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Software as a Service Value and Firm Performance - a literature review synthesis in small and medium enterprises

Jorge Rodrigues*, Pedro Ruivo, Tiago Oliveira

ISEGI, Universidade Nova de Lisboa, Campus de Campolide, 1070-312 Lisbon, Portugal

Abstract

It is consensual that Software as a Service (SaaS) has significant effects on enterprise costs and return on investment (ROI) in information technologies (IT) and information systems (IS). However, as a distribution model which is still relatively recent and a fraction of all IT invested, even if growing at a faster pace than traditional distribution models, the impact in Firm Performance is still an area of research which is very much under covered especially in the small and medium enterprises (SMEs) segment. Literature reviews to support research of SaaS applications impact in SMEs Firm Performance are unknown to the best of our knowledge and this review in selected publications is a starting point to fill this gap and looks at some of the cross-road subjects that might be combined to build on greater knowledge and research work on the subject, such as Firm Performance influenced by (not specified genre of) IT/IS adoption; Cloud Computing and Performance, and, Enterprise Systems Software and Firm Performance. It provides an updated bibliography of the most relevant publications about these subjects, published mainly during the period of 2001 to 2014, for the exception of a seminal article published in 1995. A total of 32 articles from 30 journals and 2 conferences are reviewed. The main focus of this paper is to shed the light on the areas that researchers should consider in the research of the impact of SaaS business applications adoption in SMEs Firm Performance, and which are the major variables that explain SaaS Value influence to these organizations.

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Keywords: cloud computing; software as a service; organizational impacts of information systems; ROI; firm performance; business value; competitive advantage; cost reduction; efficiency; IT business value; CRM; ERP; enterprise system solutions (ESS).

* Corresponding author. Tel.: +0-000-000-0000; fax: +0-000-000-0000.
E-mail address: author@institute.xxx

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1. Introduction

There is an increasing trend in the adoption of business solutions in the Software as a Service model as some market analysts, such as IDC point out, namely that more than 50% of medium and large organizations will use cloud services in 2014 and growth is at a two-digits rate at worldwide level (+20%).

To date most of the research focus regarding "cloud computing" or "software as a service" (SaaS) has been devoted to the aspects of adoption and usage, and there is less evidence of significant research regarding the impact of this usage on the value created and especially in its relative Impact in Firm Performance.

Business Value of IT research is considered an important element and the IS field have not done enough to explain how and when business value is created [1, 2]. In addition to this, Firm Performance impact from Value derived of business applications has been studied mainly in Medium-Large organizations, where one of the variables related with Firm Performance most common to find is "stock market valuation" [3].

It could be argued that return on investment is even more critical for small and medium-sized enterprises (SMEs), for whom business applications implementations constitute a comparatively larger investment than for large enterprises [4], however there has been limited focus on the study of business applications impact in the SMEs Firm Performance (from this point on referred as SME Performance) excepting some specific researches in ERP post-adoption effects in SMEs [5].

The impact obtained from usage of business applications, delivered through SaaS distribution model, in Value creation and SMEs Performance is a subject even more understudied as this review found and makes this research significant for the authors and the subject for doctoral studies such as on theory based models that can explain and quantify the formation of SaaS value and respective impacted variables explaining SMEs Performance.

The academic research community can contribute to the field in various ways. A typical way of contributing to a knowledge field is by diffusing the researches through conferences and publishing journal papers for public benefits. Literature reviews represent a well-established method for accumulating existing knowledge within a domain of interest [4].

The objective of this study is to provide an updated review of the most relevant literature which can contribute to explain SaaS business applications value impact in SMEs Performance and which are the major theories used to explain this. The set of 32 papers published in various reference journals and conferences is a starting point to build up a conceptual framework that can explain how this new business model of business applications adoption might influence some variables which in its combination give superior competitive advantage and enhance Firm Performance in SMEs.

2. Research Method

In this article we have applied a systematic review approach, where the criteria for choosing articles for the review are as follows. First of all, the article must have been published in a peer-review, archival journal or conference. Second, to avoid never ending revision of the article, 30 April 2014 was selected as the cut-off date. Third, the keywords were cloud computing, software as a service, organizational impacts of information systems, ROI, firm performance, business value, competitive advantage, cost reduction, efficiency, IT business value, CRM, customer relationship management, ERP, enterprise resource planning, ESS, enterprise system solutions. After refining the search through Web of Science, EBSCO, IS journals and IS conferences proceedings, a total of 32 articles were found: 30 are journal articles and 2 conference proceedings.

In this section we present a summary of present study results and we have both the studies applied at large enterprises and SMEs. The review shows a gradual increase in research interest of Cloud Computing and Enterprise System Solutions impact in Firm Performance, especially since 2010, and as the same time a decreasing degree of studies in Firm Performance impact from generic IT/IS implementations, as can be seen in Table 1. This seems also to be aligned with the increasing adoption of SaaS applications in the commercial market.

In the last four years there was an increase of interest in the subject of impact in Firm Performance from the adoption and usage of information systems at enterprise level, with 2.5 times more articles published than in a larger period of nine years.

One other important element of this Literature Review is the analysis of the theories used, as presented in Table 2. This shows clearly that most authors refer to Resource Based View (RBV) theory, especially in the analysis of generic IT/IS implementations in Firm Performance, where RBV stands in 85% of the articles. Excepting Diffusion of innovation, Organizational information processing and Transaction cost economics, which are referred more than once, all other theories mentioned are referred only once.

