



Strategic Planning, Autonomous Actions and Corporate Performance

Torben Juul Andersen

There has been a tendency to de-emphasize the role of strategic planning in recent years and instead focus on management autonomy and organizational learning. Yet most firms continue to plan for the future. This reveals a need to review the effects of strategic planning in conjunction with managers' autonomous actions. Past research on the performance effects of strategic planning has been inconclusive, and evidence of the strategic importance of adaptive actions taken by lower level managers remains somewhat anecdotal. What is more, contemporary scholars hold opposing views. Some argue that autonomous actions are imperative to strategic adaptation, while planning inhibits change. Conversely, others argue that centralized planning is needed to co-ordinate responsive actions and spur adaptive strategic thinking. To clarify this apparent dilemma, this article presents a recent research programme investigating the dual performance effects of strategic planning and autonomous actions in the strategy formation process. The results indicate that strategic planning has positive performance effects across industries, and exists in tandem with autonomous actions, where managers make responsive decisions that enhance performance under changing environmental conditions. © 2000 Elsevier Science Ltd. All rights reserved.

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Introduction

Several management scholars see organizational learning as the key to adaptive strategic change and support a trend that de-emphasizes the importance of strategic planning.¹ The view is appealing, but it begs for hard supportive evidence. For example, Ikea, the Swedish retailer of home furnishings, is known for empowered managers that are able to respond to changing market conditions. However, it is unlikely that the company would achieve its impressive global operational effi-

ciencies without a central master plan. In another industry, Microsoft, a leading international software company, is composed of free-spirited and creative managers, but again it is hard to conceive of the company's new product developments without a common strategy to guide these initiatives. In the financial services industry, United Services Automobile Association (USAA) is a successful organization with managers authorized to make policy decisions. None the less, the insurance group needed a centralized strategy and planning process to build its unique processing infrastructure and extend its services portfolio. These and numerous other examples make it appropriate to ask whether organizational learning, where individuals experiment and exchange information, is an isolated process, or is in fact complementary to strategic planning. Is learning from managers' autonomous actions associated with higher adaptability and performance? Does centralized strategic planning guide and co-ordinate autonomous actions to further economic performance? In other words, are strategic planning and learning really incommensurate processes? These issues constitute the main themes of this article.

A rational planning perspective is central to the conventional strategic management paradigm, where strategic decision-making is perceived as a sequential analytical process.² This perspective is ingrained in the frameworks of modern strategy textbooks, although prior empirical studies provide somewhat equivocal evidence on the performance effects of planning and this has led to the declared demise of strategic planning.³ However, newer research indicates that under certain conditions strategic planning is conducive to higher performance. This article comments on studies that have gauged the performance effects of strategic planning, and refers to strategic planning processes that have shown a positive association with organizational performance. The article outlines an integrative perspective of strategic planning and autonomous actions, where managers can make independent decisions. Autonomous actions enable the firm to react faster to changing conditions and learn from new experiences. This perspective is used to investigate the performance effects of strategic planning and autonomous actions simultaneously in different industrial environments. The study reveals that strategic planning is associated with superior organizational performance in all the industrial settings investigated, and exists in tandem with autonomous actions to enhance firm performance in dynamic industries.

Strategic planning

The strategic planning approach conceives strategic decision-making processes as logically sequenced activities that allow management to analytically determine an appropriate strategic path for the whole organization. Strategy has been defined as the determination of long-term goals and objectives by the cor-

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porate leadership, and conceived as a pattern of policies and plans developed by top management to achieve predetermined goals.^{4,5} The strategic planning process has been depicted as the development of decision-making rules that guide future organizational actions.⁶ Centralized strategic planning systems are developed to integrate functional activities and co-ordinate long-term organizational actions that arguably should facilitate corporate adaptation.^{7,8} Many of these aspects are incorporated in the conventional strategic management paradigm, which emphasizes a need for a systematic approach to strategy development. The strategic management paradigm builds on a number of sequential steps in the strategy development process, such as goal formulation, environmental analyses, strategy formulation, implementation and control.

