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Explaining Internet-Related Performance from the Alignment Point of View

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ABSTRACT

This research addresses the question of explaining the Internet-related performance of a firm by relying on the Strategic Alignment Model. Following a contingent approach, the conceptual framework sheds light on the coherence between Internet use, business, organization and technology. The research model is applied to the main companies of the French tourism sector. The adopted methodology is based on a survey to which 131 firms have taken part. Using structural equation modeling, the proposed model is tested and data analysis reveals that there is a particularly significant relationship between the coherence of organizational designs and the Internet-related performance of the firm.

Keywords

Internet, performance, alignment, organizational structure, tourism sector

INTRODUCTION

Much research has been undertaken in order to understand the performance of the company as it relates to its Internet activities. Initially, analysis focused on the Internet activity positioning (Angehrn, 1997; Nickerson and Turberg, 2003). Other researchers have more recently focused their attention on the quality of the Web site and the satisfaction of the Net surfer. (Devaraj, Fan and Kohli, 2002; Mc Kinney, Yoon and Zahedi, 2002) or on the capacities available in the company for the online activity (Wheeler, 2002; Zhu and Kraemer, 2002) that would explain the results of the company related to the Internet.

The present research also proposes to analyze and understand the results of the Internet activity of a firm by adopting a contingent approach (Drazin and Van de Ven, 1985; Weill and Olson, 1989) that sheds light on the coherence between Internet use, business, organization and technology. More precisely, we made the choice of adopting the Strategic Alignment model (Broadbent and Weill, 1993; Henderson and Venkatraman, 1993; Papp and Luftman, 1995; Reich and Benbasat, 1996) which was largely used in order to better understand the performance of Information Systems (IS) and Information Technologies (IT).

In this paper, we first give a brief review of literature on the concept of Alignment and justify its application to explain Internet-related performance of the firm. We then present our research proposition and exploratory hypotheses. Finally, we discuss the results of a study of 131 firms from the French tourism sector.

THEORETICAL CONTEXT

The Strategic Alignment model for IS/IT (Broadbent and Weill, 1993; Henderson and Venkatraman, 1993; Papp and Luftman, 1995; Reich and Benbasat, 1996,) suggests that strategy and IT developments must be coherent.

More precisely, the Strategic Alignment model takes into account the fit between four elements: *Business Strategy* (elaboration and application processes of the business strategy), the *organization* of the firm *(*structures and organizational processes), *IT Strategy (*elaboration and application processes of the IT strategy) and *IT organization (*technological infrastructure and processes linked to IT).

The alignment viewpoint was adopted by many researchers in order to study the performance of IS/IT (Brown and Magill, 1994; Chan and Huff, 1993; Jouirou and Kalika, 2004; Sabherwal and Chan, 2001).

Strategic Alignment model for IS/IT can be applied to Internet strategy if we consider Internet strategy as emerging from Internet technologies. Then the Strategic Alignment model highlights the congruence of the Internet strategy with the rest of the firm. It is then possible to study the relation between the coherence of Internet strategy and the results obtained as far as the Internet is concerned. Today, however, there are very few, if any, studies that apply the Strategic Alignment model to explain Internet-related performance of the firm.

RESEARCH CONSTRUCT

Strategic Alignment

Strategic alignment of the Internet activity derives from the fit between the Internet Strategy (elaboration and application processes of the Internet strategy) and the Business Strategy (elaboration and application processes of the business strategy).

The **"Implication of directors and managers from the different departments of the firm in the Internet activity"** and the **"implication of (the) Internet manager(s) in the management of the firm"** are key factors to reach strategic alignment. Indeed, much of the research in Alignment has shown that strategy-planning processes are crucial elements, which directly influence Alignment (Broadbent and Weill, 1993; Mc Farlan, 1981). Reich and Benbasat (1996) underline the role of exchanges in the planning process. They confirm in practice the idea that the closeness of the relationship between IT planning processes and business planning processes positively influences the level of Alignment, essentially on the short term. According to Zmud (1988), this closeness between planning processes appears through the existence of structural mechanisms (management committees, groups for the transfer of technology), in association with management and communication systems (planning and supervision mechanisms); all being essential in setting up a satisfying IT/administration relationship for successful introduction of new technologies.

