more appropriate. Our objective is to apply existing theories about ERPS users’ satisfaction to a new research context in order to see whether the results of previous research in a different research context can be generalizable beyond the confines of the initial research context.

![Figure 1 – The process of deduction (Bryman & Bell, 2011, p. 11)](image)

**2.2 Choices of Theories**

To build and support our conceptual model, we have led a literature review from academic articles, books and previous studies. We took the course “Research methodology in business administration B69” which was really useful and enriching. It provided us useful knowledge concerning the organization of our tasks, the construction of our survey, and the choice of
research design and research strategy. This course was very relevant for our theoretical part because it is the first time we conducted a project of this nature. In addition, it provided us knowledge concerning the analysis an interpretation of data collected.

We first conducted a literature review in order to deal with the ERPS market and the ERPS benefits and drawbacks. Then, we have searched for previous studies in this sector and we have concluded that it was possible to reduce the knowledge gap in the ERPS field. We believe that ERPS are essential for international companies nowadays. Our research question concerns ERPS users’ satisfaction regarding the cost of acquisition and also the number of modules implemented in the company. As a consequence, it is relevant to us to study more precisely the different variables listed in our research question.

An ERPS implementation is not only expensive but also time-consuming (Abdinnour-Helm & al, 2003, p.258). When choosing to implement an ERP product, companies have to take decisions carefully since these systems are quite expensive. Thus, we think the implementation of an ERPS is an important investment that becomes a strategic challenge: if the implementation is a failure, it will be a waste of valuable resources. Beatty and Williams (2006) explain that there is always an ERP provider, that is to say the vendor, and this vendor sells the product to an organization, the buyer (Beatty and Williams, 2006, p. 106). We therefore believe that it is important in the theoretical framework to study Business to Business (B2B) strategies and B2B theories.

We think that this literature review is crucial in order to understand user’s expectation and to choose the relevant variables.

2.3 Choices of Theoretical Sources

To try to complete successfully our project, we have used above all original sources. As it is said before, we have used books, academic articles and courses from Umea University. The majority of articles used come from EBSCO which is an important database of academic articles and Emerald which proposes also a huge portfolio of research articles and information. In order to find relevant articles we used different words and expressions in the menu bar like user’s satisfaction, measurement of user’s satisfaction, satisfaction B2B, ERP systems, ERPS market, ERPS benefits and return on investment, ERPS literature review, among others.
3. THEORETICAL FRAMEWORK

In this chapter, our aim is to discuss the theories relevant to our study. First we will present general theories related to B2B, user satisfaction, price and finally quality. Then we will focus on theories concerning ERPS, their accounting benefits and modules. Finally we will define our independent variables and dependent variables.

During our research, we noticed that the number of theories concerning specially ERPS is limited. In fact, there are just few articles concerning ERPS system from a theoretical point of view. After discussing with our supervisor, we decided to study general Business to Business (B2B) theories that we think can be applied to ERPS research.

3.1 Business to business (B2B)

Anderson et al (2009) define a Business to business (B2B) as “firms, institutions, or governments that acquire goods and services either for their own use, to incorporate into the products or services that they produce, or for resale along with other products and services to other firms, institutions, or governments”. (Anderson et al, 2009, p. 4). As stated above, we believe that B2B theories are important in our study because the ERPS implementation is done by the vendor, which is the ERPS provider, to the buyer, which is the purchasing organization. We think that in B2B or also B2C markets, the buyer expectation and the user satisfaction is a key element. Our study aims at interviewing ERPS end-users, that is to say customers. We wanted our study to be customer oriented and to take care of user expectations. According to Narver and Slater (1990, p.21), it is relevant to be customer oriented in order to evaluate the buyer needs on the market. (Narver & Slater, 1990, p.21). So, in our case it is important to study the customer opinion with the goal to evaluate his satisfaction.

3.2 User satisfaction and Customer Satisfaction

Marketing theories are mainly focus on customer satisfaction. In order to identify the theories relevant to our study, we think it is necessary to define the differences and similarities between customer satisfaction and user satisfaction.

Based on a careful literature review, we chose three definitions of customer satisfaction that are suitable to ERPS. From a general point of view, customer satisfaction is an overall post-purchase evaluation based on the perceived product performance compared with pre-purchase expectations (Fornell, 1992, p.11). According to Churchill and Surprenant (1982), customer satisfaction is defined as “conceptually, an outcome of purchase and use resulting from the buyer’s comparison of the rewards and costs of the purchase relative to anticipated consequences. Operationally, similar to attitude in that it can be assessed as a sum of satisfactions with various attributes” (Churchill & Surprenant, 1982, p. 493). Customer satisfaction can also refer to the consumer's fulfillment response. It is considered as a judgment that the product or service itself or a product or service feature, provided (or is providing) a pleasurable level of consumption-related fulfillment (Oliver, 1997, p. 13). According to this definition, customer satisfaction is based on the judgment of the customer and therefore it is subjective.
Concerning user satisfaction of ERPS, there are two definitions that we can analyze. End-user computing satisfaction is an “affective attitude towards a specific computer application by someone who interacts with the application directly” (Doll & Torkzadeh, 1988, p. 260). Ives et al. (1983) defined User Information Satisfaction as “the extent to which users believe the information system available to them meets their information requirements.” (Ives et al., 1983, p.785) According to these definitions, user satisfaction and customer satisfaction are subjective judgments based on perceptions and feelings of the consumer.

However the customer is aware of the price of the product purchased and he or she takes it into account in the formation of his or her judgment. In our research, the company acquiring the ERPS is considered as the customer. The ERPS is used by the employees of the company. The users are indirectly concerned by the price because they are part of the company purchasing the ERPS. Their primarily concern is the quality of the ERPS. Given that our research is based on both price and quality of ERPS, we think we can make reference to marketing theories of customer satisfaction and to IS user satisfaction theories.

3.3 Groups of Users

According to Kalb Roses (2011), in the real-time environment of current IS, users interact in daily basis with IS directly to input data as well as make queries for decision making purposes. In this specific environment, users assume more responsibility in operating these applications; therefore, they obtain an adequate perception about how they are served by these systems. This perception is extended to management personnel who do not necessarily interact directly with the different modules, but are mainly end-users of the information processed by them to run the company (Kalb Roses, 2011, p.391). Computing end-users are the user interact daily with the IS (Doll & Torkzadeh, 1988, p. 260). Information end-users are users who exploit the information they receive from the application (Kalb Roses, 2011, p.391).

In order to identify more specifically the users, we deeply think that we need to know in what departments of the company the IS or ERPS are implemented. For ERPS, the accounting module is the heart of the system, incorporating applications such as accounts receivable and payable, general ledger, fixed assets, cost control, cash management and budgeting (Spathis & Constantinides, 2004, p. 236-237). Via an exploratory survey, Spathis and Constantinides (2004) show that managers of companies adopting ERPS have quoted using mostly operating financial and management accounting modules. The main motive of ERP adopters is to integrate their accounting processes. (Spathis & Constantinides, 2004, p. 239)

ERPS have radically changed the way operating and financial data is collected, stored, disseminated and used. This new information processing method dramatically affects accounting as a whole (Sutton, 2006, p.1). ERPS help accountants to increase their efficiency related to the routine tasks, consequently, accounting professionals have more time for analysis tasks (Granlund & Malmi, 2002 p. 313). Furthermore, the implementation of an ERPS leads to computerization of routine jobs, more forward-looking information and line managers with accounting; therefore management accountants obtain a wider role by providing more support to business managers (Scapens & Jazayeri, 2003, p. 201; 228).

Consequently, we can conclude that the main end-users are the accountants who interact directly with ERPS on daily basis. However, sometimes accountants do not have the technical capabilities to make the most of the software.
Consequently, IT professionals and their capabilities are essential to the implementation process of an ERP (Willcocks & Sykes, 2000, p. 34). Granlund (2011) develops the concept called “hybridization” professional non-accountants groups such as IT specialists, become major actors in accounting thanks to the implementation of a new technology typically involving ERP (Granlund, 2011, p. 11). Through this concept of hybridization, we can argue that IT professional are concerned by ERP and can be considered as end-user of this type of systems. We argue the IT professional are indirectly related to the accounting function of the company through the ERP implemented.

We decided to focus on these two groups because they both are related directly or indirectly to the accounting function of the company and interact directly with the ERP daily. Maybe another group that it is possible to explore is information end-users. However, as stated before this group only use the information produced by the ERP and does not directly input data on the ERP; in other words management does not interact directly with the ERP. Therefore, we considered their perception of ERP is based on a part of the system and not the system as a whole.

3.4 Price or Cost

Kotler and Armstrong (2010) define the price as “the amount of money charged for a product or service, or the sum of the values that customers exchange for the benefits of having or using the product or service” (Kotler & Armstrong, 2012, p. 290). The price of a product fixed by the seller has an important influence on the customer using this final product (Turel et al, 2006, p. 314; 331). It means that the price of a product, for instance an ERP, has an influence on the customer and his/her attitude towards the product. Given that in this market there are many competitors who provide different ERPs, the price can be an important factor when a company has to choose one.

Cao et al (2003) conducted a research study about prices and price satisfaction. This study points out how important is the fact of, as they called it, “satisfying the customer”. They explain that companies need to understand that the price has a vital and essential role on customer satisfaction. The above analyses have validated our decision to select the cost of the implementation of the ERP as a variable of user satisfaction (Cao et al, 2003, p.47).

3.5 Quality

From a general point of view, quality is defined as the totality of features and characteristics of a good or service that bear on its ability to satisfy stated or implied needs (Kotler et al., 2002, p. 831). Therefore, quality is also related to the value of a good or service, which could lead to satisfaction or dissatisfaction on the part of the user. The quality of a product has a direct impact on customer satisfaction; in fact there is a strong relationship between these two concepts (Jahanshahi et al, 2011, p. 253).

Transcendent quality: quality is a condition of overall excellence (Tuchman, 1980, p. 38). Since the criteria for judging overall excellence are subjective they do not allow for comparability (Seawirght & Young, 1996, p. 108).

Manufacturing-based quality refers to the quality of products or services produced in conformance with objective design specifications or within acceptable production defect rates (Seawirght & Young, 1996, p. 109).

Product-based quality: quality is considered as an objectively measurable construct: the amount of some product or service attribute or characteristic. This type of quality results from the combination of a product or service design and from operations that produce according to design. (Seawirght & Young, 1996, p. 109)

User-based definitions of product quality are based on the fulfillment of users’ needs (Seawirght & Young, 1996, p. 109).

Value-based quality definitions consider quality as excellence, or fitness for use, at an acceptable price. Customer satisfaction is considered concurrently with price. (Ishikawa & Lu, 1985, p. 125)

Multidimensional definitions of product quality refers to different dimension of the product acquired such as performance, reliability, durability, features, conformance, aesthetics, and perceived quality (Garvin, 1984, p.29-30). Concerning the services the dimensions studied are tangibles, tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman, Berry, & Zeithaml, 1991, p. 423).

Strategic Quality: strategic benefits provided by a product or service (Seawirght & Young, 1996, p. 110). A product or service that exceeds the quality of competing offerings can increase the market share of the company (Buzzell & Wiersma, 1981, p. 140). Product quality can improve customer perceptions of the product as well (Deming, 1986, p.186)

Based on these definitions of quality, we argue that for ERPS the best fitted definitions are product-based quality, value-based quality and user-based quality. In fact, product-based quality takes into account the product attributes or characteristics. We deeply think that to evaluate a product quality, it is essential to evaluate its attributes or characteristics. Value based quality is related to the customer satisfaction and it takes into account the price of the product purchased and customer satisfaction. An ERPS implementation is very expensive (Abdinnour-Helm & al, 2003, p.258); therefore we think that the influence of ERPS purchased price and implementation cost cannot be exclude of an analysis of quality and satisfaction. Concerning customer satisfaction, we strongly believe that it is necessary to take into account the customer perception to evaluate the quality of the product, since the product it is designed to satisfy him or her. User-based quality, as customer satisfaction (Oliver, 1997, p. 13), is based on the consumer needs fulfillment. Therefore, user-based quality and satisfaction are related by this mean.

According to Esteves (1999), during the adoption decision phase, the company questions the need for a new ERPS while selecting the general IS approach that will best address the critical business challenges and improve the organizational strategy. This phase includes the definition of system requirements, its goals and benefits. During the acquisition phase, the company selects the product that best fits the requirements of the organization. Factors such as price, training and maintenance services are analyzed and, the contractual agreement is defined. (Esteves, 1999, p.28) During these phases, the company assesses its needs and selects the product that will fulfill its needs. As mentioned before, the three main reasons why companies decide to implement an ERPS concern needs for real-time information, needs in information generation for decision making and needs to integrate the applications (Spathis & Constantinides, 2004, p. 239). If the ERPS chosen fulfills users’ needs at a perceived
appropriate cost, the system will achieved a desirable level of quality (product-based, user-based and value-based)

3.6 Accounting benefits

Product-based quality refers to the amount of the product attribute or characteristic. We argue that for ERPS, the attributes and characteristics can be perceived as the benefits that rise from the implementation of this system. As mentioned before, the accounting modules are the heart of ERPS (Spathis & Constantinides, 2004, p. 236-237); therefore we think that the benefits will concern mostly the accounting function.

Spathis and Constantinides (2004) present the accounting benefits achieved through the implementation of an ERPS. The most important are:

- Increased flexibility in information generation.
- Increased integration of accounts applications.
- Improved quality of reports-financial statements.

ERPS characteristics such as the integration of applications, the production of real-time information and the access to information for decision making affect business processes in general and the accounting practices in particular. (Spathis & Constantinides, 2004, p. 241)

First, previous research covers direct accounting benefits present in different research contexts. In Denmark, ERPS are confirmed as powerful tools concerning transaction processing and integration of the company given that data collection can be seen as a proxy for transaction processing (Rom & Rohde, 2006, p. 61). In Finland, ERPS may lead to improved service time in accounting tasks (Velcu, 2007, p.1327). Concerning US firms, ERPS appear to reduce dramatically reports lags (Brazel & Dang, 2008, p.17). ERPS such as SAP eliminates reporting and data entry chores; therefore reports and multiple data entry are eliminated (Gattiker & Goodhue, 2004 p. 436). Another accounting benefit shown through the study of companies in Sweden is the improved quality and availability of information (Olhager & Selldin, 2003, p. 373).

Second, accounting benefits are achieved through changes in the accounting profession. ERPS help accountants to increase their efficiency related to the routine tasks, so they have left accounting professionals with more time for analysis (Granlund & Malmi, 2002 p. 313). Furthermore, Scapens and Jazayeru (2003) outlined that the implementation of an ERPS leads to computerization of routine jobs, more forward-looking information and lines managers with accountants; therefore management accountants obtain a wider role by providing more support to business managers (Scapens & Jazayeri, 2003, p. 201, 228).

In order to classify and measure the accounting benefits deriving from the implementation of an ERPS, Shang and Seddon (2002) propose a benefit framework for summarizing benefits in the years after the Information System implementation (Shang & Seddon, 2002, p.277). They define 5 categories of benefits:

- Operational: related to the costs, cycle time, productivity, quality and customer service.
- Managerial: related to resource management, decision making and planning
- Strategic: related to business growth, business alliance, business innovations, cost leadership, product differentiation and external linkages.
· IT infrastructure: related to business flexibility for current and future changes, IT cost and IT infrastructure capability.
· Organizational: related to work patterns, organizational learning, empowerment and the construction of common vision.

After a literature review, Kanellos and Spathis (2013), summarize accounting benefits in 5 categories.

· IT accounting benefits: ERPS gathers data and produces results more quickly and easier.
· Operational accounting benefits (time): reduction of time for closure accounts and for issuing financial statements.
· Organizational accounting benefits: increased flexibility in information generation and integration of accounting applications, improved decision-making, internal audit and quality of reports.
· Managerial accounting benefits: improved working capital control and increased use of financial ratio analysis, integration of the accounting processes and reduction of time for issuing payroll.
· Operational accounting benefits (cost): reduction of personnel of the accounting department.

(Kanellou & Spathis, 2013, p. 223)

The accounting benefits of an ERPS constitute the product-based quality of the product. If these accounting benefits are achieved the perceived product-based quality of the system will increase. Since quality and satisfaction are deeply related (Jahanshahi et al. 2011, p. 253) the accounting benefits may have an impact on user satisfaction. Moreover the accounting benefits noticed depend on how much the system integrated different business processes; in other words the accounting benefits achieved depends on the number of modules (Bae & Aschcroft, 2004, p.7).

