Effects of Business Managers' Skills on Enterprise Resources Planning Strategic Alignment

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The subject of the antecedents of strategic IT/IS alignment continues to generate interest. Most researches focus on the role of IT/IS managers in the alignment process and less attention is paid to the role of business managers in such projects. Indeed, although these managers are deemed to have contributions to the success of IT/IS projects, few researches have examined their contributions in the alignment process. In this context, this research attempts to identify the contributions of business managers' skills in achieving alignment between business strategy and ERP (Enterprise Resources Planning) implementation. To achieve this objective, a model is developed based on the literature review. According to this model, three types of skills are necessary for business managers to contribute to alignment: IT/IS skills, interpersonal skills and conceptual skills. These skills influence the state of alignment directly and indirectly by promoting interactions between managers. A survey research provided support, mainly, to the assumptions of indirect dependency between skills and the state of alignment. The results of statistical tests demonstrate also that it is mainly interpersonal skills which most influence alignment. These results are in contradiction with several previous studies that emphasize the importance of the "technical" skills of business managers (IT/IS skills) to contribute to alignment. Thus, this research supports the idea that the "social" (human) aspect is more crucial than the "technical" one in ERP projects.

Key Words: Strategic alignment, business managers, skills

Introduction

The subject of the antecedents of strategic IT/IS alignment continues to generate interest. Most researches focus on the role of IT/IS managers in the alignment process and less attention is paid to the role of business managers in such projects. Indeed, although these managers are deemed to have contributions to the success of IT/IS projects, little researches have examined their contributions in the alignment process (Chao and Chandra, 2012). In this context, this research attempts to identify the contributions of business managers' skills in achieving alignment between business strategy and ERP implementation. This alignment seems to be important because ERP systems can require many organizational changes (Davenport, 1998). Also, in the absence of such alignment, firms could not benefit from these systems (Yaseen, 2009). So, the research question is: what are the impacts of business managers' skills on ERP strategic alignment?

Literature Review

What's the ERP Strategic Alignment?

Many definitions are suggested for the "strategic IS alignment" concept. Some researchers consider that alignment is a process of continuous changes that aim to ensure coherence between business strategy and IS strategy (Henderson and Venkatraman, 1993). However, the researchers who expected to study the antecedents of alignment defined the alignment as a state (Reich and Benbasat, 2000).

In our study, because we focus on some factors which influence alignment (the skills), we decided to define the ERP strategic alignment as a state. Thus, based on Reich and Benbasat (2000) and Cigref (2002), we defined this alignment as a state in which:

- The ERP implementation integrates business strategy (in terms of strategic choices)
- The business strategy considers the ERP characteristics (mainly the benefits and limitations)

This alignment is defined as a pattern of covariation due to the specificities of ERP systems that are standard and adaptable at the same time.

How can business managers' skills influence ERP Strategic alignment?

To know if business managers' skills can influence strategic alignment in the case of an ERP implementation, we focused on theories that studied the antecedents of alignment. These theories are:

- The "alignment duality" (Reich & Benbasat, 2000): according to these researchers, two dual dimensions of alignment can be distinguished. The first is the "intellectual dimension" which focuses

on the coherence between the business plans and the IS ones. The second is "the social dimension" which is related to the interactions between the business managers and the IS managers. These interactions are considered as the most important enabler of alignment (Reich & Benbasat, 2000; Kearns & Lederer, 2003; Chan & Reich, 2007; Kashanchi & Toland, 2008).

- The "Strategic Alignment Model" (SAM) developed by Henderson and Venkatraman (1993): according to this model, there are many alternatives to achieve alignment. Nevertheless, the interactions between managers are essential in each alternative (Broadbent et Weill, 1993; Henderson and Venkatraman, 1993).

- The "Knowledge Based View" (KBV): based on this theory, Kearns and Sabherwal (2007) state that alignment is achieved through interactions between business managers and IS managers. However, to stimulate these interactions, business managers must have IS skills (in terms of knowledge and experience). Indeed, the shared skills between business managers and IS managers help them share the specific knowledge so better alignment is achieved (Reich & Benbasat, 2000; Kearns & Lederer, 2003; Kearns & Sabherwal, 2007).

