Motivations Underlying the Adoption of ERP Systems in Healthcare Organizations: An Analysis from “Success Stories”

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Abstract

In order to deal with continuous drastic increases in healthcare spending and major demographic changes, governments in industrialised countries are initiating major reforms aimed at improving the efficiency and the quality of care services provided to their citizens. These reforms along with increasing requirements for accountability tend to “corporatize” these institutions by exposing them to market-like pressures. To face their changing environment, healthcare institutions have invested in ERP systems as their basic technological infrastructure, highlighting a phenomenon that recalls the earlier popularity of the ERP movement with private companies. Based on the analysis of 180 public “success stories,” the main objective of this study is to identify and characterize the sets of motivations that lead to the adoption of ERP systems in healthcare organizations. Our findings indicate that these motivations can be classified into six categories, namely technological, managerial operational, managerial strategic, clinical operational, clinical strategic, and financial. Three clusters of healthcare organizations were identified with regard to these motivations, and labelled as a Business View, a Clinical View, and an Institutional View of ERP systems.

1. Introduction

Despite governments’ enormous financial efforts, the gap between the demand for healthcare services from an increasingly well-informed and expectant public, and the capacity of healthcare organizations to meet this demand increases regularly [1]. It is in this context that many, if not most, governments are initiating major reforms aimed at improving the efficiency and the quality of care services provided to their citizens [2]. These reforms along with increasing autonomy and accountability tend to “corporatize” healthcare organizations by exposing them to market-like pressures. Consequently, these organizations are facing the same challenges than other modern organizations [3] and thus seek flexibility, rapidity, integration, and innovation [4].

In order to deal with these challenges, most scholars and experts recommended intensive use of information technology (IT) [5]. Following these recommendations, healthcare organizations have increased their capital investments in IT, although they still lag behind organizations operating in other information intensive industries such as the financial industry, the telecommunications industry, and the airline sector [6]. Following Pollock and Cornford [7], it might be argued that since the healthcare sector shares common problems with a wide range of sectors or industries, IT innovations such as enterprise resource planning (ERP) systems implemented in contemporary business corporations would also apply in healthcare institutions. Indeed, ERP systems were arguably the most popular IT innovation in the 1990s [8] and even at the beginning of the 21st century [9, 10], so much so that the large enterprise market for these systems became saturated, forcing ERP vendors to look for other market segments, particularly in the service and small business sectors [11]. One could thus assume that there is a convergence of interests between healthcare organizations and ERP system vendors. On the one hand, the former would be attracted by the benefits purportedly obtained from ERP adoption in the private sector, benefits such as the integration of business processes and the greater quality of information available for decision-making [12]. On the other hand, ERP vendors recognize the healthcare...
sector to have the greatest potential for growth in the ERP systems market [13]. Indeed, the global healthcare systems market is estimated to be worth $53.8 billion by 2014, growing at an annual rate of 16% [14].

As more and more healthcare organizations are adopting ERP systems, analyzing the motivations for which they undertake an ERP system project has become important for at least three reasons. Firstly, these motivations affect the project’s scope, design and implementation [15, 16]. It has also been confirmed empirically that the influence of motivations to adopt a health information system influence the project’s implementation outcome [17, 18]. Secondly, most studies on motivations to adopting ERP systems have been conducted in the context of large, private sector [19-21] and public sector organizations [22-24]. Thirdly, ERP system adoption in the healthcare industry is a relatively recent phenomenon, less than 20 percent of hospitals having implemented an ERP by the year 2006 [6].

To our knowledge, no prior research has examined the motivations for adopting ERP systems in the healthcare sector. This paper attempts to fill this gap by first aiming to identify and characterize the actual motivations that lead to the adoption of these systems by healthcare organizations. Another research objective is to characterize these organizations with regard to ERP by uncovering typical profiles or patterns of motivations among them. And following previous work done in public sector institutions [25], our final aim is to ascertain whether these motivations are influenced by certain aspects of the organizational context.