3.7 Modules

Several studies have investigated the relationship between the number of modules implemented, in other words the level of integration, and the performance, or in other words the ERPS benefits. Truman (2000) stressed that there is a positive relationship between integration and performance (Truman, 2000, p. 209). Chapman and Kihn (2009) point out that the integration of a system leads to flexible forms of analysis leading to enhanced performance (Chapman & Kihn, 2009, p.166). In particular, Spathis (2006), shows that there is a relationship between the number modules operated and the perceived ERPS benefits (Spathis, 2006, p. 76; 77). In other words, the degree of integration influences the impacts of the implementation of an ERPS. The majority of companies adopt accounting modules which means that their main concern is to integrate their accounting processes (Spathis & Constantinides, 2004, p 239). Sumner (2000) conducted a study that explains how ERPS users often complain about the lack of integration of the software. Here, the lack of integration refers to a too small number of implemented modules (Sumner, 2000, p. 317-327). Thus in order to investigate the integration of accounts applications, one of the user’s needs, we decided to study the number of modules

Nicolaou (2004) divides ERPS modules into two different categories. On the one hand, he describes primary modules as modules of core value-chain activities like production or also
logistics. On the other hand, support modules support value-chain activities human resources management modules and accounting ones. Both modules have different characteristics regarding an ERPS implementation (Nicolaou, 2004, p.82). In our case, it was difficult to proceed like Nicolaou because we did not know at the beginning how many modules and what type of modules our targeted firms had implemented. Kanellou and Spathis (2013) decided to divide their module into two categories: “the accounting modules” such as costing, payroll and fixed asset register for example and “the other modules” such as production and logistics. (Kanellou & Spathis, 2013, p.221). In fact as mentioned before, the accounting modules are the heart of the ERPS and the accounting benefits are the main attributes and characteristics of the product; therefore it seems logical to divide the modules in these two categories in order to identify if the ERPS has being implemented in the accounting department. Moreover, the number of modules implemented will influence the ERPS implementation cost. The ERPS implemented can be customized. Therefore, the more customized the ERPS is the higher the implementation cost is. (Bingi et al., 2006, p.12)

3.8 ERPS total cost

Concerning the ERPS total cost, Ehie and Madsen (2005) suggest that the cost of ERPS implementation ranges from 2% to 6% of annual sales (Ehie and Madsen, 2005, p.547). Cost/budget issues are strongly related with ERPS implementation (Ehie and Madsen, 2005, p.554). More detailed, Olhager and Selldin (2003) stressed that the cost of implementation or an ERPS ranges from an average 3.5% of annual revenues for small companies and an average 0.5% of annual revenues for larger companies (Olhager & Selldin, 2003, p . 372). In order to understand more in-depth this variable, Bingi et al. (2004) conclude that even though the price of the ERPS is low compared with in-house development, the total cost of implementation could reach three to five times the purchase price of the ERPS.

ERPS total cost, through a case study, Calisir and Calisir (2004) have shown that the total cost in an ERP environment can reach end-users and above all can have an impact on user satisfaction (Calisir & Calisir, 2004, p. 20). Consequently, regarding previous studies on price and quality and on user satisfaction, we believe that the ERPS total cost can influence user satisfaction in an ERP environment.

Concerning the difference between the budgeted and actual ERPS cost, Liang-Chuan Wu and Fang-Ming Liou (2011) show that 90% of ERPS implementations cost more than the budgeted cost. The cost of this type of project is quite uncertain (Liang-Chuan Wu & Fang-Ming Liou, 2011, p. 6715). Thus, we think that it is relevant in our case to take also the excess of money invested in the implementation of the ERPS. For this purpose, we have decided to take into account the difference between the actual cost and the budgeted cost. Here, we consider the budgeted cost as the amount of money which was forecasted and was supposed to be invested in the project. Then, the actual cost represents the effective cost invested, the total amount of money spent by the demanding company for the ERPS. Moreover, cost/budget issues are strongly related with successful ERPS implementation (Ehie & Madsen, 2005, p.554).

3.9 Theories
Based on the concepts analyzed above, we have chosen theories concerning satisfaction from marketing in general and IS system in particular.

3.9.1 Customer Satisfaction

From a general point of view, understanding the customer and trying to satisfy him lead to loyalty and to the attractiveness of new customers. Companies focusing on user satisfaction outperform on the market (Carson Research Consulting, 2009, p.2). Furthermore, measuring and understanding user satisfaction can enable a company to save a lot of money and to take relevant decisions regarding the future of the firm (Educause & Leah Lang, 2012, p.1).

Given that there are a lot of theories in this field, we have decided to present one theory that we consider is relevant to the ERPS market.

Value and Satisfaction

Value is what is added to the consumer’s live through the product or service purchased. This addition can be cast in terms of utility, monetary worth or additional pleasure (Oliver, 1999, p.56).

Value is a negative function of perceived sacrifices in terms of monetary outlays and non-monetary costs such as time and effort. These sacrifices are considered as cost-based value. Value is a negative function of what is sacrificed to purchase the good or service and a positive function of what is received from the purchase of the good or service (Oliver, 1999, p.45). What the customer receives from the purchase are the performance outcomes of the product.

For Oliver (1999), value-as excellence- is equivalent to the quality of the product or service purchased. Consumers assess value partly based on quality. In fact, quality enhances their consumption experience and gives them added utility. Quality can be seen from three different perspectives: attainment, desirability and usefulness. Attainment implies that the object in question has achieved a high level of technical accomplishment. Desirability refers to the consumer’s needs for attachment to the good or service. This perspective is related to the attractiveness of the consumable and suggests a level of quality that can be acquired. Usefulness reflects the influence of utility-based reasoning on different definitions of quality (Oliver, 1999, p.51-53).

The comparison of the performance outcomes and the cost-based value is one of the antecedents of satisfaction. This is one of the comparative operations in post-purchase judgment (Oliver, 1999, p.56).

Satisfaction provides value in what it leaves with the consumer; the fulfilled state. “Satisfaction may provide a sense of extended value in that the consumer values (places a high utility on) being satisfied. […] At the same time that consumption value enhances satisfaction may be a valued outcome for many consumers” (Oliver, 1999, p.58).

Figure 2 in Appendix 1 presents Oliver’s theory.

Concerning ERPS, we deeply think that this theory fit our purpose given that cost based value does not only include the price but also the time and effort invest in the transaction. As we mentioned before, the implementation of an ERPS can be time-consuming and efforts from the employees concerned are essential for the success of this implementation.
Concerning value-as excellence, in our case we considered that quality can be materialized by the number and type of modules and the accounting benefits of an ERPS since these concepts will allow the ERPS to fulfill the user’s needs. Based on this theory we can analyze the relationship of this predictor in satisfaction in France for the ERPS.

### 3.9.2 User satisfaction

#### IS success model

Figure 3 in Appendix 1 presents the IS model success.

DeLone and McLean (1992) argue that the measure of IS success can be divided in six categories: system quality, information quality, information use, user satisfaction, individual impact, and organizational impact. Through these categories, DeLone and McLean design a model for IS success with a process type approach, instead of treating them independently. According to their model, system quality and information quality have a positive or negative influence over information use and user satisfaction. The information quality category is related to the output of an IS, the layout on paper or electronic file. The system quality category concerns the system that processes the raw information required to create the output. It represents user perceptions about his (or her) interaction with the system during the daily tasks. In addition, the amount of information used can affect user satisfaction, and vice versa. In this model information use and user satisfaction are direct predictors of individual impact (DeLone & McLean, 1992, p. 87-88).

#### Integrated Model of User Satisfaction and Technology Acceptance

Wixom and Todd (2005) present the user satisfaction research stream approach and noticed that in user satisfaction literature, the mediating behavioral beliefs and attitudes are absent, and inattention to this conceptual gap explains the equivocal relationship between system satisfaction and system usage (Wixom & Todd, 2005, p. 89).

Figure 4 in Appendix 1 presents user satisfaction research stream approach.

Wixom and Todd (2005) design a model which integrated the technology acceptance model and user satisfaction model as two complementary models in a causal chain from key characteristics of system design to beliefs and expectations about outcomes that ultimately determine usage. After an empirical research with 465 data warehouse users, they demonstrated the potential to integrate concepts related to user satisfaction and technology acceptance into a single unified model (Wixom & Todd, 2005, p. 85).

Based on the technology acceptance model (Davis, 1989), Wixom and Todd (2005) considered information quality and system quality as object-based beliefs and information satisfaction and system quality as object-based attitudes. This model describe more in-depth the predictor of users satisfaction (information satisfaction and system satisfaction) (Wixom & Todd, 2005, p. 87).

Figure 5 in Appendix 1 presents this theory.
End-User Computing satisfaction

Doll and Torkzadeh (1988) consider End-user computing satisfaction (EUCS) as a second-order two-factor model with five first-order factors. In this model satisfaction is the second-order factor and content, accuracy, format, ease of use and timeliness are first-order factors (Doll & Torkzadeh, 1988, p. 268; 271-272).

Doll and Xia (1994) conducted a confirmatory factor analysis and concluded that the EUCS model explains end-user satisfaction (Doll & Xia, 1994, p. 453). Somers et al. (2003) evaluated ERPS packages and reported that content, format and ease of use are the top three contributors of EUCS. They concluded that this model is valid in predicting satisfaction (Somers et al., 2003, p.595).

This model has been validated by several researches in different national contexts. Deng et al. (2008) tested this model across cultures using samples in the United States, Saudi Arabia, Western Europe, Taiwan and India. For all the different cultures that they studied, they found that all five factors are equivalent. There is no significant difference for content, format, accuracy and timeliness; however, there is a difference for ease of use (Deng et al., 2008, p.211).

Azadeh et al. (2009) tested this model in an Iranian power holding company and their results show that the model is valid and the instrument reliable. They also state that the type of IS does not influence the EUCS model (Azadeh et al., 2009, p. 324).

By using this instrument, researchers are able to measure the attitudes towards the performance of ERPS or IS system concerning the following characteristics:

- Timeliness
- Efficiency
- Accuracy
- Precision
- Reliability
- Currency
- Completeness
- Format
- Usefulness
- Relevancy
- User-friendly
- Ease of use

(Wixom & Todd, 2005, p. 88)

Figure 6 in Appendix 1, presents the model developed by Doll and Torkzadeh.

All the elements of system quality and information quality can be assessed through Doll and Torkzadeh model (1988) except integration and accessibility. Based on literature presented above, we are going to measure the level of the integration through the number and type of modules.
3.10 Conceptual Model

Based on the theoretical framework analyzed in the previous section, we have designed the following conceptual model:

![Proposed Conceptual Model](image-url)

Figure 7 – Proposed Conceptual Model
4. PRACTICAL METHOD

In this chapter, we will describe the methods used to collect the data. In addition, we will explain the reasons of our choices and how they influence our research. In order to facilitate future replications of our study, we will try to describe and explain our practical method as clear and detailed as possible.

4.1 Data Collection Method

First, for our research, we have decided to collect primary data, which means new data is collected in order to answer to our specific research question and meet our objectives (Saunders et al., 2012, p. 319). In business and management research there are two types of data: primary data and secondary data (Saunders et al., 2012, p. 304).

One the one hand, secondary data has already been collected for some other specific purpose; its analysis can provide different or additional, interpretations or conclusions (Saunders et al., 2012, p. 304). The use of secondary data has many advantages. First, the use of secondary data can help the researcher to save valuable time and money because there is no need to collect the data him / herself (Saunders et al., 2012, p. 317). Second, secondary data can provide comparative and contextual data. By comparing our findings to secondary data we can place our results in a wider context and therefore assess their generalizability (Saunders et al., 2012, p. 318). In contrast with primary data, the use of secondary data ensures the permanence of the data collected and its availability to public scrutiny (Saunders et al., 2012, p. 318; 319).

Nevertheless, there are some important disadvantages of using secondary data. We agree that if we use secondary data it is difficult to assess the quality of the data, since we do not know exactly how this data has been collected and processed (Saunders et al., 2012, p. 319). In addition, in some cases, the access to secondary data is costly and difficult, which means time-consuming (Saunders et al., 2012, p. 320). Since secondary data was collected to answer a specific research question, its compilation and presentation may not meet our specific information needs (Saunders et al., 2012, p. 319; 320). Finally, we think that our research field is relatively new because ERPS are a relatively new technology; therefore we do not think to be able to find secondary sources that meet our expectations. Based on this discussion, we consider that primary data is appropriate for our research.

Secondly, concerning our research strategy, we decided to apply a quantitative method to collect the data. One of our purposes is to define if findings of a previous study conducted in different settings can be generalizable to another national context. The study conducted in Greece was a quantitative study. In order to compare the results we think it is appropriate to conduct a quantitative research. In quantitative research, generalization is one of the main preoccupations of the researcher. By using a representative sample of the population a quantitative research can meet the external validity requirements (Bryman & Bell, 2011, p. 163; 165). In addition, we used a quantitative research because this research method allows us to analyze relationships between variables (Saunders et al., 2012, p. 162). The main purpose of our study is to show the relationship between ERPS user’s satisfaction and ERPS accounting benefits, ERPS total cost and type and number of modules implemented. In this kind of research, we can incorporate controls to ensure the validity of the raw data collected. Data is collected in standard manner and the researcher is independent of the respondents. (Saunders et al., 2012, p.163). Therefore, we believe that this kind of research method will
Hénoc & Rivera, 2014

help us to conduct a value free study. Concerning the research design, we decided to apply a cross-sectional research design. A cross-sectional research design will allow us to collect data on more than one case in order to gather a body of quantitative and quantifiable data in connection with the variables which will then be examined to detect patterns of association (Bryman & Bell, 2011, p. 53).

Finally, we decided to use self-completion questionnaires to collect the data. This type of questionnaire is less resources consuming, we can save time and money. By using self-completion questionnaires, we avoid the interviewer effects and variability. For respondents, this kind of questionnaires is more convenient because they can complete it when they want and take the time they want to. (Bryman & Bell, 2011, p. 233). Given that we are not based in France to conduct the study, this type of data collection is also convenient for us. We decided to create a survey on the internet and send it by e-mail to our sample. We think that this is less time and energy consuming for our potential respondents and they are going to be keener to answer it.

In order to support our findings, to obtain precise answers, and to complement our survey data, we decided to conduct some interviews with accountants and IT professionals working with ERPS. These interviews were conducted by phone. In order to not disturb our respondents, we have asked clear and concise questions.

There is a logical basic outline for these interviews and we added some additional questions based on the precise answers of the respondents. Given that we interviewed French people, the interviews were conducted in French and are translated as precisely as possible to English. We have interviewed one IT professional and two accountants. To respect ethical principles and confidentiality, we have named the company A and B instead of stating the real name and we do not have divulged the name of our respondents. The respondents are aware of the fact that we have used their responses in our thesis. Please find the basic outline of the questionnaire in Appendix 3.

4.2 Survey Construction

All the questions of our questionnaire were based on previous research developed to measure the variables studied and the relationships between them.

The questionnaire is divided in five sections:
- ERP software information,
- ERPS accounting benefits,
- User satisfaction,
- Company’s characteristics,
- Employee’s characteristics.

In the first section, we decided to use items such as: “how many years ago did your company adopt an ERP system?” and “how much time did ERPS implementation process last?” (Kanellou & Spathis, 2013, p. 231). In fact, according to Esteves (2009), in order to obtain a successful realization of the potential benefits that the ERPS could bring it is mandatory to adopt a long-term vision. Managers should perceive ERPS benefits realization as a continuum cycle along the ERPS post-implementation. (Esteves, 2009, p. 25). So in order to detect a relationship between users’ satisfaction and ERPS accounting benefits, it is necessary to know if the implementation process is finished and for how long the company has used en ERPS.
Concerning, ERPS total cost, as Kanellou and Spathis (2013), we used the item “how much did ERP system cost (acquisition and installation) as a percentage of annual sales?” To this variable we added one item concerning the variance between the cost and the budget of the ERPS implementation. According to our theoretical framework, we strongly believe these issues can influence ERPS users’ satisfaction. We also asked what ERPS they used because maybe unique features of each ERPS can have an influence on ERPS users’ satisfaction. For the questions concerning the ERPS and its implementation, we proposed open questions so respondents can give answer in their way (Saunders et al., 2012, p.432). By proposing open questions, we allowed responses to be derived and obtain answers that we have not contemplated (Bryman & Bell, 2011, p. 249). For the numbers and type of modules, we proposed a list question. We decided to use this kind of question because we need the respondents to consider all the possible responses and this type of question meets our needs (Saunders et al., 2012, p.433).

In order to measure the accounting benefits, we used the questions used by Kanellou and Spathis (2013) and based on previous studies conducted by Deloitte Consulting (1998), O’Leary (2004), Spathis (2006) and Esteves (2009). Nevertheless, we changed some questions in order to reduce the number of items to avoid respondents’ fatigue. Kanellou and Spathis (2013) use three items concerning the reduction of time for closure (monthly, quarterly, annual accounts) (Kanellou & Spathis, 2013, p. 231). We decided to ask just one question about this benefit. As presented in the literature review, we believe that the items used by Kanellou and Spathis (2013) are appropriate to measure ERPS accounting benefits. Finally, in this section Kanellou & Spathis, (2013) incorporate some items more related to users’ satisfaction (Kanellou & Spathis, 2013, p. 231), we decided to delete them from this part.

In their questionnaire, Kanellou and Spathis (2013) have just two items to measure users’ satisfaction: satisfaction with the ERP software and the use of the ERPS (Kanellou & Spathis, 2013, p. 232). These items are based on DeLone and McLean’s (1992) model (DeLone & McLean,1992, p. 87). We thought that these two items were not enough to measure the users’ satisfaction in-depth. Therefore, we decided to use Doll and Torkzadeh (1988) model to measure users’ satisfaction. This comprehensive model measures five dimensions of users’ satisfaction: content, accuracy, format, ease of use and timeliness (Doll & Torkzadeh, 1988, p.268). Thanks to this model we will be able to measure in detail ERPS users’ satisfaction and see how different characteristics of ERPS influence users’ satisfaction.