In addition to these theories, we integrated the research results of Katz (1974), Ajzen (2002) and Mintzberg (2006) that allowed us to find links between specific skills of business managers (interpersonal and conceptual skills) and interactions:

- Interpersonal skills: these skills are related to the ability of managers to interact with others. According to Ajzen (2002), if a manager is "habituated" to do something, he will do it later. So, if the manager is habituated to interact with other managers, he will do this with IS manager.

- Conceptual skills: according to Katz (1974), these skills are mostly required by business managers because they are associated to the ability to see the organization as a hole. Conceptual skills may be very useful because IS manager needs to interact with a manager that knows all the organizational aspects to align ERP effectively.

As a result of literature review, we built our research model (figure 1). According to this model, three business managers' skills are required for strategic alignment: IS skills, interpersonal skills and conceptual skills.
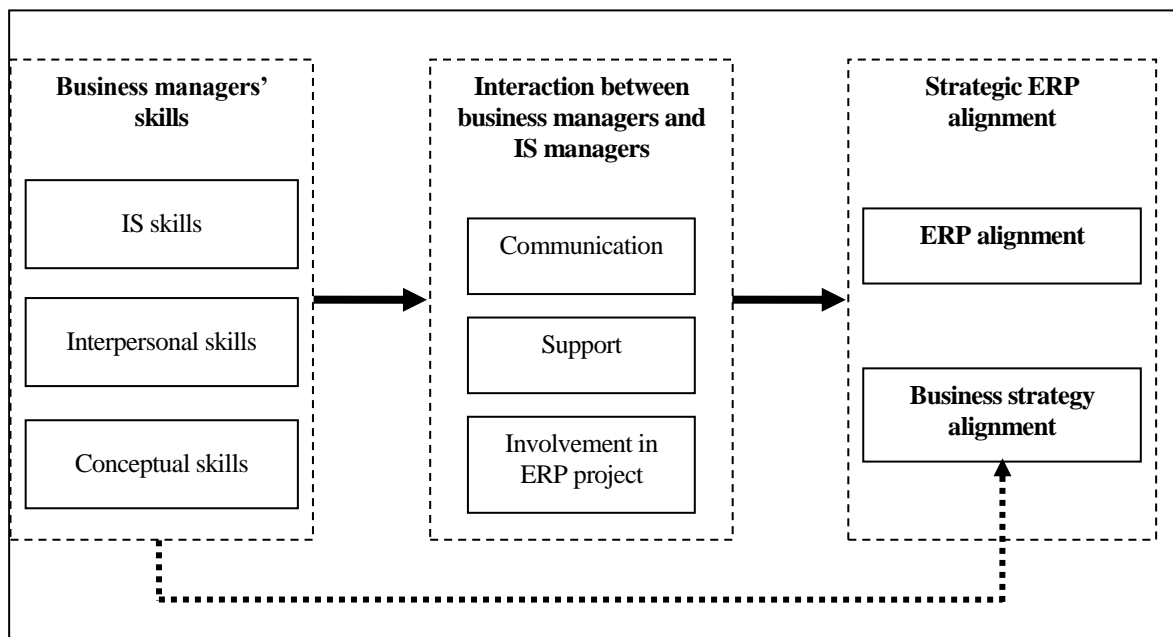

Figure 1: The research model

In this model, we distinguish three kinds of interaction:
- Communication between business managers and IS managers.
- Support of IS managers by business managers.
- Involvement of business managers in ERP project.

Also, because strategic alignment is defined here as a pattern of covariation, we add a direct link between business managers' skills and business strategy alignment. So, our general hypothesis (H) can be formulated as follows:

H: Business managers' skills influence positively ERP strategic alignment directly and indirectly through interaction with IS managers.

Research Methodology

To test the above hypothesis, we conducted a survey research using a questionnaire.

Sample

To conduct our survey research, we dressed a list of 125 Tunisian firms that implemented or are implementing an ERP. However, because many firms belong to the same group and so have the same ERP project, we found that only 72 firms can be surveyed.

