FIT IN STRATEGIC INFORMATION TECHNOLOGY MANAGEMENT RESEARCH: AN EMPIRICAL COMPARISON OF PERSPECTIVES

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Abstract

The impacts of information technology on business performance has been a focus of research in recent years. In this regard, contingency models based on the notion of «fit » between the organization's management of IT, its environment, strategy, and structure seem to show promise. Six perspectives are examined as they pertain to the relationships between the firm's environmental uncertainty, its strategic orientation, its structure, its strategic management of IT, and its performance, namely *moderation*, *mediation* and *matching* as bivariate approaches to fit, and *covariation*, *profile deviation* and *gestalts* as systems approaches. These relationships are analyzed by means of an empirical study of 110 small enterprises. Results obtained from applying and comparing the six perspectives illustrate their significant differences and confirm the need for conceptual and methodological rigor when applying contingency theory in strategic information technology management research.

Key-words: environmental uncertainty, strategic orientation, organizational structure, structural complexity, strategic information technology management, performance

"The beginning of administrative wisdom is the awareness that there is no one optimum type of management system."
(Burns and Stalker, 1961, p.125)

1. INTRODUCTION

Since the publication, in 1961, of Burns and Stalker's pioneering work, the idea that there is no one best way to manage an organization has been the underlying assumption of a great number of research models, in several areas of study. Organization theorists have focused on the study of contingency models that share the "underlying premise that context and structure must somehow fit together if the organization is to perform well" ?25, p.514?. In strategic management, the general axiom of contingency theory is that no "strategy is universally superior, irrespective of the environmental or organizational context" ?75, p.424?. Contingency models, which hypothesize that there is no best way to organize, have also been proposed and tested in IS, be it for studying strategies for information requirements determination ?21?, individual impacts of information technology ?56?, IT impact on learning ?40?, the impact of IT problem solving tools on task performance ?77,78?, or IT impacts on organization performance ?7,8,14?.

While they agree that contingency theory has been an important contributor to the advancement of knowledge, several authors have deplored the fact that researchers were not cautious or consistent

enough in defining the concept of fit – which is central to any contingency model - and in selecting the most suitable data analysis approach to a given definition of fit [25,34,66,79]. Definitional rigor is critical, since different conceptual definitions of fit imply different meanings of a contingency theory and different expected empirical results [25]. This lack of definitional and methodological rigor has led to inconsistent results and could eventually alter the very meaning of a theory [44,66,73,75].

Along the years, much effort has been put on understanding and clarifying the theoretical and methodological issues associated with contingency models. In organization theory for instance, Drazin and Van de Ven [25], and Van de Ven and Drazin [73] have examined different approaches to defining fit and to testing fit-based hypotheses. In a conceptual article, Venkatraman [75] proposed a classificatory framework for the concept of fit, wherein six different perspectives of fit are defined. This was done in an effort toward definitional clarity of the concept of fit and to help researchers draw the appropriate links between the verbalization of fit-based relationships and the statistical analyses chosen to test these relationships. The six fit perspectives and the related statistical analysis methods were illustrated by referring to previous studies in the domain of business strategy. Building on this work, Chan, Huff, Barclay, and Copeland [15] performed a comparative analysis of two of the six perspectives of fit defined by Venkatraman [75], in the particular context of the relationship between IT and organizational performance.

The present study pursues the previous efforts in conducting a comparative analysis of all six fit perspectives in the context of the IT-performance relationship. Moreover, it examines the contingency relationships between strategic orientation of the firm, strategic IT management, organizational structure, environmental uncertainty, and business performance. These relationships are analyzed by means of an empirical study of 110 firms. Alternative perspectives of fit are first presented followed by the study's theoretical background, methodology, a discussion of the results and their implications.

2. ALTERNATIVE PERSPECTIVES OF FIT

2.1 A classificatory framework for fit perspectives

Venkatraman [75] proposed a framework that comprises six different perspectives from which fit can be defined and studied; these are, fit as (a) moderation, (b) mediation, (c) matching, (d)

covariation, (e) profile deviation, and (f) gestalts. The framework classifies each perspective along three dimensions : the degree of specificity of the functional form of fit, the number of variables in the equation, and the presence – or absence – of a criterion variable. The following paragraphs describe each perspective of fit according to these three dimensions, along with its particular conceptualisation of fit, the corresponding verbalisation of hypothesised relationships, and the appropriate analytical schemes for testing the relationships.

Fit as moderation. In this criterion-specific perspective, fit is conceptualised as the interaction between two variables. Figure 1 illustrates this perspective of fit. The verbalisation of the relationship between the strategic orientation of a firm and strategic IT management would be as follows : The interactive effect of the strategic orientation of a firm and its strategic IT management will have implications on firm performance. The relationship between the other two variables (structure and environmental uncertainty) and strategic IT management would be verbalised in the same way. When this perspective of fit is adopted, regression analysis, with interaction terms, is the appropriate testing technique.

Fit as mediation. This criterion-specific perspective adopts a conceptualisation based on intervention. That is, according to the mediation perspective, there exists an intervening variable between one or several antecedent variables and the consequent variable. As illustrated in Figure 2, the corresponding verbalisation of the relationships would be as follows : strategic IT management is an intervening variable between strategic orientation, structure, environmental uncertainty, and firm performance. The appropriate analytical scheme here is path analysis.

Fit as matching. This perspective is a "major point of departure from the previous two perspectives because fit is specified without reference to a criterion variable, although, subsequently, its effect on a set of criterion variables could be examined" ?75, p.430). Here, fit is a theoretically defined match between two variables. As illustrated in Figure 3, adopting this perspective, one would state that fit in an IT management context exists when strategic IT management matches environmental uncertainty (or matches structure, or strategic orientation). Whether the match improves firm performance would then

be tested. Venkatraman identifies three analytical schemes for supporting the matching perspective : deviation score analysis, residual analysis, and analysis of variance.

Fit as covariation. This perspective defines fit "as a pattern of covariation or internal consistency among a set of underlying theoretically related variables" ?75, p.435?. In the context of IT management, it would mean that it is the appropriate coalignment of environmental uncertainty, structure, strategic orientation, and strategic IT management that will influence performance (see Figure 4). In this perspective, Venkatraman identifies second-order factor analysis as the appropriate analysis technique for testing the propositions.

Fit as profile deviation. Fit as profile deviation is defined as the internal consistency of multiple contingencies ?25?. In this criterion-specific perspective, an ideal profile is assumed to exist, and deviations from this ideal profile should result in lower performance. Venkatraman's ?75? graphic representation of fit as profile deviation is reproduced in Figure 5. In terms of the research variables of interest in the present study, adopting a profile deviation perspective would imply the following verbalisation : the degree of adherence to a specified profile of strategic IT management, environmental uncertainty, structure, and strategic orientation, has a significant effect on performance. When adopting this perspective, a subsample of high performers is selected from the larger sample. The management profile – in terms of the independent variables under study - of these high performers is estimated. Then, the degree of adherence to the ideal profile is obtained by calculating the Euclidean distance in an n-dimensional space.

