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Assessing the Benefits of an ERP Implementation in SMEs. An Approach from the Accountant´s Perspective

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Abstract

The aim of the present study is to investigate by first-hand the level of satisfaction of the CEOs with the ERP system testing the benefits of its implementation on the company in four aspects, accounting, organizational, external or internal, that the adoption of an ERP system may entail to small and medium sized enterprises. A survey was designed to measure the accountants' perception of the level of implementation of ERP in their companies. The sample consisted on 175 accountants from Spanish companies. To identify the best explanatory variables in order to test the hypothesis, a discriminant analysis for dimensionality reduction was used, choosing the factorial analysis. Finally, a post hoc analysis to investigate which factors affect the user satisfaction of ERP in business was carried out using multiple regression method (backward stepwise). The empirical evidence from a web-based survey with 175 Spanish SMEs confirms that an ERP system brings a variety of benefits including organizational, external and internal to an SME, and focusing on accounting there are a number of accounting benefits derived from ERP systems particularly for accounting process. The findings will be valuable to any business that wants to implement an ERP deeper in small businesses. This work significantly contributes to the existing body of ERP benefits knowledge to the SMEs in the light of the resource-based view, strengthens the literature about the topic because the use of theories in ERP literature in SMEs is still very limited.

Keywords: ERP; SME; implementation; benefits.

JEL classification: M15; M41.

1. INTRODUCTION

In this day and age, Enterprise Resource Planning (ERP) system, which integrates all of the units in an organization at the information level, is a key point for a successful enterprise because ERP system is one of the most widely accepted choices to obtain competitive advantage for manufacturing companies and have even a major impact in SMEs (Berić *et al.*, 2018). Implementing an ERP system is a substantial investment decision, so business have to make an effort in selecting the right system (Kilic *et al.*, 2015) since it will be easier to provide

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coordination between the units, eliminate waste and make faster and better decisions with the precise ERP system. These technologies are also used by companies to improve their ability to provide service to customers and their operational performance to achieve competitive advantage through customer self-service, a quick response to customers, a reduction in product lead time and inventory levels (Chuang and Shaw, 2008). In this sense, ERP systems are becoming increasingly significant in business as a comprehensive information system management due to its ability to automate and integrate business processes (Escobar Pérez and Lobo Gallardo, 2006).

The implementation of enterprise resource planning (ERP) systems has been the most significant information technology project that interacts with the accounting function in the last fifteen years (Kanellou and Spathis, 2013, p. 210). Nonetheless, the relevant literature has been focused on ERP systems in general and there is scarce scientific evidence on the effects on accounting of ERP implementation processes (Granlund and Malmi, 2002; Sutton, 2006). This is one of the reasons why there is a growing need for more empirical research on the impact of ERP in terms of accounting advantages and disadvantages Sutton (2006).

In the last fifteen years small and medium enterprises (SMEs) have done efforts to implement information systems such ERP to improve their management and organizational performance (Pérez Estébanez *et al.*, 2016). It has been proved that ERP helps business processes to be more flexible and responsive by breaking barriers between functional departments and by reducing duplication of effort. It is also more necessary for small businesses because ERP integrates various business functional units and offer several benefits, but at the same time, they are very expensive, and this is an obstacle for SMEs, where funds are mediocre, to adopt them (Bajaj and Ojha, 2016).

Based on the resource-based view theory (Barney, 1991) where an ERP can be an strategic resource with the potential to achieve sustainable advantage to a firm, this research investigates the benefits that the adoption of an ERP system may entail to companies in four aspects, organizational, accounting, external and internal using the same classification as Spathis (2006), as well as provides empirical evidence from Spanish small and medium companies. The findings will be valuable to any business that wants to implement an ERP deeper in small businesses. This work significantly contributes to the existing body of ERP benefits knowledge to the SMEs in the light of the resource-based view, strengthens the literature about the topic cause the use of theories in ERP literature in SMEs is still very limited (Ruivo *et al.*, 2012). The investigation is also supported by the Benefits Realization Management (BRM) theory, defined by the Association for Project Management (APM) as the identification, definition, planning, tracking and realization of business benefits (Haddara and Päivärinta, 2011), because the fundamental principles of this theory are that IT has no inherent value in itself but it is realized through people who perform their work differently thus benefits arise through expected and emerging ways from new technology. Also potential negative outcomes from IT need to be recognized and mitigated by management, and therefore, benefits realization needs a set of keen management practices to optimize the possible benefits (Peppard *et al.*, 2007).