2. Conceptual and Empirical Background

What can motivate an organization to adopt an ERP system, knowing the high cost and high risk associated with such an undertaking? In prior research, the motivations underlying an organization’s decision to adopt an ERP system have been examined mostly in an incidental manner [e.g. 16, 26-28], whereas few empirical studies have focused on these motivations per se.

In the private sector, Oliver and Romm [19] found that there are three categories of motivations that lead an organization to search for an ERP solution: 1) the need to improve the performance of current operations, 2) the need to integrate data and systems, and 3) the need to prevent a competitive disadvantage or a business risk from becoming critical. In the same setting, Ross and Vitale [20] identified six reasons generally cited by enterprises, classifying them into three categories (infrastructure, capacity, and performance). These authors underlined the sequential character of these categories as the firm’s new common systems platform (infrastructure) makes it possible to develop new capabilities (process improvement, data visibility), which in turn are meant to improve organizational performance (cost reduction, strategic decision making, customer responsiveness). Essentially the same three types of motivations can also be found in Parr and Shanks [15], under different names, that is, technological (common platform, obsolescence of legacy systems), operational (process improvement, data visibility, operating cost reductions), and strategic motivations (Y2K compliance, multi-site standardization, customer responsiveness, decision-making improvement, need for efficiencies and integration, business restructuring).

In the public sector, the only empirical study on ERP motivations that could be found was that of Raymond et al. [22]. Based on their analysis of data from 46 stories of public organizations, these authors found that the motivations that lead public sector organizations to adopt an ERP system are related to four types of performance, namely, technological, operational, strategic, and financial performance. In the healthcare sector, while four ERP implementation studies could be found [29-32], none focused on the motivations that underlie the adoption of these systems. Hence to our knowledge, no prior research has specifically examined such ERP adoption motivations in healthcare organizations.

As shown in Table 1, for the purpose of the present study, an initial taxonomy of ERP adoption motivations was elaborated by integrating the previously cited categorizations.

Table 1. Taxonomic framework

<table>
<thead>
<tr>
<th>Type of motivation</th>
<th>Specific examples of motivations</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technological</strong></td>
<td>&quot;The majority of administrative systems are 10-25 year old [...] While most of these systems have had major modifications to adapt to changing requirements, the original design and intent of the systems remain a barrier for users.&quot;</td>
<td>[19]</td>
</tr>
<tr>
<td></td>
<td>&quot;The current Student System is unable to support core University functions such as the management of student information and must be replaced as a priority.&quot;</td>
<td>[19]</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td>&quot;In this industry, we make very fast decisions. Our old systems just can’t keep up with the demand [...] The old systems just didn’t have the flexibility to react to the market that quickly.&quot;</td>
<td>[32]</td>
</tr>
<tr>
<td></td>
<td>&quot;These current systems, built originally to support an organizational view, should be systematically replaced with systems supporting a process view.&quot;</td>
<td>[33]</td>
</tr>
<tr>
<td><strong>Strategic</strong></td>
<td>&quot;Enhance the view that the university is an information technologically advanced and open institution&quot;</td>
<td>[33]</td>
</tr>
<tr>
<td></td>
<td>&quot;increased student support and enhanced teaching activities&quot;</td>
<td>[33]</td>
</tr>
<tr>
<td><strong>Financial</strong></td>
<td>&quot;To deal with the projected decline in state funding support and to reduce the pressure to increase tuition, costs need to be contained or reduced. Of particular importance is the need to focus on personnel costs, which are the largest component of the expenditure base, and the need to streamline processes and procedures which add to administrative costs.&quot;</td>
<td>[19]</td>
</tr>
<tr>
<td></td>
<td>&quot;We need to increase the use of electronic documents internally and the exchange of information electronically with external organizations through the use of industry standards [...] I will simplify business processing, reduce costs.&quot;</td>
<td>[19]</td>
</tr>
</tbody>
</table>
This produced the following four generic categories: 1) technological performance, 2) operational performance, 3) strategic performance, and 4) financial performance motivations. Technological performance motivations have mainly to do with the IT infrastructure. Operational performance motivations concern the improvement of processes. Strategic performance motivations are related to a change in orientation, in the design or delivery of services, or in the image of the organization. Financial performance motivations apply to profitability, cost reduction, and revenue growth. This classification initially appears to have sufficient face validity and discriminating power for the purposes of this research.