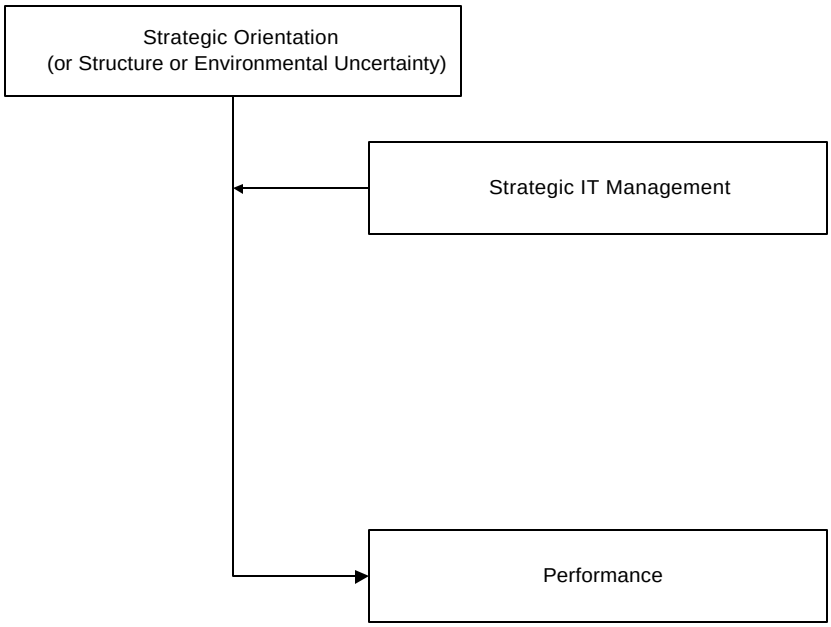

Figure 1 - Fit as moderation

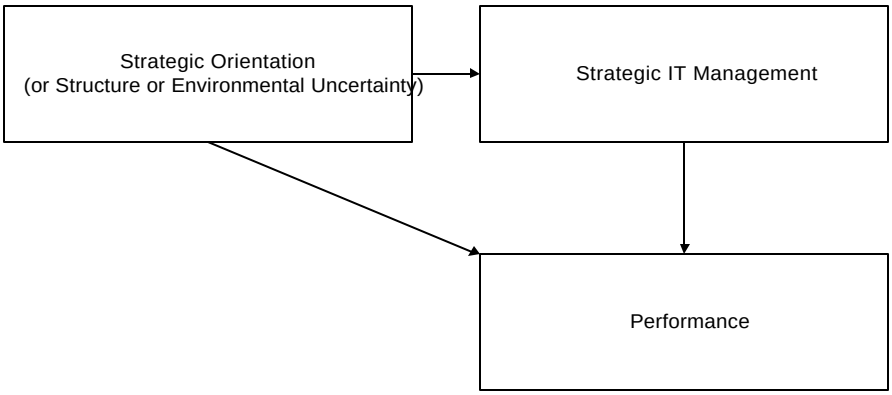

Figure 2 - Fit as mediation

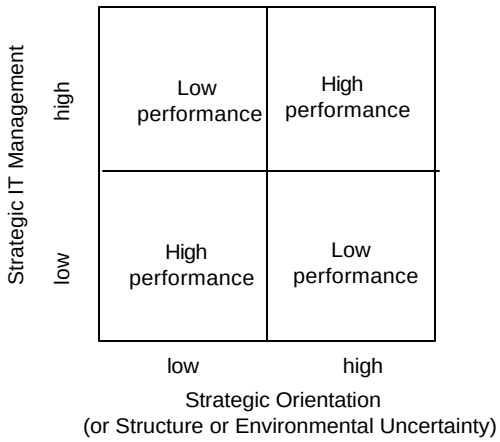

Figure 3 - Fit as matching

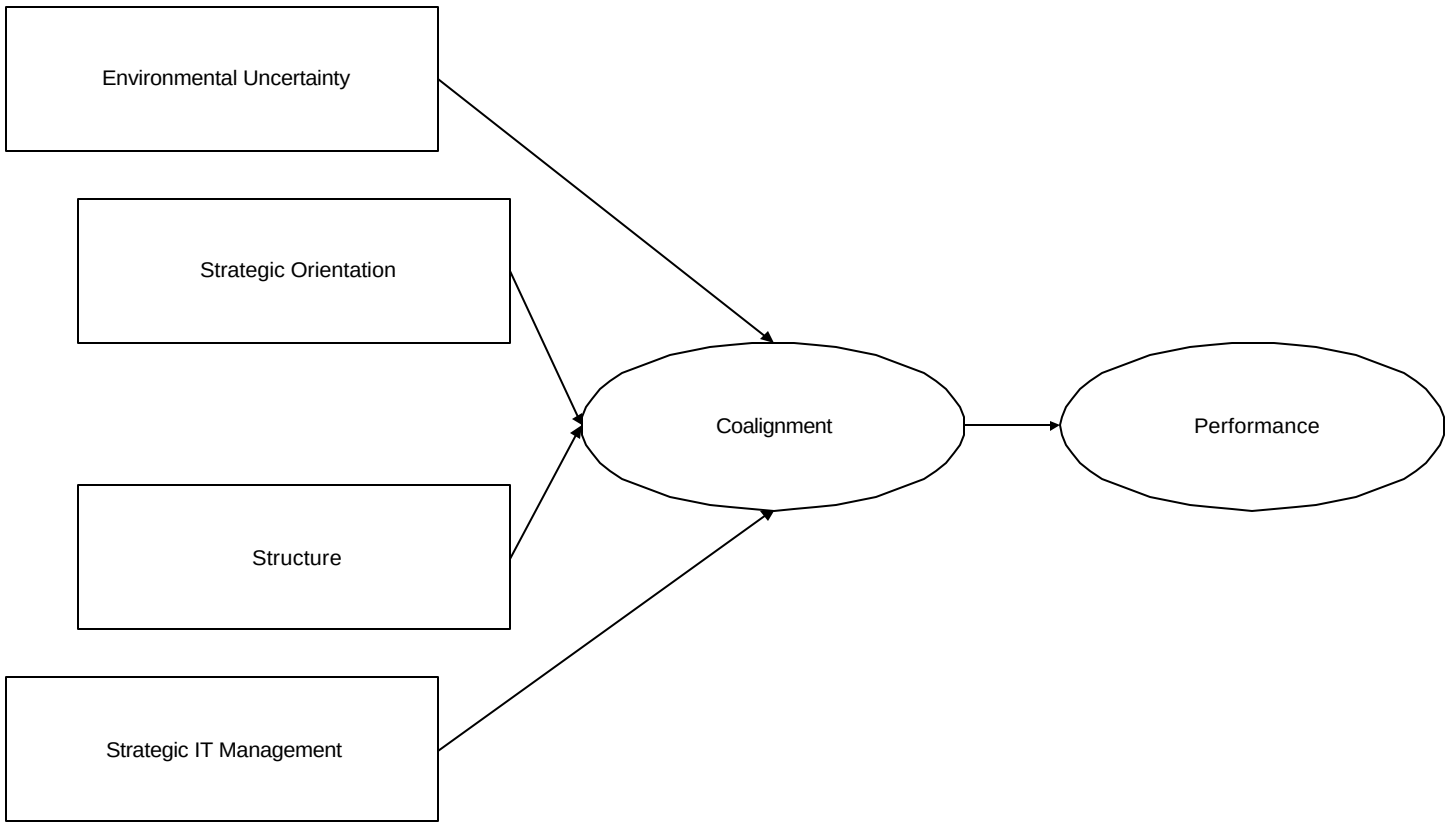

Figure 4 - Fit as covariation

Fit as gestalts. This perspective is based on an internal congruence conceptualisation, whereby fit is seen as a pattern. Venkatraman adopts the definition proposed by Miller ?44? who conceptualises fit as a set of relationships which are in a temporary state of balance. Adopting this perspective implies that "instead of looking at a few variables or at linear associations among such variables we should be trying to find frequently recurring clusters of attributes or gestalts" [44, p.5], as cited by Venkatraman [75, p.432]. Figure 6, borrowed from Miller ?44?, illustrates the notion of gestalt, in a three-dimensional space. As shown in the Figure, this perspective of fit "seeks to look simultaneously at a large number of variables that collectively define a meaningful and coherent slice of organisational reality" ?44, p.8?. Numerical taxonomic methods such as cluster analysis and q-factor analysis are the appropriate statistical techniques for developing the profiles.

2.2 An examination of two perspectives of fit

In their study of the relationship between IT and firm performance, Chan et al. ?15? assessed two fit perspectives : the moderation perspective and the matching perspective, to determine which approach would receive the most support from the data. Chan and Huff ?14, p.353? verbalize the moderation perspective of fit in the context of their study as follows : "moderation implies that the form and/or strength of the effect that company IS strategy has on IS effectiveness is contingent on business strategy; similarly, the form and/or strength of the effect that business strategy has on business performance is contingent on IS strategy". The authors verbalize the matching perspective in the context of their study as how close the score of strategic orientation of the firm and the strategic orientation of IT are in a given firm. From their analysis of the data gathered from 164 business units, the authors conclude that the moderation conceptualization of fit was the approach that was best supported.

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Strategy Dimensions	Importance	Standardized Scale for Measuring the Dimensions
		-1 0 +1
X_1	b_1	X_{s1} X_{c1}
X_2	b_2	
X_3	b_3	
X_4	b_4	
X_5	b_5	
X_6	b_6	X_{c6} X_{s6}

X_s : represents values in the study sample.
X_c : represents values in the calibration sample – empirically derived ideal profile.