To measure accounting benefits and users’ satisfaction, we used closed-questions. This type of question is easier and quicker to answer because they require no writing at all; in fact, since the possible answers are predetermined, responses are easier to compare (Saunders et al., 2012, p.432). In our study, we aimed at measuring attitudes towards ERPS. The approach to investigate a set of attitudes is known as a Likert scale (Bryman & Bell, 2011, p. 155). Likert scale is a type of ordinal scale that ask the respondents to answer to what extent they agree or disagree with different statements about a given concepts (Saunders et al., 2012, p. 436). Furthermore, for previous research projects, we have used Likert scales and we have noticed this scale will help us to save time because the questions can be pre-coded (Bryman & Bell, 2011, p. 240). We decided to use a 5-points Likert scale instead of 7 items scale because we consider that this scale is suitable for our research. Based on Saunders et al., (2012), and our experience in ERPS, we strongly believe that our respondents can answer accurately to 5-point rating; we considered that the likelihood of measurement error is very low (Saunders et al., 2012, p.437). We thought that just 5 choices will be appropriate for our statistical measurements.
For questions related to the age and experience and number of employees in the company we used open questions. We are fully aware that open question can be time-consuming for the respondents and the researchers as well. This answers need to be coded and this can be a very difficult task. Nevertheless, the data we want to collect is continuous data; numerical data whose values can theoretically take any value (Saunders et al., 2012, p. 476). So, the answers provided will not be too long and not difficult to code. In addition, thanks to our past experience using SSPS and regressions, we noticed that it is more appropriate to have the exact information instead of dividing the possible answers in categories.

For the rest of the demographic questions and company characteristics, we considered that the data that we want to collect is descriptive (nominal) data. The values of this kind of data cannot be numerically measure but it can be distinguished by classifying into categories (Saunders et al., 2012, p. 669). So we used closed-questions to obtain from our respondents the information we needed such as gender or type of industry of the company.

To collect the raw data, we created an online survey, we used the survey website; esurv.org. This website allows us to enter all the questions, alternative answers and scales directly into the website. After activating the survey, our potential respondents can have access to it via an internet ink. This internet link along with a brief introduction of ourselves and our project was sent via e-mail to our prospective respondents. In this e-mail, we stressed that it is voluntary to participate in and that we ensure the anonymity and confidentiality to the participants. We strongly think that to provide this information to our prospective respondent is essential to increase the positive perceptions of our questionnaire.

A pilot testing refers to a small-scale study to test the questionnaire. It allows the researcher to refine the questionnaire so the respondents will be able to answer the questions and the researcher will be able to record the data accurately. Furthermore, it allows us to assess the validity and reliability of the questions and the data that will be collected. (Saunders et al., 2012, p. 677; 678). We tried to pilot test our questionnaire on a group similar to our targeted population to be certain that the respondents would understand the questions and their feedback will be relevant (Saunders et al., 2012, p. 451). We decided to contact friends and relatives working with ERPS to conduct the pilot test so we will be able to have a feedback as complete as possible. Thanks to the feedbacks received, we noticed that the questions related to the ERPS total cost was a very sensitive point. In fact, most of the time, this information is confidential and very few people know it. This question is essential to our study so we could not delete it. Moreover, concerning the accounting benefits, our pilot test respondents told us that the question “ERP is more flexible in general” was not very clear, is more flexible compare to what? In our survey there is another question related to the flexibility of ERPS “Increased flexibility in information generation” which is more precise. So we decided to delete the question “ERP is more flexible in general” and keep just one question concerning the flexibility of the system. In general the feedback received was very positive.

The questionnaire used is presented in appendix 2.

4.3 Ethical considerations

There are two main ethical principles concerning primarily researchers’ attitude: integrity and objectivity. The quality of a research project depends on these two principles. The behavioral translation of these principles is: to act openly, to be truthful and to promote accuracy.
Hénoc & Rivera, 2014

(Saunders et al., 2012, p. 231). We did our best to ensure the integrity and objectivity of our research.

In our research project, we need to take into account major ethical principles concerning our attitude towards the respondents of our survey: harm to participants, lack of informed consent, invasion of privacy and deception.

First and foremost, research projects should not harm the participants. Harm can be defined as physical harm, harm to career prospects, or future employment, harm to participants’ development or self-stem, stress, among others. It is the responsibility of the researcher to assess carefully the possibility of harm to participants, and when it is possible, to minimize it. In order to minimize and even eliminate the possibility of harm to the research participants, in quantitative research, it is possible to anonymize records so the participants cannot be identified (Bryman & Bell, 2011, p. 128; 129). Ensuring confidentiality is essential to avoid any possible harm to participants. Moreover, the confidentiality and anonymity can enhance the reliability and the quality of the data collected (Saunders et al., 2012, p. 231). The introduction of our survey clearly stipulates that this one is completely anonymous and confidential. We intended to do so, in order to avoid any possible harm to participants.

The second ethical issue is related to the nature of the participation and the scope of withdraw. The use of data without the consent of the participants can be perceived as violating the principle of voluntary participation (Saunders et al., 2012, p. 232). This makes reference to the principle of informed consent: prospective participants must be given as much information as they may need in order to make an informed decision about their participation in the research project (Bryman & Bell, 2011, p.133). In order to respect this ethical principle, when we first make contact to our prospective respondents, we introduce ourselves, our study and its objectives. We try to give the respondents all the information they need to make an informed decision. But, we found it a bit difficult because we do not know how much information is relevant to do so.

Third, it is mandatory to respect others and their privacy. The invasion of participants is viewed as unacceptable no matter what is the research subject. The lack of normal respect for an individual values is regarded as a transgression as well (Bryman & Bell, 2011, p.136). In our study, we ask question separated from the privacy of the respondent. Our study focuses on their professional position towards ERPS. At any moment, we aim to intrude in our respondents’ privacy.

Finally, research should avoid, when possible, presenting their research as something it is not. This can cause the deception of the respondents. Sometimes, researches want to limit respondents’ understanding of the objective of the research so the responses are more natural. (Bryman & Bell, 2011, p.137). In our case, we do not use this kind of strategy because we do not need to. We present our research as it is and try to give as much relevant information as we can to our participants.

4.4 Sampling Construction

A population can be defined as “the universe of units from which a sample is to be selected” (Bryman & Bell, 2011, p. 176). Units can be nations, cities or companies. In this research project, the population represents all ERPS users in France, in other words, all people working
in France, whether it is in a French company or in a foreign one, which has implemented an ERPS. We decided to focus our research in a country such as France because we have previous experiences in this country and we have local contacts. We think that this will a great number of respondents. Since we are fully aware that conduct a census; the enumeration of the whole population (Bryman & Bell, 2011, p.176), we decided to sample the population.

A sample can be defined as a subset of the population selected for further study. There are two types of sample: the probability sample and the non-probability sample. On the one hand, a probability sample uses a random selection method; therefore, each unit of the population has the same chance of being selected. When this method of selection is applied, it is assumed that the research will obtain a representative sample. A representative sample is a segment of the population that reflects the population accurately. The main objective of a probability sample is minimized the possibility of sampling error. (Bryman & Bell, 2011, p.176). A sampling error is defined as “the discrepancy between the parameter of a population and the corresponding statistic computed for a sample drawn randomly from that population” (Watt & Van Den Berg, 2002, p.127). One the other hand, a non-probability sample is a sample that does not use random selection methods. It implies that some units of the concerned population are most likely to be selected. (Bryman & Bell, 2011, p.176)

There are three main non-probability sampling: quota sampling, convenience sampling and snowball sampling. (Bryman & Bell, 2011, p.190). First, a quota sample is claimed to be almost as good as a probability sample, its aim is to generate a sample that reflects the population in terms of relative proportions of individuals in different categories such as age, gender, etc. (Bryman & Bell, 2011, p.193). Second, a convenience sample is a segment of the population available to the researcher by virtue of its accessibility (Bryman & Bell, 2011, p.190).

Finally, a snowball sampling consists in soliciting a small group of people concerned by our research with the goal to establish contact with other units (Bryman & Bell, 2011, p. 192).

Given the nature of the population concerned by our research, we deeply think that it will be almost impossible for us to use probability sampling techniques. In fact, the population is very wide and it changes all the time: when people are hired or laid out of a company using ERPS, they enter or exit the population. Therefore we decided to use non-probability sampling techniques; convenience sampling and snowball sampling.

We both did an internship in France so we know people working with ERPS. As we said in the introduction, we also belong to the same French university. Grenoble Ecole de Management has an Alumni website (http://graduatenetwork.grenoble-em.com/) where we can have access to the professional information of the former students; job title, current employer and e-mail address. Therefore we have decided to use this website to contact former students who meet the criterions of our projects. Thus, we sent emails to accounting and IT professionals in France. This sample was easy of access for us; therefore it is a convenience sample. In a first e-mail, we explained to them our project and if they wanted to participate in our study. After receiving a positive answer we sent them the survey and ask if it was possible to send the survey to their colleagues. By asking them so, we applied the snowball sampling. We think it was the best way to reach units of our targeted population.

By using the alumni network of our home university we tried to minimize one of the main drawbacks of a self-completion questionnaire. Bryman and Bell (2011) explain that self-completion questionnaires often lead to a low response rate and interviewees sometimes do not answer all the questions (Bryman & Bell, 2011, p.234). In fact, there is a kind of solidarity
between former students and current students; former students are often keen to help students because they have being our situation. Given that we have not a lot of time to conduct this study, we think that contacting them and using them to get in touch with other ERPS users was the most relevant way to process and to avoid a very low response rate.

The main drawback of a snowball sample, as for all the other non-probability samples, is the generalization. Actually, Taylor-Powell (1998), explains that a non-probability sample cannot be appropriate if the goal of the study is to generalize the results (Taylor-Powell, 1998, p.2). Nevertheless, Monette et al (2013), sustain that, even if a snowball sample is not the most appropriate type of sample for generalization, this kind of samples may lead to generalization if and only if the generalization of results concern people having the same characteristics than those of our sample (Monette et al, 2013, p.147) In our case, every unit of our sample has the same characteristics than other units of our population: they work in a French company and are ERPS users. That is why we finally decided to use a snowball sample. Regarding the allocated time and the geographical difficulty to reach people in France, the snowball sample was the most appropriate way to conduct our study.

4.5 Motivations

Our survey was sent on March 26th and we closed it on May 12th. In total, we contacted 256 people by mail in order to know if they were interested to participate in our study. Our survey was sent out to the 49 willing people and we received 34 answers. The response rate is the percentage of a sample that does agree to participate. The response rate can be calculated as follows (Saunders et al. 2012, p. 680.):

\[
\text{Number of usable questionnaires/ (total sample-unsuitable or uncontestable members of the sample)}
\]

Thus, the response rate for our study is 13.3% if we consider our total sample to be 256 and the response rate is 69.3% if we consider our sample to be 49. We used a self-completion questionnaire sent by mail. With this type of questionnaire we were supposed to have a response rate between 10% and 20%. (Saunders et al. 2012, p. 270). We can explain our high response rate by the fact that we knew more or less the people we have contacted. Indeed, as we said before, we used the Alumni network of our home university; we believe that these people were more likely to answer our survey than unknown people. Moreover, as we launched the survey really early, we had time to send reminders to companies in order to obtain their responses. But as we are in Sweden, it was difficult to contact companies by phone or personally, so we just used e-mails.

We decided to process all the answers we have received. In fact, only 4 questionnaires where fully completed, 11% of the total questionnaires received. We think that the answers to some questions concerning the ERPS total cost or the operational accounting benefits (cost / reduction of personnel of accounting department) are not commonly known by all the employees in a company.

The question about the ERPS total cost obtained just a low response rate. Two main reasons can explain this. First, maybe the respondents did not know this figure and secondly, this kind of data is often strictly confidential, companies are often unwilling to give this kind of information to external people. Even though we explained our goals and the purpose of our thesis, several companies rather keep the information about the costs as secret as possible. In order to overcome this problem, we decided to ask another question about the difference between the actual cost of the implementation and the budgeted cost (in percentage). This
kind of data is less confidential and companies were more likely to answer our question. 35% of the surveys received contain this information. Thus, in our data analysis we used the percentage between actual cost and budgeted cost instead of using the ERPS total cost of the implementation as variable.

Concerning the operational accounting benefits (cost / reduction of personnel of accounting department), we can think about three main reasons why just 80% of the respondents answer this question. First, maybe the respondents concerned did not experience the ERPS implementation process and cannot give an accurate answer about this matter. Second, maybe the ERPS implementation is very recent and all the long-term effects such as the reduction of personnel of the accounting department have not appeared yet. Finally, maybe the respondents just do not know if the reduction of personnel of accounting department is directly linked to the ERPS implementation so they prefer do not answer this question.

### 4.6 Errors

We received 34 answers we decided to use all these 34 answers even if most of them were not fully completed. There are several reasons that can explain this. First, as we said before, some data can be confidential for a company, like the ERPS implementation cost. Secondly, our survey was addressed to IT workers and management controllers. Thus, it was sometimes impossible for IT consultants to evaluate the accounting impacts of the ERPS implementation on the working capital because it does not fall within their capabilities. Another example is related to the ability of respondents to know the impact on the reduction of personnel, it is always difficult to evaluate this criterion and relate it directly to the implementation of an ERPS. That is why we decided to exploit all the answers. All the surveys received had the answers concerning accounting benefits and ERPS users’ satisfaction.

Furthermore, it was difficult to obtain a lot of responses because our survey was sent during the quarterly closure. Indeed, in France, companies have a lot of work during April due to the quarterly closure; therefore, our survey was not a priority for them. Finally, a lot of firms wanted to know their interest in responding the survey and it was difficult to answer this question because the interest for the responding company having already implemented an ERPS was quite limited. On the contrary, our study can be really useful for companies which want to buy an ERPS or to replace the old one.

### 4.7 Data Analysis

The survey was open on the 26th of March 2014. It was sent out as soon as the potential respondent agreed to take part in our study. The survey was sent to our acquaintances and the potential respondents of Grenoble Ecole de Management Alumni between the 1st of April and the 29 of April 2014. We sent a reminder to our acquaintances on the 7th of May 2014. We closed down the survey on the 12th of May 2014. The survey was active during almost seven weeks. To process the data we used the software IBM SPSS Statistics. SPSS allows us to conduct tests to measure the impact of ERPS total costs, the number and type of modules and the ERPS accounting benefits on users’ satisfaction.
4.7.1 Descriptive statistics

First, since we are using numerical data through the Likert scale, in order to include all the data values, we used the mean; a measure of central tendency which includes all data values in its calculation (Saunders et al., 2012, p. 504).

Secondly, in order to describe the extent of spread of numerical data, we used the standard deviation. It is important to know to describe and compare the extent by which values differ from the mean. In fact, if the data values are all close to their mean, the mean is more representative than if they vary widely. (Saunders et al., 2012, p. 506).

4.7.2 Cronbach’s alpha

In order to assess the internal reliability of the scales used to measure the different variables, we will apply the method based on the calculation of the Cronbach’s alpha coefficient. The result of the Cronbach’s alpha test varies between 0 (no internal reliability) and 1 (high internal reliability). The result of this test should be above .8 to be able to ensure the internal reliability of the scale used. This meaning of reliability applies to multiple-indicator measures. (Bryman & Bell, 2011, p. 158-159)

4.7.3 Regression analyses

The regression coefficient, allowed us to measure the strength of the relationship between numerical variables. This coefficient varies between 0 and +1. This coefficient “measures the proportion of the variation in a dependent variable […] that can be explained statistically by the independent variable”. If the dependent variable can be explain only by the independent variable in question, the regression coefficient will be 1. In order to calculate this coefficient, we conduct a multiple regression analysis because we have more than one independent variable and one dependent variable. (Saunders et al., 2012, p. 523) Thanks to this analysis we were able to assess the influence of ERPS total cost, number and type of modules, and ERPS accounting benefits on users’ satisfaction. We are going to apply the standard method and the stepwise statistical method.

On the one hand, the standard method enters all the independent variables into the model at the same time. This method is probably the safest method to use given that we do not have any theoretical rationale that certain independent variables may be more important than others. However one of the drawbacks of this method is that if one of the independent variables is more important than the others, it may appear to account for only a small proportion of the variance because it shares a fair amount of variance with the other predictor variables. (Brace et al., 2012, p. 270)

On the other hand, the stepwise statistical method enters the independent variables into the model one at a time in a specific order defined by the strength of their correlation with the dependent variable. If adding the independent variables contributes to the model, it is retained. All the other independent variables are then re-tested for their contribution to the success of the model. Any independent variable that does not contribute significantly is removed. This is a very sophisticated statistical method. However, statistical methods should be applied with caution to a large number of cases, since the minor variation in the data due to sampling error can have large effects on the order in which variables are entered and, consequently, the likelihood of them to be retained. (Brace et al., 2012, p. 272)
5. EMPIRICAL FINDINGS

This chapter deals with the results of our quantitative study. Tables and descriptive statistics are included to illustrate our results. The following part, analysis and discussion, is based on the empirical findings presented in this part.

5.1 Demographics

In order to have a concrete view of who the respondents are, we added some demographics questions to our survey. The demographic characteristics of our sample will give us an idea of how applicable our results are to the French economy.