Table 1. Number of selected articles published per period between 1995 and present

Subject	Year Range		
	< 2000	2000 - 2009	2010–To Date
IT/IS impact in Firm Performance	1	8	4
Cloud Computing and Value/ Performance/ ROI	-	-	11
ESS impact in Firm Performance	-	-	8

Table 2. Theories referrals

	Subject		
	IT/IS and Firm Performance	Cloud Computing and Value/ Performance/ ROI	ESS and Firm Performance
Total # Articles	13	11	8
Theory referenced	# articles	# articles	# articles
Agency theory	1 [3]		
Benefits realization			1 [4]
Competitive strategy	1 [6]		
Delone and McLean			1 [4]
Diffusion of Innovation (DOI)		2 [7, 8]	1 [5]
Dynamic Capabilities	1 [9]		
Economic theory of production	1 [10]		
IT productivity paradox	1 [10]		
Natural resource-based	1 [9]		
Organizational information processing			2 [4, 11]
Resource Based View (RBV)	11 [2, 6, 9, 10, 12-18]		2 [4, 5]
Schumpeterian innovation	1 [12]		
Strategic management	1 [3]		
Systems Theory	1 [2]		
Theory of strategic netwoks	1 [12]		
TOE		1 [8]	1 [19]
Transaction cost economics	2 [3, 12]		1 [4]
Value chain analysis	1 [12]		
Value-Focused Thinking (VFT) approach			1 [20]
No Theory referenced	1 [1]	[21-29]	[30-32]

It is also clear from this Review that in Cloud Computing research most academic articles still do not base their models on theories. This is also an indication that there is a very wide opportunity for deeper research on IS theory based models explaining the impact from SaaS in Firm Performance.

Regarding the most referred Benefits and Advantages of Cloud Computing and SaaS adoption, which are mentioned in this Literature Review, these are summarized in Table 3, where we can see that Financial and Functional benefits are the most referred in the Literature.

Table 3. Benefits and Advantages of Cloud Computing

Financial	
Cost Effectiveness	[28]
Cost Reduction	[29]
ROI	[23]
Pay-as-you-go Cost structure	[21]
SaaS reduces repair costs of application-based construction and maintenance	[27]
No upfront capital investments needed for hardware resources	[26]
Lower cost of entry to enhanced applications	[26]
Functional	
Computational power	[7]
Easier for enterprises to scale their services	[26]
Controlled Interface	[22]
Addressability and Traceability	[22]
Ease of use & convenience	[29]
Flexibility	[21]
Location Independence	[22]
Ubiquitous Access	[22]
Rapid elasticity	[22]
Security & privacy	[29]
Virtual Business Environments	[22]
Innovation and new services	
Lower IT barriers to innovation	[26]
Possibility of new classes of applications and Services not possible before	[26]
Other	
Instrument for sustainable improvements in the IT landscape supporting SMEs business	[24]
Sourcing Independence	[22]

The strong focus in Cost reduction or optimization, can be exploited in function of the impact in the bottom line in the Profit and Loss (P&L) account and consequently in the Firm Performance. However, there is the need to study further if this has to be balanced with the time period usage in order to understand if this becomes a sustained competitive advantage. Other advantages such as lower cost of access to applications, less capital investment and delivery of new services, which do not limit only to financial advantages but also time to market or increased offer to market and as such, customer advantage, are also enablers of increased Firm Performance [6].

3. Findings and Recommendations

The use of theories in SaaS business applications impact in SMEs is very limited and as such we call for more theory use. Initially the research focused in articles published in reference journals since 2006. However, as the research proceeded there were some seminal articles which for the number of referrals and the ranking of the publications, enlarged the period since 1995 [15], being this an exceptional exception, but this article stands as a

reference in the study of RBV theory application to analyze the impact of information technologies in creating sustained competitive advantages.

The major references found for Cloud Computing and Enterprise Systems impact in the creation of value and firm performance, which are the topics closer to the research topic, are mainly published after 2010, representing nearly 60% of the total selected references. There was also the need to enlarge the scope into the applications in large enterprises and especially the generic IT/IS applications impact in Firm Performance.

With the growing trend of Cloud Computing, and subsequently of SaaS, the emergence of business applications delivered through this distribution model is also growing, with more offerings from the software suppliers and an increasing interest from the market. We believe this can have a significant impact in the performance of SMEs but need to understand and answer some questions, such as (1) if in general SaaS business applications are a valuable IT resource to increase an SME Performance, then (2) which are the specific performance indicators impacted by SaaS business applications in a SME and (3) how can the value of a SaaS business application be assessed.

These are questions which we recommend further research and this literature review is also an indication that the practices and understanding of the SaaS business applications value amongst SMEs and impact in respective Firm Performance have matured enough to warrant some serious reflections on its essential issues. Reflecting about the low number of articles surveyed which study this subject turns out to make this an area with large potential for more future research.

4. Concluding remarks

The field of SaaS business applications impact in Firm Performance is still very much understudied by the research community, even more in the case of the SMEs segment which only starts to see relevant articles in the last 4 years.

The articles under review were analyzed with a focus on the following topics – First, if SaaS business applications are a valuable IT resource to increase firm performance; secondly, which values/benefits does SaaS business applications brings to a firm, and lastly, how can the value of a SaaS business application be assessed.

This study contributes to research through providing a literature review of SaaS value and impact in Firm Performance in SMEs, and several areas for future research seem promising such as which is the model, based in theories such as RBV and/or a combination with other theory, that can explain better and quantify the formation of value through SaaS applications and which are the impacted variables related to explain SMEs Performance and relative competitive advantage.

As more SME adopt these type of distribution model for their business applications, the questions on the value generated calls for a more rigorously investigation.

The research field of SaaS business applications adopted by SMEs and in particular the business value is sub-studied probably due also to more focus on large enterprises. We believe that our findings and recommendations for future research should lead to a more cohesive stream of literature that yields actionable steps for researchers, managers, and regulators working in the SME domain through the study of theory based models explaining impact in Firm Performance from value obtained of SaaS business applications usage.

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