Figure 5 – Fit as profile deviation

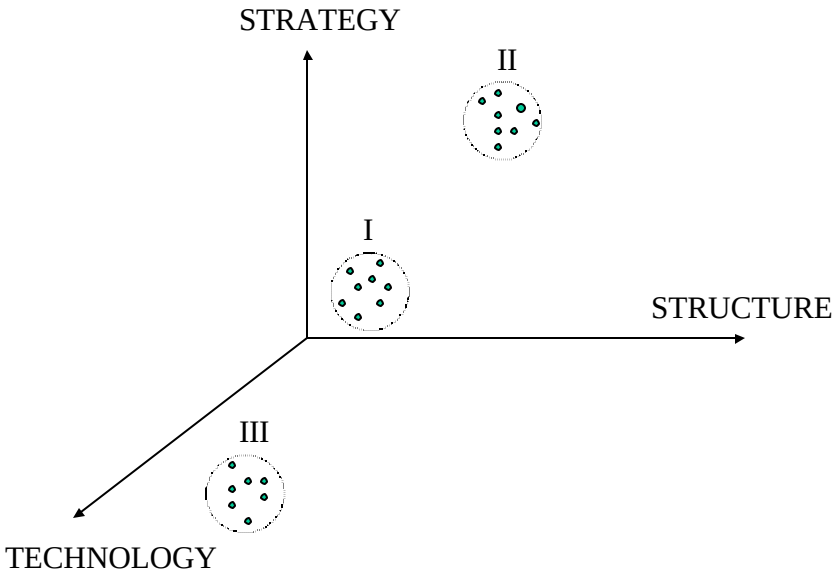

Figure 6 - Fit as gestalt

3. THEORETICAL AND EMPIRICAL BACKGROUND

The contribution of IT to organizational performance is a domain where the notion of fit is particularly relevant. In this regard, researchers in the field of strategy, organizational theory and IS have looked to the contingency effects of the relationships between the firm's environment, strategy, structure, and information systems. More precisely, previous theoretical and empirical work has hypothesized that the use and strategic management of IT contributes to business performance, dependent upon contingent factors such as the firm's environmental uncertainty, strategic orientation or structural sophistication ?14, 60?. The contribution of IT to organizational performance was chosen to illustrate the differences that exist between the six perspectives of fit. The following paragraphs review the research that has been conducted in this area.

3.1 Environment, Strategic IT Management and Performance

Fighting to survive and prosper in markets that are ever more dynamic, unstable, and competitive, firms perceive uncertainty in their environment. For organization theorists, environmental uncertainty has long been assumed to play an important role in technology-structure relationships ?43?. A turbulent environment may induce firms to a more extensive use of information systems ?55, 39?. For instance, prior studies have shown that firms use their IT resources to counter forces in their industry such as the bargaining power of suppliers and customers ?30, 3?. In a risky environment, IT should be more flexible and managers more alert to adapt information systems to external changes ?13?. Increased instability in the environment is also seen as causing information acquisition to be more continuous, variant, and wide-ranging ?33?. In that sense, the management of IT must be strategically oriented.

In strategic management and organization theory, the concept of environmental uncertainty is critical in the explanation of the strategy-performance relationship. For instance, adopting a fit as matching perspective, Miller ?43? found a positive relationship between the environment-strategy match and performance. Specifying fit as profile deviation, Venkatraman and Prescott ?76? found a positive impact of the environment-strategy fit on performance. In the information systems area, while many studies have examined the relationship between IT and firm performance, and several have studied the relationship between firm strategy, IT, and firm performance, the relationships between

environment, IT, and performance have not received much attention. To our knowledge, one empirical IS study has directly attempted to confirm the performance impacts of the IT-environment fit, Sabherwal and Vijayasarathy ?64? confirming the use of telecommunication links with suppliers as a mediating variable between environmental uncertainty and organizational performance. Environmental uncertainty has however been included as a contingency variable in models of IT-structure and IT-strategy fit, but results have been mixed. For instance, Raymond, Paré and Bergeron ?60? found relationships between IT management sophistication, organizational structure and performance in small firms to be unaffected by environmental uncertainty. Similarly, Teo and King ?71? could not confirm any influence of environmental uncertainty upon the integration of business and IS planning. Choe, Lee and Park ?17? did find however that external factors such as environmental dynamism and hostility influenced the facilitators of strategic IS alignment such as the IS manager's involvement in business strategy planning.

3.2 Strategy, Strategic IT Management and Performance

Since the early 1960s, pioneering work by researchers such as Chandler ?16?, Ansoff and Stewart ?1?, and Steiner ?69? has brought forth the notion of strategy as a unifying concept that links the functional areas of an organization and relates its activities to its external environment. Devising and implementing strategy are considered to be the most important tasks of managers ?51?. While there exists in the literature many definitions of strategy, a commonly accepted one originates from Porter ?57?. In this author's view, strategy involves taking offensive or defensive actions to create a defendable position in an industry, to cope successfully with competitive forces and thereby yield a superior return on investment for the firm.

Various approaches to strategy measurement have been developed over time, be it narrative (e.g., ?69?), classificatory (e.g., ?42, 58?), or comparative (e.g., ?74?). They have been used to study the relationship between strategy and organizational profit, among other research aims, with the premise that the strategic orientation of a firm could be a crucial aspect in determining bottom line results (e.g., ?2, 69?). Indeed, a firm strongly oriented toward differentiation, cost leadership, or focus, can achieve a competitive advantage. This translates into higher rates of sales, profits and returns. In a study on strategic management, Miller ?45? found a positive association between strategy and performance

under various conditions. Venkatraman [74], Zahra and Covin [81], and Parnell, Wright and Tu [53] also found various dimensions of strategy to be positively related to organizational performance. For small firms in particular, performance impacts of strategy have been found in conjunction with structural complexity [45] and the chief executive's personality [49].

While much has been written on the importance of the fit between the IS function and organizational strategy, the dominant perspective deems information technology to play a moderating role. In this view, IT enables business strategies and allows the firm to adopt a stronger competitive posture [32]. Also, the performance effects of managing IT strategically apply to small and medium-sized firms as well as large ones [7]. For example, having to make large-scale IT investments prevents smaller firms from accessing value chain alliances and thus benefits their larger competitors [37]. More directly, Bergeron and Raymond [7] found the moderation model to best explain the performance impacts of aligning business strategic orientation with strategic IT management, whereas the matching perspective was not well supported. Similar result was obtained by Chan et al. [15] with regard to the fit between strategic orientation and IS strategic orientation. Using a mediation perspective, Teo and King [71] confirmed the existence of four types of integration between business planning and IS planning (administrative, sequential, reciprocal, and full integration); their proposition that greater fit supports a firm's business strategies more effectively was confirmed by the significant positive relationship of planning integration with IS contributions to organization performance.

3.3 Structure, Strategic IT Management and Performance

The structure of a firm is the complex set of goals, functions and relationships among units that allow an organization to react effectively to market demands. It is dependent upon the level of coordination, formalization, and specialization of organizational tasks. Factors such as technology, environmental uncertainty, and strategy may be linked to organizational structure [29,38,23].

In particular, the fit between IS structure and organizational structure has long been considered to play a role in information success. In fact, the firm's structure is seen to act as a foundation for its strategy and its technological choices [27]). Information technology is thought to enable decentralization of control and delegation of decision authority by facilitating the dissemination and sharing of information

throughout the firm [19, 70]. A complex structure implies more elaborate coordination, control, and communication mechanisms which in turn requires enabling information technology [41].

As noted by Iivari [34], the empirical literature on IT-structure fit had been dominated by the mediation perspective, with performance omitted from the research setting (e.g., [26]). Later, Brown and Magill [10] used a gestalts approach to identify centralized, decentralized, hybrid, and split configurations of the alignment between the IS structure (locus of responsibility for managing IT and IT use) and the organization. Using a matching approach, Fiedler, Grover and Teng [28] produced a taxonomy of IT structure (centralized, decentralized, cooperative, and distributed computing) in relation to formal organizational structure, again with no attempt being made to measure performance. Also from a matching perspective, Raymond, Paré and Bergeron [60] found the fit between IT management sophistication and formal structure to be significantly greater among high-performing small firms than among low-performing ones, thus confirming the performance impacts of fit.