As presented in Table 1, our sample is mostly composed by accountants (82,4%). Concerning the IT professionals, they just constitute 17,6% of the sample. The mean of age of the respondents is 33,7 years; the respondents mean total work experience is 10 years and finally the mean years at current position is 6 years. Concerning the type of companies, 82,4% are S.A. and the mean number of employees is 54 210. 85,3% of the sample are companies in the manufacturing sector and 14,7% are in the Service – R&D sector. 94,1% of the companies in our sample have implemented the ERPS provided by SAP and 5,9% have implemented the ERPS provided by Oracle.

The companies in our sample represent a relatively wide assortment. Nevertheless, the companies from the retail sector are not represented. In fact, companies in this sector represent 24,1% of the total companies of the non-agricultural and non-financial companies in France in 2011 (Insee, 2013, p. 147).

Concerning the ERPS provider, in 2013, SAP was the leader of the global market with 24% market share (Gartner, 2014). In our study, SAP is the most represented ERPS provider. This is consistent with of its position in the global ERPS market.
Table 1 – Demographic Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respondents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Position in the firm</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting</td>
<td>28</td>
<td>82,4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT (ERP)</td>
<td>6</td>
<td>17,6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100,0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>21</td>
<td>61,8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>38,2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100,0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age and experience</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (both Its and Accounting)</td>
<td>23</td>
<td>33,7</td>
<td>23</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>ITs (years)</td>
<td>26</td>
<td>32,2</td>
<td>26</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Accounting (years)</td>
<td>23</td>
<td>34,0</td>
<td>23</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td><strong>Years at current position</strong></td>
<td>1</td>
<td>6.0</td>
<td>1</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>ITs (years)</td>
<td>2</td>
<td>2.3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Accounting (years)</td>
<td>3</td>
<td>7.0</td>
<td>1</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td><strong>Total work experience</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITs (years)</td>
<td>3</td>
<td>8.8</td>
<td>3</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Accounting (years)</td>
<td>1</td>
<td>10.0</td>
<td>1</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td><strong>Companies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type of Industry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacture</td>
<td>29</td>
<td>85.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service – R&amp;D</td>
<td>5</td>
<td>14.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commerce</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type of company</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.A.</td>
<td>28</td>
<td>82.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>17.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Company size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of employees</td>
<td>60</td>
<td>150 000</td>
<td>54 210</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ERP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type of ERP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAP</td>
<td>32</td>
<td>94.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>5.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time since adoption (years)</strong></td>
<td>1</td>
<td>7.20</td>
<td>1</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>
5.2 Cronbach’s alpha

As mentioned before the Cronbach’s alpha test measures the internal reliability of the indicators used to measure a specific variable. This test determines if the indicators used to measure a variable are consistent and can be used in the regression analysis (Bryman & Bell, 2011, p. 158-159). The results of this test are presented in Table 2. The results of the Cronbach’s alpha test reveal that all the multiple-indicators measures used in our survey; users’ satisfaction, operational accounting benefits (time), organizational accounting benefits, managerial accounting benefits and IT accounting benefits, have a coefficient larger than 0.7; therefore they are internally consistent (Bryman & Bell, 2011, p. 159).

Table 2 – Cronbach’s Alpha Coefficient

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s Alpha Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERP Users’ satisfaction</td>
<td>0.933</td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>0.746</td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>0.899</td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>0.723</td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>0.914</td>
</tr>
</tbody>
</table>

5.3 Descriptive statistics

The descriptive statistics we decided to include in our study are the mean, the standard deviation and the Pearson correlation.

5.3.1 Mean and Standard Deviation

The mean and standard deviation of each variable are presented in Table 3. The mean and standard deviation of the two groups studied are presented in Table 4.

Concerning the variables measured through a 5-points Likert scale, all the means, except one, are above 3, the middle point of the scale. As seen in Table 3, operational accounting benefits (cost) have the lowest mean (1.18), while IT accounting benefits have the highest (4.09). Concerning the mean of number of modules implemented (6.59) shows that the companies implement, on average, more than 50% of the 11 modules available. As far as the type of modules is concerned, all the firms of the sample have implemented more accounting modules (financial accounting, fixed asset register, management accounting, costing, stock purchase and payroll). Finally, on average, the budget of implementation has been exceeded by 32.35%. However, the mean only depicts the average value of all answers. To complete our analysis, we need to calculate the standard deviation.

The standard deviation measure shows us how the answers are distributed around the mean (Bryman & Bell, 2011, p. 345). Concerning the variables measured through a 5-points Likert scale, all the standard deviations are below 1. On a 5-point scale, we deeply think that these values are dramatically low; therefore we argue that the answers are concentrated around the
means of the variables concerned. Concerning the difference between the budgeted and actual cost of the ERP implementation, the standard deviation is very high (44,945); therefore the data is dispersed around the mean. For the number of modules, the standard deviation (2,676) shows that, for 11 modules available, the values are quite concentrated around the mean.

Table 3 – Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERP Users’ satisfaction</td>
<td>3.86</td>
<td>0.708</td>
</tr>
<tr>
<td>Budgeted and actual cost difference</td>
<td>32.35</td>
<td>44.945</td>
</tr>
<tr>
<td>Number of modules</td>
<td>6.59</td>
<td>2.676</td>
</tr>
<tr>
<td>Type of modules</td>
<td>2.94</td>
<td>0.343</td>
</tr>
<tr>
<td>Position in the firm</td>
<td>1.29</td>
<td>0.387</td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>1.18</td>
<td>0.946</td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>4.07</td>
<td>0.824</td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>3.89</td>
<td>0.730</td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>3.58</td>
<td>0.733</td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>4.09</td>
<td>0.802</td>
</tr>
</tbody>
</table>

Type of modules: 1: more "other modules"; 2: equal number of accounting modules and other modules; 3: more accounting modules.

More specifically, in Table 4 are presented the mean and standard deviation for the variables measured through a 5-points Likert scale divided by group of respondents. The means are all above the middle point except for operational accounting benefits (cost) for the accounting group. In addition, the standard deviations are below 1; therefore we argue that the answers are concentrated around the means of the concerned variables.

Table 4 – Descriptive statistics by Groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>Accounting</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>IT</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>2.680</td>
<td>0.945</td>
<td>3.330</td>
<td>0.816</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>3.964</td>
<td>0.858</td>
<td>4.556</td>
<td>0.404</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>3.798</td>
<td>0.742</td>
<td>4.317</td>
<td>0.531</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>3.485</td>
<td>0.721</td>
<td>4.000</td>
<td>0.689</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>4.009</td>
<td>0.826</td>
<td>4.458</td>
<td>0.600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERPS user satisfaction</td>
<td>3.742</td>
<td>0.686</td>
<td>4.436</td>
<td>0.539</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.3.2 Pearson Correlation

The results of the Pearson correlation test between the independent variables and the dependent variable are presented in Table 5. All the variables are significantly related to each other except for the “type of modules”. In fact, this variable is constant; consequently its
relations with the other variables cannot be used. SPSS deleted it from the analysis. Thus we do not take it into account in our study.

ERPS users’ satisfaction is strongly correlated with all the other independent variables. The correlations are significant at the 0.01 level (2-tailed).

The strength of the relationships varies widely from 0.034 to 0.862. The correlations between Operational accounting benefits (cost) and all the other variables are amid the lowest. The lowest correlation is the one between organizational accounting benefits and type of modules. The strongest correlation is the one between organizational accounting benefits and operational accounting benefits (time). Therefore, it would be interesting to improve organizational accounting benefits or operational accounting benefits since they are highly correlated. The variable budgeted and actual cost difference is negatively related to the other variables. We could conclude that when the difference between the actual implementation costs and the budgeted costs increases the other variables decrease.

Finally, the correlation coefficient between the position in the firm and ERPS users’ satisfaction is not statistically significant. In addition to this, the means concerning accounting benefits and ERPS users’ satisfaction are higher for IT professionals than for accountants. Given the correlation coefficient between the position in the firm and ERPS users’ satisfaction and the alignment of the descriptive statistics for the two groups studied, we decided to conduct the correlation test and regression test for the sample as a whole.
Table 5- Pearson Correlation

<table>
<thead>
<tr>
<th>Variable</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Budgeted and actual cost difference</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Number of modules</td>
<td>-.573*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Type of modules</td>
<td></td>
<td>0.334</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Position in the firm</td>
<td>-.331*</td>
<td>.453**</td>
<td>0.081</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>-0.45</td>
<td>.564**</td>
<td>0.148</td>
<td>.268**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>-.797**</td>
<td>.499**</td>
<td>0.158</td>
<td>.268**</td>
<td>.265**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>-.650**</td>
<td>.523**</td>
<td>0.034</td>
<td>.275**</td>
<td>.225**</td>
<td>.862**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>-.629**</td>
<td>.454**</td>
<td>0.058</td>
<td>.272**</td>
<td>.143**</td>
<td>.705**</td>
<td>.794**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>-.731**</td>
<td>.374*</td>
<td>-0.04</td>
<td>.217*</td>
<td>.204**</td>
<td>0.854</td>
<td>.834**</td>
<td>.625*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10. ERPS Users’ satisfaction</td>
<td>-.782**</td>
<td>.631**</td>
<td>0.183</td>
<td>.379**</td>
<td>.289**</td>
<td>.760**</td>
<td>.831**</td>
<td>.747**</td>
<td>.711**</td>
<td>1</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
b. Cannot be computed because at least one of the variables is constant.

5.4 Regressions

To measure the relationship between the independent variables and users’ satisfaction, we conducted a multiple regression analysis. We used a 5% statistically significance level to assess whether there is a relationship between the independent variables and the dependent variable.

5.4.1 Standard regression

Tables 6 to 9 are in Appendix 4.

First, we used the standard method. Given that the variable type of modules is constant, SPSS deleted it from the analysis.
As presented on Table 6, $R^2 = 0.847$ indicates the overall explanatory power of the model and the adjusted $R^2$ shows us that this model accounts for 69.5% of variance in the “se” scores (Brace et al., 2012, p. 278). These values show us that this model is a sound model. Table 7 reports the ANOVA that assesses significance of $R^2$. In this case, $p=0.013$, $R^2$ is statically significant and therefore the model is significant.

The standardized coefficient, Beta, provides a measure of the contribution of the dependent variables to the model in terms of standard deviations. Beta is the predicted change in standard deviation of the dependent variable for a change of 1 standard deviation in the predictor variable i.e. independent variable. (Brace et al., 2012, p. 279). Table 8 presents the Beta of all the predictors. In this model, the Betas are relatively low. Number of modules is the predictor with the most important impact on ERPS users’ satisfaction with a Beta of 0.488 while IT accounting benefits has the lowest impact on ERPS users’ satisfaction with a Beta of -0.021.

Finally, table 9 presents the collinearity coefficients. The closer to 0 the tolerance value is for independent variable, the stronger the relationship between this specific variable and the other predictor variables. An acceptable tolerance level is higher than 0.01. (Brace et al., 2012, p. 279). The tolerance levels of the predictor are all above 0.1. The VIF is an alternative measure of collinearity. A large VIF value indicates a strong relationship between the independent variables (Brace et al., 2012, p. 279). All the VIF values are below 10. In this model collinearity is not a major threat.

5.4.2 Stepwise regression

Tables 10 to 12 are in Appendix 5.

Second, we used the stepwise statistical method. The results of the regression analysis showed that the strongest model is when operational accounting benefits (time) and the number of modules are the only variable included (model 2).

The $R^2$ of model 2 is 0.814, this is a high explanatory power of the model. The model’s adjusted $R^2$ is 0.787 (Table 10); therefore the model is strong and shows that the operational accounting benefits (time) and the number of modules are responsible for 78.7% of the variance in ERPS users’ satisfaction (Saunders et al., 2012, p. 525).

By looking at Table 11, we noticed that the model is significant at the level of $p<0.0005$, which means that the independent variables’ influence on the dependent variable have a low probability of occurring by chance (Bryman & Bell, 2011, p. 354). Multicollinearity is not a threat to this model (Table 12). The tolerance level of operational accounting benefits (time) and number of modules is 0.630. The VIF level of these two variables is 1.58. This implies that the independent variables are not too highly correlated. Table 12 shows that operational accounting benefits (time) is the independent variable that has the most important impact on users’ satisfaction with a Beta of 0.528 (Brace et al., 2012, p. 279).
5.5 Cross Tabulation

The tables describing the cross tabulation analysis are presented in appendix 6.

Table 13 presents the cross tabulation results for SA and other types of companies. There are 28 respondents from SA companies and 6 in other types of companies. Regarding the accounting benefits perceived, the responses from SA employees ranges from “not at all” to “very high degree” with most responses being in the “high degree” field. The items with the most “high degree” answers are operational accounting benefits (time) and organizational accounting benefits. For other types of companies the item with the most “high degree” answers is IT accounting benefits. The answers range from “low degree” to “high degree” with most responses being in the “high degree” field.

For satisfaction again the responses from SA employees ranges from “not at all” to “very high” with most responses being in the “high degree” field. The item with the most “high degree” answers is “Overall satisfaction”. For other types of companies the items with the most “high degree” answers are “timeliness” and “content”. The answers range from “low degree” to “high degree” with more responses in the” high degree” field.

In Table 14, we present the cross tabulation concerning company variable “number of employees”. In France, there are 3 categories of companies SME (1 to 250 employees), Medium size companies (ETI, 250 to 5000 employees) and large companies (more than 5000 employees). There are 5 respondents working for SME, 6 working for ETI and 23 working for large companies. For SME and ETI in general, the accounting benefits have being perceived between a “low degree” and “high degree”. For large companies, the accounting benefits have being perceived between an “average” and “very high degree”. In SME, organizational and operational accounting benefits are perceived between “low degree” and “average”. In ETI IT accounting benefits are perceived in a “high degree” and organizational and managerial accounting benefits in an “average” degree. Large companies perceived operational accounting benefits (time) in a “very high degree” and managerial operational and IT accounting benefits are perceived between “average” and “high degree”.

Concerning satisfaction, most SME of the sample are highly satisfied with timeliness. Most ETI of the sample are satisfied with content, format and accuracy. Most large companies of the sample are satisfied with content, accuracy format and timeliness.

In table 15 we present the cross tabulation for IT and Accountant professionals. There are 28 responses from accountants and 6 from IT professionals. Concerning the accounting benefits perceived, the responses from Accountants are mainly “average” and “high degree” while the range goes from “Not at all” to “very high degree” for IT professionals. The item receiving the most “high degree” answer is “IT accounting benefits”. For IT professionals, answers range from low level to very high degree with a majority of the answers being high degree. The most ticked field for IT professionals in” high degree” is operational accounting benefits (time) and organizational accounting benefits.

Concerning satisfaction, we can see that the degree of satisfaction of Accountants varies between “not at all” and “very high degree” the most common answer is “high degree”. “Overall satisfaction” is the most selected item in “high degree” while IT professionals answered in majority “high degree” as well but the most selected item is “Content”. The answers of IT professionals are ranged from “average” to” very high degree”.
In Table 16, we present the cross tabulation concerning the demographic variable “number of years at current position”. There are 18 respondents who have been in their current position for 1 to 5 years, 5 respondents 5 to 10 years and 7 respondents more than 10 years. Thanks to this table, we can see that, in general, for the employees who have been in their current position for 1 to 10 years, the accounting benefits have being perceived between a “low degree” and “high degree”. For most employees who have been in their current position for more than 10 years, the accounting benefits have being perceived in a “high degree”. Most of the employees who have been in their current position for 1 to 5 years perceived operational accounting benefits and organizational accounting benefits at a “high degree”. Most of the employees who have been in their current position for more than 5 years perceived IT accounting benefits in a “high degree”. In addition, most of the employees who have been in their current position for 5 to 10 years, perceived organizational accounting benefits in a “high degree”.

Concerning satisfaction, we can see that for employees who have been in their current position for 1 to 10 years, in general their degree of satisfaction varies between “average” and “very high degree”. For employees who have been in their current position for more than 10 years, mostly, their degree of satisfaction varies between “low degree” and “very high degree”. The 3 groups of employees have mostly an average or above average degree of satisfaction concerning timeliness, accuracy and content.

In Table 17, we present the cross tabulation concerning the demographic variable “total years of experience”. There are 11 respondents with a total experience between 1 and 5 years, 12 respondents with a total experience between 5 and 10 years and 11 respondents with more than 10 years of experience. Thanks to this table, the employees who have between 1 to 10 years of experience, in general, the accounting benefits have being perceived between an “average” degree and “high degree”. For employees who have been in their current position for more than 10 years, mostly, the accounting benefits have being perceived between “average” and “very high degree”. All the respondents perceived organizational accounting benefits at a high degree. Most employees with more than 5 years of total experience have perceived IT accounting benefits and operational accounting benefits (time) at a high degree.

Concerning satisfaction, for employees with 1 to 10 years of total experience, in general their degree of satisfaction varies between “average” and “high degree”. Most of the employees with 1 to 5 years of experience are highly satisfied with content, accuracy and format of the layout provided by the system. Most of the employees with 5 to 10 years of total experience are highly satisfied with timeliness. Finally, most of the employees with more than 10 years of total experience are highly satisfied with content and timeliness.

5.5 Interviews

In order to support the findings presented above, we have interviewed three people selected from the population of this study; two Accountants and one IT professional. We present our findings summarizing the main insights from the interviews. We provide separate transcripts of the three interviews in Appendix 8.

Modules

First, the type of modules implemented in the companies our respondents work for vary slightly. The three companies have implemented the accounting /financial modules. In addition, modules related to Human Resources, IT and R &D have also been implemented.
Through these interviews, we notice that, in some of the companies concerned, the IT department is strongly related with the financial / accounting department since the implementation of the ERPS.