The strategic planning approach has been reflected in large parts of the strategy literature as a rather centralized process. The CEO is portrayed as the key strategy maker who conceives the strategic plan, and imposes its implementation on the rest of the organization. In this framework, top management sets long-term goals and medium-term objectives, rational analyses of the firm's competitive position guide the formulation of appropriate strategies in view of goals and objectives, and strategic choices are enacted through the organization's operational policies. Hence, the corporate strategy process is typically described as a hierarchical process where top management outlines an overall strategic plan based on corporate goals, before general managers develop their goals and strategic business plans, and middle managers set functional goals and strategies. Subsequently strategic control systems assess how the organization proceeds towards established strategic goals and objectives.⁹⁻¹³

A stream of studies has attempted to test the performance effects of different aspects of the strategic planning process (a chronology of representative studies is provided in Table 1). Much of the empirical research has focused on manufacturing companies and banks. Some studies have shown that strategic planners outperform non-planners, while other analyses revealed no association between strategic planning and higher performance.¹⁴⁻¹⁶ Yet other empirical studies found that process comprehensiveness, a proxy for strategic planning, was associated with high performance in relatively stable industries, and low performance in dynamic industries.¹⁷⁻²⁰ These results contradict proponents of strategic planning, who argue that planning enhances strategic adaptability in dynamic environments. The findings also contrast observations that high performers in the dynamic computer industry use extensive analyses in their strategic decision-making processes.^{21,22} In other words, no conclusive evidence has emerged to unequivocally demonstrate performance effects from strategic planning. A simple reason is that the strategic planning measures have lacked precision and consistency. For example, comprehensiveness and formality are not synonymous with strategic planning,

Table 1. Representative studies of strategic planning and autonomous actions: a chronology

Author	Focus	Method	Conclusions
Chandler (1962)	Corporate strategy	Case study	Strategy formulation leads to corporate structure
Bower (1970)	Investment decisions	Case study	Managers' resource-committing capital budgeting decisions influence strategy
Mintzberg (1973)	Strategy modes	Literature study	Planning applies to stable environments and emergent strategy to dynamic industries
Wood and LaForge (1976)	Strategic planning	Questionnaire	Strategic planning has a positive performance effect
Sapp and Seiler (1981)	Strategic planning	Questionnaire	Strategic planning has a positive performance effect
Fredrickson (1984)	Comprehensiveness	Scenario analysis	Comprehensiveness has positive performance relationship in stable industries
Fredrickson and Mitchell (1984)	Comprehensiveness	Scenario analysis	Comprehensiveness has negative performance relationship in dynamic industries
Whitehead and Gupp (1985)	Strategic planning	Questionnaire	Strategic planning has no performance effect
Rhyne (1986)	Planning openness	Questionnaire	Planning openness has positive association with performance
Fredrickson and Acquinto (1989)	Comprehensiveness	Scenario analysis	Comprehensiveness has positive performance relationship in stable industries and negative in dynamic industries
Eisenhardt (1989)	Fast strategic decisions	Case studies	High performers in the dynamic computer industry make extensive decision analyses
Jelinek and Schoonhoven (1990)	Corporate innovation	Case studies	Development commitments influence strategy in the dynamic computer industry
Kukalis (1991)	Planning flexibility	Questionnaire	Planning flexibility has a positive performance association
Powell (1992)	Comprehensiveness	Questionnaire	Comprehensiveness has a positive performance relationship in stable industries and negative in dynamic industries
Miller and Cardinal (1994)	Strategic planning	Meta-study	Strategic planning has a positive relationship to performance, particularly in dynamic industries
Hopkins and Hopkins (1998)	Planning intensity	Questionnaire	Planning intensity has a positive relationship to performance in the banking industry

and may say little about the effectiveness of the planning processes.²³

Whereas past research on strategic planning has been inconsistent in defining planning, a closer look at newer studies reveals that strategic planning, measured on the basis of the conventional strategic management paradigm, seems to show a positive association with performance. The strategic management paradigm entails the existence of strategic objectives, long-term plans, competitive analysis, strategic control and so on. The studies found a positive association between planning and performance, particularly in dynamic and complex environmental settings, while planning formalization, for instance

written plans, the use of manuals and the like, showed no performance relationship.^{24–27} These results imply that centralized strategic planning drives performance effects rather than the formalization and comprehensiveness of the planning process. Consequently, a strategic planning process that adheres to the key elements of the conventional strategic management paradigm, for example through the development of mission statements, long-term goals, action plans and controls seems to support organizational performance.