The **"Valuation of the Internet activity"** by the various members of the managing staff (general managers, service managers) also has to be taken into account to raise strategic alignment. The concept of Alignment cannot be correctly approached without considering technology within its social context to take into account influences, both institutional and cognitive. At the core of these influences, Alignment then corresponds to the satisfaction of the interests of one party through the behavior of another (Ciborra, 1997). The welcoming of new IT by users is well worth being taken into account to better study the concept of Alignment (Ciborra, 1997). Accepting a new IT ("*hospitality*"), at first perceived as a foreign body, which has just been introduced, encourages a better Alignment within the firm. How, then, does IT happen to be favorably welcomed by an organization? The involvement of users and the way it influences their attitude to work and their working methods (Barki and Hartwick, 1989) is one answer. Involvement is related to the degree of belief of one person in the importance of some subject or object and it can be translated in terms of valuation.

Organizational Alignment

Organizational alignment of the Internet activity comes from the fit between the Internet Strategy (elaboration and application processes of the Internet strategy) and the organization of the firm (structures and organizational processes).

"Organizational evolution" supports organizational alignment of the Internet activity. It requires an adaptation of the organizational structure within firm to match the Internet activity, and vice versa. Indeed, most of the research on IS that is related to Alignment underlines the necessity of such a change in order to improve the coherence of IT within the organization (Broadbent and Weill, 1993). This change can cause the creation of new processes (Venkatraman, 1995) for the Internet activity in the firm. Thus, we will draw our attention to the creation of new processes linked to the Internet activity within the organization. These new processes may correspond to the treatment of new operations directly linked to the integration of Internet technologies within the firm. They may also replace some processes that already exist, and which have become obsolete with the integration of Internet technologies.

Organizational Alignment of the Internet activity also depends on the level of integration (Venkatraman, 1995) of Internet-based technologies within the different departments of the firm: **"Integration in the back-office functions"**, **"Integration in the commercial functions"**, **and "Integration in the customer relationship management"**. Our aim is to consider to what extent the different functional groups in the organization of the firm have integrated Internet-related technologies.

Technological Alignment

Technological Alignment of the Internet activity represents the fit between the Internet Strategy (elaboration and application processes of the Internet strategy) and the Internet structure (technological infrastructure and processes linked to the Internet).

According to Weill and Vitale (2002), the success of the implementation of Internet activities mainly depends on the adequacy of the IT infrastructure. This is why traditional companies must invest in a significant way in their IT infrastructure,

which is a key element to lead an online business. **"Complementary investments"** (Zhu and Kraemer, 2002) reinforce the usefulness of Internet technologies and contribute to technological alignment of the Internet activity. For instance, thanks to the Intranet, one can have access to different types of services or operations within the organization through the use of a network based on Internet protocols. Firms who have an Extranet can take advantage of complementarity Internet-based technologies and are more likely to open their organization to the outside, which in turn improves their exchanges.

"Technological evolutions" are also essential to raise technological alignment and support the Internet activity. Much of the existing research has demonstrated the necessity of technological evolution within the organization in order to support the alignment of the IT activity (Henderson and Venkatraman, 1993; Rockart, Earl and Roos, 1996). Concerning the Internet activity, we will therefore focus on the integration of Internet technologies into the other technological resources already existing in the firm. The integration of Internet technologies into existing applications creates new network applications. Thanks to the standardization of protocols through the Internet, this enables, for example, ERP to transform the job processes into Internet services oriented towards the exterior. We will also refer to the development of a new technological architecture (Venkatraman, 2000). This one in particular must be able to process more information but also to answer new specific tasks for the Web activity.

Alignment of the Internet activity

The Strategic Alignment model not only concerns the relationships between pairs of variables (Henderson and Venkatraman, 1993) but integrates simultaneously the whole existing relations between the strategy, the organization, and the technological infrastructure. Thus, the alignment of the Internet activity also results from **the global coherence between the strategic choices, the design of the organization, and the use of technologies**. It is then significant through a contingent approach (Drazin and Van de Ven, 1985) to consider simultaneously the whole of the relations between factors. Co-variation is the approach most often used for this purpose. The second-order factor represents the co-variation and the co-alignment between the first-order factors (Venkatraman, 1989).