4. METHODOLOGY

4.1. Sample and Data Collection

A cross-sectional survey was conducted, with a target population consisting of 1000 small enterprises. Half were manufacturing firms listed in Dun & Bradstreet's Directory and the other half were service firms listed in Scott's Directory [68]. All these organizations have between 10 and 300 employees, with annual sales under $50 million. In order to obtain a representative sample, one thousand organizations were selected using a systematic sampling technique (an organization taken at random from the first k units and every k^{th} organization thereafter), following Cochran's [18] and Kerlinger's [36] recommendations. The questionnaire used for data collection was pre-tested with five CEOs through on-site interviews. Following this pre-test, some minor modifications were made to the questionnaire.

A fax-mailing of the questionnaire was conducted to speed up the data collection process, to lower administration costs, and to get possibly higher returns than a mail survey, as observed previously by Dickson and Maclachlan [24]. CEOs (or a representative manager) were asked to fill out the questionnaire and to send it back preferably by fax to the researchers. A toll free 1-800 line had been set up for this purpose, expecting that small business owner-managers would prefer not to assume any

direct cost in participating in the survey. One week after the fax-mailing, a fax follow-up was sent out to all organizations reminding them the importance of their participation in the study. Two weeks after the first mailing, follow-up phone calls were made to a sample of 293 CEOs who had not yet returned their questionnaire. The main reasons invoked for not participating in the study were: an internal policy not to answer surveys, time constraints, too many solicitations to answer surveys, and privacy concerns.

One hundred and fifty one questionnaires were sent back, for a gross response rate of 15.1%. Out of those, a total of 41 questionnaires were eliminated for various reasons: they were incomplete, they came from organizations with no computer systems, they had less than 10 employees or they had more than $50 million in revenues. The final response rate was 11%. The firms operate in a variety of sectors including manufacturing (49.1%), wholesale/distribution (24.4%), services (11.4%), and others (15.1%). The average firm in the sample has 54 employees, and a mean IS budget of $84 000. The respondents were: CEOs (63.9%), vice-presidents (7.1%), directors of finance (15.0%), other managers (13.3%).

4.2 Measurement

The measures of environmental uncertainty, strategic orientation, structural complexity and performance originate from concepts developed in the organization theory and strategic management literature, and have had their validity confirmed in prior empirical studies. As presented in Table 1, all variables show an adequate level of reliability in terms of their alpha coefficient.

Environmental Uncertainty. The uncertainty in the firm's external environment is a concept that was first examined as a determinant of structure, in that greater uncertainty is assumed to render administrative tasks more complex and less routine ?12?. Environmental uncertainty was measured in this study by using an instrument validated in the small business context by Miller and Dröge ?47?, using five 7-point scales to assess the degree of change and unpredictability in the firm's markets, competitors, and production technology.

Strategic Orientation. The concept of strategy has been viewed - and thus measured - in many different ways. Venkatraman ?74? identified four such inter-related perspectives used by previous

researchers, namely the scope of a strategy ("means and ends" versus "means"), its hierarchical level (corporate, business or functional), its domain ("parts" or "holistic"), and its temporal status (intentions versus realizations). Strategic orientation was measured in this study with Venkatraman's instrument, which determines the "realized" business strategy in holistic terms, focusing on the means adopted to achieve the desired goals. Twenty-nine items rate the firm's strategies on 7-point scales, tracing its course of action in terms of six underlying dimensions, namely aggressiveness, analysis, defensiveness, futurity, proactiveness and riskiness. The unidimensionality and convergent validity of the strategic orientation construct were reaffirmed by a confirmatory factor analysis; however, as in a prior study [77], the riskiness dimension was found to be unreliable (α =0.40) and removed from the final measure.

Structural complexity. The organization's structure is characterized by its level of decentralization, formalization, and complexity. However, these three fundamental dimensions of structure constitute distinct, independent concepts and thus cannot be aggregated [46]. Given the research aims and small business context, the third dimension was chosen as the most relevant surrogate for structure, and evaluated in this study by the size of the firm's managerial hierarchy, i.e. the ratio of managers to total employees [47], also known as the firm's administrative intensity [20]. While there are alternative measures of complexity, this ratio is particularly relevant in the context of smaller firms, as an indicator of the delegation of decision-making authority from the entrepreneur or owner-manager to professional managers who specialize in certain complex tasks [9,54]. In fact, Miller and Toulouse [49] found the relative profitability, sales growth and return on investment of dynamic small firms to be higher among those that had recruited a proportionally higher number of professional managers.

Performance. The concept and measurement of organizational performance have long been a subject of debate in business research. In most IS studies, the assessment of performance has been based on an objective approach, using a set of financial ratios such as return on investment (ROI) and return on assets (ROA) or volume measures such as revenue and sales growth [80]. Such accounting measures have been criticized because they focus only on the economic dimensions of performance, neglecting other important goals of the firm; also, the data are often unavailable or unreliable [63]. This is particularly true in the small business context where these data are either not provided or have been

subject to managerial manipulation by the owner for a variety of reasons, such as the avoidance of corporate and personal income taxes [65].

To relieve this measurement problem, strategic management researchers have proposed an alternative approach, based on subjective measures of organizational performance [22]. Strategic management researchers such as Miller [45] and Venkatraman [74] used such an approach to examine the relationship between strategy and performance. As the latter's instrument was validated in a small business context by Raymond, Paré and Bergeron [60], it was deemed appropriate for the present study. The CEO was thus asked to indicate on 7-point Likert scales how his or her firm performed relative to the industry average or to other firms in the same market during the last five years, in terms of long run profitability, growth of sales, and financial resources (liquidity and investment capability).

Strategic IT Management. Strategic IT management (SITM) is defined here as a multi-dimensional construct that characterizes the extent to which organizations are deemed to plan, implement and use information systems in a competitively-oriented manner. The SITM measure was developed and validated as a first step in this study. A list of 66 IT management issues potentially critical to small business performance was extracted from a review of the literature. The issues were grouped a priori on four dimensions: IT planning and control [13,35], IT acquisition and implementation [62], strategic use of IT [13,50], and IT environment scanning [59,57,52]. An initial instrument was built from this list and pre-tested by having 26 small firm CEOs (half manufacturing, half services) indicate which items were most critical to their firm. A final instrument was obtained by retaining the 29 items mentioned by more than one respondent. As presented in the Appendix, the SITM construct was then measured by having the respondent evaluate on 7-point scales to what extent these items constituted a strength or a weakness for the firm, relative to the competition. A comparative approach was used to render the evaluation more objective as was done in a previous study by Bergeron and Raymond [7].

Using Bentler and Weeks' [5] structural equation modeling approach as implemented in the EQS software [4], a second-order confirmatory factor analysis of the SITM construct was performed. This was done to test a posteriori the unidimensionality and reliability of the construct, and its validity as to the four hypothesized dimensions. As shown in Figure 7, the results of the factor analysis confirmed the unidimensionality of the construct, as Bentler's comparative fit index for the SITM measurement

model attains the recommended 0.9 level. Construct reliability was assessed with the ? coefficient, that is, the ratio of construct variance to the sum of construct and error variance, and is greater here than the recommended 0.8 value. Finally, the values of the four path coefficients linking SITM to its four dimensions and the latter's respective reliability coefficients provide confirmation of the hypothesized structure of the construct.