The questionnaire, built on measures from previous researches, was tested and then sent to IS managers of the selected firms. Here we chose to question IS managers because they are considered as key informants when the survey is about IS (Kearns and Sabherwal, 2007). Also, we did not choose to question business managers to reduce the egocentric bias.

Finally, we collected 51 questionnaires that can be used for statistical analysis. The response rate is about 71%.

Techniques used in analyzing data

Two types of analysis were conducted:

- Descriptive analysis: here we conducted exploratory factor analysis (EFA) with SPSS software and then confirmatory factor analysis (CFA) with AMOS software to purify the measures.
- Explanatory analysis: these analyses were conducted using maximum likelihood (ML) method with AMOS software to test the general hypothesis (H).

Findings and Discussion

First, we present statistical results of descriptive analysis then explanatory ones. We conclude with a discussion of the results.

Findings of descriptive analysis

When conducting EFA with SPSS, we obtained a new factor structure of variables used in the research model (figure 1). In other words, we found that some variables are multidimensional. These variables are presented in table 1.

Table 1: Multidimensional variables

Before EFA	After EFA
Interpersonal skills	Skills to "share the vision"
	Skills to "motivate"
	Skills to "establish a network of relations"
Conceptual skills	Analytical skills
	Skills to "view change"
Communication	Communication "from business managers to IS managers" (business – IS)
	Communication "from IS managers to business managers" (IS – business)

The factors obtained were named in reference to previous researches, mainly Kotter (1982). The variable "analytical skills" was then deleted when testing validity.These results were then confirmed by CFA conducted with AMOS. Besides confirming the new factor structure, CFA allowed us to verify the reliability of factors using Jöreskog's rho (> 0.6) and the validity of measures using the average variance extracted (AVE > 0.5). The results of reliability and validity tests are presented in table 2.

Table 2: Results of reliability and validity tests

Variables	Jöreskog's rho	AVE
IS knowledge	0,850	0,573
IS experience	0,672	0,578
Skills to "share the vision"	0,817	0,554
Skills to "motivate"	0,839	0,660
Skills to "establish a network of relations"	0,828	0,628
Skills to "view change"	0,827	0,658
Communication "Business-IS"	0,825	0,657
Communication "IS-Business"	0,621	0,520
Support	0,618	0,617
Involvement in ERP project	0,674	0,557
ERP alignment	0,728	0,593
Business Strategy alignment	0,591	0,502

These results allowed us to proceed to explanatory analysis.

Findings of explanatory analysis

To conduct the explanatory analysis, we built the structural model based on results of descriptive analysis and then we applied the ML method with AMOS software. This method provided good results regarding fit indices (table 3).

Table 3: Fit indices (structural model)

	chi-square	P (%)	Normed chi-square (< 2 or 3)	RMR (<0,1)	GFI (>0,9)	TLI (>0,9)	CFI (>0,9)	RMSEA (<0,08)	ECVI
Structural model	22,407	91,8	0,679	0,054	0,944	1,517	1,000	0,000	2,248