2. STATE OF THE ART

There is a great interest among researchers and practitioners in accounting information systems (AIS) value and this is particularly significant in cases of systems such as enterprise resource planning (Ruivo *et al.*, 2014). Enterprise resource planning is an important

innovation because it can generate tangible and intangible improvements in all companies no mater it's business size (Abdel-Haq *et al.*, 2018) and it has been the solution for numerous companies as a key element of the strategy (Paquet and Paviot, 2017). However, despite the advance in technology and research, enterprises are still struggling in the process of implementing and routinizing the use of ERP, as well as, achieving an optimal range of benefits it offers (Phaphoom *et al.*, 2018).

Research that has focused on the benefits derived from ERP adoption has shown that the implementation of these systems is usually followed by improvements of the decision-making process and enterprise integration (Colmenares, 2009). Some studies discuss that if firms make the right adoption choices in the ERP selection and implementation phase, benefits from ERP systems are obvious and tangible (Tan *et al.*, 2010; Kale *et al.*, 2010). Spathis and Constantinides (2004) examined the reasons behind enterprises' decision to replace the traditionally information systems with completed ERP systems and conclude that the most important benefits for accounting due to ERP implementation were increased flexibility in information generation, increased integration of accounting applications, improved quality of reports and reliable accounting information and reduction of time for closure of annual accounts. Recently, Trigo *et al.* (2014) added another benefit to this list, the improved decisions based on timely or real-time accounting. However, there is increasing evidence that firms fail to obtain the benefits of these investments within the anticipated timeframes (Trott and Hoecht, 2004).

Companies utilize Enterprise Resource Planning systems to manage their resources and improve their competitiveness; though, implementation of appropriate ERP systems is a challenging task for many companies, particularly small and medium sized enterprises (Alpers *et al.*, 2014) and identify these challenges in the manufacture industry in Turkey (Ekren, 2019).

The majority of existing literature about ERP benefits has been developed based on data from large enterprises and only a few studies have tried to explore this phenomenon within the SME context and it has also remained largely inconclusive. There are some researches such as Hallikainen *et al.* (2002) focus on Finnish SMEs that suggest that SMEs want ERP as a tool to manage day-to-day operations and that it is important to have local and continuing support for the tools used. Bernroider and Druckenthaner (2007) conclude that in Austria, SMEs perceive their ERP projects more often successful than large companies and report to gain more benefits out from them. Furthermore, in Taiwanese SMEs, perceived benefits of ERP systems have a significant impact on their adoption decisions (Shiau *et al.*, 2009). Another studies conclude that the benefits gain from the ERP exceed the costs of acquisition, implementation and maintenance, although the benefits are attained after the first year of system use (Ruivo *et al.*, 2012; Velcu, 2005; Federici, 2009; Gattiker and Goodhue, 2005). ERP systems are becoming more affordable for SMEs (Sledgianowski *et al.*, 2008); even if, the potential benefits of these systems are substantial, as is the risk associated with their implementation (Poba-Nzaou and Raymond, 2011). While there are lots of benefits of ERP, it is still a low- level adaptation of ERPs in SMEs because there are so many reasons for this (Hewavitharana *et al.*, 2019).

Although ERP implementation is a significant investment regarding time and costs to companies, it brings benefits in various perspectives, both in short and long term, as well as in internal and external company's relations (Martins and Alturas, 2016). According to Spathis (2006) classification, the most important accounting benefits, derived from ERP adoption that occur for a company due to the inclusion of the accounting department in the ERP system are, increased flexibility in information generation, increased integration of applications, improved quality of reports, improved decisions based on timely and reliable accounting

information and reduction of time for closure of annual accounts. Overall, it seems that there is a positive relationship between ERP implementation and operational efficiencies (Nicolaou and Bhattacharya, 2008; Matolscy *et al.*, 2005).