Second, the high level of integration achieved thanks to the implementation of the ERPS is recognized and analyzed by our respondents. Thanks to the ERPS, the communication and coordination between all the departments using this product have increased. The ERPS users can see crystal clear the difference between the previous IS and ERPS. In fact, given that there is on single data base, all the departments have access to the centralized data. This single database is time-saving and allows the ERPS users to work faster and be more efficient. The information needed to take decisions is available in a short time and therefore the decisions are taken more quickly. In other words, thanks to the high level of integration, the users highly perceive the IT accounting benefits, operational accounting benefits (time) and managerial accounting benefits of the ERPS.

Moreover, thanks the high level of integration, the users perceive the organizational accounting benefits of the ERPS. Given that all the users work with the same system and have access to the same information, the analyses and reports are more accurate and reliable. In addition, thanks to this system, the work is better organized. The ERPS makes users’ work easier and it is more pleasant to work with this kind of IS. In other words, the level of integration and the number of modules implemented by a company is a token of quality, efficiency and accuracy. However, the users are fully aware that it will take some time before the company will notice and enjoy all the benefits that this kind of system offers.

Finally, for ERPS users, the number of modules implemented has a direct impact on their level of satisfaction because a high number of modules allows a high level of communication between the departments, an easier and faster way of gathering and processing data and therefore a simplified access to real time information. Concerning this concept, the opinion of the Accountant and IT professional interviewed are aligned. However, for the IT professional the integration of application has a direct impact on his/her interaction with the other departments, specially the accounting / financial department.

As we presented above, according to the interviewees, the level of integration achieved through the ERPS is a key factor in the perception of the ERPS accounting benefits.

**Accounting Benefits**

Concerning the accounting benefits in general, the opinion of the Accountants and the IT professional are aligned. However, the Accountants are more precise when describing how the perceived accounting benefits have impacted their work.

The IT accounting benefits is noticed and appreciated. ERPS users’ realize that the new system gathers data and produces results more quickly and easier. The ERPS is time-saving and it simplifies their daily tasks. Consequently, the users are more efficient and have more time to perform the analysis of the data.

The operational accounting benefit (time) are recognized by the ERPS users. The employees point out that the ERPS has as direct consequence the reduction of time for closure accounts and for issuing financial statements.
Concerning the organizational accounting benefits, just some elements of them are mentioned by the respondents. For the ERPS users it is clear that the system increases the flexibility in information generation. The system adapts its reports to the needs of the users. The ERPS users consider the integration of accounting applications achieved through this system is remarkable. As well, the quality of the reports provided by the ERPS is dramatically high and therefore the reports and the information they contain are more reliable. Given that the quality of the reports is improved and the delay to obtain these reports is reduced, the decision-making process is improved. However, the interviewees did not mention the impact of the ERPS on internal audit.

The managerial accounting benefits are barely mentioned by our respondents. Maybe this is because our respondents are juniors in the companies they are working for. However it is stressed, at numerous occasions, the high level of integration of the accounting processes achieved thanks to the ERPS.

In our study, it was difficult to grasp the operational accounting benefits (cost). In fact some of our respondents were not in the company during the implantation process so they cannot express a sound opinion about it. It appears that until the system is completely efficient, it is difficult to evaluate whether it will allow the company to reduce personnel. For the other respondents, they consider that it is too early to establish a direct relationship between the implementation of the ERPS and a reduction of personnel. However, it seems that the ERPS implementation has monopolized many workers in some companies so the reduction of personnel will not be decided in the short run.

**ERP total cost and difference between budgeted and actual cost**

Concerning the ERP total cost, none of the respondents know the exact amount. Even though they are aware that this kind of system is really expensive, they point out that the information concerning the cost in confidential and very few people in the company know it (project managers and top management).

Concerning the difference between budgeted and actual cost is less confidential than the ERPS total cost. The users are fully aware that regarding this kind of projects the budget is often overstepped.

According to the respondents, the difference between budgeted and actual cost plays has an influence over users’ satisfaction. In fact, this difference is often due to miscalculations or poor planning during the conception phase. Consequently, it will take more time than planned to implement the ERPS. During this additional delay, the system is not completely operational and some mistakes in the information and data provided by the system can occur. In addition, during this delay, the company has to pay additional fees to the consulting firm and SAP professionals to correct the mistake done in the conception phase and therefore to reduce the lack of efficiency resulting from it. This lack of efficiency of the ERPS can have a negative influence on our satisfaction.

The influence of the difference between budgeted and actual cost plays has an influence over users’ satisfaction seems to be more clear for the Accountants than for the IT professional even if at the end their opinions are aligned.
Users’ Satisfaction

When comparing with other type of IS, the ERPS users’ are highly satisfied of this system. ERPS is more appropriate to the needs and expectations of large sizes companies. This type of companies deals with an important quantity of data gathered all over the word that needs to be analyzed. The ERPS helps users to perform this analysis in an easier and faster way. By centralizing the information, the system facilitates users’ daily tasks. For IT professionals, the ERPS represents an important improvement in the company given that with one single data base to handle they have time and the risk of error decrease dramatically. Even though they are conscious there are some drawbacks, the overall impression of the system is good and positive.

Concerning the components of users’ satisfaction, “timeliness”, “ease of use”, “accuracy”, “content” and “format”, in general, all the respondents recognize that all this five components are important when determining their level of satisfaction. However, the main characteristic that the ERPS users appreciate the most is “timeliness”. The timeliness of the information enables to produce more accurate reports and analyses. Thanks to the improved quality of the reports, Accountants have more time to analyze the data. The quality of the information provided by the ERPS gives management more visibility and confidence to take decisions in a short time. Moreover, some respondents recognize that accuracy was also more important than the other characteristics given that the level of accuracy will determine the level of reliability of the information provided by the system. In addition, if the information produces is accurate, the number of mistakes, misunderstandings and information gaps would be reduce and therefore the users can save time and improve the quality of the reports. The only difference between the Accountants and IT professionals opinion is that for IT professionals, the friendliness of the software is highly appreciated. They consider the system is more users friendly that the other system they have worked with. IT professionals consider that with a good training, it is easy to be proficient quickly on the ERPS.
6. ANALYSIS AND DISCUSSION

In this chapter, first, we will analyze and discuss the results presented in the previous chapter in relation to our theoretical framework. Based on this analysis we will evaluate our conceptual model. This chapter contains the basis for the recommendations and conclusions stressed in the next chapter.

As stated before, given the correlation coefficient between the position in the firm and ERPS users’ satisfaction and the alignment of the descriptive statistics for the two groups studied, we decided to conduct the correlation test and regression test for the sample as a whole.

6.1 Regression 1 - Standard Method

According to Table 8, the predictor variables with the higher coefficients on ERPS users’ satisfaction are budgeted and actual costs difference (-0.242), number of modules (0.488) and organizational accounting benefits (0.208). However, according to the Sig values in Table 9, these coefficients are not statistically significant. In fact, none of the predictors has a significant coefficient on ERPS users’ satisfaction. The predictor with the lowest Sig is number of modules p=0.096. Nevertheless, for the standard method, the significant test or the t-test only tests the unique variance explained by the predictor variable. Therefore, a predictor that is strongly correlated with the dependent variable but shares variances explained with another predictor can have a non-significant coefficient Beta (Brace et al., 2012, p. 279). So based on this regression, given the significance levels, we cannot conclude on a sound influence of the independent variables over ERPS users’ satisfaction. This is the reason why we decided to conduct a Stepwise regression.

6.2 Regression 2 - Stepwise Method

We decided to use the stepwise statistical method because of the drawbacks of the standard method. As mentioned before, the advantage of this method is that it enters the independent variables one at a time in contrast with the standard method. As we can see in Table 12, operational accounting benefits (concerning time) and the number of modules are the only variables that contribute significantly to the model. In addition, as presented in Table 11, since p<0.0005, the influence of these two variables on the dependent variable user’s satisfaction is not due to chance or happenstance.

Nevertheless, the use of this stepwise statistical method needs to be qualifying in our case. Indeed, as said above, this kind of method should be applied with a large sample. Our sample is formed by only 34 units; maybe it is not enough to apply this statistical method. Nevertheless, it gives an overall view of the importance and significance of each variable of our conceptual model. This method enables us to understand which variables influence more ERPS users’ satisfaction. It appears to be normal that the number of modules implemented and operational accounting benefits (time) have a strong influence over ERPS user’s satisfaction.

First, concerning the number of modules, it reflects the degree of integration of the ERP product. We believed, based on our previous experience that it is obviously easier to work
with a system that encompasses all modules and has one single database for all the departments than to switch between different systems that are not centralized. The number of modules implemented will determine the level of integration provided by the ERPS. We think that the higher the level of integration the faster employees obtain the information needed.

Secondly, as it is showed in Figure 3, timeliness has the highest ERPS users’ satisfaction rate (84%). Therefore, it is easily understandable that operational accounting benefits (time), which include statements regarding the reduction of time, are considered as one of the two most significant variables. It has been shown that there is a statistically significant correlation between the two independent variables. In our case, the important number of modules implemented improves the integration of the ERPS and therefore there is a reduction of time to obtain the information. When the number of modules increases, it has a positive impact on the reduction of time for doing tasks.

6.3 Modules

First, the number of modules, and consequently the level of integration of the ERPS, has an important and significant influence over ERPS users’ satisfaction with a Beta of 0.478 as showed by the stepwise regression in Table 12. These results are in accordance with previous studies. Truman (2000) stressed that there is a positive relationship between integration and performance (Truman, 2000, p. 209). Chapman and Kihn (2009) point out that the integration of a system leads to flexible forms of analysis leading to enhanced performance (Chapman & Kihn, 2009, p.166). In particular, Spathis (2006), showed that there is a relationship between the number of modules operated and the perceived ERPS benefits (Spathis, 2006, p. 76; 77). Thus the number of modules and therefore the degree of integration of the ERPS influences the impacts of the implementation of an ERPS and consequently the ERPS users’ satisfaction.

Table 18 (Appendix 7) presents the modules operated in the ERPS implemented by the companies of our sample. Almost all the companies operate the financial accounting module. In addition, the majority of the companies operate a fixed asset register, costing, management accounting modules and stock-purchases. Nearly all the companies of our sample operate more accounting modules than other type of modules. The operation of this kind of modules demonstrates that the companies implementing an ERPS are primarily concerned with the integration of their accounting processes into this system. This trend reflects the companies’ expectation that ERPS will have a positive impact on their accounting processes. (Kanel lou & Spathis, 2013, p. 227). However, payroll is the only accounting module that is not implemented in the same basis as the others. This exception is align with the study of Kanel lou and Spathis (2013).

6.4 ERPS total costs and the Difference between Budgeted and Actual Cost

First, the ERPS total cost (purchase and implementation costs) is one of the key independent variables of our model. This variable was calculated in percentage of annual sales. In our survey, the response rate for this question was very low, just 11%. The answers obtained are between 0.01% and 7% of annual sales. Any of the answers obtained are ranged from 2% to 6% of annual sales as suggested by Ehie and Madsen (2005) (Ehie and Madsen, 2005, p.547). When asking this question, we expected to have a low response rate. In fact, the ERPS total
cost is confidential information and not all the employees in the company are aware of. We think that the employees who have access to this information are the one who participated in the ERPS implementation process or the heads of the accounting department and the heads of the company. Given that the response rate for this question was really low, we decided to focus our analysis on the difference between actual and budgeted costs of ERPS implementation.

Secondly, concerning the question about the difference between the actual and budgeted cost of ERPS implementation, we obtain a response rate of 35.2%. The answers vary from 0% to 150% of the established budget. According to Table 5, this variable has a strong correlation with ERPS users’ satisfaction -0.782 significant at the 0.01 level. This means that the difference between the actual and the budgeted ERPS cost and ERPS users’ satisfaction are negatively correlated. Nevertheless, this variable is not significantly related to ERPS users’ satisfaction neither in the standard regression nor in the stepwise regression. As far as the difference between actual and budgeted ERPS implementation cost is concerned, we cannot state a sound conclusion since the relationships obtain through the standard regression is not statistically significant. Therefore, we cannot assess if the value-based satisfaction (Oliver, 1999) theory is applicable to ERPS.

6.5 Accounting Benefits

Based on previous literature, we decided to analyze the following accounting benefits:

- IT accounting benefits,
- Operational accounting benefits (time),
- Organizational accounting benefits,
- Managerial accounting benefits,
- Operational accounting benefits (time).

Through the results summarized in Table 5, we can analyze the correlation between our five independent variables and users’ satisfaction.

First, the Pearson correlation indicates a correlation index equal to 0.289 between ERPS users’ satisfaction and operational accounting benefits (cost). The variable operational accounting benefits (cost) refers to the reduction of personnel due to the implementation of the ERPS in a company. The correlation coefficient 0.289 is really low and not statistically significant. This value shows that there is not a significant relationship between the reduction of personnel and ERPS users’ satisfaction. In our case, it is understandable because a lot of implementations are quite recent among our respondents.

As a matter of fact, according to Esteves (2009), in order to obtain a successful realization of the potential benefits that ERPS could bring, it is mandatory to adopt a long-term vision. Managers should perceive ERPS benefits realization as a continuum cycle along the ERPS post-implementation. (Esteves, 2009, p. 25). Thus, the long run consequences of the ERPS implementation cannot be noticed immediately. In fact, after implementing an ERPS, there is a phase during which some new problems appear i.e. the maintenance phase (Esteves & Pastor, 1999, p.4; 5). A company needs some years in order to know if it is convenient to reduce the accounting personnel. Regarding our survey, a great number of respondents have been using the ERPS for less than two years; therefore it seems really complicated to assess their satisfaction about a reduction or not of the personnel. It is difficult to gasp long-term
effects regarding an ERP implementation. In addition, some people are working on an ERPS for two years whereas the ERPS in the company they work was implemented 10 years ago, so in this case, it is also difficult for our respondents to link their satisfaction with this independent variable. That is why there is a low correlation between operational accounting benefits (cost) and users’ satisfaction.

This low correlation is also mentioned by Granlund and Malmi (2002) who explain that an ERPS implementation does not lead to reduction of personnel because workers save time thanks to the ERPS product but use this extra time in order to do extra work and extra analysis (Granlund and Malmi, 2002, p.313). In addition, this low rating is aligned with the results of the study conducted by O’Leary (2004). He states that only 12% of the organizations which implemented an ERPS have undertaken a reduction of personnel (O’Leary, 2004, p.68).

Secondly, the correlation coefficient between ERPS users’ satisfaction and operational accounting benefits (time) is 0.760. This figure shows the strong relationship between reduction of time due to the ERPS and ERPS users’ satisfaction. It seems clear that a reduction of time for doing the same tasks than before the ERPS implementation is directly related with users’ satisfaction. Reducing time can enable ERPS users to organize better their workload or to do extra work and extra analyses aiming at improving the results of the company (Granlund and Malmi, 2002, p.313).

Then, concerning organizational accounting benefits, the correlation coefficient with users’ satisfaction is 0.830 which is quite high. This can be explained by the fact that the quality of the issued reports, the flexibility in information generation or also the integration of accounting applications can play a part in ERPS users’ satisfaction. A new report with best quality than a former report would obviously answer better the users’ needs. The fact that an ERPS improves quality of reports and availability of information is also pointed out (Olhager & Selldin, 2003, p. 373). In addition, if the flexibility in information generation increases, it can also play a significant role regarding ERPS users’ satisfaction. According to Spathis and Constantinides (2004, p.241) flexibility is one of the most important accounting benefits.

As far as managerial accounting benefits are concerned, the correlation with ERPS users’ satisfaction is 0.747; it is also a quite high value. One of the main motivations at work is the income, at the end of each month, each worker earns a salary. So, the reduction of time for issuing payroll can have an impact on the satisfaction of users. Furthermore, an increased use of financial ratio can lead to well-informed decisions and therefore better decisions. This benefit contributes to the success of a company; this is why we think that it can also have a strong relationship with ERPS users’ satisfaction.

Finally, concerning IT accounting benefits, our last independent variable, the correlation with users’ satisfaction is 0.711. Indeed, the way by which data is gathered and results are produced is logically related to ERPS users’ satisfaction, for example, if the data are gathered really easily and quickly, that may lead to the satisfaction of the end user. So, we can see that among the five dimensions of accounting benefits, only the operational accounting benefits (cost) are not linked with users’ satisfaction.

In conclusion, thanks to the Pearson correlation test, we can see that IT accounting benefits, organizational accounting benefits, managerial accounting benefits, ERPS total cost and the difference between actual and budgeted costs might have a positive effect on ERPS users’ satisfaction individually (correlation coefficient above 0.7). However they are not found to have any relevance when analyzed together with the number of modules and the operational
accounting benefits (time). This is the reason why they are excluded from the stepwise regression.