3. Methodology

3.1 Selection and description of the cases

In identifying success stories of ERP system adoption and implementation in the healthcare sector, we followed Shang and Seddon’s [32] approach in using case studies published by ERP vendors on their websites. The main reasons for using such data were that they provide a broad view of the ERP adoption and implementation experience, they contain verifiable facts, including the disclosure of the adopting organization’s identity as well as that of the main project actors, and they are reported from the perspective of the adopting organization. All stories are considered successful from the adopting organization’s and vendor’s perspective.

Now, stories related by vendors evidently tend to oversell their products and services and the business benefits they provide. Our study’s main purpose however was not to evaluate the degree of attainment of these benefits but rather to identify and analyze the primary motivations that led healthcare organizations to adopt ERP systems. Hence the main data collection task was centered on the various experiences described in each story rather than on the conclusions of their authors [34].

As an initial step, we consulted the websites of SAP, Oracle, and Microsoft which together represent more than 50% of the ERP world market. We then consulted the websites of McKesson, Cerner, and HLTH who represent the leaders of the health IT sector with 30% of the market. Thereafter, we performed general web searches with the following keywords: “ERP,” “healthcare,” and “hospital.” The web sites were accessed between November 15, 2010 and January 20, 2011. Altogether, we identified 225 “success stories” qualified as healthcare sector implementations by ERP vendors.

We disqualified 45 of these stories for different reasons. After preliminary analysis, some stories did not pertain at all to the healthcare sector even though they were presented as such on the ERP vendors’ websites. We also disqualified other stories after concluding that the system implemented could not be truly considered as an ERP product. Other stories were written in languages other than English or French, the two languages spoken and understood by the researchers. Last, other stories were eliminated because not enough explicit or implicit information about the ERP adoption motivations could be found.

As shown in Table 2, altogether, 180 stories from a variety of healthcare ERP vendors were recorded: 100 from Oracle, 38 from SAP, 37 from Cerner and 5 from other vendors such as McKesson, Siemens and Compiere. These stories emanate from 31 different countries on five continents, the majority being North American (92) and European (68), including the United States with 89, and the United Kingdom, Germany and The Netherlands with 17, 15 and 8 stories, respectively. One may note here that while Oracle’s and SAP’s success stories are equally found in North America and Europe, Cerner’s stories are almost exclusively found in North America.

<table>
<thead>
<tr>
<th>Vendor</th>
<th>North America</th>
<th>Europe</th>
<th>Asia</th>
<th>South America</th>
<th>Oceania</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle</td>
<td>40</td>
<td>44</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>SAP</td>
<td>16</td>
<td>18</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>Cerner</td>
<td>35</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>92</strong></td>
<td><strong>68</strong></td>
<td><strong>12</strong></td>
<td><strong>5</strong></td>
<td><strong>3</strong></td>
<td><strong>180</strong></td>
</tr>
</tbody>
</table>

As ERP vendors structure their offer in a modular fashion, the various modules described in the stories include the following functions: administrative systems (145 stories), clinical information systems (38 stories), clinical support systems (36 stories), and patient management systems (22 stories). Table 3 presents the breakdown by vendor of the ERP modules implemented. One may note here Cerner’s under-representation in the “administrative systems” category, and conversely its over-representation in the other three categories versus Oracle and SAP.

3.2 Coding and analysis

To collect the story data, we elaborated an initial coding sheet with two main categories of data: case attributes and ERP adoption motivations. The case attributes refer to institutional attributes and ERP system attributes. The institutional attributes
considered here include tax status (for-profit vs not-for-profit), organization status (hospital or clinic vs other type of organization), location (urban vs rural), organizational size (number of employees and number of beds when applicable), network affiliation (yes or no), and university affiliation (yes or no). For their part, the ERP system attributes considered here refer to ERP vendor, functional coverage of the ERP system, and modules implemented.