In this context the following research question is presented:

RQ: Which type of benefits offers the implementation of an ERP system in an SME? Accounting, organizational, internal or external benefits?

3. SAMPLE AND METHODOLOGY

A survey was designed to measure the accountants' perception of the level of implementation of ERP in their companies. The sample consisted on 175 accountants from Spanish companies. The majority of the sample population were small and medium sized companies in accordance with the business population in Spain, 99,8% of the enterprises have a small dimension by number of employees (DIRCE, 2020). Regarding the sample by activity sector, most of the businesses belong to the services sector and have ERP systems from six to ten years. Regarding business size, 53% were medium-sized business, 43% were small business and only 4% were microbusiness.

The survey consisted on some socio-demographic questions and questions about the accountants' perception of the benefits of the implementation of an ERP system in their companies. The survey was designed and validated with several experts in the issue. The questionnaire takes approximately 10 to 15 minutes to complete. The socio-demographic variables were sector, number of years having ERP and Business size. Distribution by activity sector showed that most of the businesses belonged to the service sector and had had ERP systems for six to ten years. By firm size, the sample is divided into 53% medium-sized businesses, 43% small businesses, and only 4% microbusinesses.

The rest of the variables, thirty nine, were specifically about the ERP system that after the factorial analysis were classified into four final factors named as: Accounting benefits, Organization benefits, External benefits and Internal benefits. Each of them were answered using a five-point Likert scale (1 = Totally Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Totally Agree). There was also an open-ended section for comments. The sample is considered as large since according to Anderson *et al.* (2004). The Cronbach's alpha is tested to measure the internal consistency of the survey, meaning how closely related a set of items are as a group, therefore considered to be a measure of scale reliability (Cronbach, 1951) with a measure of 0,836 which is a strong reliability according to George and Mallery (1995). The descriptive statistics are shown on Table no. 1. The total number of responses was 174.

Table no. 1 – Descriptive statistics

	Mean	Std. Deviation
Business size	1.79	1.089
Sector	.60	1.080
Number of years using ERP	1.89	1.810
Integrated Management Control	4.01	1.026
Integration of different areas	3.94	1.018
Optimizing operational efficiency	3.80	1.082
Cost reduction	3.41	1.220
Improved productivity	3.56	1.175
Obtaining information relevant to the organization	3.98	1.026

	Mean	Std. Deviation
Standardization of processes	3.80	1.090
Organic growth of the business	3.50	1.350
Internationalization	2.68	1.843
Mergers and / or acquisitions	2.34	2.084
cyclical changes in the environment	2.75	1.906
IPO of the company	1.95	2.154
Change the existing ERP	3.07	1.872
THE ERP is implemented in all departments of the company	3.39	1.417
The company workers feel or have felt involved in the decision to implement an ERP	3.00	1.466
Workers have adequate training to use ERP	3.28	1.327
The level of implementation of ERP in your company is appropriate	3.22	1.377
The company assessed its situation to determine its strengths and opportunities to implement an ERP	3.21	1.400
ERP gathers data faster	3.82	1.163
ERP produces results more easily	3.73	1.193
ERP processes results faster	3.78	1.167
ERP collects data more easily	3.76	1.166
ERP is more flexible in general	3.17	1.517
Reduced time transaction entry	3.36	1.325
The accounting department is more easily communicate with other departments within the organization	3.41	1.335
Reduced time of closing of monthly accounts	3.59	1.250
Reduction of the closing time of the quarterly accounts	3.55	1.284
Reduced time of closing of the annual accounts	3.57	1.258
Reduced time of issuance of the financial statements	3.63	1.237
Increased flexibility in generating information	3.55	1.293
Increased integration of accounting applications	3.69	1.176
Improved decisions based on timely and reliable information	3.62	1.190
Improved quality of reporting - statements	3.59	1.217
Improved internal audit function	3.45	1.270
ERP is easy to use	3.24	1.402
Better control of working capital	3.22	1.401
Increased use of analysis of financial ratios	3.22	1.439
Reduction airtime payroll	2.91	1.822
Downsizing the accounting department	2.78	1.728