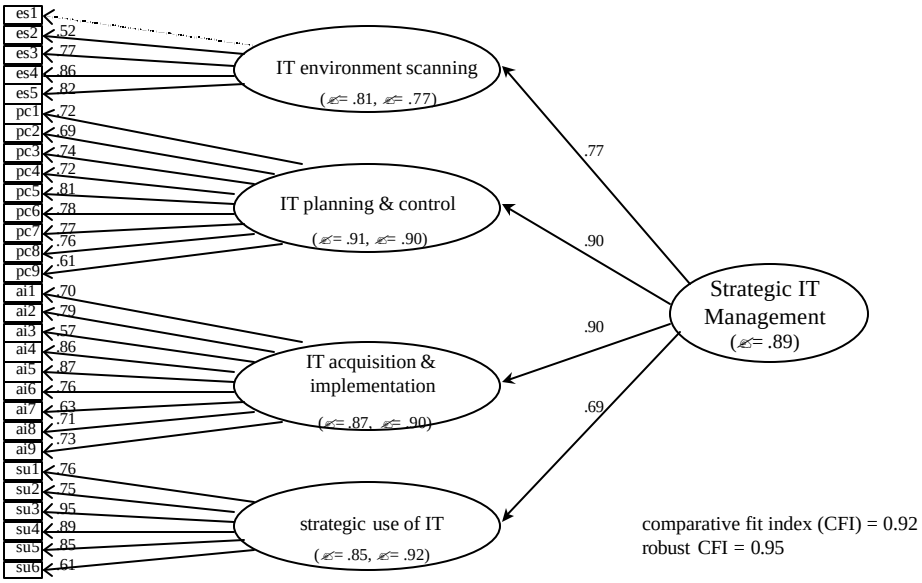

Figure 7 : Second-order confirmatory factor analysis of the Strategic IT Management measure

5. RESULTS

As mentioned earlier, each perspective of fit calls for a particular type of data analysis. Accordingly, the data were analyzed by computing zero-order and partial product-moment correlation coefficients for the environment uncertainty, strategic orientation, structural complexity, strategic IT management, and performance. Additional results were obtained by forming subsamples based on the median (high-low) performance and strategic IT management, comparing correlations and means with Z and t tests (subgroup analysis). Path analyses were also done by means of structural equation modeling

(PLS method). Note that, given a sample of small firms, organizational size is not a factor as this variable (in terms of number of employees) did not correlate significantly with any of the research constructs.

The first results of note concern the interrelationships between environmental uncertainty (ENVI), strategic orientation (STRA), structural complexity (STRU), and strategic IT management (SITM). As shown in Table 2, STRA is highly intercorrelated with SITM ($r = .48$, $p<.001$), confirming the congruence of strategy and IT in the sampled small firms. In this sense, "strategic alignment" defined as the fit existing between strategic orientation and strategic IT management is achieved by many of these organizations. An additional significant intercorrelation between ENVI and STRU ($r = .22$, $p<.01$) would indicate that small businesses respond to environmental uncertainty somewhat more in structural terms (i.e. by increasing the managerial hierarchy to deal with more complex and specialized tasks) than in strategic or technological terms. One may also note that there is no significant association between strategic orientation and structural complexity ($r = -.14$, $p>.05$).

5.1 Moderation Approach to Fit

According to the moderation approach to fit, the impact of a predictor variable such as environmental uncertainty, strategic orientation, or structural complexity on performance (PERF, the criterion variable) is dependent on the level of a third variable, namely strategic IT management (the moderator). It is assessed by evaluating if the direction and strength of the relation between predictor and criterion variables vary across different levels of the moderator. This is done here by calculating the correlation of environment uncertainty, strategic orientation, and structural complexity with performance for two subsamples based on the median IT score (the "high" SITM firms showing more strong points in their management of IT than the "low" SITM firms).

As shown in Table 3, IT's moderating effect is observed most by looking at the structure-performance relationship. This effect is also present for firm's strategy but not for its environment. While STRU is positively associated to PERF in the high-SITM firms ($r = .09$), this relationship becomes significantly negative in the low-SITM firms ($r = -.27$, $p<.05$). This would indicate that adding more managerial resources would in fact be dysfunctional, i.e. would decrease performance if the small firm does not possess the IT management capability required to support its increased structural complexity. One also sees that the significant positive correlation of strategic orientation with performance for the

high-SITM firms ($r = .23$, $p<.05$) then becomes non-significant for low-SITM ones ($r = .07$). Again, this would mean that to be effective, strategy requires the small firm to have attained a certain threshold of IT management expertise.

Table 1. Descriptive statistics of the research variables (n=110)

Variable (acronym, range, ?)	mean	med.	s.d.	min.	max.
Environmental Uncertainty (ENVI, 1-7, 0.62)	3.9	4.0	1.0	1.2	6.0
Strategic Orientation (STRA, 1-7, 0.85)	5.0	5.1	0.7	2.4	6.4
Structural Complexity (STRU, 1-7, -[a])	2.3	2.1	1.0	1.0	7.0
Strategic IT Management (SITM, 1-7, 0.95)	5.5	5.6	0.8	3.5	6.9
Performance (PERF, 1-7, 0.89)	4.7	4.7	1.1	2.0	7.0

[a]Structural complexity score resulting from a linear transformation of the proportion of managerial personnel to total personnel (to obtain a 1-7 range similar to the other four variables).

Table 2. Intercorrelations of the independent variables

Correlation With	Strategic Orientation (n=110)	Structure (n=110)	Strategic IT Manag. (n=110)	SITM For High[a] PERF (n=54)	SITM for Low PERF (n=56)	Z[b]
Environment Uncertainty (ENVI)	.11	.22**	.14	.17	.16	0.06
Strategic Orientation (STRA)	-	-.14	.48***	.47***	.41***	0.40
Structural Complexity (STRU)	-.14	-	-.08	.15	-.27*	2.18*

[a]High/Low: based on median Performance score

[b]A positive Z score indicates that the correlation is greater in the high-PERF firms than in the low-PERF firms ?31, pp. 166-167?

*: p<0.05 **: p<0.01 ***: p<0.001

Strategic IT management's role as moderator can also be analyzed by looking at its interaction with a predictor variable, i.e., in the form of a joint, multiplicative effect. Thus, according to the interaction perspective, the products of environment uncertainty, strategic orientation, and structural complexity with IT should have an effect on performance. Three "fit variables" corresponding to these products were thus computed and correlated with performance, after controlling for the linear and quadratic effects of their two components to establish the presence of multiplicative effects ?75?.

Results presented in the top half of Table 4 show that the interaction of structure with strategic IT management has the most impact, as performance increases with the STRU*SITM product (r = .17, p<.1), but not with ENVI*SITM (r = -.03) nor with STRA*SITM (r = .01). Thus, while increasing structural complexity by itself would have no effect on performance (Table 3), small firms doing so in conjunction with a stronger IT focus would achieve a more competitive position in terms of growth and profitability.

5.2 Mediation Approach to Fit

In approaching fit as mediation, strategic IT management is viewed as an intervening mechanism between antecedent variables (environment uncertainty, strategic orientation, and structural complexity) and performance (the consequent variable). In other words, greater environmental uncertainty, strategic orientation, and structural complexity lead to more strategic IT management, which in turn leads to better performance. One way to assess IT's intervening effect is by calculating the partial correlations of environment, strategy and structure with performance (PERF), using IT as the control variable, and comparing with the zero-order coefficients for these same variables (indirect effects versus total effects).

As presented in Table 3, the results confirm that strategic IT management mediates the effect of strategy on performance, but does not play this role for the firm's environment and structure. On one hand, ENVI and STRU are both uncorrelated with PERF (r = -.00, r = -.05), and controlling for SITM does not change this result (r = -.07, r = -.02). In other words, there are neither direct nor indirect (through IT) effects of environmental uncertainty and structural complexity on small business performance.

Table 3. Correlations of the independent variables with Performance

Correlation with Performance	Zero-order (n=110)	Partial, control for SITM (n=110)	Partial, control for all variables (n=110)	For High[a] SITM (n=55)	for Low SITM (n=55)	Z[b]
Environment Uncertainty (ENVI)	-.00	-.07	-.09	-.08	-.03	-0.25
Strategic Orientation (STRA)	.40***	.25**	.26**	.34**	.19	0.83
Structural Complexity (STRU)	-.05	-.02	.03	.09	-.27*	1.87*
Strategic IT Management (SITM)	.42***	-	.28**	.23*	.07	0.84

[a]High/Low: based on median Strategic IT Management score
[b]A positive Z score indicates that the correlation is greater in the high-SITM firms than in the low-SITM firms ?31, p. 166-167?,)
*: p<0.05 **: p<0.01 ***: p<0.001

Table 4. Correlation of IT fit variables with Performance

Correlation of IT fit variables with Performance	Zero-order	Partial[a]
Interaction approach		
(ENVI*SITM)	.18*	-.03
(STRA*SITM)	.48***	.01
(STRU*SITM)	.30***	.17[b]
Matching approach		
$(ENVI-SITM)^2$	.28***.	.02
$(STRA-SITM)^2$	-.02	-.01
$(STRU-SITM)^2$	.36***	-.17[b]

[a]Controlling for linear (i.e. for SITM and ENVI, STRA or STRU) and quadratic (i.e. for $SITM^2$ and $ENVI^2$, $STRA^2$ or $STRU^2$) effects of the fit variable's original components
[b]p<0.10 *: p<0.05 ***: p<0.001

On the other hand, the strong correlation between STRA and PERF ($r = .40$, $p<.001$) decreases but remains significant when adding the intervening effect of SITM ($r = .25$, $p<.01$). Strategic orientation thus has both a direct and an indirect effect (through strategic IT management) on organizational performance. The mediating effect on strategy is IT's alone, as the partial correlation does not change, when including ENVI and STRU as added control variables ($r = .26$, $p<.01$). Note also that the strong correlation between SITM and PERF is reduced but remains significant when controlling for the other three variables ($r = .28$, $p<.01$), indicating that information technology would have a positive impact on performance, irrespective of its level of fit with the small firm's environment, strategy and structure.