As for ERP motivations, four main categories were created based on the initial research framework: technological, operational, strategic, and financial performance (see Table 1). In the coding process, however, two of these categories were refined. As cases were analyzed to identify actual motivations leading to ERP adoption, a further breakdown of the operational and strategic categories into both a “managerial” and a “clinical” category was deemed necessary. The success stories retrieved from the ERP vendors’ websites were loaded as source documents in the NVivo 9 software.

### 3.3 Methodological rigor

This study used public secondary data, noting that this method has proven to be a valid source of insights in previous information systems research [e.g. 22, 32, 35]. Being publicly available and accessible, these data are deemed to provide confirmability to qualitative research [36, 37]. Although the study cannot claim to be a case survey, our approach was guided by basic techniques of this method, namely, selecting relevant cases from inclusion criteria, developing a coding scheme to convert qualitative case description into quantified variables, and using multiple coders and assessing inter-rater reliability [34].

The coding process was performed by two of the four researchers. The cases recorded were randomly subdivided into two equivalent parts, and each part were independently analyzed and coded by one coder. Certain measures were taken to ensure the relative concordance of the coding process between the two coders. First of all, the two coders used the same previously described coding scheme. Second, a pre-coding test was conducted by randomly selecting ten stories. These were analyzed and coded independently by the two coders, who then compared and discussed their coding. This step allowed them to harmonize their understanding of the different codes. Third, at the end of the process, the two coders worked together to harmonize the phrasing of different codes and to group similar codes. Fourth, to ascertain the validity of the coding process, each of the two other researchers not involved in the preceding steps independently coded 50 transcript segments from the cases. Cohen’s kappa inter-coder reliability coefficient was equal to 0.61 in the first case and 0.74 in the second case, indicating substantial agreement [38].

### 4. Results

As determinants of ERP adoption, motivations refer to the initial reasons that led to the ERP adoption decision. Table 4 presents the most frequent motivations found in the stories analyzed. Given the limited richness of the information provided in the stories by the ERP vendors, the various motivations for the adoption of ERP systems identified within each story were coded as 46 binary variables (1: present, 0: absent). These include 7 technological motivations, 9 managerial-operational, 12 managerial-strategic, 10 clinical-operational, 4 clinical-strategic, and 4 financial.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Technology</th>
<th>Operational</th>
<th>Strategic</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Improve IT infrastructure capabilities (44)</td>
<td>Improve administrative data accuracy (30)</td>
<td>Improve effectiveness of administrative processes (20)</td>
<td>Monitor cost trends (49)</td>
</tr>
<tr>
<td>2</td>
<td>Improve IT functionality (46)</td>
<td>Improve administrative data accuracy (29)</td>
<td>Improve operational effectiveness (19)</td>
<td>Increase probability of return on investment (47)</td>
</tr>
<tr>
<td>3</td>
<td>Modernize IT systems (45)</td>
<td>Improve HR performance (13)</td>
<td>Improve operational effectiveness (19)</td>
<td>Improve clinical performance management (19)</td>
</tr>
<tr>
<td>4</td>
<td>Improve IT productivity (28)</td>
<td>Enhance the sharing of clinical data (24)</td>
<td>Enhance the effectiveness of clinical processes (18)</td>
<td>Improve clinical performance management (38)</td>
</tr>
<tr>
<td>5</td>
<td>Build a knowledge management infrastructure (23)</td>
<td>Improve regulatory compliance (15)</td>
<td>Enhance the sharing of clinical data (14)</td>
<td>Improve financial transparency (17)</td>
</tr>
</tbody>
</table>

The hierarchy of the motivation categories stems from the logic found in many of the stories, that is, from the way ERP adoption motivations were formulated. Consider the following transcripts from case #29:

“We believed that rationalizing technology and standardizing processes would enforce the sharing of best practices across all therapy areas and enable [our organization] to reduce...
operating costs through automation and shared service centers.”

“We also wanted to build a scalable, flexible IT environment that would allow [our organization] to leverage its market-leading position and continue generating strong cash flow and profitable growth.”