Source: Own elaboration

To identify the best explanatory variables in order to test the hypothesis, a discriminant analysis for dimensionality reduction was used, choosing the factorial analysis. To know if this analysis was appropriate for the data set, two reliability tests were conducted. On the one hand the Kaiser-Meyer and Olkin (KMO) measure of sampling adequacy was tested, which indicates if the values obtained in this test are over 0.5, the factorial analysis is appropriate for the study sample, since this test checks whether the correlations between the variables are small enough and allows comparing of the magnitude of the observed correlation coefficients with the magnitude of the partial correlation coefficients. In this case, the KMO is 0,957 for the analysis. On the other hand, we tested Bartlett's sphericity, which indicates if there are significant correlations between the variables (in every case the chi squared has a p value below 1%) therefore it is appropriate to apply the analysis.

4. RESULTS

So the new factors that clearly reflect the main benefits that follow ERP implementation are shown on Table no. 2 and are four: *Accounting benefits, Organization benefits, External benefits* and *Internal benefits*.

The first factor, Accounting benefits, is formed by the variables: ERP gathers data faster (0.600), ERP produces results more easily (0.599), ERP processes results faster (0.603), ERP collects data more easily (0.585), ERP is more flexible in general (0.590), Reduced time transaction entry (0.681), The accounting department is more easily communicate with other departments within the organization (0.686), Reduced time of closing of monthly accounts (0.844), Reduction of the closing time of the quarterly accounts (0.836), Reduced time of closing of the annual accounts (0.853), Reduced time of issuance of the financial statements (0.836), Increased flexibility in generating information (0.672), Increased integration of accounting applications (0.797), Improved decisions based on timely and reliable information (0.715), Improved quality of reporting–statements (0.778), Improved internal audit function (0.811), ERP is easy to use (0.685), Better control of working capital (0.747), Increased use of analysis of financial ratios (0.745), Reduction airtime payroll (0.641), Downsizing the accounting department (0.731).

The second factor, Organization benefits, groups the variables that best fit with the benefits obtain from the ERP implementation regarding organization issues and are: Integrated Management Control (0.720), Integration of different areas (0.747), Optimizing operational efficiency (0.809), Cost reduction (0.753), Improved productivity (0.780), Obtaining information relevant to the organization (0.777), Standardization of processes (0.687) and Organic growth of the business (0.499).

The third factor, External benefits, is composed by the nest variables: Internationalization (0.787), Mergers and / or acquisitions (0.844), Cyclical changes in the environment (0.818), IPO of the company (0.865) and Change the existing ERP (0.556).

Finally, the Internal benefits variables are: THE ERP is implemented in all departments of the company (0.678), The company workers feel or have felt involved in the decision to implement an ERP (0.670), Workers have adequate training to use ERP (0.678) The company assessed its situation to determine its strengths and opportunities to implement an ERP (0.690).

Table no. 2 – Classification of benefits through a factorial analysis

	Component			
	Accounting benefits	**Organization benefits**	**External benefits**	**Internal benefits**
Integrated Management Control	.319	.720	.265	.343
Integration of different areas	.293	.747	.315	.284
Optimizing operational efficiency	.308	.809	.205	.280
Cost reduction	.367	.753	.231	.109
Improved productivity	.366	.780	.237	.132
Obtaining information relevant to the organization	.355	.777	.229	.214
Standardization of processes	.357	.687	.247	.316
Organic growth of the business	.285	.499	.425	.316
Internationalization	.232	.212	.787	.181
Mergers and / or acquisitions	.256	.211	.844	.127
cyclical changes in the environment	.192	.209	.818	.111
IPO of the company	.265	.190	.865	.171
Change the existing ERP	.231	.197	.556	.284