The preceding results are confirmed in a more global way by the results of the path analysis presented in Figure 8. When strategy, structure and environment are simultaneously taken into account, the path coefficients denote the existence of a partial mediating model for the first dimension only, as the paths linking the other two dimensions to IT and performance are non significant. This means that strategic orientation has both a direct and an indirect (through its impact on strategic IT management) effect on performance. Note also that the indirect effect is approximately as strong as the direct effect in terms of explaining variance in performance, highlighting the essential role of strategic IT management in transforming strategic objectives into effective realities.

5.3 Matching Approach to Fit

In the matching approach, fit is a theoretically defined match, alignment or congruence between IT and another related variable, say strategy, without reference to a criterion variable. Subsequently however, its effect on performance can be verified by hypothesizing that the match between IT and the other variable will be better among good than poor performers. As indicated by Venkatraman ?75?, one way to confirm this is by using an analysis of variance approach. Here, one can compare correlations of IT with environment, strategy and structure across the high and low-performing subsamples.

Looking at the right side of Table 2, one first sees that the correlations between STRA and SITM are highly significant in both the high and low-PERF groups, but are of approximately equal strength ($r = .47$, $p<.001$, $r = .41$, $p<.001$). Hence, from a matching perspective, the fit between strategy and IT management, while strong, has no impact on performance. A possible explanation could be that, contrary to the moderation perspective, matching entails that a "low-low" combination, that is, a

firm weaker on both strategy and IT management, would be as effective as a "high-high" combination, which seems less plausible *a priori*. The link between STRU and SITM in the high-PERF group ($r = .15$, $p>.05$) differs significantly from that of the low-PERF group ($r = -.27$, $p<.05$), as evidenced by a Z value of 2.18 ($p<.05$) that tests for a difference between correlations in the two groups. Here, the dysfunctional impact on performance of a mismatch between the organization's management of IT and its structure would come into play, be it a "high-low" combination where more competitively-oriented IT management practices are combined with a simpler structure, or inversely a "low-high" combination.

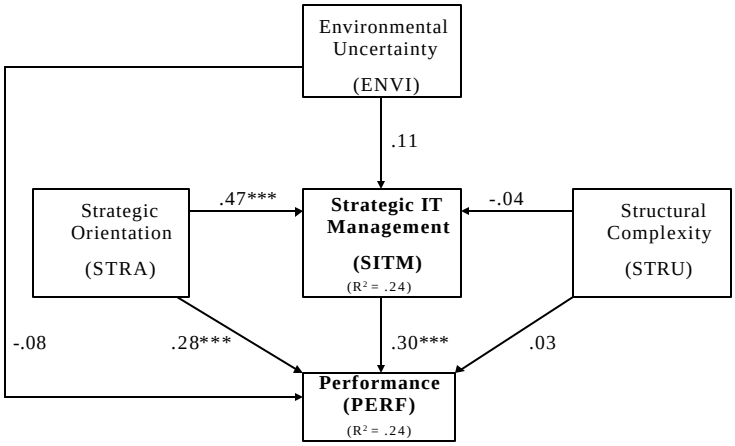

Figure 8: Path analysis of fit as mediation

The match between IT and another variable can be analyzed by using another approach, based on difference scores between two variables. The difference score indicates a lack of fit, i.e. the higher the difference, the higher the mismatch between IT and the other variable, which leads to decreasing performance. Three additional fit variables corresponding to the squared difference between ENVI, STRA, or STRU and SITM were thus computed and correlated with performance, after controlling for the linear and quadratic effects of their two components (partial correlation).

Looking at the bottom half of Table 4, it is again the structure-technology mismatch which is important in that it is the only one out of the three to lower performance, as evidenced by a partial correlation of -.17 ($p<0.1$) between this fit variable $(STRU-SITM)^2$ and performance. This result concurs with the previous one for the matching approach, confirming the need to meet increases in structural complexity with a stronger organizational stance on strategic IT issues that are now critical to

small businesses. As the $(STRA-SITM)^2$ score is uncorrelated to performance (r = -.01), this again confirms that the matching approach is unsuited to the fit between strategy and strategic IT management.

5.4 Systems Approach: Fit as Covariation

Following Van de Ven and Drazin ?73? on the need for a "systems" approach, a multivariate perspective was used to test fit among environment uncertainty, strategic orientation, structural complexity, and strategic IT management. As discussed earlier, one such perspective views fit as "a pattern of covariation or internal consistency among a set of underlying theoretically related variables" ?75?. As shown in Figure 9, fit is specified as "coalignment", an unobservable or latent construct whose meaning is derived through the observable variables, namely ENVI, STRA, STRU and SITM.

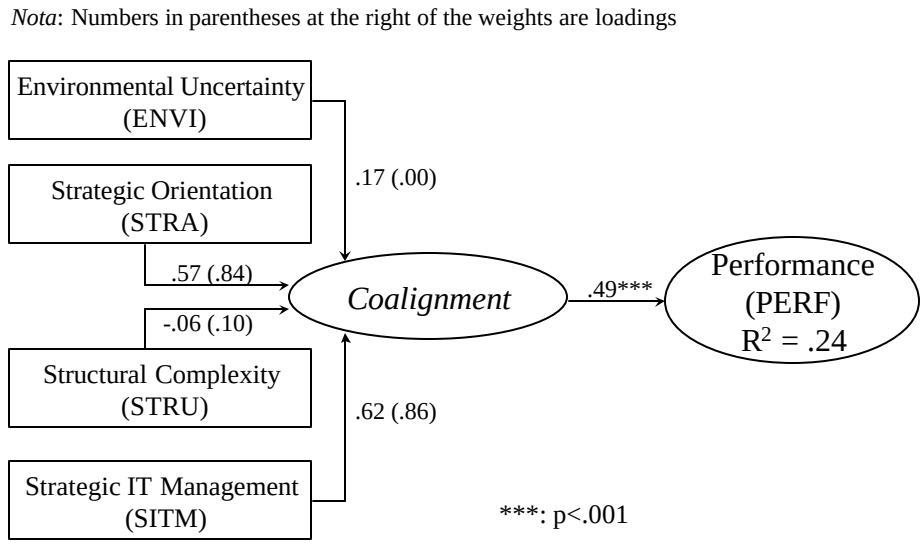

Figure 9: Path analysis of fit as covariation

By using structural equation modeling, covariation is formally represented by the variables' standardized weight in forming the coalignment construct, and its effect on performance can be directly assessed by the path coefficient linking the two constructs. Given weights equal to .62 for SITM and .57 for STRA (versus .17 for ENVI and -.06 for STRU), it is thus strategy and technology (as opposed to environment and structure) that contribute to coalignment in this case. A highly significant path coefficient confirms the positive impact of coalignment, as this construct explains 24% of the variance in

performance. In view of this, internally consistent, concurrent efforts by small firms to enhance both their strategic orientation and IT management would result in higher growth and profits.

5.5 Systems Approach: Fit as Profile Deviation

Another approach views fit in terms of adherence to an ideal profile or pattern on a series of underlying dimensions [25]. The more an organization deviates from the ideal on any or all of the dimensions the lower the expected performance. Following Venkatraman and Prescott [76], the top 10% of the sampled firms in terms of performance were used as a calibration sample (n=11); mean scores along the environment uncertainty, strategic orientation, structural complexity and strategic IT management dimensions were calculated to specify the "ideal" profile empirically (rather than theoretically). The bottom 10% were also removed so as not to skew the sample downwards (n=11, hold-out sample). As shown in Figure 10 and following Drazin and Van de Ven [25], fit (or more appropriately "misfit") was measured for the 88 remaining firms (110 minus 22) in the sample as the Euclidean distance from the individual pattern of scores to the ideal pattern along the four dimensions. This distance or profile deviation measure is thus hypothesized to be negatively and significantly correlated to performance.