It appears from these two transcripts that technological motivations such as “rationalizing technology” and “building a scalable, flexible IT environment” were not the ultimate trigger of the organization’s decision, but were deemed a necessary condition for managerial performance (“automation and shared service centers,” “leverage market-leading position”), clinical performance (“sharing of best practices across all therapy areas”), and financial performance (“reduce operating costs,” “continue generating strong cash flow and profitable growth”).

Another notable result lies in the frequency with which certain types of ERP motivations are present in the 180 stories examined. The most frequently mentioned motivations pertain to managerial-operational performance (in 84% of the cases). For instance, “improving the effectiveness of managerial processes” and “leveraging the ERP system to improve performance management capabilities,” mentioned in 88 and 30 cases respectively, are the most frequently mentioned individual motivations in this regard. Next in order of appearance are motivations that pertain to clinical performance (in 44% of the cases) and to technological performance (in 41%). Here, one finds “improving the effectiveness and efficiency of the care provided to patients” (in 44 cases) and “searching for IT integration” (in 51 cases) as being the motivations most often cited. The least frequent motivations are the ones that pertain to financial performance (in 29% of the cases). Being present in 44 cases, “monitoring cost trends” is the most prevalent motivation of this last category.

To obtain further descriptive insights from the stories, cluster analysis was used to group the healthcare organizations on the basis of their motivations for adopting ERP systems. This approach aims to group organizations into clusters such that each cluster’s membership is highly homogeneous with respect to certain characteristics. A second aim is that each group differs from other groups with respect to these same characteristics. The number of motivations of each type present in a story was chosen here as clustering variables. The SPSS TwoStep algorithm was used to identify clusters as it can handle a large number of cases and has the ability to determine the optimal number of clusters [39]. A three-cluster solution was found to be optimal in identifying groups of stories that could be clearly distinguished from one another, based on an interpretable and meaningful pattern of relationships among the clustering variables.

As shown in Table 5, the three clusters of healthcare organizations were labelled as having a Business View (30% of the stories), a Clinical View (19%), and an Institutional View of ERP systems (51%). Significant differences between cluster means for all clustering variables and for the organization’s total number of motivations demonstrate the unique character of each cluster.

Table 5. Cluster analysis of healthcare ERP stories by type of motivations

<table>
<thead>
<tr>
<th>Number of ERP motivations</th>
<th>Business View</th>
<th>Clinical View</th>
<th>Institutional View</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivations</td>
<td>(n=57)</td>
<td>(n=34)</td>
<td>(n=92)</td>
<td></td>
</tr>
<tr>
<td>Total number of motivations</td>
<td>5.5</td>
<td>5.3</td>
<td>2.3</td>
<td>41.3***</td>
</tr>
<tr>
<td>Financial motivations</td>
<td>1.0</td>
<td>0.3</td>
<td>0.0</td>
<td>115.2***</td>
</tr>
<tr>
<td>Clinical / managerial</td>
<td>0.7</td>
<td>2.5</td>
<td>0.3</td>
<td>62.6***</td>
</tr>
<tr>
<td>Clinical / strategic</td>
<td>0.0</td>
<td>0.6</td>
<td>0.0</td>
<td>82.5***</td>
</tr>
<tr>
<td>Managerial / strategic</td>
<td>1.4</td>
<td>0.9</td>
<td>0.7</td>
<td>11.4***</td>
</tr>
<tr>
<td>Managerial / operational</td>
<td>1.4</td>
<td>0.6</td>
<td>0.8</td>
<td>8.9***</td>
</tr>
<tr>
<td>Technological motivations</td>
<td>1.0</td>
<td>0.4</td>
<td>0.5</td>
<td>5.4**</td>
</tr>
</tbody>
</table>

The first group is comprised of healthcare organizations whose motivations pertain more significantly to managerial-operational as well as managerial-strategic performance, technological performance and financial performance than the other two groups. As such, they are seen as taking a purely “business” view of ERP system, i.e. the dominant view propounded by the large ERP system vendors such as Oracle, SAP and Microsoft, and adopted by most firms in the manufacturing sector from which ERP originated and where its market penetration is the greatest. In contrast, the second group is made up of organizations that look at ERP system offerings from a more “clinical” perspective, that is, whose motivations to adopt such a system pertain significantly more to their core business, i.e. clinical processes than the other two groups.