After adjusting the structural model (using fit indices), we eliminated the non-significant links. So we obtained the model presented in Figure 2.
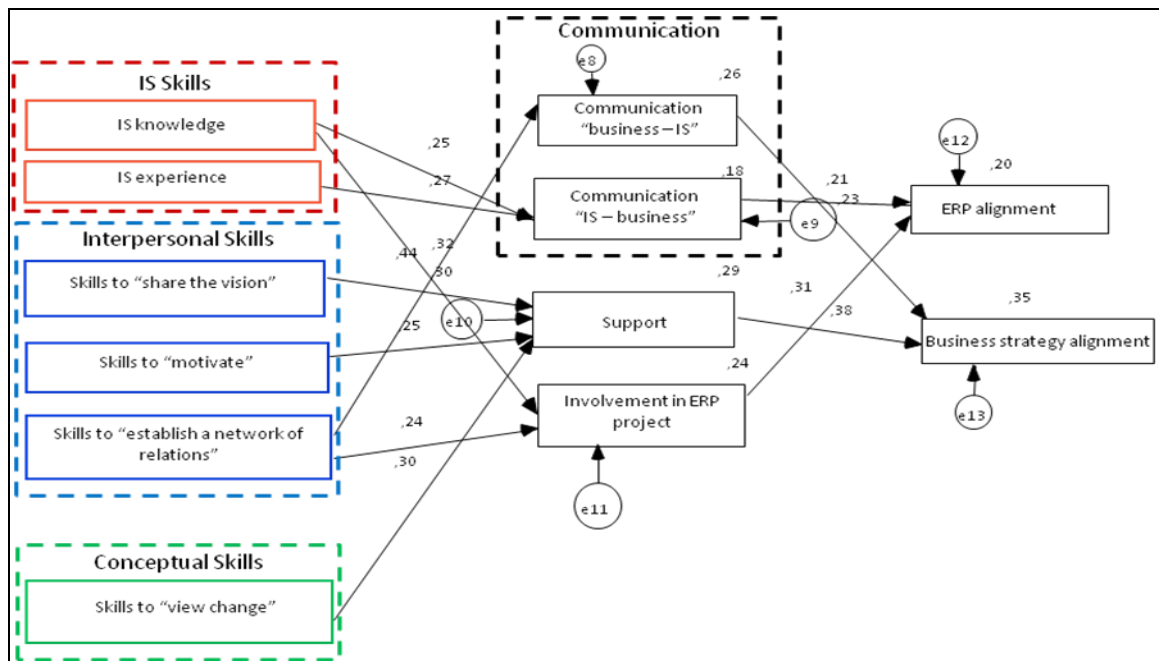

Figure 2: The fitted structural model

As we can see, it is a structural model without latent variables. In fact, according to Baile (2001), such model is preferred when the sample size is reduced. A Bollen-Stine bootstrap (with 500 iterations) was also conducted. This bootstrap provided 98.60% as probability value which confirms the fact that the model obtained is correct.

Based on results presented in figure 2, it is possible to state that there is no direct link between business managers' skills and strategic ERP alignment. Also, interpersonal skills seem to influence alignment more than other skills. These results are discussed below.

Discussion

The results show that business managers' skills do not influence directly strategic alignment, so H is partially verified. Details concerning the effects of each type of skills are presented below.

Effects of IS skills on ERP strategic alignment

The results of explanatory analysis show that IS skills of business managers influence, even indirectly, the alignment of ERP (alignment regarding IS managers). This confirms the results found by Kearns and Sabherwal (2007). In fact, statistical tests performed by these authors confirm the existence of this positive but weak link. In other words, the ERP alignment remains the responsibility of IS managers. However, business managers can help, even slightly, through their expertise in the field of IT/IS that favors certain forms of interaction (communication and participation).

According to figure 2, these skills promote communication that emanates from IS managers. This result can be explained with reference to Reich and Benbasat (2000). In fact, the authors state that the business managers experience in the field of IT/IS experience encourage IS managers to communicate with them. In other words, when business managers have IS skills, IS managers

would communicate with these managers because they know they will be understood.

The results found here indicate IS managers who communicate with business managers tend to align the ERP according to those managers' needs. This communication is much easier when business managers have IS skills. In fact, these skills would create, in reference to the KBV, an "absorptive capacity" that facilitates communication.

IS Skills seem also to favor the participation of business managers in the ERP project. In reference to Kearns and Sabherwal (2007), these skills help business managers to become more involved in IS projects. This involvement could help business managers to clearly express their needs so IS managers could align the ERP system. This involvement is particularly important in ERP project which is itself considered as an organizational project.

Effects of interpersonal skills on ERP strategic alignment

Figure 2 shows that the factors linked to interpersonal skills affect both ERP and business strategy alignment across the different forms of interaction.

Thus, interpersonal skills facilitate business managers interaction with IS specialists. Such a result is consistent with the theoretical assumptions of Strang (2007) which state that the execution of a role (interaction) requires specific skills that fit this role. Therefore, playing an interpersonal role, as defined by Mintzberg (2006), would require interpersonal skills. This finding is consistent with the ideas of Yukl (1998) who states that interpersonal skills are required to develop and maintain cooperative relationships with all managers within the company.