Autonomous actions and learning

While proponents of strategic planning claim that planning is required to guide new initiatives and co-ordinate adaptive strategic actions, it has been argued that reliance on centralized strategic planning processes is insufficient. A significant number of investment decisions emerge and get approved by lower level managers. These resource commitments subsequently influence the corporation's strategic development. It has also been suggested that the strategy process evolves around ongoing learning from the resource-committing actions taken by managers in different parts of the firm. In this paradigm, strategy is formed over time as shared cognition develops among the managers who enact the firm's strategic moves. Strategy development has been described as a social learning process, where relatively autonomous actions are nurtured and promoted by middle managers until they eventually become a part of or actually shape the organization's official strategy. When managers make investment decisions, product developers select projects and sales managers approach new markets, resources are committed in ways that influence the strategic development of the firm. The internal resource deployment builds capabilities, partially unintended, that subsequently will determine which strategic options are available to the organization. In this way, it is claimed, important strategies can emerge even without the awareness of top management.^{28–33}

Managers' abilities to make independent decisions should allow the organization to be more responsive to changing market conditions, which is particularly beneficial to firms operating in dynamic and complex industries. Furthermore, learning from managers' autonomous actions might support the strategic planning process, because new experiences and insights can inspire proactive business initiatives. It might be possible for the organization to learn about new strategic opportunities through the decentralized strategic actions taken by autonomous managers. Hence, managers' autonomous actions can provide the firm with a better understanding of changing conditions and help identify new ways to adapt the firm's business activities.

A potential downside to autonomous actions is that they might divert organizational efforts, and lead to conflicting and counterproductive functional actions. However, centralized

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strategic planning processes are supposed to integrate organizational activities and co-ordinate new actions between the firm's different functional areas. Therefore, strategic planning and autonomous actions do not necessarily represent either-or propositions, but might be congruent strategy processes. In that case, strategic planning processes and autonomous actions are complementary elements of strategy formation that facilitate learning and adaptation across the organization.

An integrative strategic planning perspective

The above discussion of planning research concludes that centralized strategic planning and managers' autonomous actions are not mutually exclusive, and might even be complementary elements of the strategy formation process. This is captured in a strategic planning model (see Figure 1) indicating that strategic planning and autonomous actions both influence organizational performance and might interact in ways that enhance performance. It is suggested that the performance relationships depend on the industrial environment in which the firm operates, where the environment is characterized by how dynamic and complex the industry is. According to proponents of planning, strategic planning should be associated with higher performance in dynamic and complex industries, which contradicts the predictions of a conventional environmental contingency view, while autonomous actions clearly should lead to higher performance in industries with high levels of dynamism and complexity.³⁴⁻³⁶

In this model, strategic planning depicts the organization's adherence to the rational process elements of the conventional strategic management paradigm. The strategic planning construct is measured by recently developed and tested item scales indicating the organization's emphasis on mission statements, long-term goals, strategic action plans, and ongoing control.³⁷ Autonomous actions reflect the extent to which managers below the top management team are authorized to make decisions that have strategic implications. The construct of autonomous actions is captured by decision authority scales of conventional centralization measures adapted to consider decisions affecting the firm's strategic development, such as new market activities, product and service developments, changes in practices and policies and the like.³⁸⁻⁴¹

Organizational performance is expressed as economic performance, the sum of two economic indicators, and organizational innovation. The economic indicators, return on assets and sales growth, are combined to obtain an integrated measure of both efficiency and market position effects. The economic performance indicators are assessed by comparison to the firm's close competitors. Organizational innovation denotes the extent to which the organization is a first user of new useful ideas, devices, systems, policies, programmes, processes, products and services.^{42,43}

Adaptive strategic thinking is expected to have a particularly pervasive effect in dynamic industries