For its part, the third group stands as the one with the least number of ERP adoption motivations, whatever the type. For these healthcare organizations, there is no specific type of motivations that seems to play a central role in the ERP adoption decision. These organizations are seen as following an “institutional” perspective, referring to neo-institutional theory for which technology adoption is a result of external or environmental pressures rather than internal rational decisions or cognizant choices by the organization’s management [40]. An organization’s institutional context determines to some extent the pressures it will undergo to align itself either to common practices, often referred to as “best practices” (a frequent argument for justifying
ERP adoption), or to legal and regulatory requirements. This context will also force the organization to adapt itself to the power shifts within the various stakeholder groups in its immediate environment.

A further characterization of the three groups of healthcare organizations can be obtained by looking at the different modules implemented within their ERP system. Looking at Table 6, one may note that organizations whose view of ERP is “clinical” tend to implement clinical IS and clinical support modules in greater proportion than the other two groups, as expected. Conversely, the organizations with the least motivations, that is, those whose view is labelled as “institutional”, tend to implement patient management system modules in lesser proportion. However these organizations are the ones that have most implemented administrative system modules, that is, modules that are the most “generic” by ERP standards and the least specifically related to the healthcare sector.

Table 6. Breakdown of ERP modules by cluster

<table>
<thead>
<tr>
<th>ERP module</th>
<th>Business view</th>
<th>Clinical view</th>
<th>Institutional view</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative systems</td>
<td>41(30)</td>
<td>20(14)</td>
<td>82(56)</td>
<td>14.6***</td>
</tr>
<tr>
<td>Patient management systems</td>
<td>7(6)</td>
<td>8(6)</td>
<td>4(3)</td>
<td>11.4***</td>
</tr>
<tr>
<td>Clinical support systems</td>
<td>8(22)</td>
<td>15(42)</td>
<td>13(36)</td>
<td>15.2***</td>
</tr>
<tr>
<td>Clinical information systems</td>
<td>10(26)</td>
<td>18(48)</td>
<td>10(26)</td>
<td>20.7***</td>
</tr>
</tbody>
</table>

**p < 0.001

The three groups of healthcare organizations can also be characterized by the vendor selected to provide their ERP system. Here, as indicated in Table 7, one may note that healthcare organizations whose view of ERP is “clinical” tend to select an ERP provided by Cerner rather than the other two groups, again a result that was to be expected.

Table 7. Breakdown of ERP vendors by cluster

<table>
<thead>
<tr>
<th>ERP vendor</th>
<th>Business view</th>
<th>Clinical view</th>
<th>Institutional view</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle</td>
<td>33(35)</td>
<td>30(109)</td>
<td>37(55)</td>
<td>35.0***</td>
</tr>
<tr>
<td>SAP</td>
<td>13(34)</td>
<td>4(11)</td>
<td>21(55)</td>
<td></td>
</tr>
<tr>
<td>Cerner</td>
<td>7(15)</td>
<td>20(54)</td>
<td>10(27)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1(20)</td>
<td>0(9)</td>
<td>4(80)</td>
<td></td>
</tr>
</tbody>
</table>

**p < 0.001

Now, one may also ascertain whether the organizational context influences the motivations for which healthcare ERP is adopted. Initial evidence presented in Table 8 to this effect indicates that it is with regard to technological and clinical performance motivations that such influence occurs.

Specifically, it was initially found that the smaller the size of the hospital or clinic (number of beds), the more ERP is adopted for clinical reasons. Also, healthcare organizations located in the United States (49% of the cases) show less technological motivations but more clinical motivations than those located in other countries. The majority of American stories relate the experience of hospitals who have implemented an ERP provided by Cerner and meant to support clinical processes primarily.