Specifically, the findings show that:

- Interpersonal skills positively influence both ERP and business strategy alignment. Consequently, interpersonal skills are essential for business managers to be able to align strategic choices according to ERP implementation. Also, these skills help these managers to better interact with IS managers for successful ERP system adaptation.

- The variable "skills to establish a network of relations" influences most the interaction. So, the relational component is very useful for business managers. In fact, it facilitates communication with IS managers and participation in IS projects. Therefore, it is possible to predict that the "relational" capacity induces "communicative" and "participatory" capacities. In other words, managers "habituated" to work with people from different specialties have more capacity to actively participate in achieving the ERP strategic alignment.

- Developments made above show the importance of interpersonal skills. Now the question is whether the conceptual skills can play a key role in achieving alignment, especially as these skills are

considered complementary with the interpersonal aspect (Carmeli & Tishler, 2006).

Effects of conceptual skills on ERP strategic alignment

From figure 2, we can note that the variable "Skills to view change" influences positively and indirectly the variable "business strategy alignment" through the variable "Support". This result can be explained as follows:

- For the positive link between "support" and "business strategy alignment", several researchers suggest that the support is the main enabler of alignment (Martin Gregor and Hart, 2005).

- The positive link between "Skills to view change" and "Support" can be explained by the nature of ERP projects that implies ambiguous organizational changes. So, by having conceptual skills, business managers would have, in reference to Yukl (1998), the ability to perceive this ambiguity. This will allow them to support IS managers during an ERP project to overcome the difficulties related to this project.

The absence of links between conceptual skills and other forms of interaction can be explained by the elimination of several indicators measuring these skills in the factor analysis.

As we can note, all skills presented in this research influence positively but not directly ERP strategic alignment. This result confirms many theoretical ideas which insist on the importance of interactions as a mediation between skills and alignment (Reich and Benbasat, 2000; Kearns and Sabherwal, 2007). In other words, skills are not sufficient if they are not used in an "innovative way", through interactions for example, to improve alignment. However, business managers can not interact effectively with IS managers if they do not have a set of skills.

Another important result noted in this research, is the strong link between the specific skills (interpersonal and conceptual) of business managers and interactions in the context of IS project. This link was not supported in previous IS researches which insisted on IS skills as determinant of interactions (and so of alignment).

As we can see in figure 2, interpersonal skills influence positively all types of interactions and then both directions of strategic alignment. This result can be explained in reference to Strang (2007) who states that the execution of a role requires specific skills for this role. So playing an interpersonal role (like communication) would require interpersonal skills.

To sum up, we can state that specific skills (mainly interpersonal ones) of business managers are as important as IS skills during an ERP implementation. This result highlights the importance of interpersonal (social) aspect, compared to technical one, in an ERP project for improving alignment and so for a successful ERP implementation.

Conclusion

This paper attempted to examine the links between business managers' skills and strategic ERP alignment. For this, we built a research model based on previous research that shows direct and indirect links between three kinds of business managers' skills (IS, interpersonal and conceptual) and strategic ERP alignment through interactions with IS managers. By testing the links presented in the research model through a questionnaire survey, we concluded that business managers' skills influence positively strategic alignment by enabling interactions. In addition, we concluded that the interpersonal skills are more important than other skills in improving strategic ERP alignment. Therefore, we can affirm that this research contributes to highlight the importance of specific skills of business managers even in an IS project.

This research could help practitioners when implementing an ERP project by drawing attention to required skills and to the importance of interactions needed during this type of project. Beyond these contributions, it is possible to note some limits which are linked essentially to the small sample size which limits the statistical processing. Also, studying business managers' skills through IS managers can be criticized although this choice limits the egocentric bias related to self-assessment.

To overcome these limitations, it would be interesting to conduct a comparative study among business managers and extend this study to other enterprise systems (e.g. CRM) to increase the sample size.

Further researches could also study ERP alignment within currently great changes caused by emergent technologies such cloud computing. Indeed, according to Guleria, Sharma and Arora (2013), such computing is changing ERP implementation, so what about ERP alignment?

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