Thus, the alignment of the Internet activity corresponds to the higher construct resulting from the strategic, organizational and technological alignment of the Internet activity.

Internet performance

Internet performance corresponds to the performance of the firm related to Internet activity.

Dess and Robinson (1984) and Venkatraman (1987) show that the subjective approach to measuring performance gives similar results as the objective approach (significant correlations between the measurements result from the two approaches). Moreover, it is necessary to take into account the difficulty to obtain accounting and financial information related to the Internet activity of the firm. This is why we choose to adopt a subjective measuring instrument for performance.

With this intention, we decide to use the subjective scale developed by Venkatraman (1989-b) which could be validated in several former studies undertaken in particular by Raymond, Paré and Bergeron (1995) or Croteau, Bergeron and Raymond (2000). This scale is easily adaptable to the Internet activity and has the advantage of being based on two complementary dimensions. Whereas the **"Financial"** dimension of the scale measures performance mainly in the short-term, the **"Commercial dimension"** measures the performance in the longer-term.

We choose to supplement the instrument of Venkatraman (1989-b) by two variables adapted to the Web activity. They are first of all the **"Indirect sales related to the Internet"**, i.e. initiated on the Internet but not concluded online, which represents a significant part of the sales turnover related to Internet. It is then about a variable situated at the client level, potential type and particularly adapted to the Internet activity: the **"Marketing performance"**. Indeed Internet makes it possible to offer products and services corresponding to customer's demand (Alter, 2002; Bakos, 1998; Haeckel and Nolan, 1993) and to offer new products and services (Alter, 2002; Rayport and Sviokla, 1995), which improve the image of the company.

RESEARCH PROPOSITION AND EXPLORATORY HYPOTHESES

In the study, we investigate the following question: What is the impact of Internet activity alignment on a firm's Internet-related performance? To answer the question we constructed four hypotheses.

First of all, research dealing with the relationship between alignment and performance highlights the positive effect of the former on the latter. Then the alignment of the IS function supports the performance of the company (Brown and Magill, 1994; Chan and Huff, 1993). This why we propose to test the following hypothesis **H1:** ***The alignment of the Internet activity influences directly and positively the Internet-related performance of the company.***

The positive effects of alignment on performance could be confirmed with regard to the relation between IT strategy and business strategy (Chan and Huff, 1993; Chan, Huff, Barclay and Copeland, 1997; Raymond, Paré and Bergeron, 1995; Sabherwal and Chan, 2001). Thus, we will test the following hypothesis **H2:** ***The strategic alignment of the Internet activity influences directly and positively the Internet-related performance of the company.***

In the same way the coherence between IT strategy and the structure of the organization improves the performance of the firm (Bergeron, Raymond and Rivard, 2002; Jouirou and Kalika, 2004). This is why we wish to test the following hypothesis **H3:** ***The organizational alignment of the Internet activity influences directly and positively the Internet-related performance of the company.***

The congruence between IT strategy and IT structure also supports the performance of the firm (Bergeron, Raymond and Rivard, 2001; Croteau, Bergeron and Raymond, 2001). Consequently we will test the following hypothesis **H4:** ***The technological alignment of the Internet activity influences directly and positively the Internet-related performance of the company.***

These four hypotheses correspond to two distinct models:

- the additive model (Figure 1), which integrates the simultaneous effect of strategic, organizational and technological alignment on Internet performance through the second-order construct Alignment of the Internet activity,

- the direct model (Figure 2), which represents the direct effect of strategic, organizational and technological alignment on the Internet performance.