Misfit was in fact demonstrated as the pattern analysis procedure yielded a correlation equal to -.28 (p=.004). Note that this procedure assumes that deviations from the ideal profile on any dimension have an equal effect on performance. Given their fundamental nature as underlying dimensions of organizations, there is a priori no theoretical or empirical reasoning on which to justify weighting them differentially, e.g., to justify the assumption that deviations in strategic IT management are more important in determining performance than deviations in strategic orientation, structural complexity, or environmental uncertainty [75]. Looking at the mean scores presented in Figure 10, one notes however that it is on the technology and strategy dimensions, as opposed to structure and environment, that the top-performers tend to differ most from the remaining firms. This implies that firms seeking to achieve more growth and profitability should strive to reduce the gap between themselves and the top-performers in terms of IT management and strategic orientation.

	mean score[a]						
Variable	1	2	3	4	5	6	7
1. Environmental Uncertainty (ENVI)				$\mathbf{X_s X_c}$			
2. Strategic Orientation(STRA)					$\mathbf{X_s}$	$\mathbf{X_c}$	
3. Structural Complexity (STRU)		$\mathbf{X_s}$	$\mathbf{X_c}$				
4. Strategic IT Management (SITM)						$\mathbf{X_s}$	$\mathbf{X_c}$

[a] X_c: calibration sample (n=11, X_{ENVI}=3.9, X_{STRA}=5.4, X_{STRU}=2.5, X_{SITM}=6.2) = top 10% on PERF

X_s: remaining sample[b] (n=88, X_{ENVI}=3.9, X_{STRA}=5.0, X_{STRU}=2.3, X_{SITM}=5.5)

[b] excluding a hold-out sample (n=11) of the bottom 10% on PERF

Correlation of D_s with Performance: -.28 (p=.004) where $D_s = (\sum_{j=1,4}(X_{cj}$ - score on $var_j)^2)^{1/2}$

Figure 10: Schematization of fit as profile deviation

5.6 Systems Approach: Fit as Gestalts

When fit is determined by the degree of internal coherence among a set of theoretical attributes, one is not looking at linear associations among these but is trying instead to find clusters of attributes or "gestalts" ?44?. In this perspective, as opposed to profile deviation, there is no referent pattern anchored to a criterion such as performance; different internally consistent patterns or configurations may thus be equally effective. Configurations were determined by submitting the sample to a hierarchical cluster analysis (Ward's method, Euclidean distance), using the technology, strategy, structure and environment attributes as clustering variables. As shown in Table 5.1, a 4-cluster solution was retained, based on cluster homogeneity and ease of interpretation ?67?.

Table 5 : Results of analyzing fit as gestalts

Table 5.1 : Evaluation of 2-, 3-, 4-, and 5-cluster solutions

step no.	no. of clusters (N)	frequency of new cluster	RS[b] (heterogeneity of clusters)	RMSSTD[c] (homogeneity of new cluster)
109	1	110	0.00	0.951
108	2	57	0.20	0.930
107	3	45	0.32	0.883
106	4	53	0.43	0.852
105	5	12	0.51	0.857

Table 5.2 : Four groups of firms obtained from cluster analysis

Clustering Variable	Environment Uncertainty		Strategic Orientation		Structural Complexity		Strategic IT Management	
Cluster	center	([a])	Center	([a])	center	([a])	center	([a])
1 (n=24)	3.3_c	Low	5.4_a	High	2.1_b	Mid.	6.1_a	High
2 (n=12)	5.0_a	High	5.1_b	Mid.	4.2_a	High	5.6_b	Mid.
3 (n=53)	4.5_b	High	5.1_b	Mid.	2.0_b	Mid.	5.3_b	Mid.
4 (n=21)	2.7_d	Low	4.4_c	Low	2.1_b	Mid.	4.9_c	Low
F (anova)	65.1***		12.1***		34.4***		11.1***	

Note. Within columns, different subscripts indicate significant (at p<.05) pairwise differences on Duncan's multiple range test.

Table 5.3 : Breakdown of Performance by cluster

Criterion Variable	Performance						
Cluster	mean	([a])	s.d.	1[d]	2	3	4
1 (n=24)	5.26	High	1.18	-			
2 (n=12)	4.95	Mid.	1.10	n.s	-		
3 (n=53)	4.45	Mid.	1.02	**	n.s.	-	
4 (n=21)	4.41	Mid.	0.84	**	n.s.	n.s.	-
F (anova)	4.1**						

n.s. : non significant * : p<0.05 ** : p<0.01 *** : p<0.001

[a]High/Mid./Low : mean in upper/middle/lower third percentile (33%) of the total sample

[b]R-squared = $[? _{i=1,N} ? _{j=1,4} SS_b] / [? _{i=1,N} ? _{j=1,4} SS_b] + [? _{i=1,N} ? _{j=1,4} SS_w]$?67, p.198?

where SS_b = between groups sum-of-squares, SS_w = within groups sum-of-squares

[c]Root-mean-square standard deviation = $[? _{j=1,4} SS / ? _{j=1,4} df]^{1/2}$?67, p.197?

where SS = sum-of-squares within new cluster, df= degrees of freedom

[d]T-test to compare means (contrasts)

Table 5.2 presents the four configurations or clusters of firms, in terms of the cluster centers on each dimension. When compared to the total sample, the first configuration (n=24) is characterized by a higher degree of strategic IT management and strategic orientation, an average level of structural complexity, and a low level of environmental uncertainty. The second configuration (n=12) differs from the first on all four dimensions in that it shows a high degree of uncertainty and complexity, and an average degree of strategic orientation and IT management. In the third configuration (n=53), most representative of the sample as a whole, firms are in the middle-range on the technology, strategy, and structure dimensions, combined with a high level of environmental uncertainty. The last configuration (n=21) is the only one to show weakness in both IT management and strategic orientation; it also has an average level of structural complexity and a low level of environmental uncertainty.

The four gestalts thus obtained can subsequently be examined to determine if they are all equally effective. As shown in Table 5.2, one sees that the first configuration is the most effective one. The second configuration exhibits a level of performance that is statistically equal to the first one , even though its environment is much more uncertain. In this case, one can surmise that the firms in the second group deal with increased uncertainty by placing more emphasis on their managerial resources, and less on strategic IT management than the first group. When compared to the first group, firms in the third group perform significantly less, given mid-range levels on the strategic, technological and structural dimensions. These firms operate in an environment that is more uncertain, with the same level of managerial resources, but place less emphasis on IT management, thus possibly explaining their weaker performance. The fourth configuration is similar to the third one in terms of effectiveness. In this last case, the firms lack of orientation in terms of strategy and IT management would be precluded by a more stable, less threatening environment, from having a more negative impact on their performance.

5.7 Aggregate Findings

The aggregate findings of this study are presented in Table 6. The first observation is that the environment-technology fit, whatever the bivariate approach taken, does not appear to predict or explain performance. Second, the mediation and covariation approaches seem to confirm the performance implications of the strategy-technology pair only, whereas the moderation and matching approaches do the same for the structure-technology pair. The third observation is that both the profile

deviation and gestalts perspectives confirm the existence of specific configurations of strategic IT management, strategic orientation, structural complexity, and environmental uncertainty that are more effective than others. Overall, the pattern that emerges most visibly, as expected from the main body of research on IS alignment, is that high-performing organizations combine a highly strategic orientation with a highly strategic IT management.

Table 6: Aggregate findings linking IT fit to Performance

fit approach Variable	*Moderation*	*mediation*	*matching*	*covariation*	*profile deviation*	*gestalts*
Strategic IT Management	-	-	-	Yes	Yes	Yes
with Environ. Uncertainty	No	No	No	No	No	Yes
with Strategic Orientation	No	Yes	No	Yes	Yes	Yes
with Structural Complexity	Yes	No	Yes	No	Yes	Yes

One could initially discuss these findings from a theoretical/substantive point of view. For instance, one could attempt to explain the first observation on the performance implications of the environment-technology fit, or lack thereof, by relating it to the small business context. One could surmise that the more intuitive, judgmental and experiential (rather than analytical) management/decision style of small firm owner-managers ?47? does not lead them to increase their firm's information processing capability in response to increased turbulence in their environment (e.g., globalization), but to respond more in structural terms (e.g., hiring managers and delegating specialized tasks to them). However, given the aim of this study, such a discussion is moot, as inconclusive, mitigated, and somewhat contradictory empirical results confirm and exemplify the need to discuss the study's findings from a definitional/methodological point of view on fit.