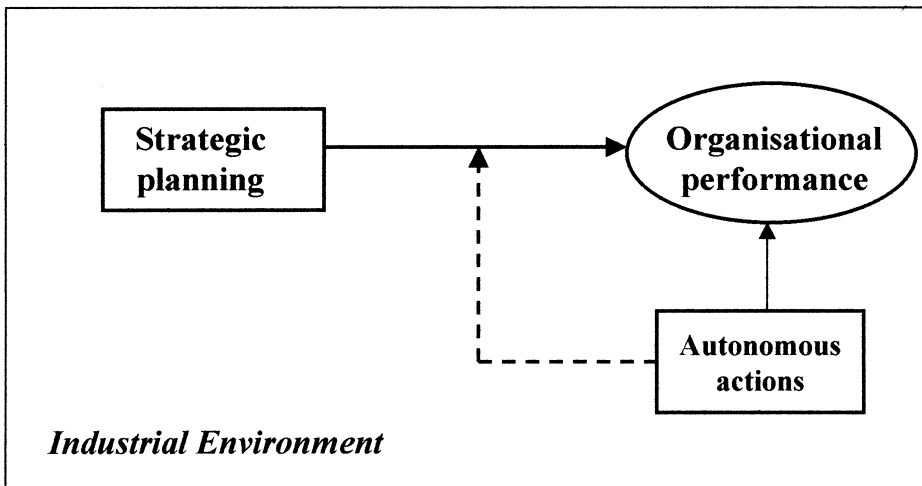


Figure 1. A model of strategic planning

The industrial environment is characterized by dynamism and complexity indices, where dynamism denotes the variance in the industry's net sales and operating income, and complexity reflects the diversity of inputs and outputs in the particular industry^{44,45} (The Appendix provides detailed descriptions of the environmental indices.)

The model implies that strategic planning has a positive influence on organizational performance. This performance effect is expected to come about because planning facilitates adaptive strategic thinking among managers and enhances the co-ordination of longer term functional actions. Adaptive strategic thinking is expected to have a particularly pervasive effect in dynamic industries, and the integrative effects of planning might be particularly useful in complex environments. Hence, the performance effect of strategic planning is expected to depend on how dynamic and complex the industrial setting is: the performance relationships should be more pronounced in highly dynamic and complex industries.

The existence of autonomous actions imply that managers below the top management level can make decisions with strategic implications without prior approval from top management. The autonomous actions of managers provide fast adaptive responses and facilitate strategic experimentation that can allow the organization to update its knowledge about changing environmental conditions and devise adaptive responses. Such insights might be incorporated into the strategic planning process, and fuel appropriate adjustments to the strategic plans. As a consequence, autonomous actions might enforce the positive performance effects of strategic planning.

An empirical study

The strategic planning model was subjected to an empirical investigation. Strategic planning, autonomous actions, and organ-

izational performance were measured as aggregations of items derived from responses to a questionnaire. Each item was assessed by responses to five-point Likert scales added together to form the respective measures. The assessments referred to prevailing conditions over recent years to reduce spurious effects. Strategic processes typically build on and extend past organizational behaviours and therefore will have existed several years prior to the period covered by the measures. For example, the organizations included in this study had on average adhered to a strategic planning approach for five to six years, while entities with high emphasis on planning had used it even longer. Consequently, there is a strong argument that the strategy constructs measured in the study influence organizational performance. However, the statistical analyses can only reveal the significance of model relationships, and do not unambiguously determine the causal structure of the strategic planning model.

Interviews with sales executives in six firms in the food and household products, computer products and banking industries supported the development of the questionnaire. The questionnaire was pre-tested by 20 managers reporting to the sales executives in the firms. The pre-test led to some fine-tuning of the questionnaire, but generally showed acceptable correspondence between responses from sales executives and subordinate sales managers. Sales executives in a larger sample of single business firms and corporate divisions in the food and household products, computer products and banking industries were asked to respond to the questionnaire. The bank responses focused on retail banking and used business area, regional and branch executives as the prime respondents. (The sales executive was first identified from the Compustat database as the corporation's member of the top management team responsible for the sales function.) Then the information was confirmed, adjusted and completed through telephone calls to all the entities. Managers in market-oriented functions, such as sales, marketing and field services were used as respondents, because they are generally more engaged in the strategy formation process.⁴⁶

Sample selection and data collection

To investigate the model relationships in different industrial settings and make comparisons to previous research results, the study identified three distinct industry groups (see the Appendix). The food and household products group comprised manufacturing industries that are relatively low on dynamism and complexity. The computer products group represented manufacturing industries with a high level of dynamism and complexity. Banking represented a distinct services industry characterized by levels of dynamism and complexity somewhere between the food and household and the computer products industries. Analyses of dynamism and complexity indices in different four-digit SIC industries extracted from Compustat supported the selection of industry groups. Annual reports

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from approximately 84% of all the firms included in the Compustat database in the selected industries were subjected to thorough analysis to ensure that single business firms and divisions were appropriately identified. A total of 456 business entities were identified of which 188 were in the food and household products industry, 172 in the computer products industry and 96 in retail banking. The questionnaires were mailed to the executives in late 1997. The mailing was supplemented by soliciting phone calls and another mailing sent to non-respondents after two months.