### 6.6 Users’ Satisfaction

![Users' Satisfaction Rate](chart)

*Figure 8 – Users’ Satisfaction Components*

A better understanding of the factors that can influence ERPS users’ satisfaction needs to be develop in order for ERPS to be used effectively and efficiently (Somers et al., 2003, p. 613). In order to better understand users’ needs and users’ satisfaction, we used the 12-item instrument developed by Doll and Torkzadeh’s (1988, p. 268). It shows which components influence users’ satisfaction. All the 5 components measured have a high rate, above 60%. Timeliness is the most appreciate component of the ERPS. This fact confirms that operational accounting benefits (time) is the most significant independent variable which influences users’ satisfaction. The other components are respectively accuracy, content, format and easy to use. The chart analysis confirms the idea shown in the regression analysis. More than 80% of users determine timeliness as the most important factor regarding their satisfaction. Thanks to this chart, we can see the link between ERPS users’ satisfaction and the factors influencing it.

Moreover, the component ease of use is the one with the lowest rate. This can be explained by the complexity of the system. As users of ERPS systems, we both agree that this kind of systems are not intuitive and need a particular long learning period.

This 12-item instrument was used by Law and Ngai (2007) to measure ERPS success (Law and Ngai, 2007, p.422) and by Zviran et al. (2005) as one of the indicators of ERPS success (Zviran et al., 2005, p. 44). Finally, Wu and Wang (2007) used it to measured key-user satisfaction (Wu & Wang, 2007, p.1586). Any previous research has analyzed the results
provided by this instrument in order to identify what are the components of end-user satisfaction that need to be improved by the ERPS providers.

These results are aligned with the results obtained by Deng et al. (2008) since all five factors have a high score and there is no significant difference for content, format, accuracy and timeliness. However, there is a difference for ease of use (Deng et al., 2008, p.211).

These findings are aligned with DeLone and Mclean model (1992) since the information quality and system quality are the determinants of users’ satisfaction.

More in-depth, these results are aligned with Wixom & Todd model (2005). Since all the factors have a high score we can say that all the components of information quality (completeness, accuracy, format and currency), measured thanks to EUCS model, determine users’ satisfaction. Moreover, three components of system quality (reliability, flexibility and timeliness), measured thanks to EUCS model, determine users’ satisfaction.

6.7 Cross tabulation

The results found thanks to the cross-tabulation can be linked to theories and aim at supporting the reliability and the credibility of our findings. As stressed by Granlund and Malmi (2002), accounting workers are concerned by the implementation of an ERP and explain that ERPS enable users to have more time to do other things. Table 15 shows that accountants point out IT accounting benefits, that is to say, the time for gathering data, for processing results and the ease to do that. Then, we can see here the importance of the saved time for accountant users (Granlund & Malmi, 2002 p. 313). In addition, concerning the similarities between accountants and IT professionals, regarding Table 15, we notice that accounting benefits are all between “average” and “very high degree”, except for operational accounting benefits (cost). Therefore, it justifies our choice to choose accountants and IT professionals.

As explained in the empirical findings, “timeliness” and “accuracy” are two of the factors most well graded by the users in Table 13, Table 14 or Table 15. These findings are in accordance with previous research which shows that ERPS aim at reducing errors and at improving service time (Velcu, 2007, p.1327 ; Brazel & Dang, 2008, p.17).

The empirical findings have shown that there is a relation between the degree of the accounting benefits and the overall satisfaction of the users. All the accounting benefits, except operational accounting benefits (cost) are mostly ranked between “average” and “very high degree”. At the same time, all the factors of satisfaction are mostly ranked between “average” and “very high degree”. These results show the relation between the product-based quality and the users’ satisfaction. The higher the product-based quality is, the higher the user satisfaction (Jahanshahi et al, 2011, p. 253).

Moreover, the relationship between the number of modules and the accounting benefits is obvious in our cross-tabulation analysis. In Table 15, all the accounting benefits except operational accounting benefits (cost) are ranged between “average” and “very high degree”. The number of modules for this Table is on average 9,17. As stated by some previous research, the higher the number of modules is the higher the level of integration and therefore the greater the perception of accounting benefits (Bae & Aschcroft, 204, p.7 ; Truman, 2000, p. 209). It is the same conclusion with the other tables. The more modules are implemented in a company, the perception of the accounting benefits is higher.
DeLone and McLean pointed out the importance of system quality and information quality on users’ satisfaction. Information quality is related to the output of the ERPS and system quality represents the system that processes the raw information required to create the output. Then, information quality can be linked to operational accounting benefits (time) because the output of the ERPS is on one hand the issue of financial statements and financial reports. It can also refer to IT accounting benefits regarding the timeliness to produce results. The results can be seen as the output of the ERPS. System quality can also represent IT accounting benefits because it concerns the gathering of raw data in order to create the output. System quality is also linked to managerial accounting benefits. For example the increased use of financial ratio aims at improving the output and at creating it (DeLone & McLean, 1992, p. 87-88).

Based on the analysis above, in Table 13, the majority of the respondents for SA ranked accounting benefits between “average” and “very high degree” (27 out of 28 for operational accounting benefits (time), 25 out of 28 for managerial accounting benefits and 27 out of 28 for IT accounting benefits). At the same time, the same respondents mostly ranked the overall satisfaction between “average” and “very high degree” (25 out of 28 for overall satisfaction). Here, it is just an illustration of this theory. The theory of DeLone and McLean is confirmed by our results and we can also verify it in the other tables.

Concerning the EUCS model design by Doll and Torkzadeh (1988), the overall end-user satisfaction is based to five factors: Content, accuracy, format, ease of use and timeliness (Doll & Torkzadeh, 1988, p. 268). Regarding the different cross tabulation tables, our results corroborate the fact that the five factors are the predictors of users’ satisfaction. For example, Tables 16 shows that whatever the age at current position, when the five factors are mostly ranked between “average” and “very high degree”, the overall satisfaction is also mostly ranked between “average” and “very high degree”.

6.8 Interviews

By reading the three interviews, we can see some similarities that support our empirical findings. For the three respondents, the time saved thanks to the implementation of the ERPS is a key benefit. It shows that IT accounting benefits and Operational accounting benefits (time) are important for our respondents. The time saved and the fact that data are gathered and processed more quickly and easily satisfies the users. Moreover, the flexibility of the new system and the quality of the analyses done by the users is also pointed out by our respondents. That implies the importance of the organizational accounting benefits. The integration of the system and the number of modules seems to be a key element for the respondents, it shows that the variable “number of modules” and the managerial accountings benefits (integration of the accounting processes, reduction of time for issuing payroll…). This responses are aligned with the exploratory study conducted by Spathis and Constantinides (2004).

In Spathis and Constantinides (2004) study, the most highly rated perceived accounting benefits achieved through an ERPS are relate to increased flexibility in information generation, improved quality of reports-financial statements and increased integration of accounts applications. In fact, the integration of applications, the production of real-time information and particularly information for decision making clearly affect business processes and particularly the accounting practices of ERP adopters. In this study, benefits achieved involve time reductions for accounts closure and preparation of financial statements (Spathis & Constantinides, 2004, p.241).
Furthermore, the respondents do not really take into account the operational accounting benefits (cost), that is to say whether there is a reduction of personnel due to the implementation of the ERP system. Finally, they are not aware of the total cost of the ERPS implementation. Nevertheless, they all know that the actual cost was higher than the budgeted cost and they believe that this cost can play a role and can have consequences on user’s satisfaction. Through these interviews, we can explain the reasons explaining our results concerning the ERPS total cost and the Operational accounting benefit (cost); These interviews supported in a large extent our findings and illustrating how users interpret the benefits produced by the implementation of an ERPS.

6.9 Discussion

Our study is based on an article written by Kanellou and Spathis (2013). In their study there is a strong correlation between ERPS users’ satisfaction and all the dimensions of accounting benefits except one: operational accounting benefits (cost) (Kanellou & Spathis, 2013, p.226). Furthermore, the ERPS total cost has also a strong correlation with ERPS users’ satisfaction. On the contrary, the type of modules has a quite low correlation with users’ satisfaction. In addition, IT accounting benefits, operational accounting benefits (time) and ERPS total cost have a significant and positive coefficient on ERPS users’ satisfaction (Kanellou & Spathis, 2013, p.227). Operational accounting benefit (cost) and the type and number of modules have a negative effect on ERPS users’ satisfaction (Kanellou & Spathis, 2013, p.227). Finally, in this study there was no significant difference between IT professionals and accounting perceptions concerning the ERPS accounting benefits (Kanellou & Spathis, 2013, p.229).

Our study has some similarities and some differences with the results found by Kanellou and Spathis (2013). As in their study, in our study, operational accounting benefits (time) and the number of modules influence ERPS users’ satisfaction. Then, even if our sample does not enable us to generalize our results, our study shows the similarities between French and Greek companies.

Concerning the differences, in our model, the number of modules implemented has a strong influence over ERPS users’ satisfaction. In addition, the only accounting benefit that seems to have a significant and positive influence over ERPS users’ satisfaction is operational accounting benefits (time). Moreover, the variable type of modules had to be eliminated from our analysis since in our sample it was constant. Maybe this difference can be explained by the nature of our sample. In fact our convenience sample needs to be treated with caution. As we explained before, one of our variables was constant for all the 34 respondents; consequently this raises questions about the quality of our sample.
6.10 **Final conceptual model**

Based on the analysis of our results we propose this final conceptual model.

<table>
<thead>
<tr>
<th>IT accounting benefits</th>
<th></th>
<th></th>
<th></th>
<th>Accounting and IT users’ satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational accounting benefits (time)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERP total costs and variance between budgeted and actual ERP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of modules implemented*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of modules implemented</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Effects of separate predictors:**

**Effects in the overall model:**

**Non-significant variables:**

* Excluded Variable

*Figure 9 - Final conceptual model*
7. CONCLUSIONS AND RECOMMENDATIONS

In the following chapter, we will describe the theoretical contributions that our research makes to the research field. We answer to the research question and sub-purposes defined in the introduction. Moreover, we will provide practical recommendations for companies concerned by our study: providers of ERPS and the customers of these companies.

7.1 General conclusions

The main purpose was to study the potential impact of the number and type of modules, the ERPS total cost and its variance between the budgeted and actual amount and the accounting benefits generated by the ERPS implemented on the ERPS users’ satisfaction. To analyze this potential impact we decided to target two groups of employees that are in contact with the ERPS on a daily basis: accountant and IT professionals. By conducting this study in France we tried to generalize to other national context the results of the study conducted by Kanellou and Spathis (2013). By conducting this research project, we are able to answer our research question and address the sub-purposes used as guidelines in our study.

At an individual level, how do the number and type of modules, the ERPS total cost and the variance between budgeted and actual amount and the accounting benefits generated by the ERP system implemented influence accounting and IT users’ satisfaction?

In our study we decided to target specific accounting benefits divided in five groups:

- Operational accounting benefits (cost),
- Operational accounting benefits (time),
- Organizational accounting benefits,
- Managerial accounting benefits,
- IT accounting benefits.

Our study shows that there are differences in how the independent variables affect ERPS users’ satisfaction. Our results of the correlation test show that operational accounting benefits (time), organizational accounting benefits, managerial accounting benefits, IT accounting benefits, and the number of modules have a positive effect on ERPS users’ satisfaction. The variance between the actual and budgeted cost has a negative yet strong effect on ERPS users’ satisfaction. Our findings in the stepwise regression show that there are two predictor variables that are relevant in the model: number of modules and operational accounting benefits (time). We can conclude that organizational accounting benefits, managerial accounting benefits, IT accounting benefits and the variance between the actual and budgeted cost might only play minor roles affecting ERPS users’ satisfaction.

The first sub-purpose of our research is to identify the relationship between accounting and IT users’ satisfaction and the accounting benefits generated by this system. The operational accounting benefits (time) are the only accounting benefits that have a strong effect in ERPS users’ satisfaction in the model as a whole. Operating accounting benefits (cost) do not have any significant effect on satisfaction. The other accounting benefits have a positive effect on ERPS users’ satisfaction individually.

The second sub-purpose is to analyze whether ERPS total cost and the difference between actual and budget cost has an influence on accounting and IT users’ satisfaction. Given the low response rate concerning the ERPS total cost, we decided to focus our analysis on the
difference between actual and budget implementation cost. This predictor has a strong negative effect on ERPs users’ satisfaction individually but not in the model as a whole.

The third sub-purpose is to investigate the relationship between accounting and IT users’ satisfaction and the number and type of modules implemented. The number of modules has a strong and positive impact in ERPs users’ satisfaction in the model proposed. The variable type of modules is excluded from our analysis given that it is constant in our sample.

Finally, our last sub-purpose is to identify if there is any difference between the accounting user’s satisfaction and IT users’ satisfaction. The results of our test show that there is not a statistically significant relationship between the perceived ERPs users’ satisfaction and the position in the company.

7.2 Theoretical contributions

Kanellou and Spathis (2013) explain in their article that there is really little research about ERPs and users’ satisfaction. This study is unique and our goal was to reduce the knowledge gap in this field. Their study takes into account only Greek companies, so it leads for example to a geographical limit (Kanellou & Spathis, 2013, p. 209).

In our thesis, we went further by studying the same topic than Kanellou and Spathis in France. Our survey was only addressed to French ERPs users. From a theoretical point of view, the results of our study show that there are similarities between French and Greek companies, even though both countries have different characteristics. Kanellou and Spathis (2013) have shown that ERPs users’ satisfaction was influenced by the following factors: operational accounting benefits (time), organizational accounting benefits, managerial accounting benefits, IT accounting benefits and ERPs total cost whereas the other variables do not have a strong correlation with users’ satisfaction (Kanellou & Spathis, 2013, p. 225). Regarding our results and empirical findings, we came up to the same conclusions. Our results actually show that ERPs users’ satisfaction in France is influenced by the same factors and variables than in Greece. Thus, as theoretical contribution, even if our sample does not enable us to generalize our results, we can argue that ERPs implementations in Greece and France are quite similar and lead to the same impact on users’ satisfaction. Furthermore, Kanellou and Spathis (2013) point out that operational accounting benefits (cost) and the type of modules do not have a strong correlation on users’ satisfaction. Our findings also confirm this trend regarding French companies. (Kanellou & Spathis, 2013, p. 225). The cross tabulation also confirms and verifies some theories about users’ satisfaction and the relation between accounting benefits and users’ satisfaction. Furthermore, our decision to lead some personal interviews also give credibility to our findings, the interviewees explain clearly what they appreciate in the ERPS and which factors are the most important for them.

Based on our results, we have made some theoretical contributions. First, we have explored a field in which there is little research. ERPs are now widespread in a lot of companies and our thesis can facilitate research in other countries or other type of companies. We have reduced the geographical gap by doing this study in a new country, France. We have tested and experienced a new conceptual model. Our conceptual model has evolved during our study and could be really useful for future research about the same topic in another country for example, in order to keep reducing the geographical gap. We have also contributed to research about customers’ satisfaction and factors influencing users’ satisfaction in a B2B process. We have also offered a new definition of some variables like accounting benefits by including or
removing some factors in several accounting benefits dimensions. Concerning ERPS total cost, we have shown that it was possible to answer the confidentiality problem thanks to the question about the difference between the actual cost and the budgeted cost of the ERPS implementation. We can’t really generalize our conclusions because of the limits of our sample, but we can point out that our results have several similarities with the Greek analysis.

7.3 Practical implications

In order to improve users’ satisfaction, ERPS providers need to understand which factors are determining it.

Concerning the accounting benefits (operational accounting benefit (cost) excluded) ERPS providers have to take into account the influence they have on ERPS users’ satisfaction. Consequently they need to have a level of assurance that this accounting benefits are going to be reached so the users are going to be satisfied with the EPRS implemented. Furthermore, ERPS providers need to focus on operational accounting benefits (time), and the components of this division in order to allow a time reduction even more consistent. Likewise, they need to focus on flexibility and integration for improving organizational accounting benefits.

Moreover, providers should be aware of the fact that the number of modules, i.e. the level of integration of the ERPS in the company is one of the determinants of ERPS users’ satisfaction. Therefore they can tell their potential clients that the more modules they implement the more it is probable to enjoy the accounting benefits rising from an ERPS implementation.

Providers should be careful with the budget evaluation when proposing the package with ERPS cost and consultants’ costs given that the differences between the budgeted and actual ERPS total cost can have some negative effects in ERPS users’ satisfaction.

Finally, concerning the components of ERPS users’ satisfaction, even though all of them received high satisfaction rates, ERPS providers should pay close attention to the ease of use of their product in order to increase the satisfaction of the users of their product.
8. TRUTH CRITERIA

In this chapter, our objective is to explain and discuss the reliability of the measures used, their validity, the possibility of generalization of our findings beyond the confines of our research context and finally the possibility of replication of our research in the future.

8.1 Validity

First and foremost, validity is concerned with the question of whether or not the measure or set of measures designed to gauge a concept, really measure the concept (Bryman & Bell, 2011, p. 159). There are at least three types of validity that, we believe, concern our research project:

- Face validity: the set of measures seems to reflect the concept studied. One way of establishing the face validity of a measure is to ask other people with some experience or expertise in the field, if the measure is apparently getting at the concept related (Bryman & Bell, 2011, p. 160).
  We confirmed the face validity of our survey through the pilot test. The persons that took part in this test are persons working on ERPS every day. Thanks to their remarks we have improved the face validity of our survey in particular and our study in general. In addition, We believe our measures to have face validity given that our measures were based on surveys used by other researchers who have measured the same constructs before and found them to be valid (Doll and Torkzadeh, 1988, Somers et al., 2003, Spathis & Constantinides, 2004, Zviran et al., 2005, Law & Ngai, 2007, Wu and Wang, 2007, Kanellou & Spathis, 2013)

- Internal validity: this type of validity is related to the concept of casualty. It deals with the issue of whether or not a result that concerns a causal relationship between variables is sound. (Bryman & Bell, 2011, p. 715) Based on the regression analyses, we saw that the independent variables; number of modules and operational accounting benefits (time), explained a large proportion of variance in ERP users’ satisfaction. We believe that there might be other independent variables than those we used that could affect ERP users’ satisfaction as well. In conclusion, we think that our data has internal validity to a large extent.