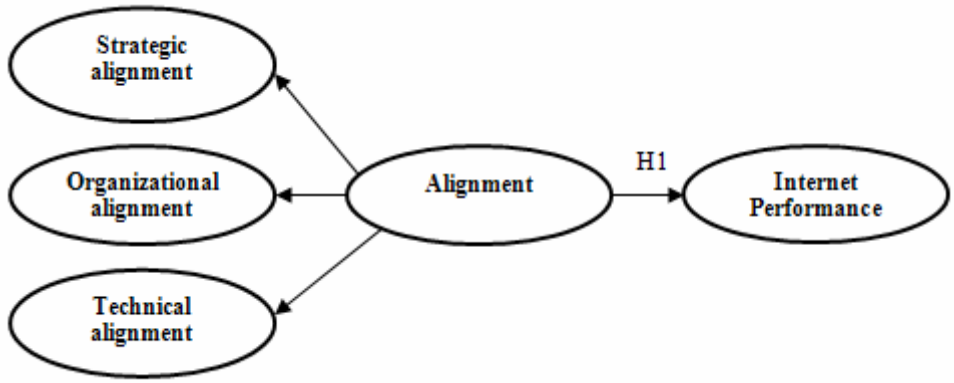


Figure 1. The additive model

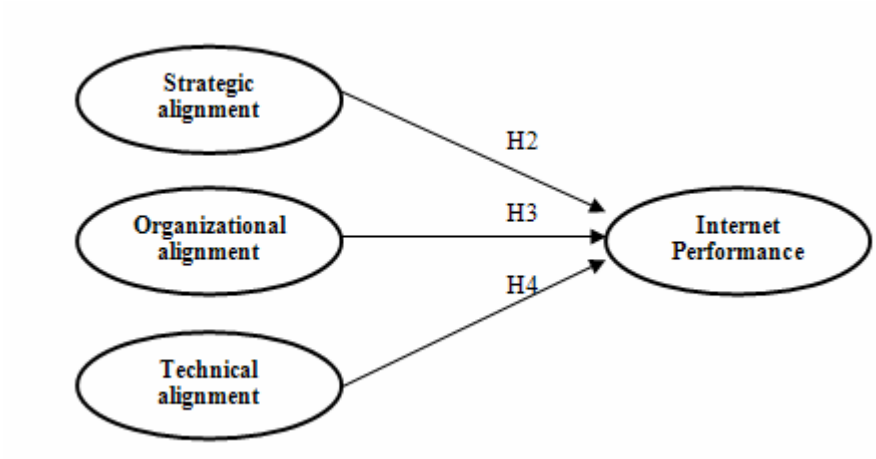


Figure 2. The direct model

METHODOLOGY

Most of the research measuring alignment by the bi-varied approach uses the correlation coefficient to represents the "Fit". This descriptive measurement of alignment (describing the intensity of alignment) is however limited to one moment "t" (longer or shorter according to circumstances). Yet, the environment related to the Internet evolves very quickly and it is practically impossible to aim at a pre-determined objective (Venkatraman, 2000).

This is why we wish to establish an explanatory measurement of alignment, which makes it possible to study a longer period of time. With this intention we rely on the approach developed by Luftman (1997) and Luftman, Papp and Bier (1999) which refers to the catalyst and inhibitor mechanisms of alignment. Thus, alignment is not measured any more as the result of correlations but as the expression of characteristic factors. It is of course necessary to adapt these factors to the Internet activity. From this perspective, we adapted scales from the IS/IT literature describing factors that inhibit/facilitate alignment to the Internet activity.

610 questionnaires were sent to general and e-business managers from the main companies of the French tourism sector. All of the contacted companies had developed in addition to their traditional activity, an online activity. After re-contacting firms that did not respond to the questionnaire, we finally had 131 questionnaire responses at the end of March 2005.

We analyzed the data into two stages with EQS 6.1 structural equation modeling software. First, the validity and reliability of the research constructs was assessed from a separate estimation and respecification of the measurement models by confirmatory factor analyses (CFA). Second, the research models (additional and direct) were tested by the simultaneous estimation of the measurement and theoretical (or structural) models.

ANALYSIS AND DISCUSSION OF RESULTS

Validity and reliability

Convergent validity and reliability of the constructs were successfully tested by the CFA. The average score of Jöreskog's rhô for each construct is 0.81 (superior to 0.7, the recommended minimum value), which proves the reliability of the used scales. Besides, the CFA verifies the convergent validity of each construct. All constructs have significant loading factors (Student *t* test>1.96; $p < 0.05$) and superior to 0.5, the recommended minimum value (Figures 3 and 4).