Results

A total of 230 questionnaires were returned from executives in the 456 business entities corresponding to an overall response rate of 50.4%. The respondents were distributed with 97 executives from the food and household group, 96 executives from the computer products group and 45 from banking entities, corresponding to group response rates of 51.5, 55.8 and 46.9%, respectively. The sample was tested for non-response biases and differences between early and late respondents. The sample was also tested for reliability through comparison with external data on net sales, sales growth and corporate profitability. The self-reported and archival data were highly correlated and statistically significant. Sales managers reporting to the sales executive were selected randomly from the early respondents. These sales managers provided secondary responses in approximately 15% of the total sample. Comparison between the primary and secondary respondents in this sub-sample showed an effective *inter rater* reliability of 0.70, which was considered satisfactory.^{47,48} The validity of the model constructs was assessed by exposing the item responses from the questionnaire to factor analysis. The analysis clearly supported distinct constructs of strategic planning and autonomous actions with Chronbach's alphas of 0.84 and 0.70.

The mean values and correlation analysis of the measures are presented in Table 2. Both strategic planning and autonomous actions are significantly and positively correlated with economic performance and organizational innovation, which is consistent with the proposed strategic planning model.

Analyses

The performance effects of the strategy constructs, strategic planning and autonomous actions, were assessed by applying multiple regression analyses to determine the relationships between the strategy constructs and the two organizational performance measures. The performance measures were included as dependent variables in two regressions, both of which had strategic planning, autonomous actions and the interaction terms between strategic planning, industry dummies and autonomous actions as independent variables. A number of control variables that might confound the effects of the strategy

Table 2. Descriptive statistics and correlation analysis (n = 230)

	Mean	S.D.	Range	1	2	3
1. Strategic planning	18.0	4.72	5–25	–	–	–
• Food and household products industries (n = 97)	17.8	5.13				
• Computer products industries (n = 88)	17.2	4.38				
• Banking industry (n = 45)	20.0	3.88				
2. Autonomous actions	13.0	4.42	5–25	0.054		
3. Economic performance	7.7	2.15	2–10	0.355 ⁱ	0.144 ⁱⁱ	
4. Organizational innovation	10.9	1.82	3–15	0.275 ⁱ	0.230 ⁱ	0.307 ⁱ

ⁱp < 0.01.ⁱⁱp < 0.05.

constructs were considered in the analysis. These variables included organizational size, fixed asset commitments and the organization's geographic dispersion. However, none of the variables materially affected the regression coefficients and were not included in the regression results reported here.⁴⁹ Finally, the regressions were tested for multi-collinearity, outliers, heteroscedasticity and normality.

The analyses of firms across industry groups show that strategic planning has significant positive relationships to economic performance (Table 3) and organizational innovation (Table 4). The interaction terms between strategic planning and the industry dummies do not reveal significant differences between the performance effects of strategic planning in the three industrial settings. Therefore, strategic planning appears to be equally important in all industrial settings.

The inclusion of autonomous actions in the multiple regression analyses shows that both strategic planning and autonomous actions have significant effects on both organizational performance measures. However, the interaction terms between strategic planning and autonomous actions do not have significant regression coefficients on economic performance and organizational innovation (see Tables 3 and 4). Therefore,

Table 3. Multiple regression analyses on economic performance (n = 230) [standardized regression coefficients]

Independent Variables				
Strategic planning	0.347 ⁱ	0.360 ⁱ	0.348 ⁱ	0.362 ⁱ
Autonomous actions	–	–	0.122 ⁱⁱ	0.129 ⁱⁱ
Interaction Terms				
Planning—banking industry	0.031	–	–	–
Planning—computer industry	–	–0.077	–	–
Planning—autonomy	–	–	–	0.053

ⁱp < 0.01.ⁱⁱp < 0.05.