- External validity: a concern with the issue of the generalizability of the findings beyond the specific research context in which the research was conducted (Bryman & Bell, 2011, p. 714). This characteristic is deeply related with the representativeness of the sample used. As stated before, we applied a convenience sampling method but we were able to access a representative proportion of our population. Almost all the respondents use the ERPS provided by SAP. SAP is the leader on the ERP market worldwide, so we consider that from this point of view our sample was representative of the target population.

8.2 Generalizability / External validity

The results of a study are externally valid if they can be generalizable beyond the specific confines of the particular research context. The degree of external validity of a research depends mostly on the sample and its representativeness of the population. It is almost
impossible to send questionnaires to the whole population and get an answer of every individual, so it is necessary to sample. Nevertheless, the sample must be representative of the population so the results obtained can be generalized beyond the cases that make up the sample chosen. In fact, the main objective of business research is to develop law to explain human behavior. These laws can be used to predict human behavior in some situations. By generalizing research finding, research can establish laws applicable to a whole population. This is why generalizability is a key criterion in business research. The concerns with generalizability is stronger for researches using cross-sectional and longitudinal designs (Bryman & Bell, 2011, p. 163-165).

First, as we decided to use a convenience sampling method, given the nature of this sample, the generalizability of the findings is limited (Bryman & Bell, 2011, p. 190). In fact, a convenience sample is a non-probability sample; therefore this can influence the representativeness of the sample.

As presented in Table 2, from a demographic point of view, our sample includes a wide assortment of respondents. The age varies from 23 to 55 years old; the number of years at current position varies from 1 to 22 and finally the total work experience varies from 1 to 30.

The companies in our sample represent a relatively wide assortment. The size of the companies varies from 60 to 150,000 employees. They are S.A. or other type of companies. Nevertheless, the companies from the retail sector are not represented. In fact, companies in this sector represent 24.1% of the total companies of the non-agricultural and non-financial companies and 22% of the working force of the non-agricultural and non-financial sector in France in 2011 (Insee, 2013, p. 147).

Concerning the ERPS provider, in 2013, SAP was the leader of the global market with 24% market share (Gartner, 2014). Thus, from this point of view, our sample has similar characteristics to the population.

Based on this information, we argue that the generalizability of our findings is limited.

8.3 Reliability

In business research, reliability is primarily concerned with the consistency of the measures used. There are three key factors that determine the degree of reliability of a measure:

- Stability: the measure is stable over time; therefore, the findings related to this measure for a specific sample do not fluctuate (Bryman & Bell, 2011, p. 158). Given that we conducted a cross-sectional study, we collected data at a single point in time. In fact, we do not have the time or resources to repeat our own research. The variables analyzed in this study, have been measured before, in another geographical settings. Given this lack of research we cannot compare our findings to prior research and see if they have been stable in the past. Therefore we cannot assess the stability of our measures.

- Internal reliability: the items that make up the scale are consistent (Bryman & Bell, 2011, p. 158). The calculation of the Cronbach’s alpha coefficient is used to determine the degree of consistency of the items in question. The results of the Cronbach’s alpha test were quite satisfactory. These results are presented in Table 2. Based on this test we can state that the multiple-indicators measures are internally consistent.
Inter-observer consistency: these factors need to be taken into account when a great deal of subjectivity is involved in the research activities such as the translation of data into categories or the recording of observations and when more than one “observer conduct these activities” (Bryman & Bell, 2011, p. 158). First, throughout the whole project, we have always made all decisions together. Second, we used established indicators; the questions used in our survey were based on previous research when measuring the variables of our study (Doll and Torkzadeh, 1988, Law & Ngai, 2007, Spathis & Constantinides, 2004, Kanellou & Spathis, 2013). Third, the results of our study were based on statistical tests, which decrease subjective influences on this research. Finally, we strongly believe that the subjectivity of us as researchers is quite low, which contributes to a better and more reliable result.

8.4 Replication

Another criterion of research is the replicability of a study. Some researchers often aim at replicating the findings of existing research projects. In order to enhance the degree of replicability of a study, its authors must describe thoroughly their procedure; giving as much details as possible. In order to assess the reliability of a measure of a specific concept, the procedures behind the used measure must be replicable by other researchers (Bryman & Bell, 2011, p. 41; 42).

The degree of replicability of a research project influences not only its reliability, but also its validity. The findings of a research can be affected by the researcher biases’ and values leading to a damaging lack of objectivity. In order to minimize the risk of bias and subjectivity, research must seek to replicate others’ researches. If the study cannot be replicated and therefore its findings cannot be reproduced, the validity of the study in question can be doubted (Bryman & Bell, 2011, p. 165).

One of the priorities during our research was to be as transparent as possible and describe the method applied as detailed as possible. The thorough description of our method will allow someone else to reproduce our research project. We have stated the methods used and why those specific methods were selected. Moreover, in our Practical Methodology chapter, we described thoroughly the sampling technique, the construction of the survey and how we accessed the targeted population. Therefore, we believe that our research project can be replicated to a large extent.

In conclusion, thanks to the stability of the measures, high internal reliability of the multiple-indicators measures and low inter-observer inconsistency, we strongly believe that this research project is reliable. In addition, the results were regarded as valid, where face validity and external validity were acceptable and there was internal validity to a large extent. Moreover, we think that our research project can be reproduced, therefore it enhances the evaluation of the study. Finally, we state that the findings were representative for the target population; however, we believe it might be difficult to generalize the results to all the accountants and IT professionals working with ERPS in France.
9. LIMITATIONS AND FUTURE RESEARCH

This chapter presents the limitations of our research and provides some research ideas to guide future research project in the field of ERPS.

Our research project is subject to some limitations. First, we are fully aware that our survey was better fitted to the accountants than to the IT professional. In fact, some of the accounting benefits evaluated in our study are not easy for the IT professionals to seize. Maybe this can explain the low response rate for this group of participants. 17.6% of our sample are IT professionals. Finally, concerning the information asked in our survey, as stated before, some information is confidential, such as the ERPS total cost. We obtained really low response rate for this question so we believe that further study must analyze this variable in deep and with an acceptable quantity of raw data. Concerning the sample, we deeply think that our non-probability sample is the major limitation of our study. Given the nature of this sample, the generalizability of our study is limited. In addition, concerning the sectors represented in the sample, the retail sector was absent; therefore, this element jeopardizes the representativeness of the sample as well. We deeply think that further research should test our final conceptual model to confirm or complete our findings.

In addition, we are fully aware that our study presents a geographical limit. Regarding the time allowed and our background and relations, it was difficult for us to extend this study to other countries. That’s why we recommend leading this study in other countries in order to facilitate the analyses and to study whether or not the findings can be generalized.

After conducting this study, we suggest further research to focus not only on the positive accounting impacts of ERPS. We think that it could be interesting to the negative impacts of this kind of system from an accounting point of view. We suggest further research to explore the possible problems or disadvantages rising from the implementation of ERPS. By identifying and analyzing the possible problems or disadvantages, one will be able to evaluate ERPS users’ satisfaction from a wide and comprehensive perspective. This will not only make a theoretical contribution to the ERPS research field, but it will also allow the ERPS providers to improve their product.
Sources


Hénoc & Rivera, 2014


Appendix 1: Theories

Figure 2 – Value and Satisfaction model (Oliver, 1999)

![Value and Satisfaction model diagram]

Figure 3 – IS success model (DeLone & McLean, 1992, p.87)

![IS success model diagram]

Figure 4 – User Satisfaction Research Stream Approach (Wixom & Todd, 2005, p. 89)

![User Satisfaction Research Stream Approach diagram]
**Figure 5 – Integration of User Satisfaction and Technology Acceptance (Wixom & Todd, 2005, p. 90)**

**Figure 6 – Model for Measuring End-User Computing Satisfaction (Doll & Torkzadeh, 1988, p. 268)**

**CONTENT**
- C1: Does the system provide the precise information you need?
- C2: Does the information content meet your needs?
- C3: Does the system provide reports that seem to be just about exactly what you need?
- C4: Does the system provide sufficient information?

**ACCURACY**
- A1: Is the system accurate?
- A2: Are you satisfied with the accuracy of the system?

**FORMAT**
- F1: Do you think the output is presented in a useful format?
- F2: Is the information clear?

**EASE OF USE**
- E1: Is the system user friendly?
- E2: Is the system easy to use?

**TIMELINESS**
- T1: Do you get the information you need in time?
- T2: Does the system provide up-to-date information?
Appendix 2: Questionnaire

A. ERP software information

1. Which ERP system have you adopted?
2. How many years ago did your company adopt an ERP system?
3. How much time did ERP implementation process last? (in months)
4. How much did ERP system cost (acquisition and installation) as a percentage of annual sales?
5. In percentage, how much did the actual cost exceed the budgeted cost (if it was)?
6. Which modules have you included in your ERP system?

<table>
<thead>
<tr>
<th>ERP module</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial accounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed asset register</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management accounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-commerce</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock – Purchases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payroll</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales – Marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. ERP accounting benefits

Which benefits followed ERP implementation and to what extent? (Please check)
1=not at all, 2=low degree, 3=average, 4=high degree, 5=very high degree

<table>
<thead>
<tr>
<th>Benefit</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction of time for closure of (monthly, quarterly and annual)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accounts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of time for issuing of financial statements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved quality of reports – statements of account</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved internal audit function</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased use of financial ratio analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved working capital control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of time for issuing payroll</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of personnel of accounting department</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved decisions based on timely and reliable information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased integration of accounting applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of time for transaction entry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERP gathers data more quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The accounting department communicates easier with other departments within the organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERP gathers data easier</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERP processes results more quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERP processes results easier</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased flexibility in information generation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C. User satisfaction

1=not at all, 2= low degree, 3=average, 4=high degree, 5=very high degree

<table>
<thead>
<tr>
<th>Answer</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you satisfied with the ERP software package that was adopted from your organization?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you satisfied with the use of ERP system?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on your previous answers concerning your satisfaction of the ERP system used, please answer to the following questions

1=not at all, 2= low degree, 3=average, 4=high degree, 5=very high degree

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the system provide the precise information you need?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the information content meet your needs?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the system provide reports that seem to be just about exactly what you need?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the system provide sufficient information?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the system accurate?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you satisfied with the accuracy of the system?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you think the output is presented in a useful format?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the information clear?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the system user friendly?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the system easy to use?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you get the information you need in time?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the system provide up-to-date information?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Company’s characteristics

1. Type of company
   S.A.
   Other

2. Type of industry
   Manufacture
   Commerce
   Services – Research & Development

3. Number of employees:

E. Employee characteristics

1. Position in the company:
   IT professional
   Accountant

2. Years at current position:
3. Total work experience (years):

4. Age (years):

5. Gender:
   - Male
   - Female

Thank you very much for your time
Appendix 3: Phone questionnaire

Below are the questions asked in French to our respondents and the translation in English. Some questions have been added in the different interviews regarding the responses of the interviewees.

1) Quel est votre poste dans cette entreprise?
What is your position in this company?

2) Depuis quand travaillez-vous sur un système ERP?
For how long have you been working on an ERPS?

3) Quelle est votre impression générale vis à vis de cet ERP? Êtes-vous globalement satisfait?
What is your overall satisfaction regarding this system? Are you satisfied?

4) Qu’aimez-vous dans ce système ERP?
What do you like about this kind of system?

5) Connaissez-vous le coût de l’implémentation du produit ERP?
Do you know the cost of the ERP implementation?

6) Savez-vous si votre entreprise a réduit les effectifs au sein de votre département dû à l’implémentation du produit ERP?
Do you know if your company has reduced the personnel in your department thanks to the ERPS implementation?

7) Si je vous dis “rapidité”, “facilité d’utilisation”, “précision”, “contenu” et “format”, lequel vous apparaît le plus important relativement à votre utilisation du produit ERP?
If we say to you “timeliness”, “ease of use”, “accuracy”, “content” and “format”, which one are the most important regarding your use of the ERPS?

8) Savez-vous quels départements sont concernés par le produit ERP?
Do you know which departments are concerned by the ERPS?

9) Ainsi, quelle est la différence au niveau de la relation entre les départements, entre avant l’implémentation et la situation actuelle?
And so, what is the difference regarding the relation between the departments now and before the ERPS implementation?
Appendix 4: Standard regression

Table 6 – Standard Method - Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.921*</td>
<td>.847</td>
<td>.695</td>
<td>.36070</td>
<td>2.247</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), IT Accounting Benefits, Position in the Firm, Operational Accounting Benefits (cost), Budgeted and Actual costs difference (in %), Number of Modules, Managerial Accounting Benefits, Organizational Accounting Benefits, Operational Accounting Benefits (time)

b. Dependent Variable: Users' Satisfaction

Table 7 - Standard Method - ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>5,777</td>
<td>8</td>
<td>.722</td>
<td>5,550</td>
<td>.013*</td>
</tr>
<tr>
<td>Residual</td>
<td>1,041</td>
<td>8</td>
<td>.130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6,818</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Users' Satisfaction

b. Predictors: (Constant), IT Accounting Benefits, Position in the Firm, Operational Accounting Benefits (cost), Budgeted and Actual costs difference (in %), Number of Modules, Managerial Accounting Benefits, Organizational Accounting Benefits, Operational Accounting Benefits (time)
### Table 8 - Standard Method - Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.792</td>
<td>1.472</td>
<td>1.217</td>
</tr>
<tr>
<td>Budgeted and Actual costs difference (in %)</td>
<td>-.004</td>
<td>.004</td>
<td>-.242</td>
</tr>
<tr>
<td>Number of Modules</td>
<td>.106</td>
<td>.056</td>
<td>.488</td>
</tr>
<tr>
<td>Operational Accounting Benefits (cost)</td>
<td>-.089</td>
<td>.225</td>
<td>-.123</td>
</tr>
<tr>
<td>Position in the Firm</td>
<td>-.052</td>
<td>.253</td>
<td>-.037</td>
</tr>
<tr>
<td>Operational Accounting Benefits (time)</td>
<td>.195</td>
<td>.375</td>
<td>.194</td>
</tr>
<tr>
<td>Organizational Accounting Benefits</td>
<td>.236</td>
<td>.359</td>
<td>.208</td>
</tr>
<tr>
<td>Managerial Accounting Benefits</td>
<td>.083</td>
<td>.292</td>
<td>.083</td>
</tr>
<tr>
<td>IT Accounting Benefits</td>
<td>-.023</td>
<td>.281</td>
<td>-.021</td>
</tr>
</tbody>
</table>
Table 9 – Standard Method - Collinearity

<table>
<thead>
<tr>
<th>Model</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>VIF</td>
</tr>
<tr>
<td>(Constant)</td>
<td>.258</td>
<td></td>
</tr>
<tr>
<td>Budgeted and Actual costs difference (in %)</td>
<td>.403</td>
<td>.254</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.938</td>
</tr>
<tr>
<td>Number of Modules</td>
<td>.096</td>
<td>.285</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.507</td>
</tr>
<tr>
<td>Operational Accounting Benefits (cost)</td>
<td>.703</td>
<td>.196</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.102</td>
</tr>
<tr>
<td>Position in the Firm</td>
<td>.843</td>
<td>.574</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.743</td>
</tr>
<tr>
<td>Operational Accounting Benefits (time)</td>
<td>.617</td>
<td>.137</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.309</td>
</tr>
<tr>
<td>Organizational Accounting Benefits</td>
<td>.530</td>
<td>.190</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.276</td>
</tr>
<tr>
<td>Managerial Accounting Benefits</td>
<td>.783</td>
<td>.223</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.481</td>
</tr>
<tr>
<td>IT Accounting Benefits</td>
<td>.937</td>
<td>.293</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.416</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Users' Satisfaction
## Appendix 5: Stepwise regression

### Table 10 - Stepwise Method - Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.819&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.670</td>
<td>.648</td>
<td>.38732</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.902&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.814</td>
<td>.787</td>
<td>.30127</td>
<td>2.089</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Operational Accounting Benefits (time)  
b. Predictors: (Constant), Operational Accounting Benefits (time), Number of Modules  
c. Dependent Variable: Users' Satisfaction

### Table 11 - Stepwise Method - ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>4,568</td>
<td>1</td>
<td>4,568</td>
<td>30,449</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>2,250</td>
<td>15</td>
<td>.150</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6,818</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>5,647</td>
<td>2</td>
<td>2,774</td>
<td>30,560</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1,271</td>
<td>14</td>
<td>.091</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6,818</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Users' Satisfaction  
b. Predictors: (Constant), Operational Accounting Benefits (time)  
c. Predictors: (Constant), Operational Accounting Benefits (time), Number of Modules

