Understanding the role of the external consultant in ERP project success: A case study from Morocco

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Abstract- Enterprise Resource Planning project is a complex piece of work that aims to integrate business process management. Hence, the ERP project success depends closely on the support of an external (Information Technology) IT consultant. This support is very crucial, especially in developing countries such as Morocco, which knows the issue of skill shortages in IT external expertise. Based on ERP project lifecycle and stakeholder theory, the aim of this study is to understand external consultant’s role in the ERP project success, through studying a single case study and data triangulation of interviews, observations and documents. The results show that the efficiency of external consultants depends on the engagement, the reactivity, and the non-stop assistance of the client through the hall process of the ERP project. Thus, the relationship between the external consultant and the stakeholders is very important when it is based on good internal communication, the active commitment of each party, and a continuous knowledge sharing.

Keywords— ERP project, External Consultant, Success, Stakeholder

I. Introduction
Enterprise Resource Planning (ERP) is a modular and a standard application that integrates many business functions of a company into a single information system (Shatat, 2015; Hasan et al., 2019; AboAbdo et al., 2019). It aims to improve operational performance and obtains real time information, which increases the efficiency of strategic decision-making within the organization (Shah & Khan, 2011; Leyh, 2016).

However, many companies failed in completing the project implementation (Kraljić, 2019). In order to avoid such scenarios, several studies have highlighted the
important role of the external consultant in Information Technology (IT) and ERP success, through quantitative and qualitative studies (Alsulami et al., 2013; Paweloszek, 2016). Despite the richness of these studies, understanding ERP project success from IT external consultant perception remains limited, especially in developing countries such as Morocco, which knows by a lack of research in this area. This paper enriches the literature review by understanding external consultant role in ERP project success through a single case study of an ERP editor and integrator operating in agriculture sector in Morocco. The objectives of this paper are to study the perception of ERP project’s success by the external consultant (functional and technical), and his missions in the project lifecycle, as well as the factors that affect the stakeholder’s relationship in ERP project.

In the following sections, we present a review of the recent literature on the theoretical concepts, the methodology adopted, the presentation and discussion of the results.

II. Literature review

Several authors have suggested many ERP success measurement models; each one has a specific measurement theory or approach (Kronbichler et al., 2010; Zouine et al., 2015). In this paper, we adopt two theories to study the role of external consultant in ERP project success. Firstly, we choose the stakeholder theory, regarding the actors involvement in process evaluation at each stage of the information system’s development (Alsulami et al., 2016). Indeed, the identification of stakeholders must take into consideration their roles in ERP environment (Candra, 2016), because ERP success perception by stakeholders can determine the results of a project (Davis, 2017). Secondly, we adopt the ERP lifecycle, because we assume that a longitudinal observation of ERP project lifecycle from the external consultant can help to improve the understanding ERP project (Law et al., 2010; Li-Man et al., 2018).

A. Stakeholder theory

Stakeholder theory has techniques to identify stakeholders, describe the relationships between them, and provide guidelines for further interest into managing conflicts. Hence, organizations can align their parts on a set of common goals, to improve communication, reduce work-time again, and increase opportunities for overall organizational success (Hartman & Ashrafi, 2002). Stakeholder theory has been used widely in the area of ERP, involving many stakeholders, with a specific knowledge (Candra, 2016). Thus, the organizations that implement ERP should deal with a multitude of stakeholders who are potentially able of
influencing the achievement of organizational aims (Alsulami et al., 2016). ERP projects involve internal as external stakeholders (Elragal & Haddara, 2013). Internally, corporate staff must make an active contribution, based on their analysis and requirements communication and the knowledge of details about the company (Ballejos & Montagna, 2008). Likewise, ERP require multiple functional and external technical skills provided by consultants in ERP’s field (Hustad & Vikstøl, 2014). Thong et al. (1996) found in this sense, that high quality of external experts and consultants were more important than management support for occurring the success of information system in small businesses. Thus, external consultants have more experience in ERP systems implementing and can help users in order to understand ERP functioning.

B. The ERP project lifecycle

The ERP lifecycle is made up of four fundamental phases frequently cited in the literature: planning, implementation, system stabilization and improvement (Maheshwari & Fillion, 2011). Markus et al. (2000) develop a model of four phases of ERP implementation in Figure 1. The authors given the project complexity have also developed other integration models and its integration (Esteves & Pastor, 1999; Markus et al., 2000; Ross & Vitale, 2000). The differences between these phases rely on the activities related in each phase.