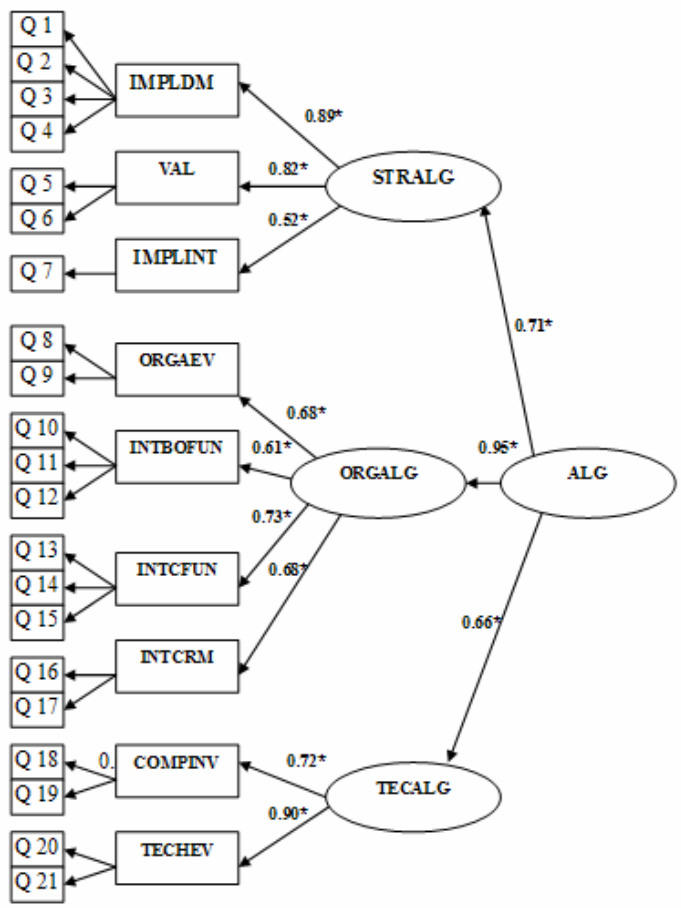
Structural Models

The fit of the models to the data is satisfactory according to the main fit measures (Figures 5 and 6). For the absolute fit measure, chi-square test results are 97.1672 and 98.2292 for respectively 60 and 59 degrees of freedom. The Goodness of Fit Index (GFI) has a value of 0.878 and 0.884 which is very close to the minimum recommended value 0.9. The Root Mean square Residual (RMR) is 0.066 for the two models, which is within the acceptable range of 0-0.08. Another measure of the fit of the model is the Root Mean Square Error of Approximation (RMSEA), where values between 0 and 0.08 are acceptable. The proposed models' RMSEA are 0.072 and 0.075 and fall within that range. The parsimonious fit measure chi-square/degree of freedom (χ^2/d.f) has a value of 1.619 and 1.664 which is within the recommended range of 1-2.

The squared multiple correlation (R^2) for the dependant construct in the structural models is similar to R^2 in a regression model and measures the percentage of the construct's variance explained by the model. The value of R^2 for Internet performance is 0.64 in the additive model and 0.66 in the direct model. Thus, this first result attests the interest of adopting the alignment point of view to explain the Internet-related performance of the firm.

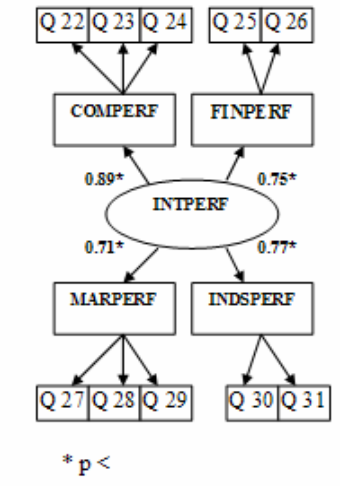
If we look more closely at each component of Internet performance, we can note that commercial performance is explained the best by the additive or direct model (loading factor is 0.89 and 0.87).

In the additive model, we can observe a significant and high correlation coefficient (0.80; $p < 0.05$) between alignment and Internet performance. The H1 hypothesis (*The alignment of the Internet activity influences directly and positively the Internet-related performance of the company*) is then corroborated.