THE ERP is implemented in all departments of the company	.211	.330	.243	.678
The company workers feel or have felt involved in the decision to implement an ERP	.295	.251	.365	.670
Workers have adequate training to use ERP	.343	.331	.327	.678
The company assessed its situation to determine its strengths and opportunities to implement an ERP	.358	.169	.259	.690
ERP gathers data faster	.600	.461	.044	.503
ERP produces results more easily	.599	.484	.111	.445
ERP processes results faster	.603	.473	.061	.478
ERP collects data more easily	.585	.451	.002	.541
ERP is more flexible in general	.590	.342	.236	.438
Reduced time transaction entry	.681	.349	.156	.373
The accounting department is more easily communicate with other departments within the organization	.686	.366	.217	.306
Reduced time of closing of monthly accounts	.844	.218	.255	.161
Reduction of the closing time of the quarterly accounts	.836	.221	.277	.135
Reduced time of closing of the annual accounts	.853	.213	.272	.144
Reduced time of issuance of the financial statements	.836	.288	.257	.161
Increased flexibility in generating information	.672	.435	.142	.362
Increased integration of accounting applications	.797	.362	.206	.212
Improved decisions based on timely and reliable information	.715	.393	.134	.384
Improved quality of reporting - statements	.778	.364	.185	.256
Improved internal audit function	.811	.354	.205	.190
ERP is easy to use	.685	.317	.215	.396
Better control of working capital	.747	.337	.233	.230
Increased use of analysis of financial ratios	.745	.338	.239	.221
Reduction airtime payroll	.641	.113	.303	.191
Downsizing the accounting department	.731	.152	.300	.215

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.

Deepen in the study, a post hoc analysis to know which factors affect the user satisfaction of ERP in business was carried out using a multiple regression (backward stepwise method) where the dependent variable was the appropriateness of the level of implementation of ERP and the independent variables were the four regressors obtained in the factorial analysis: Accounting benefits, Organization benefits, External benefits and Internal benefits (see Table no. 3).

Table no. 3 – Benefits of an ERP system in SMEs

	Standardized Coefficients		
	Beta	**t**	**Sig.**
(Constant)		59.693	0.000
Accounting benefits	0.378	9.467	0.000
Organization benefits	0.28	7.006	0.000
External benefits	0.317	7.929	0.000
Internal benefits	0.647	16.196	0.000
R Square = 0,740			

Source: Own elaboration

As we can see in the results the four variables determining the consideration of the level of implementation of ERP in company is appropriate being statistically significant. The beta from the four variables was: Accounting benefits 0.378 (p-value = 0.000), Organization benefits 0.28 (p-value = 0.000), External benefits 0.317 (p-value = 0.000) and Internal benefits 0.647 (p-value = 0.000). The beta four variables were positive, so there is a statistical positive relation between the appropriateness of the level of implementation of ERP and the four type of benefits analyzed.

5. RESULTS DISCUSSION AND CONCLUSIONS

In very dynamic business situation, ERP systems are broadly spread and fast developing in the last years (Berić *et al.*, 2018). Undoubtedly, an ERP system brings a variety of benefits including organizational, external and internal benefits and also regarding accounting to an SME. However, the small business have to do an effort to update their traditional ERP systems into cloud-based ERPs that offer new benefits such as its scalability and lower investment costs that are clear opportunities for SMEs in line with Berić *et al.* (2018). As Hewavitharana *et al.* (2019) conclude in their study Open source ERP shows a lesser complexity index as it needs lower proprietary technologies, hardware, and software so it can be the type of ERP system more adequate for small businesses.

There is a wide variety of accounting benefits in line with Teittinen *et al.* (2013), such as ERP gathers data faster, produces results more easily, processes results faster, collects data more easily and in general is more flexible. Another key factor in that ERP reduce time in transaction entry, time of closing of monthly, quarterly and annual accounts and of issuance of the financial statements. The accounting department is more easily communicate with other departments within the organization. It also increase flexibility in generating information and the integration of accounting applications as well as, improve decisions based on timely and reliable information, the quality of reporting – statements and the internal audit function. ERP is easy to use; improve the use of analysis of financial ratios, helps the control of working capital, reduce airtime payroll and downsize the accounting department.