Three phases constitute the common points between these different authors (Huang & Yasuda, 2014):

- The pre-implementation: which determines the suitable ERP to adopt.
- The implementation: which concerns the operationalization of the solution.
- The post-implementation: which consists of using the solution.

There is a need to improve understanding of the ERP lifecycle issues in order to conduct a successful research and ensure their implementation (Huang & Yasuda, 2014). In this sense, the ERP system project should take into consideration important aspects: implementation strategies, system configuration, and degree of customization and implementation costs (Uppström, 2015). In addition, ERP success does not only depend on a single phase but also on all ERP project stages; therefore, the role of the external consultant should be evaluated from the pre-implementation phase to post-implementation.
C. ERP project success according to stakeholder theory

For stakeholder theory, ERP success depends on stakeholders’ perception (Davis, 2017). Indeed, different parties can see ERP systems in different ways, depending on their interests, perspectives and opinions. It would therefore be wise for an organization to better grasp the multiple visions of its stakeholders and learn how to manage them effectively (Sathish et al., 2004).

Several works have mobilized stakeholder theory in ERP and information systems success. Adelakun & Jennex (2002) conducted a qualitative study to understand the evaluation of an IS / IT project using stakeholder theory. This approach urges the system developer’s involvement, in order to understand the expectations of the different approach stakeholders in each stage of the development process.

Sedera et al (2004) examined the success of ERP, based on DeLone & McLean (2003) model in Australian public organizations, according to organizational stakeholders (users at strategic, managerial and operational level, and IT staff). They found that different groups had different views on ERP success: IT staff place much more importance on "system quality" than users, whereas users at the strategic level rated the measures and dimensions of "organizational impact" more than IT staff. However, these authors also noted that the two organizational groups of stakeholders did not show significant differences in the perception of "information quality".
Ifinedo & Nahar (2006) conducted an empirical study with 44 private organizations from various industries to determine if there are differences between two groups of top and middle management regarding measuring ERP’s success. According to the model established by the same authors (Figure 2), they noted no significant statistical difference between the two groups, except for the measurement of "system quality" on the one hand, and "organizational impact" on the other hand: top management has a more positive view of these issues than middle management.

Ifinedo & Nahar (2007) studied the existence of perception difference of business leaders and IT professionals, regarding the prioritization and evaluation of ERP success measures and dimensions. Their results indicated that there were no significant statistical differences between the two groups except for Vendor/Consultant Quality.

D. The role of the external consultant in ERP project success

External consultant role is to diagnosis information needs, study the recommendation of the IT infrastructure, the appropriate software and managing the solution to implement (Bradshaw, 2013). Thus, it supports clients in the configuration of the appropriate ERP system and training in order to exploit technology advantages. Therefore, the external consultant plays an important role in ERP projects (Henningsson & Øhrgaard, 2016).

The literature review highlights several studies that focused on the role of the external consultant in IS implementation success and more specifically ERP. Thong (2001) used the resource constraint theory of Welsh and White in small businesses and the Barriers to Knowledge Management of Attewell to establish an IS success model. With a sample of 114 small businesses, the results show that external expertise is the predominant key factor in the IS success in small business.

Wang & Chen (2006) studied, through a survey of 85 ERP projects implementation with Taiwanese manufacturers, the role of top management, users and external consultants in ERP projects. The study shows that competent consultants can facilitate communication and solving conflicts in the ERP consultancy.

Figure 2. Measures of ERP success (Ifinedo, 2006)
process and they can help improving the ERP system quality.

Ifinedo (2011) carried out a survey of 109 companies in two European countries to study the effect that can have external and internal expertise and IT knowledge on the ERP success. The results confirmed that these two factors are relevant in improving the ERP success for organizations. The same author examined in other study the impact of contingency factors such as executive support, corporate vision and external expertise on ERP success. The results showed that the relative importance of external expertise is very powerful comparing to the two other factors (Princely Ifinedo, 2008).

The case study of Hustad & Vikstøl (2014) identifies the knowledge required and the roles to assume by external consultants working on the implementation of Web 2.0 technologies. They demonstrate that consultants must capitalize on technical skills and organizational knowledge. Thus, for the implementation success, the consultants must master roles like the project manager and the system developer.

III. Methodology

To give a particular concern addressed to the enterprise’s context, we choose a case study that is defined as an empirical investigation, which examines a phenomenon in its real context (Basit, 2003).

Alpha Company is an IT editor and integrator operating in agriculture sector in Morocco, its teams consists of 17 interdisciplinary collaborators (Profiles in IT, Agronomy, Finance, and Economy).