Table 4. Multiple regression analyses on organizational innovation (n = 230) [standardized regression coefficients]

Independent Variables				
Strategic planning	0.282 ⁱ	0.278 ⁱ	0.265 ⁱ	0.270 ⁱ
Autonomous actions	–	–	0.214 ⁱ	0.169 ⁱ
Interaction Terms				
Planning—banking industry	–0.012	–	–	–
Planning—computer industry	–	0.005	–	–
Planning—autonomy	–	–	–	0.011

ⁱp < 0.01.

strategic planning processes and autonomous actions seem to exert performance effects largely independently of each other. In other words, autonomous actions do not seem to enforce the positive performance effect of strategic planning, and vice versa. This might be taken to show that one of the prime effects of strategic planning is the ability to facilitate strategic thinking across the organization and thereby encourage and support managers to take appropriate and timely strategic actions. Conversely, the results might indicate that the strategic planning process is less effective as an ongoing co-ordinating mechanism of emergent autonomous actions, and that it is difficult to instantly adjust strategic plans in accordance with new events observed by decentralized managers. This interpretation depicts two coexisting strategy processes, with limited direct interaction between strategic planning activities and managers' autonomous actions. None the less, the two strategy approaches clearly go well together, since organizations that adhere to both approaches simultaneously can achieve significantly higher performance than organizations that only embrace one of the two.

It could be argued that the strategy constructs might have different effects on the two economic performance indicators, return on assets and sales growth, as they describe different aspects of economic performance. Return on assets should reflect economic efficiencies, whereas sales growth should indicate effects from market positioning. To assess potential differences in performance relationships, the regressions were repeated with each of the economic performance indicators as the dependent variable. However, these regressions did not show any material divergence from the reported findings.

The model constructs are measured by categorical data and their relationships are captured in a linear regression model that assumes continuous variables. The organizational performance measures, as well as the measures of the strategy constructs, are derived from items ranked on ordered Likert scales with five classifications (1–5). Economic performance is measured by adding two item scales, return on assets and sales growth, and therefore has nine possible outcomes ranging between 2 and 10. Organizational innovation is measured by

Table 5. Multiple regression on economic performance by industry group [standardized regression coefficients]

	Food Products	Computer Products	Banking
<i>n</i>	97	88	45
Independent Variables			
Strategic planning	0.297 ⁱ	0.303 ⁱ	0.371 ⁱ
Autonomous actions	-0.032	0.298 ⁱⁱ	0.212
Interaction Terms			
Planning—autonomy	0.091	-0.017	-0.083

ⁱ*p* < 0.05.

ⁱⁱ*p* < 0.01.

adding three item scales, and thus ranges between 3 and 15. The strategic planning and autonomous action measures are based on five item scales and range between 5 and 25 (see Table 2). Although the aggregate scale measures are reasonably wide, the use of categorical data might distort the analytical results. To assess whether the ordinal scaling has affected the reported results, the data were exposed to cumulative ordered logit analyses, where the explanatory variables were regressed on the logits of the cumulative probability of higher performance.^{50,51} This analysis indicates that strategic planning and autonomous actions significantly increase the odds of achieving higher economic performance at the 1% confidence level, which is consistent with the linear regression results.

Finally, the regression analyses were repeated in each of the three industry sub-samples to see whether the performance patterns differ between industrial settings. The analyses reveal that strategic planning is important in all three industry groups, food and household products, computer products and banking. On the other hand, autonomous actions do not show significant performance effects in the food and household products and banking industries. Although the regression coefficient between autonomous actions and economic performance in the banking industry is nominally high and positive, it is not statistically significant in this analysis, which could be a function of the relatively small sample size. By comparison, autonomous actions appear to be as important as strategic planning to economic performance and organizational innovation in the dynamic and complex computer products industries (Tables 5 and 6).

The analytical results of this study indicate that strategic planning has a significant positive effect on organizational performance across different industries and that autonomous actions lead to higher performance in the dynamic computer products industry. The results appear quite robust in the present sample, and although they could reflect inverse causality, that does not seem to be a major concern in this study since the strategy processes most likely precede the performance

Table 6. Multiple regression on organizational innovation by industry group [standardized regression coefficients]

	Food Products	Computer Products	Banking
<i>n</i>	97	88	45
Independent Variables			
Strategic planning	0.202 ⁱ	0.300 ⁱ	0.251 ⁱ
Autonomous actions	0.117	0.304 ⁱⁱ	0.041
Interaction terms			
Planning—autonomy	0.082	−0.052	−0.068

ⁱ $p < 0.05$.