In terms of tax status and affiliation, not-for-profit and university-affiliated health organizations show less technological motivations than for-profit and non-affiliated ones. As to the type of organization, hospitals or clinics (66% of the cases) also show less technological motivations but more clinical motivations than other types of organizations.

5. Discussion

The results presented above indicate that the performance motivations that underlie the adoption of ERP systems in healthcare organizations are technological, managerial-operational, managerial-strategic, clinical-operational, clinical-strategic, and financial in nature. These organizations differ however as to whether the managerial or the clinical benefits of ERP is the one that is privileged. Scholars have previously stressed the importance of contextual factors in order to fully understand technology adoption processes [e.g. 41, 42]. Therefore, it is not surprising that motivations related to clinical performance emerge from our analysis at both the operational and strategic levels, clinical activities representing the “core business” of this industry.

Furthermore, it is worth noting that it is only in the 1990s that healthcare organizations started to use information systems for clinical purposes to improve care services [43]. Consistent with this trend, our results show a clear domination of motivations related to managerial performance over clinical performance. Indeed, at the operational level, one may recall that the most frequent motivation is to “improve administrative process effectiveness” (expressed in 88% of the stories), as compared to “improve the effectiveness and efficiency of care
provided to patients” (44%). The second-most frequently mentioned motivation is related to technological performance, that is, the “search for IT integration” (51%). On this matter, it is worth reminding that integration of business operations and processes is one benefit of ERP that is highly-valued by all types of organizations [44]. It is also worth noting that frequently mentioned motivations such as “monitor cost trends” (40%), “leverage the ERP system to improve administrative performance management capabilities” (30%), and “leverage the ERP system to enhance compliance with applicable laws and regulations” (30%) denote the influence of the environmental context of healthcare organizations. In fact, the healthcare industry is characterized by a high level of regulatory and legal requirements that can both accelerate and inhibit IT adoption [45]. In addition, due to increasing level of governmental as well as competitive pressures, healthcare organizations are becoming more aware of their need to improve overall performance and to develop their performance management capabilities [46, 47].

The preceding results concur with Caldas and Wood’s [48] findings in that most motivations reported by the sampled healthcare organizations are “substantive” in nature, i.e. based on a “rational” organizational expression of requirements and problems for which ERP systems appear to be an adequate solution. These authors note however that substantive motivations are not the only ones that come into play. Less evident (or less acceptable) motivations of the institutional or the political type may also be present. The former type refers to external pressures that may be coercive, normative or mimetic in nature, whereas the latter refers to power and conflict within the organization. Given that such motivations could not be detected with the data collection method employed here, further research should do well to look into the institutional and political factors that may underlie the ERP adoption in healthcare organizations.

In comparing our results with those of similar studies conducted in other contexts, one must keep in mind the limitation of such an exercise due to difference in data collection methods. That being said, healthcare organizations globally appear to be driven by the same substantive motivations as organizations in the private sector [15, 19, 20] and in the public sector [23]. However, clinical performance motivations at both the operational and the strategic level are specific to organizations in the healthcare sector. In addition, healthcare sector-specific characteristics (e.g. financing systems, legislation, regulatory requirements) imply that certain motivations will have a greater impact than others, when compared with the private or the public sector. For example, the need to comply with legislation or regulatory requirements is of paramount importance in this industry.

The need for greater transparency and accountability could also have more weight in both the healthcare and the public sectors when compared to private enterprises. In line with Raymond et al.’s [23] findings, one could assert that, contrary to healthcare or governmental organizations, private firms can be motivated to adopt an ERP system in part by the need to reduce a competitive disadvantage or to prevent a business risk from becoming critical [19]. Conversely, private sector organizations would most often not be motivated by pressures to join with other organizations in an ERP implementation project, as can be the case for healthcare and public sector organizations.