Our case study focused on ERP project implementation for Alpha Consulting customers. It allows operational management of all agricultural activities and constitutes a tool for piloting agricultural production on the technical and economic levels. With regard to ERP projects implementation, each functional consultant is responsible for one or more implementation projects. In order to conduct our study, we first conducted semi-structured interviews with four functional consultants and two technical consultants; the average duration of each interview is around one hour and a half. We recorded and transcribed all the interviews, and we made additional meetings to confirm a few points of the interviewees' responses.
Furthermore, we consulted and discussed some internal documents with the company chief executive; and we attended some stages of ERP implementation.

The interview guide includes four axes: (1) the ERP project implementation process, (2) the role of the company’s external consultant, (3) the role of the external consultant in the ERP project success, finally, (4) the consultant’s relationship with the stakeholders.

We mobilized the manual method for the content analysis. It is based on data transcription in the analysis grid of verbal, visual or written data analysis in order to explore specific phenomena (Basit, 2003). We used this method to analyze the empirical data collected so as to describe and explain the external consultant’s role in ERP project success.

**IV. Results and discussion**

The following axes illustrate the results of our study:

A. The external consultant involvement in ERP implementation lifecycle.

The project cycle follows the following steps (Table 1):

The ERP lifecycle has made it possible to identify the consultant role in the implementation process. Indeed, Alpha Company uses the model of Markus et al. (2000) according to the AGILE method, where the degree of involvement differs according to the knowledge and the competences required, thus the planning phase constitutes the stage where the external consultant must be ubiquitous in all the missions of this phase. This can be explained by the importance of clearly understanding client needs and its impact on the rest of the process. Thus, the ERP system’s poor knowledge often noticed among users in the first stages requires this strong involvement of external consultant in order to illustrate the ERP importance in managerial practices.

Training is also an important step, since the external consultant must be able to explain the modules for users from different managerial levels, and he establishes close relationships with them in order to ensure the ERP adoption and acceptance.

According to the interviewees, the project size affects also the implementation cycle. Large companies generally orient the project implementation towards ERP customization (Koch, 2016). In this case, the external consultant must study the technical and functional feasibility to ensure that the proposed development fits with ERP system.

He should determine the project duration, the nature of the customization requested, and its impact on the internal projects of the integrator/editor, especially in terms of the
updates to schedule for ERP customized versions.

Table 1: The external consultant involvement in ERP implementation lifecycle.

<table>
<thead>
<tr>
<th>Stages</th>
<th>References</th>
<th>Activities involving the external consultant</th>
<th>Involvement degree of the external consultant¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>(Markus et al., 2000; Chang et al., 2000)</td>
<td>Discerning customer needs to identify the functions that the ERP is appeal to fulfill, Choosing the implementation strategy, Business Process Reengineering, The prerequisites and the technical environment determination.</td>
<td>+++</td>
</tr>
<tr>
<td>ERP Installation</td>
<td>(Chang et al., 2000; Parr et al., 1999)</td>
<td>Test of the technical requirements prepared, Installation of ERP</td>
<td>++</td>
</tr>
<tr>
<td>Training</td>
<td>(Esteves &amp; Pastor, 2004; Markus &amp; Tanis, 2000.)</td>
<td>Building an ERP training plan, Delivering training by module, Utilization ERP test with users.</td>
<td>+++</td>
</tr>
<tr>
<td>ERP’s Use and Maintaining system</td>
<td>(Markus &amp; Tanis, 2000; Parr et al., 1999)</td>
<td>ERP Business and technical assistance, ERP knowledge Transfer to users, Resolving technical problems and ERP gaps, Response to specific customer requests.</td>
<td>+++</td>
</tr>
</tbody>
</table>

¹ Notes: ++: Medium; +++: Strong; ++++: Very strong
B. Perception of ERP success by the external consultant

The indicators of ERP success reported in table 2 by the external consultants interviewed make it possible to give each step its importance in the overall project success:

Table 2: The indicators of ERP success according to implementation lifecycle.