* $p < 0.05$

Figure 3. CFA of the explanatory constructs
Chi-square = 31.4070; d.f = 23; GFI = 0.925; RMR = 0.059; RMSEA = 0.055



* $p <$

Figure 4. CFA of the explained construct
Chi-square = 2.5145; d.f = 2; GFI = 0.989; RMR = 0.020; RMSEA = 0.046

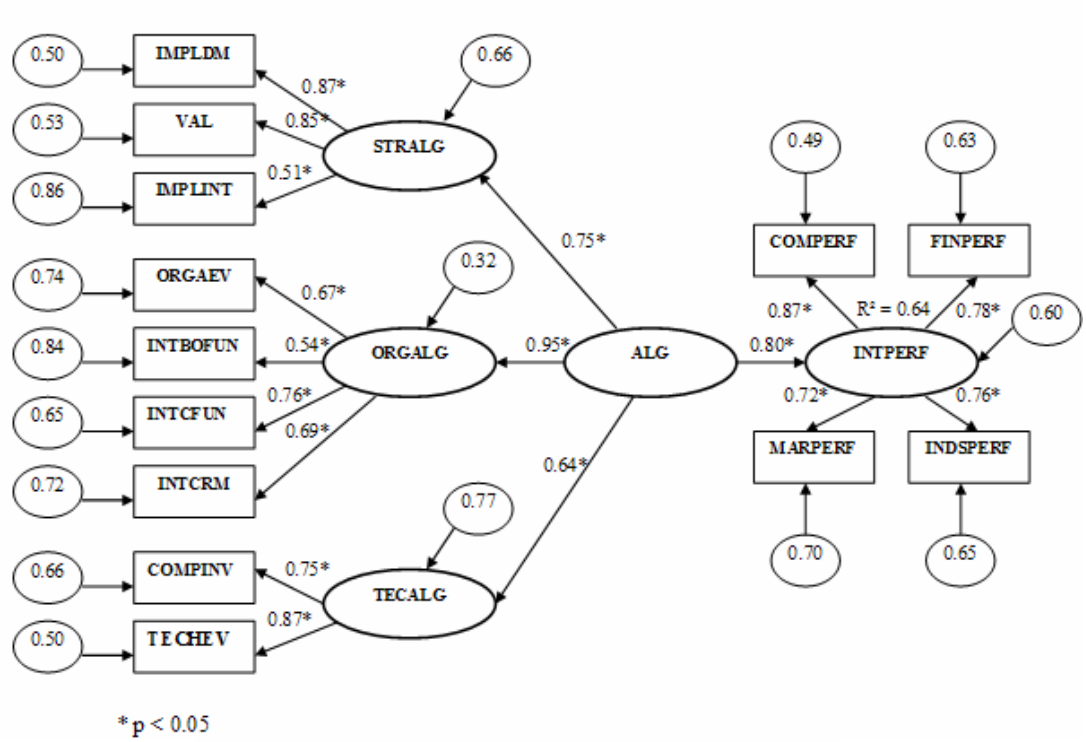


Figure 5. The structural additive model
Chi-square = 97.1672; d.f = 60; GFI = 0.878; RMR = 0.066; RMSEA = 0.072

In the same way the direct model presents a significant and high correlation coefficient (0.80; $p < 0.05$) between organizational alignment and Internet performance. The H3 hypothesis (*The organizational alignment of the Internet activity influences directly and positively the Internet-related performance of the company*) is then corroborated.

On the contrary, the correlation coefficients between strategic alignment or technological alignment and Internet performance are not significant. The hypotheses H2 and H4 supposing that *the strategic or technological alignment of the Internet activity influences directly and positively the Internet-related performance of the firm* are rejected.

Implications for Researchers

These results draw attention to the positive influence of alignment on the Internet-related performance of the firm.

They support earlier IT research which highlighted the close and positive relation between IT alignment and performance (Bergeron, Raymond and Rivard, 2002; Brown and Magill, 1994; Chan and Huff, 1993; Croteau, Bergeron and Raymond, 2001). The results also agree with work from Cao (2002) which puts forward the importance of IT alignment in the context of e-commerce. In a rather close way Zhu and Kraemer (2002) had been able to show the importance of alignment in e-commerce capabilities for traditional companies which launch out in the Internet and wish to benefit from it.

In addition, the results put forward the importance of the organizational designs for the contribution of the Internet to the performance.