From this point of view, the first implication to be drawn is that the study's results confirm that each approach to fit is theoretically and empirically different, thus the need for a clear theoretical justification of the specific approach adopted by the researcher. Given a research domain in which a

sufficiently powerful unifying theory has yet to emerge, multiple conceptualizations of fit, each with their specific functional form, can be considered as competing theories or models ?74?. For instance, Raymond et al. ?60,61? proposed a conceptualization of fit between IT sophistication and structural sophistication based on a matching perspective. Similarly, Henderson and Venkatraman ?32? developed a strategic alignment model based on the covariation perspective. Hence, the results obtained in this study confirm that research on testing competing theories is relevant.

The second implication to be drawn from the preceding observations is that they empirically support the critique of pairwise approaches to fit made by Van de Ven and Drazin ?73? among others. While such approaches have been by far the most widely used in contingency studies on the performance effects of information technology, they are based on the implicit premise that fit as a whole is reducible to a linear combination of its parts, specifically that Performance = f(IT fit) = $?_0$+$?_1$(Environment-IT fit)+$?_2$(Strategy-IT fit)+$?_3$(Structure-IT fit). Here, the aggregate findings clearly show that there is no total coherence among the environment-technology, strategy-technology, and structure-technology pairs, whatever the bivariate perspective used. This confounds our ability to identify performance variations as a result of aligning a firm's IT management with a single other factor, say its strategy, and to generalize these variations. Note that the reductionism problem is compounded when the pairwise analysis is made at the disaggregate level, combining for instance the six dimensions of strategic orientation with the four dimensions of strategic IT management to produce 24 possible fits, i.e. (strategy-IT fit) = $?_0$+$?_1$(strategy$_1$-IT$_1$)+…+$?_{24}$(strategy$_6$-IT$_4$).

A final implication regards the future integration of contingency theory into strategic IT management impacts research, and of the systems approach to fit in particular. Following Iivari's (1992) conclusions, this study has increased the prospects of contingency theory by 1) assessing the fit of strategic IT management in terms of enterprise-level performance, instead of aggregating individual or group-level measures of user-system fit such as user information satisfaction, 2) defining the relevant IT management characteristics in terms of the critical issues that must be dealt with at the strategic level, if fit is to be achieved, and 3) being one of the first empirical investigations to place emphasis on the systems approach to fit, empirically testing its validity by integrating multiple, possibly conflicting contingencies, namely environmental, strategic and structural contingencies. However, future research must further demonstrate the potential of strategic IT management contingency theory in two essential

ways. One is by using organizational assessment typologies that incorporate multiple performance criteria rather than a single objective or subjective criterion. The other is by adopting a dynamic rather than a static perspective, with longitudinal rather than cross-sectional operationalizations of fit.

6. CONCLUSION

This study is the first to encompass the concept of "fit" in empirical strategic IT management research in such a comprehensive, systematic manner. While the relatively low response rate puts some limits on the generalizability of the study, results reinforce Venkatraman's contention that different conceptualizations, verbalizations, and methods of analysis of fit will lead to different results.

Relative to the theory, the results suggest that neglecting to specify the exact perspective of fit used in earlier studies may have often lead researchers to obtain contradictory, mixed, or inconsistent results. These various perspective are so singular in their nature, consequences, and explanatory power that they cannot be selected indifferently neither can they simply be labeled as competing theories. The results of this study on the conceptualization and analysis of fit lead us to recommend that future research clearly specify the type of fit examined, i.e., moderation, mediation, matching, covariation, profile deviation, or gestalts. Authors should also theoretically support their choice before conducting their study and discuss the results with respect to the theory and the selected perspective of fit. The results also suggest that a systems perspective of fit is richer and will provide fuller explanation that bivariate approaches. As to the choice of a particular systems approach, the profile deviation and covariation perspectives of fit appear to be better suited to theory testing while the gestalts perspective would be more appropriate to theory building.

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Appendix 1: Measure of Strategic IT Management

In comparing your organization with the competition, indicate whether these aspects of your information systems constitute a ***strong or weak point*** of your organization. Refer to this scale to answer:

very weak	moderately weak	slightly weak	neither strong nor weak	slightly strong	moderately strong	very strong	Not Applicable
1	**2**	**3**	**4**	**5**	**6**	**7**	N/A

You must circle "N/A" (non-applicable) for every question that is not applicable to your situation

IT Environment Scanning.

1.	Using an external information network in order to identify your requirements in Information Technology.	1	2	3	4	5	6	7	N/A
2.	Knowing the Information Technology used by your competition.	1	2	3	4	5	6	7	N/A
3.	Instituting a technology watch in order to change rapidly your Information Technology when necessary.	1	2	3	4	5	6	7	N/A
4.	Ensuring that your choice of Information Technology follows the evolution of your environment.	1	2	3	4	5	6	7	N/A
5.	Using the Information Technologies that will permit a rapid reaction to environmental pressure.	1	2	3	4	5	6	7	N/A

IT Planning and Control.

1.	Mastering current Information Technology products.	1	2	3	4	5	6	7	N/A
2.	Maintaining control over projects involved with the acquisition of new technology.	1	2	3	4	5	6	7	N/A
3.	Being considered as a leader in Information Technology usage.	1	2	3	4	5	6	7	N/A
4.	Development of a technological culture in your firm.	1	2	3	4	5	6	7	N/A
5.	Having, within the organization, the required human and organizational resources to manage the information systems.	1	2	3	4	5	6	7	N/A
6.	Having the ability to effectively identify and fill your needs in Information Technology.	1	2	3	4	5	6	7	N/A
7.	Strategic planning of information systems in relation to the organization's business objectives.	1	2	3	4	5	6	7	N/A
8.	Mastering the technology presently in use in your organization.	1	2	3	4	5	6	7	N/A
9.	Using a distributed system to share information within the firm.	1	2	3	4	5	6	7	N/A

In comparing your organization with the competition, indicate whether these aspects of your information systems constitute a ***strong or weak point*** of your organization. Refer to this scale to answer :

Very Weak	Moderately weak	slightly weak	neither strong nor weak	slightly strong	moderately strong	very strong	Not Applicable
1	**2**	**3**	**4**	**5**	**6**	**7**	N/A

You must circle "N/A" (non-applicable) for every question that is not applicable to your situation.

IT Acquisition and Implementation.

1.	Structured approach to acquire the needed information technology	1	2	3	4	5	6	7	N/A
2.	Use of specific selection criteria for the acquisition of new information technology.	1	2	3	4	5	6	7	N/A
3.	Using financial tools in planning the acquisition of new information technology.	1	2	3	4	5	6	7	N/A
4.	Choosing Information Technology related to the strategic orientation of your firm.	1	2	3	4	5	6	7	N/A
5.	Knowing the impact that IT will have on the different functions of your firm.	1	2	3	4	5	6	7	N/A
6.	Evaluating potential problems related with the implementation of a new system.	1	2	3	4	5	6	7	N/A
7.	Knowing the results of a financial feasibility study before the acquisition of IT.	1	2	3	4	5	6	7	N/A
8.	Identification of possible sources of resistance to change before implementation..	1	2	3	4	5	6	7	N/A
9.	Evaluating the employee's aptitude to use the chosen IT.	1	2	3	4	5	6	7	N/A

Strategic Use of IT.

1.	Use of IT to reduce your production costs.	1	2	3	4	5	6	7	N/A
2.	Use of IT to make substantial savings.	1	2	3	4	5	6	7	N/A
3.	Use of IT to improve your firm's productivity.	1	2	3	4	5	6	7	N/A
4.	Use of IT to increase your firm's profitability	1	2	3	4	5	6	7	N/A
5.	Use of IT to improve the quality of products or services.	1	2	3	4	5	6	7	N/A
6.	Use of IT to respect the deadlines requested by your customers.	1	2	3	4	5	6	7	N/A

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