The organizational characteristics are the main drivers of ERP use in SMEs in line with Ruivo, Oliveira and Neto, (2014, 2015) and Elragal and Al-Serafi (2010) but have a moderate effect comparing to the study of Gupta and Misra (2016). The main characteristics of this factor are an integrated Management Control, the integration of different areas, the optimizing operational efficiency and cost reduction, an improved productivity with the standardization of processes, to gain relevant information to the organization and finally, an organic growth of the business.

The ERP implementation brings external and internal benefits to SMEs in line with Martins and Alturas (2016). The main external benefits are the internationalization, mergers and / or acquisitions, the cyclical changes in the environment and the IPO of the company.

Finally, the internal organizational benefits gained are that ERP is implemented in all departments of the company so the company workers feel or have felt involved in the decision to implement an ERP and have an adequate training to use ERP and the company could assess its situation to determine its strengths and opportunities to implement an ERP.

Limitations to this research are that the sample is small due to the type of quantitative analysis based on a questionnaire so further research in this field is suggested.

This research contributes to enrich the theoretical framework for the Spanish context regarding ERP; additionally, it allows contrasting the evidence with other studies at international levels.

References

Abdel-Haq, M. S., Chatti, H., and Asfoura, E., 2018. Investigating the Success and the Advantages of Using ERP System in KSA Context, Engineering Technology &. *Applied Scientific Research, 8*(6), 3631-3639.

Alpers, S., Becker, C., Eryilmaz, E., and Schuster, T., 2014. *A Systematic Approach for Evaluation and Selection of ERP Systems*. Paper presented at the 7th SIGSAND/PLAIS EuroSymposium, Gdansk, Poland.

Anderson, D. R., Sweeney, D. J., and Williams, T. A., 2004. *Estadistica para Administracion y Economia*: Thomson.

Bajaj, S., and Ojha, S., 2016. *Comparative Analysis of Open Source ERP Softwares for Small and Medium Enterprises*. Paper presented at the 10th Indiacom - 2016 3rd International Conference on Computing for Sustainable Global Development, New Delhi, India.

Barney, J. B., 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management, 17*(1), 108-109. http://dx.doi.org/10.1177/014920639101700108

Berić, D., Sekulić, D., Lolić, T., and Stefanović, D., 2018. *Evolution of ERP Systems in SMEs – Past Research, Present Findings and Future Directions*. Paper presented at the International Scientific and Expert Conference - TEAM, Novi Sad, Serbia.

Bernroider, E. W. N., and Druckenthaner, M., 2007. *ERP Success and Top Management Commitment in Large and Small to Medium Sized Enterprises*: International DSI / Asia and Pacific DSI.

Chuang, M. L., and Shaw, W. H., 2008. An empirical study of enterprise resource management systems implementation. From ERP to RFID. *Business Process Management Journal, 14*(5), 675-693. http://dx.doi.org/10.1108/14637150810903057

Colmenares, L., 2009. Benefits of ERP Systems for Accounting and Financial Management. Allied Academies International Conference. *Proceedings of the Academy of Information and Management Sciences, 13*(1), 3-7.

Cronbach, L., 1951. Coefficient alpha and the internal structure of tests. *Psychomerika, 16*, 297-334. http://dx.doi.org/10.1007/BF02310555

DIRCE, 2020. Directorio Central de Empresas: Explotación estadística de 1 de enero de 2018. from http://www.ine.es/jaxi/menu.do?type=pcaxis&path=/t37/p201/&file=inebase

Ekren, G., 2019. *Towards Industry 4.0: Challenges of ERP Systems For SMEs*. Paper presented at the 4th International Management Information Systems Conference Industry 4.0, İstanbul.

Elragal, A. A., and Al-Serafi, A. M., 2010. *The Effect of ERP System Implementation on Business Performance: An Exploratory Case-Study*. Paper presented at the 15th International-Business-Information-Management-Association Conference, Cairo, Egypt.