ⁱⁱ $p < 0.01$.

measures. The analyses traced some differences in the effects of the strategy approaches across the industry groups, which might call for further scrutiny. Similarly, studying other industries not included in the present analysis might reveal other interesting nuances. In other words, there is room for confirmatory research to test the generalizability of the results and extend our understanding of the complex strategy process. The coexistence of centralized strategic planning processes and autonomous actions among managers raises a number of normative management issues. How do we effectively combine planning and autonomy in strategy development? Is it possible to achieve beneficial interactions between the two strategy approaches even if the results of this study fail to confirm their existence? More research in this area could enhance our understanding of effective strategy processes in today's increasingly dynamic and complex industrial environments.

Implications

This empirical study provides evidence that strategic planning (that emphasizes elements of the conventional strategic management process) is associated with higher performance in all the industrial environments studied. The performance effect of strategic planning does not vary significantly between the different industry groups. Hence, strategic planning is an important performance driver in all industrial settings, and enhances both economic performance and organizational innovation.

Autonomous actions, where managers are authorized to make decisions without top management approval, do not show significant effects in the food and household products and banking industries in this study, but have positive performance effects in the dynamic and complex computer products industry. This result is consistent with claims that learning from decentralized managerial actions support strategic adaptability and influence the organization's strategic path in dynamic environments. The results also indicate that auton-

omous actions exert little or no influence on the performance effects of strategic planning activities. So the two strategy approaches coexist, but do not significantly enhance each other. Yet firms operating in dynamic and complex industries reach significantly higher performance levels when they adhere to both strategy approaches simultaneously.

Consequently, executives operating in increasingly dynamic and complex industries should not choose between strategic planning and learning through autonomous actions, as appears to be a common belief. Both strategy approaches coexist and can concurrently improve organizational performance. Strategic planning is important and enhances performance in all the industrial settings, while autonomous actions, where managers can make independent decisions, also affect firms operating in dynamic and complex industries. Therefore, strategic planning processes are essential to good performance in all industrial environments and should not be ignored. However, in dynamic and complex industries, performance is even higher when managers simultaneously are authorized to make autonomous decisions and learn from their actions.

Appendix A

Table A.1. Industry groups and environmental indices

	Dynamism ⁱ	Complexity ⁱⁱ
Food and household products industries ⁱⁱⁱ	1.5	8.3
Computer products industries ^{iv}	7.6	24.5
Banking industry ^v	4.4	12.1

ⁱDynamism: $S + O.S$ was calculated as the standard error of the annual net sales regression slope coefficient divided by the mean value of net sales for the 10-year period 1986–1995. O was calculated as the standard error of the annual operating income regression slope coefficient divided by the mean value of operating income for the 10-year period 1986–1995. The 10-year time series were extracted as aggregate industry data. Source: *Compustat*, Dow Jones (1997).

ⁱⁱComplexity: $C^{-1} + D^{-1}$. C was calculated as an index reflecting the extent to which other industries supply inputs to the industry in 1987 [$C_i = (\sum_{vj} I_{ij}^2) / (\sum_{vj} I_{ij})^2$, where C_i is the concentration of input in industry i , and I_{ij} is the dollar value in producers' prices of commodities from industry j used by industry i]. D was calculated as an index reflecting the extent to which the industry supplies products to other industries in 1987 [$D_i = (\sum_{vj} P_{ij}^2) / (\sum_{vj} P_{ij})^2$, where D_i is diversity of output in industry i , and P_{ij} is the dollar value in producers' prices of commodities sold from industry i to industry j]. Source: *Benchmark Input-output Accounts of the US 1987*, US Bureau of Economic Analysis (1994).

ⁱⁱⁱFood and household products industries: meat packing (SIC: 2011–2015), flour and cereals (SIC: 2040–2046), sugar products (SIC: 2060–2063), beverages (SIC: 2082–2089), various food items (SIC: 2090–2099), men's clothing (SIC: 2300–2399), women's clothing (SIC: 2331–2341) and household furniture (SIC: 2511–2514).

^{iv}Computer products industries: electronic computers and storage devices (SIC: 3571–3572), computer terminals and calculators (SIC: 3575–3578), industrial machinery (SIC: 3547–3559) and measuring and analytical instruments (SIC: 3825–3827).

^vBanking industry: national commercial banks (SIC: 6021).

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