As found above, three organizational profiles were identified with regard to ERP adoption motivations, that is, healthcare institutions were seen as having a Business View, a Clinical View, or an Institutional View of ERP systems. The first two views are consistent with a rational perspective of innovation adoption [49]. The emergence of the third profile is rather surprising however, as it represents about a half of the sampled organizations. While the rational perspective of innovation adoption does not apply to this group, another line of reasoning may be of interest to these organizations. Contrary to DiMaggio and Powell [50] for whom the “first adopters” of an innovation are the ones motivated by a desire to improve their performance, it stems from our results that healthcare organizations in the third group may have adopted an ERP system as a result of environmental pressures, be them coercive or normative, or by imitation, possibly following a management “fashion wave” [51].

With regard to our third research aim, our results indicate that five characteristics of the organizational context (hospital or clinic size, country, tax status, university affiliation and type of organization) play a significant role in motivating the adoption of ERP systems in the healthcare sector. First, organizational size is one of the most widely investigated antecedents of IT adoption in hospitals [52]. Our results indicate that smaller organizations are motivated more by improving their clinical performance. While in contradiction with two previous studies [e.g. 53, 54], this result may be explained by an argument analogous to the one used to characterize the greater “proximity” of small and medium-sized enterprises to their clients [55]. Thus, in the case of small and medium-sized hospitals, this
proximity would be achieved through improvements in patient care enabled by an ERP system.

Another result worth discussing is the greater emphasis on technological performance and the lesser emphasis on clinical performance of the for-profit healthcare organizations, as opposed to the not-for-profit ones. Here, one clearly sees the former’s “business” orientation of ERP as opposed to the latter’s “clinical” orientation, wherein the adoption behaviour of for-profit healthcare institutions would more resemble that of other business corporations in initially seeking the IT integration and improved IT capabilities brought by implementing an ERP system.

In a similar fashion, university-affiliated institutions tend to adopt more of a “clinical” rather than a “business” orientation of ERP, that is, they are more motivated by clinical performance, and less motivated by technological performance than non-affiliated institutions. Given the primary mission of teaching hospitals, this last result is not surprising. The same can be said of hospitals and clinics versus other types of healthcare organizations as the latter are mostly for-profit organizations. Overall, these results confirm the importance of the organizational context in determining why, in the healthcare sector, organizations differ in their motivations to adopt an ERP system.

In concluding this discussion, an obvious limitation must be acknowledged in relation to this study’s use of secondary data, that is, data initially compiled for a different purpose than that of the research. In using “success stories” published by ERP vendors, one may be concerned with the inherent bias in the selection and presentation of these stories for publicity reasons. For instance, more space is given to the benefits derived from the system and to the reasons for choosing the vendor and the proposed solution. Motivations for adoption are treated incidentally, and difficulties or problems encountered in adopting ERP are rarely mentioned. Hence, it could reasonably be assumed that motivations in the selected stories are less susceptible to distortion. Finally, the terminology used in the stories varies substantially from vendor to vendor, rendering comparison more difficult.

6. Conclusion

In the present article, we have explored the key motivations that underlie the adoption of ERP systems in healthcare organizations. The research contributions lie in a better understanding of the reasons why healthcare organizations decide to implement these systems. A thorough analysis of the motivations of healthcare organizations would help avoid what Markus and Tanis [56] called the “bandwagon effect”, that is, adopting ERP systems simply because other comparable organizations have done so. Such analysis would also allow ERP vendors to better define their strategies in order to meet the expectations of healthcare organizations.

The popularity of ERP systems in private sector combined with optimistic growth forecasts in the healthcare segment within the IT market, lead one to believe that the adoption of these systems in healthcare organizations will continue to increase. As the pressure from governments continues with regard to efficiency and effectiveness, integrated systems will be required in order to enable and better manage processes in healthcare organizations, both upstream and downstream, and without loss in the quality of care provided to citizens. Alike other information systems, ERP systems can provide benefits to healthcare organizations; it has also shown that realizing these benefits is not automatic and that the risk of partial or total failure is still very high. Thus, ERP adoption issues must be better understood in light of fundamental differences in the various organizational contexts that frame these issues, be they represent differences between public and private organizations, small and large organizations, or service and manufacturing organizations.

7. References