<table>
<thead>
<tr>
<th>Phases</th>
<th>References</th>
<th>ERP success indicators</th>
<th>Explanations of the interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>(Parr et al., 1999; Chang et al., 2000; Zhu, et al., 2010)</td>
<td>The right definition and expression of the needs that the ERP must match; The degree of convergence between needs and ERP functions;</td>
<td>«… in the case where the client does not have a clear view of his technical needs, generally we offer the standard version, as the project progresses, we always return to the needs analysis stage, because the client has not clearly determined his needs.»</td>
</tr>
<tr>
<td>Configuration</td>
<td>(Zhu et al., 2010)</td>
<td>Respect for deadlines communicated to client;</td>
<td>«…. It is therefore a question of verifying whether the steps of configuration and implementation are carried out within a very precise timeframe and under better conditions.»</td>
</tr>
<tr>
<td>ERP Installation</td>
<td>(Markus &amp; Tanis, 2000)</td>
<td>Support users’ phone calls index on business data entry;</td>
<td>«.. If we see that these users ask questions about a data entry method or tip, then we know here that it must be done at the training level, so this is a sign that this stage has not been done right.»</td>
</tr>
<tr>
<td>Training</td>
<td>(DeLone &amp; McLean, 1992; Shang &amp; Seddon, 2002)</td>
<td>The ERP use and durability of data entry on all levels (operational, managerial and strategic); Customer satisfaction;</td>
<td>«... After implementation, the success is the ratio module number used (range of use) / modules acquired. Thus, there is the edition of management control reports: this is the output used by management and top management. They must be satisfied.»</td>
</tr>
</tbody>
</table>
The criteria declared by external consultants to measure the ERP success include indicators that also used by other ERP stakeholders, especially in the post-implementation phase (use of the ERP and maintenance). However, this study shows us that the importance give to the planning stage success is not relevant in the literature review. This can be explained by the degree of consultant involvement, and the need to mobilize several efforts to involving other stakeholders in ERP project.

C. The role of the external consultant in ERP success
The results show that ERP success depends closely on the knowledge and the expertise of the consultant. Thus, the reactivity, the communication and the continuous assistance to the client are interesting contributions that the consultant must fulfill for the ERP success (Hustad & Vikstøl, 2014). In addition, the external consultant must ensure respect of time, the tasks entrusted and the validation of all project stages by the various ERP stakeholders, whence comes the interest in clearly defining the responsibilities of each consultant in the project implementation. According to a functional consultant with more than 10 years of experience:

“... the external consultant has a direct impact on the ERP project implementation success, due to its impartiality, its objectivity, its ability to give the best, and to guarantee the fit between ERP and client needs, he proposes what to do and what to avoid to streamline the stages of the project”

The interviewees spoke also of the difficulties they often encounter in ERP project implementation. On the organizational level, the lack of competence hinders the project progress (Migdadi & Abu Zaid, 2016). Functional consultants often witness that there is a poor project organization knowledge at the medium and small client, and this is from the planning phase. This is mainly due to the lack of commitment from all stakeholders, which causes schedule delays in ERP projects (Hustad & Vikstøl, 2014).

Resistance to change is also an obstacle in ERP implementation success (Al-Mashari et al., 2003; Ali et al., 2016). Indeed, fear is on all levels, given the changes involved by ERP. This resistance can lead to data entry problems, and consequently to project failure (Haddara & Moen, 2017).

Some users especially middle managers express non-legitimate resistance because they find that the ERP reduces decision-making authority. According to a functional consultant in company:

“When resistance is legitimate, we provide support to convince and reassure the resistant’s ERP usefulness as a springboard
for carrying out missions. This must be done on all managerial levels”.

To alleviate these difficulties, the interviewees insist on necessity of good internal communication and stakeholder’s integration around projects (Ali, & Miller, 2017). This solution implies a reactivity of information transmission for effective decision-making (Ouiddad et al., 2018).

A functional consultant responds in the sense that: “everyone must know their responsibilities, through communication, we can study the feasibility of each phase / stage with deadline respect : giving, informing, sending, replacing... all of this is done at the right time while respecting priorities, planning and procedures. ”

Regarding the external consultant’s relationship with clients, communication, traceability, and respect for deadlines are the keystones for the ERP success. So all interviewees also mentioned the importance of stakeholder’s involvement in the project, to raise awareness of the project criticality, and to reduce user resistance.

V. Conclusion

Based on the ERP project lifecycle and stakeholder theory, we explored the role of the external consultant in ERP project success. We have chosen the case study of Alpha Company, through its ERP. This study shows that the external consultant is involved in all stages of the project with a crucial degree of involvement in the planning stage. Due to lack of experience within the internal team, the criticality of planning stage in the ERP success, the external consultant must bring his functional knowledge to properly study client’s need, and fit them to the performance of the ERP. The results also show that the external consultant role concerns the need to face the difficulties in ERP’s setting up phase, namely the lack of skills, commitment and total client support, with resistance to change. The success of the external consultant’s role depends on its relationship with the ERP project stakeholders, which is based on good internal communication, the integration of several profiles, and the active commitment of each stakeholder.

We suggest to use the results founded, in order to examine research models, resulting from various works on the role of the external consultant in ERP project success.
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importance of a multiple stakeholder perspective. Association for Information Systems.