### Table 12 - Stepwise Method - Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td>.658</td>
<td>.649</td>
</tr>
<tr>
<td></td>
<td>Operational Accounting Benefits (time)</td>
<td>.821</td>
<td>.149</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td>1.162</td>
<td>.528</td>
</tr>
<tr>
<td></td>
<td>Operational Accounting Benefits (time)</td>
<td>.530</td>
<td>.146</td>
</tr>
<tr>
<td></td>
<td>Number of Modules</td>
<td>.103</td>
<td>.031</td>
</tr>
</tbody>
</table>
### Table 13: Cross tabulation type of Company

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all low degree</td>
<td>average</td>
</tr>
<tr>
<td>Accounting benefits perceived</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Content</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Accuracy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Timeliness</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Format</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Number of modules</td>
<td>6.96</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>4.83</td>
<td></td>
</tr>
</tbody>
</table>
Table 14: Cross tabulation number of employees

<table>
<thead>
<tr>
<th></th>
<th>Small &amp; Medium Size Enterprises</th>
<th>Medium Size Company</th>
<th>Large Size Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at allow degree average</td>
<td>high degree</td>
<td>very high degree</td>
</tr>
<tr>
<td>Accounting benefits perceived</td>
<td>1 0 3 1 0 2.80</td>
<td>0 0 3 3 0 3.50</td>
<td>0 0 4 15 4 4.00</td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>1 1 2 1 0 2.80</td>
<td>0 1 4 1 0 3.00</td>
<td>0 0 6 16 1 3.78</td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>0 2 3 0 0 2.60</td>
<td>0 1 5 0 0 2.83</td>
<td>0 1 12 9 1 3.43</td>
</tr>
<tr>
<td>Manageral accounting benefits</td>
<td>0 4 0 1 0 2.40</td>
<td>0 3 2 1 0 2.67</td>
<td>2 5 12 2 2 2.87</td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>1 0 1 2 1 3.40</td>
<td>0 0 1 5 0 3.83</td>
<td>0 0 6 11 6 4.00</td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>1 1 1 2 0 2.80</td>
<td>0 0 1 2 0 3.83</td>
<td>1 0 3 13 6 4.00</td>
</tr>
<tr>
<td>Content</td>
<td>0 2 2 1 0 2.80</td>
<td>0 1 1 4 0 3.50</td>
<td>0 1 6 12 4 3.83</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0 1 2 2 0 3.20</td>
<td>1 0 5 0 0 2.67</td>
<td>0 3 7 9 4 3.61</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>1 2 0 2 0 2.60</td>
<td>1 2 3 0 0 2.33</td>
<td>0 4 6 7 6 3.65</td>
</tr>
<tr>
<td>Timeliness</td>
<td>0 1 0 3 1 3.80</td>
<td>0 0 2 3 1 3.83</td>
<td>0 1 5 7 10 4.13</td>
</tr>
<tr>
<td>Format</td>
<td>0 1 2 2 0 3.20</td>
<td>1 0 5 0 0 2.67</td>
<td>0 3 7 9 4 3.61</td>
</tr>
<tr>
<td>Modules</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of modules</td>
<td>4.6 5.83 7.22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hénoc & Rivera, 2014
Table 15: Cross tabulation type of user

<table>
<thead>
<tr>
<th>Accounting benefits perceived</th>
<th>Accountant</th>
<th>IT professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational accounting benefits (time)</td>
<td>not at all low degree</td>
<td>1</td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Content</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Accuracy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Timeliness</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Format</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of modules</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

Hénoc & Rivera, 2014
Table 16: Cross tabulation age at current position

<table>
<thead>
<tr>
<th>Accounting benefits perceived</th>
<th>1 to 5 years at current position</th>
<th>6 to 10 year at current position</th>
<th>11 years of experience or more</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all</td>
<td>low</td>
<td>moderate</td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>0</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th>1 to 5 years at current position</th>
<th>6 to 10 year at current position</th>
<th>11 years of experience or more</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all</td>
<td>low</td>
<td>moderate</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Content</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Timeliness</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Format</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modules</th>
<th>Average</th>
<th>1 to 5 years at current position</th>
<th>6 to 10 year at current position</th>
<th>11 years of experience or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of modules</td>
<td>7.14</td>
<td>not at all</td>
<td>low</td>
<td>moderate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modules</th>
<th>Average</th>
<th>1 to 5 years at current position</th>
<th>6 to 10 year at current position</th>
<th>11 years of experience or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modules</td>
<td>Average</td>
<td>1 to 5 years at current position</td>
<td>6 to 10 year at current position</td>
<td>11 years of experience or more</td>
</tr>
<tr>
<td>Accounting benefits perceived</td>
<td>1-5 years of experience</td>
<td>5-10 years of experience</td>
<td>More than 10 years of experience</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------</td>
<td>--------------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>not at all</td>
<td>low</td>
<td>medium</td>
<td>high</td>
</tr>
<tr>
<td>Operational accounting benefits (time)</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Organizational accounting benefits</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Managerial accounting benefits</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Operational accounting benefits (cost)</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>IT accounting benefits</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

**Satisfaction**

| Overall satisfaction | 1 | 0 | 2 | 6 | 3 | 3.82 | 1 | 0 | 2 | 6 | 3 | 3.83 | 0 | 1 | 2 | 7 | 1 | 3.73 |
| Content | 0 | 0 | 3 | 7 | 1 | 3.82 | 0 | 1 | 4 | 4 | 3 | 3.75 | 0 | 3 | 2 | 6 | 0 | 3.27 |
| Accuracy | 0 | 2 | 2 | 6 | 1 | 3.55 | 0 | 1 | 4 | 4 | 3 | 3.75 | 0 | 1 | 4 | 4 | 3 | 4.09 |
| Ease of Use | 0 | 3 | 2 | 4 | 2 | 3.45 | 2 | 2 | 2 | 2 | 4 | 3.33 | 0 | 3 | 5 | 3 | 0 | 3.00 |
| Timeliness | 0 | 1 | 4 | 3 | 3 | 3.73 | 0 | 1 | 1 | 4 | 6 | 4.25 | 0 | 0 | 2 | 6 | 3 | 4.09 |
| Format | 0 | 2 | 2 | 6 | 1 | 3.55 | 0 | 1 | 4 | 4 | 3 | 3.75 | 1 | 1 | 3 | 1 | 0 | 2.82 |

**Modules**

| Number of modules | 7.27 | 6.58 | 5.91 |
## Appendix 7: Modules Implemented

**Table 18 – Modules Implemented in the ERPS**

<table>
<thead>
<tr>
<th>Modules</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial accounting</td>
<td>97.06%</td>
</tr>
<tr>
<td>Fixed asset register</td>
<td>73.53%</td>
</tr>
<tr>
<td>Management accounting</td>
<td>88.24%</td>
</tr>
<tr>
<td>Costing</td>
<td>76.47%</td>
</tr>
<tr>
<td>Production</td>
<td>61.76%</td>
</tr>
<tr>
<td>Logistics</td>
<td>47.06%</td>
</tr>
<tr>
<td>E-commerce</td>
<td>8.82%</td>
</tr>
<tr>
<td>Stock –Purchases</td>
<td>70.59%</td>
</tr>
<tr>
<td>Payroll</td>
<td>35.29%</td>
</tr>
<tr>
<td>Quality management</td>
<td>35.29%</td>
</tr>
<tr>
<td>Sales –Marketing</td>
<td>64.71%</td>
</tr>
</tbody>
</table>
Appendix 8: Interviews

We have interviewed three people in order to support the findings explained above. In this section we are going to present in detail the answers of our respondents.

First interview: Accountant, 27 years old, working in the company A for three years.

Question: What is your position in this company?
Answer: I am currently an Accountant; I joined the company three years ago.

Q: For how long have you been working with ERPS?
A: I have worked on a relatively small ERPS during an internship four years ago, but in the company I am working now, it has been three. I work with this system since I arrived in this company.

Q: What is your overall satisfaction regarding the ERPS you are working with?
A: Well, for having worked with another IS before, I can say that an ERPS is more appropriate to the needs of my company. It is a large size company with an important quantity of data to analyze and this system facilitates our daily tasks. It enables users to save a lot of time and to treat more reliable data. The access to data is also facilitated.

Q: What do you like about this kind of system?
A: As I said before, I think that the main characteristic of our ERPS is that it enables to save a lot of time and to manage accurate and therefore reliable data. Everything is centralized in one single data base and everyone has access to the same data and the same figures. In addition, the system is quick. There are really few mistakes thanks to this kind of IS. During one of my internships I used a different SI and there were a lot of mistakes and misunderstandings and information gaps due to the lack of accuracy of the system. This lack of accuracy leads to a loose of time and to problems regarding the quality of our analyses. Therefore, I really appreciate the time saved, the accuracy and the easy access to data that an ERPS provides.

Q: Do you know the cost of the ERP implementation?
A: I was not in the company when the ERPS was bought, so I do not know the exact cost, even though, I know that it is really expensive. The exact figures are just known by the top management and the project managers.

Q: Do you know if there has been a reduction of personnel in your department as a consequence of the ERPS implementation?
A: I do not really know. I was not in this company during the ERPS implementation process. Now, we have an important turnover in our team, but I do not know if it is related to the ERPS or not.

Q: If we say to you “timeliness”, “ease of use”, “accuracy”, “content” and “format”, which one is the most important regarding your use of the ERPS?
A: All these factors are important; it is difficult to choose one among the five. But timeliness is for me the most important. Actually, thanks to the timeliness information provided by the system, we can produce more accurate reports and analyses. The quality of our reports can be improved because we have more time to analyze the data. The results are produced more easily and we can have more time to take decisions and to overcome obstacles.

Q: So the quality of the analysis improves thanks to the ERPS?
A: Well, as far as I am concerned, I deeply think that the use of an ERPS increases the quality of our analyses and give us more visibility and confidence to take decisions.

Q: Do you know which departments work with the ERPS implemented?
A: Sure, the entire financial department, but also the human resources department, especially for the headcounts, and the R&D department are working with ERPS.

Q: What is the difference regarding the relation between the departments now and before the ERPS implementation?
A: As I said before, I was not in this company before the implementation of the ERPS, but in comparison with the software used during my internship, I can say that with the ERPS, there is a strong link between all the departments using this product. Everyone has access to the same data and it is easy for people working in the R&D department to use our data. It saves a lot of time for everybody. I think that when everybody works on the same system, it saves a lot of time and enables to lead more accurate and reliable analyses.

Q: Finally, you think that the level of integration and the number of modules implemented by a company is a token of quality, efficiency and accuracy?
A: Yes, exactly.

Second interview: Accountant, 29 years old, working in the company B for five years.

Question: What is your position in this company?
Answer: I am an Accountant, I did an internship in this company and I was offer a full time job after my graduation.

Q: For how long have you been working with ERPS?
A: I have worked with an ERPS for almost a year. Before implementing an ERPS, the company worked on Hyperion, it was not an ERPS. All the data was input at different levels in the company and there were a lot of input errors. Now, just one person inputs the data and everyone has access to this data. I participated to the implementation process. We have worked on the ERPS implementation for a year, but the system is not completely efficient yet.

Q: What is your overall satisfaction regarding the ERP system you are working on?
A: For the moment, even if there are still some improvements to do and some errors to correct, I am really satisfied by this system. The difference with the old system is enormous and even if it is always possible to find drawbacks and disadvantages of this new system, the overall impression is good and positive.

Q: What do you like about this kind of system?
A: There are some characteristics of the ERPS that are really appreciated. First, the time saved in comparison with the former system is huge, there are really few mistakes and when someone in a factory in Argentina or Japan input data, I have access to these data at the same time at the headquarter (France). Second, now, it is easier to analyze data and to give accurate results and analyses. With this system, we can produce more reliable and more accurate analyses in a really short time. Then, we have more time to take decisions, to make extra analyses or to lead different projects at the same time. The flexibility is increased and it is a good thing for the organization of our work.

Q: Do you know the cost of the ERP implementation?
A: No I do not know the cost, it is confidential information.

Q: Do you know the difference between the budgeted cost and the actual cost?
A: Well, yes, it was 10%, it is often the case regarding this kind of projects, and the budget is often overstepped.

Q: To your mind, do you think that this difference of cost can play a role on user’s satisfaction?
A: Obviously yes, because this difference regarding the budgeted cost and the actual cost is due to errors and mistakes done during the conception phase. So, these mistakes slow down some analyses. Because of these mistakes, the ERPS is not completely efficient yet. The company has to pay a consulting firm and SAP professionals to correct the mistake done at the beginning of the project. The company pays in order to reduce the lack of efficiency of the ERPS. I think that the lack of efficiency of the ERPS can have a negative influence on our satisfaction. Thus, for me, these 10% of difference have influenced user’s satisfaction in my company.

Q: Do you know if there has been a reduction of personnel in your department as a consequence of the ERPS implementation?
A: I do not think so and it is too early to answer this question. The ERPS implementation has monopolized a lot of workers in my company, and as the system is not completely efficient, it is difficult to evaluate whether the new system will allow the company to reduce personnel.

Q: If we say to you “timeliness”, “ease of use”, “accuracy”, “content” and “format”, which one is the most important regarding your use of the ERPS?
A: As I said before, timeliness is a key factor for us, and is one of the most important reasons for implementing an ERPS. Accuracy is also really important. But honestly, all these factors are important.

Q: Do you know which departments work with the ERPS implemented?
A: Yes, the IT department and the whole financial department work with this system, that is to say the reporting, the accounting field, the treasury, the management control and also the consolidation.

Q: What is the difference regarding the relation between the departments now and before the ERPS implementation?
A: There is a big difference. Now everything is centralized, everyone has access to the same data, and it is really easier to work and also more pleasant to work with this product. There is now a real link within the whole financial department. The work is better organized, the analyses are more accurate and the quality of our analyses also improves.

Q: Finally, do you think that the level of integration and the number of modules implemented by a company is a token of quality, efficiency and accuracy? Does the number of modules implemented have an influence on your satisfaction?
A: Yes, I think that with an achieved integration, the quality, the efficiency and the accuracy of our reports and our analyses are improved. Installing payroll, sales, production, fixed-asset register and so on is a token of improvement for our company, even if we cannot see all the positive effects of this implementation for the moment. And of course, the number of modules implemented has an impact on our satisfaction because a high number of modules makes our tasks easier and improve the situation of the company.
Third interview: IT professional, 26 years old, working for the company B for 18 months.

Question: What is your position in this company?
Answer: I am an IT professional, as for the majority of the junior staff here, I did an internship in this company three years ago, and I joined the team after my graduation.

Q: For how long have you been working with ERPS?
A: For one year, I joined the team during the transition between Hyperion and SAP.

Q: What is your overall satisfaction regarding the ERP system you are working on?
A: As an IT professional, I am really satisfied; the ERPS represents an important improvement in our company. It was really difficult and inconvenient to manage different databases. Now we have just one database for the whole company and it is really appreciated. Before, it was necessary to copy data from one database to another, this was a loss of time and above all, it was potential source of error. So, in spite of some drawbacks, I am really satisfied with this new product.

Q: What do you like about this kind of system?
A: I really like the friendliness of the software; it is more user friendly than the old one. In fact, it is quite easy to use. It also enables us to save a lot of time thanks to the centralized database and to avoid potential errors. Thanks to this system we can be more confident about our work. This product facilitates the tasks in our department. With a good training, it is easy to be proficient quickly on the ERPS. We are also more available to correct errors and to help the other departments thanks to the time saving.

Q: Do you know the cost of the ERP implementation?
A: No I am a junior, I think very few people know the exact cost, but it is really expensive, our company had to pay a consulting firm, consultants from SAP (the ERPS provider)...all the updates, it is a costly project.

Q: Do you know the difference between the budgeted cost and the actual cost?
A: No, I know that the actual cost is higher than the forecasted one because the project manager asked for more money to be able to complete the project, but I do not know the exact sum.

Q: To your mind, do you think that this difference of cost can play a role on user’s satisfaction?
A: Well, I think so, asking for an advance means that everything did not work as it was planned, so the users do not work on a 100% efficient product...therefore I guess it can play a role on everyone’s satisfaction.

Q: Do you know if there has been a reduction of personnel in your department as a consequence of the ERPS implementation?
A: No, or not yet, the team has not changed since I did my internship, at that time we were working with a non-ERPS.

Q: If we say to you “timeliness”, “ease of use”, “accuracy”, “content” and “format”, which one is the most important regarding your use of the ERPS?
A: All these factors are crucial in IT, timeliness is maybe the most important because we expect that an ERPS will provided timeliness information. But the others are also important
for me and for all the users. The new product is quicker than the old one, is more friendly, more accurate, the content and the format are better, so… all these factors are crucial.

Q: Do you know which departments work with the ERPS implemented?
A: There is my department and also the financial department. But my department is strongly related to the financial one.

Q: So, what is the difference regarding the relation between the departments now and before the ERPS implementation?
A: There is an important evolution; we were not used to be linked like that with the other departments. Now we work on the same database, everything is simplified and we are more efficient. It seems a bit paradoxical because everything is simple, we work faster but at the same time, we produce a work of good quality.

Q: So, finally, do you think that the level of integration and the number of modules implemented by a company is a token of quality, efficiency and accuracy? Does the number of modules implemented have an influence on your satisfaction?
A: Of course, when there are a lot of modules implemented, the link and the relation between the departments are reinforced, the access to data is simplified because data are gathered simply and quickly. The difference between now and before speaks for themselves, we are more efficient, we produce good quality work, our analyses are advanced and therefore the decision are taken more quickly.
Appendix 9: ERPS Software Market Share 2013