Escobar Pérez, B., and Lobo Gallardo, A., 2006. Factores de éxito para la implantación de sistemas ERP. *Evidencia empírica, Revista Partida Doble, 183*.

Federici, T., 2009. Factors influencing ERP outcomes in SMEs: A post-introduction assessment. *Journal of Enterprise Information Management, 22*, 81-96. http://dx.doi.org/10.1108/17410390910922840

Gattiker, T. F., and Goodhue, D. L., 2005. What happens after ERP implementation: Understanding the impact of inter-dependence and differentiation on plant-level outcomes. *Management Information Systems Quarterly, 29*, 559-585. http://dx.doi.org/10.2307/25148695

George, D., and Mallery, P., 1995. *SPSS/PC+ Step by step. A simple guide and reference*: Wadsworth Publishing.

Granlund, M., and Malmi, T., 2002. Moderate impact of ERPs on management accounting: A lag or permanent outcome? *Management Accounting Research, 13*, 299-321. http://dx.doi.org/10.1006/mare.2002.0189

Gupta, S., and Misra, S. C., 2016. Moderating Effect of Compliance, Network, and Security on the Critical Success Factors in the Implementation of Cloud ERP. *IEEE Transactions on Cloud Computing, 4*(4), 440-451. http://dx.doi.org/10.1109/TCC.2016.2617365

Haddara, M., and Päivärinta, T., 2011, 4-7 Jan. 2011. *Why Benefits Realization from ERP in SMEs Doesn't Seem to Matter?* Paper presented at the 44th Hawaii International Conference on System Sciences.

Hallikainen, P., Kivijärvi, H., Rossi, M., Sarpola, S., and Talvinen, J., 2002. *Selection of ERP Software in Finnish SME's* Paper presented at the Australasian Conference on Information Systems (ACIS).

Hewavitharana, T., Perera, A., and Nanayakkara, S., 2019. Prioritizing Enterprise Resource Planning (ERP) Systems for Small and Medium Enterprises. *Research Journal, 5*(2).

Kale, P. T., Banwait, S. S., and Laroiya, S. C., 2010. Performance evaluation of ERP implementation in Indian SMEs. *Journal of Manufacturing Technology Management, 21*, 758-780. http://dx.doi.org/10.1108/17410381011064030

Kanellou, A., and Spathis, C., 2013. Accounting benefits and satisfaction in an ERP environment. *International Journal of Accounting Information Systems, 14*, 209-234. http://dx.doi.org/10.1016/j.accinf.2012.12.002

Kilic, H. S., Zaim, S., and Delen, D., 2015. Selecting "The Best" ERP system for SMEs using a combination of ANP and PROMETHEE methods. *Expert Systems with Applications, 42*(5), 2343-2352. http://dx.doi.org/10.1016/j.eswa.2014.10.034

Martins, A. R., and Alturas, B., 2016, 15-18 June 2016. *Organizational impact of implementing an ERP module in Portuguese SME.* Paper presented at the 2016 11th Iberian Conference on Information Systems and Technologies (CISTI).

Matolscy, Z. P., Booth, P., and Wieder, B., 2005. Economic benefits of enterprise resource planning systems: Some empirical evidence. *Accounting and Finance, 45*, 439-456. http://dx.doi.org/10.1111/j.1467-629X.2005.00149.x

Nicolaou, A., and Bhattacharya, S., 2008. Sustainability of ERPs performance outcomes: The role of post-implementation review quality. *International Journal of Accounting Information Systems, 9*(1), 43-60. http://dx.doi.org/10.1016/j.accinf.2007.07.003

Paquet, P., and Paviot, G., 2017. The adoption of an on-line ERP by SME: Between concern and necessity. *Revue Internationale PME, 30*(3-4), 261-288. http://dx.doi.org/10.7202/1042667ar

Peppard, J., Ward, J., and Daniel, E., 2007. Managing the Realization of Business Benefits from IT Investments. *MIS Quarterly Executive, 6*, 1-15.