Finally, even though the direct relationship between strategic/technological alignment of the Internet activity and the Internet-related performance are not significant (Direct model), the global coherence between strategic, technological, and organizational designs related to Internet does influence significantly and positively the Internet-related performance of the firm (Additive model). Thanks to the contingent approach (Drazin and Van de Ven, 1985; Van de Ven and Drazin, 1985; Weill and Olson, 1989) it is possible to observe the indirect effects of strategic and technological designs on the Internet-related performance.

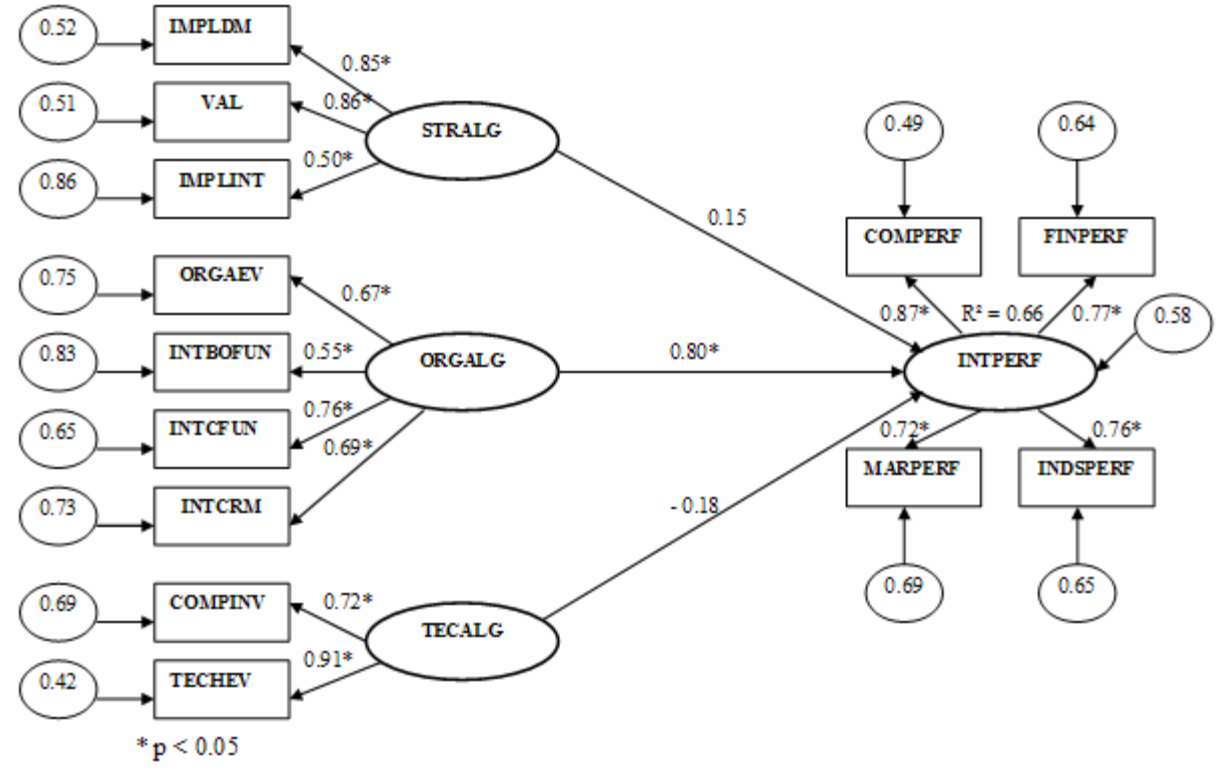


Figure 6. The structural direct model
Chi-square = 98.2292; d.f = 59; GFI = 0.884; RMR = 0.066; RMSEA = 0.075

Implications for Practitioners

One of the major concerns when trying to obtain satisfactory results out of the Internet activity relates to the evolution of the organization. Continuous evolution results in the modification of the internal operating modes in particular with regard to the incoming calls process. The integration of the Internet in the customer relationship management by ensuring customer follow-up and monitoring, securing loyal customers via the Internet but also the use of an online customer service, also play an essential part in the success of Internet strategy. Detailed attention must also be paid to the integration of Internet in the back-office functions, such as online management of customers/suppliers invoicing, online supervision of stock and availability, and ordering of products and services through the Internet.

A correct fit of the Internet activity also requires the involvement of directors and managers from the different departments of the firm in the Internet activity. Ideally, the collaborative practices should not only come from directors or managers from the different departments of the firm, but also vice versa. (The) Internet manager(s) taking part in the management of the firm can get more involved.

From a technological point of view, complementary investments and the evolution of the existing technological infrastructure support the success of the Web activity.

Lastly, successful management of the Internet activity requires continuous attention to ensure coherence between the strategic choices, the design of the organization, and the use of technologies. This exercise appears all the more difficult as these three dimensions follow simultaneous interactions.

Limitation and idea for future research

This research has contributed to a better understanding of the Internet-related performance adopting the alignment perspective. The alignment of the Internet activity is a key factor for explaining the Internet-related performance of the firm.

However, the effects of alignment on the Internet-related performance are mixed. Indeed, different organizational adjustments are pertinent, depending on the type of Internet strategy adopted. (Angehrn, 1997). For a prospective, analysis, defensive or reactive strategy alignment does not affect performance in the same way (Croteau, Bergeron and Raymond,

2001; Sabherwal and Chan, 2001). A future research perspective then consists in studying the relation between alignment and internet-related performance according to the Internet strategy type adopted.

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APPENDIX (THE QUESTIONNAIRE)

Respondent has to choose a position starting from 1 (Not at all) to 6 (Very) agree/developed, depending on the item.

Strategic alignment (STRALG)

Involvement of director and manager from various company departments in the firm's Internet activity (IMPLDM)

Q1: "Management of the Internet activity includes all the managers from the different departments of the firm"

Q2: "The company directors usually participate in management of Internet activity"

Q3: "The management style and management activity of the director(s) usually takes into account Internet activity developed by the firm"

Q4: "(The) management style and management activity of the director(s) regularly considers Internet activity needs"

Valuation of the Internet activity (VAL)

Q5: "Internet activity is considered by (the) director(s) as essential for the development of the firm"

Q6: "According to managers from the different departments of the firm, Internet activity supports the firm's growth"

Involvement of (the) Internet activity manager(s) in the overall management of the firm (IMPLINT)

Q7: "(The) Internet activity manager(s) regularly take(s) part in the general management of the firm"

Organizational alignment (ORGALG)

Organizational evolution (ORGAEV)

Q8: "After the Internet activity development, a change in the organization of the firm was decided"

Q9: "After the Internet activity development, a new way of processing incoming calls was developed"

Integration in the back-office functions (INTBOFUN)

Q10: "Invoicing: online management of customers/suppliers"

Q11: "Inventory control: online supervision of stock and availability"

Q12: "Purchases: ordering of products and services through the Internet"

Integration in the commercial functions (INTCFUN)

Q13: "A call-centre devoted to the web site"

Q14: "Sales: online sale of products and services"

Q15: "Advertising: creation and use of advertising campaigns on the Internet"

Integration in the customer relationship management (INTCRM)

Q16: "Marketing: ensuring customer follow-up and monitoring, securing loyal customers via the Internet"

Q17: "Customer services: use of online customer services"

Technological alignment (TECALG)

Complementary investments (COMPINV)

Q18: "The company uses an Intranet an/or groupware"

Q19: "The company uses an Extranet "

Technological evolutions (TECHEV)

Q20: "A new IS architecture was created to support the Internet activity"

Q21: "Internet connection for the current application programs (ERP, EDI or others) is in place"

Internet performance (INTPERF)

Commercial performance (COMPERF)

Q22: "Growth rate of sales on the Internet" (level)

Q23: "Growth rate of market shares related to online sales"

Q24: "New markets thanks to the Internet"

Financial performance (FINPERF)

Q25: "Yield of the capital invested on the Internet"

Q26: "Control of costs thanks to the Internet"

Marketing performance (MARPERF)

Q27: "Improvement in responding to clients' demand through the Internet"

Q28: "Better client satisfaction thanks to new services proposed on the website"

Q29: "Stronger public image of the firm thanks to the Internet"

Indirect sales performance (INDSPERF)

Q30: "Growth rate of sales indirectly related to the Internet"

Q31: "Growth rate of market shares related to sales indirectly linked to the Internet"