Pérez Estébanez, R., Trigo, A., and Belfo, F., 2016, 7-8 May 2016. *ERP systems adoption evolution in Iberian companies during the global financial and economic crisis and recession (2007–2014).* Paper presented at the 2nd International Conference on Information Management (ICIM).

Phaphoom, N., Saelee, W., Somjaitaweeporn, T., Yuenyong, S., and Qu, J., 2018. *A Combined Method for Analysing Critical Success Factors on ERP Implementation*. Paper presented at the 15th International Joint Conference on Computer Science and Software Engineering (JCSSE), Thailand.

Poba-Nzaou, P., and Raymond, L., 2011. Managing ERP system risk in SMEs: A multiple case study. *Journal of Information Technology, 26*(3), 170-192. http://dx.doi.org/10.1057/jit.2010.34

Ruivo, P., Oliveira, T., and Neto, M., 2012. ERP use and value: Portuguese and Spanish SMEs. *Industrial Management & Data Systems, 112*, 1008-1025. http://dx.doi.org/10.1108/02635571211254998

Ruivo, P., Oliveira, T., and Neto, M., 2014. Examine ERP post-implementation stages of use and value: Empirical evidence from Portuguese SMEs. *International Journal of Accounting Information Systems, 15*(2), 166-184. http://dx.doi.org/10.1016/j.accinf.2014.01.002

Ruivo, P., Oliveira, T., and Neto, M., 2015. Using resource-based view theory to assess the value of ERP commercial-packages in SMEs. *Computers in Industry, 73*, 105-116. http://dx.doi.org/10.1016/j.compind.2015.06.001

Shiau, W. L., Hsu, P. Y., and Wang, J. Z., 2009. Development of measures to assess the ERP adoption of small and medium enterprises. *Journal of Enterprise Information Management, 22*, 99-118. http://dx.doi.org/10.1108/17410390910922859

Sledgianowski, D., Tafti, M. H. A., and Kierstead, J., 2008. SME ERP system sourcing strategies: A case study. *Industrial Management & Data Systems, 108*(3-4), 421-436. http://dx.doi.org/10.1108/02635570310868317

Spathis, C., 2006. Enterprise systems implementation and accounting benefits. *Journal of Enterprise Information Management, 19*(1), 67-82. http://dx.doi.org/10.1108/17410390610636887

Spathis, C., and Constantinides, S., 2004. Enterprise resource planning systems' impact on accounting processes. *Business Process Management Journal, 10*(3), 234-247. http://dx.doi.org/10.1108/14637150410530280

Sutton, S. G., 2006. Enterprise systems and the re-shaping of accounting systems: A call of research. *International Journal of Accounting Information Systems, 7*, 1-6. http://dx.doi.org/10.1016/j.accinf.2006.02.002

Tan, K. S., Chong, S. C., Lin, B., and Eze, U. C., 2010. Internet-based ICT adoption among SMEs: demographic versus benefits, barriers, and adoption intention. *Journal of Enterprise Information Management, 23*(1), 27-55. http://dx.doi.org/10.1108/17410391011008897

Teittinen, H., Pellinen, J., and Jarvenpaa, M., 2013. ERP in action - Challenges and benefits for management control in SME context. *International Journal of Accounting Information Systems, 14*(4), 278-296. http://dx.doi.org/10.1016/j.accinf.2012.03.004

Trigo, A., Belfo, F., and Pérez Estébanez, R., 2014. Accounting Information Systems - The Challenge of the Real-Time Reporting. *Procedia Technology, 16*, 118-127. http://dx.doi.org/10.1016/j.protcy.2014.10.075

Trott, P., and Hoecht, A., 2004. Enterprise Resource Planning (ERP) and its impact on the innovative capability of the firm. *International Journal of Innovation Management, 8*(4), 381-398. http://dx.doi.org/10.1142/S1363919604001118

Velcu, O., 2005. Impact of the Quality of ERP Implementations on Business Value. *Electronic Journal of Information Systems Evaluation, 8*, 229-238.

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