

Impact of Strategic Initiatives in Management Accounting on Corporate Financial Performance: Evidence from Amman Stock Exchange

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This article aims at investigating the link between the practice of Activity Based Costing (ABC), Just-in-Time (JIT), and Total Quality Management (TQM) as strategic initiatives and the improvement in corporate financial performance of 56 industrial shareholding companies in Jordan. Ordinary Least Squares Regression analysis is used to test the association between the awareness level of the importance of using the initiatives and the level of adopting these initiatives. It is also used to identify the improvement in ROA as a mean of financial performance which is associated with the initiatives. Analysis shows that 26.8% of the companies under consideration use at least one of the strategic initiatives. In addition, the awareness level of the importance of using the strategic initiatives is found to be significantly high among the financial managers, but such awareness is not reflected in the implementation of these initiatives. Furthermore, strong evidence emerges that the use of strategic initiatives leads to improvement in financial performance of the companies under consideration.

Key Words: ABC, JIT, TQM, strategic initiatives, improvement in financial performance

JEL Classification: E32, E50

Introduction

Productivity and quality are the watchwords in today's business competition. Companies are not only measuring productivity and insisting on improvements but also insisting that quality means bringing to market products that satisfy customers, improve sales, and boost profits. With greater competition in the manufacturing environment defined by cost, quality and time issues, there exists a prevalent conviction that conventional accounting-based measures of organizational performance

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Managing Global Transitions 4 (4): 299–312

are outdated (Nixon 1998). Hence, there are moves to adopt newer techniques due to greater needs to be more responsive to investor and customer needs. It is argued that the traditional approaches of managerial accounting have limited evidence of technical development in response to the major changes in manufacturing technology in the past 15 years. Management accounting was the captive of financial reporting. It had limited value by its focus on the factory floor. Consequently there was a need for developing a management accounting project oriented towards the strategic accounting rather than the management control process. Some of the strategic initiatives techniques are Activity Based Costing System (ABC), Just-in-Time (JIT), and Total Quality Management (TQM). Pricing decisions are usually based on an accurate calculation of the costs of service and units produced. This is in turn calls for creating an effective costing system. The most appropriate system in this regard is an Activity-Based Costing System (ABC). In fact, the Activity-Based Costing System is an alternative system that can replace the conventional systems used for allocating common costs. However, the growing interest and tendency to use this system is attributed to various advantages achieved through the system. Perhaps, most prominent of these advantages involve improving performance measures, providing more accurate and appropriate measures for pricing decision-making, rationalizing production costs, and choosing the optimal production combination. Another production system, Just-In-Time (JIT), adopts a precise system for inventory control along with an efficient information system for full coordination between productivity on the one hand, and suppliers on the other hand. In addition, coordination is also sought for transporting supplies according to proper specifications, quantities and in a timely manner and within the framework of a stable business environment. This system reduces costs of production, preparations, reoperation, transport, disposes of surplus production and waiting time, and continually improves performance especially within the context of the prevailing severe competition. Total Quality Management (TQM), on the other hand, represents a natural expansion of the intensive efforts which are intended to upgrade and improve firm performance through quality control of products. The present study aims at filling the gap in our literature concerning the case of using strategic management initiatives such as ABC, JIT and TQM, and to investigate its impact on the financial performance. Few attempts have been found in terms of developing countries, and that includes Jordan. Under this reality, many

researchers concluded that most of strategic management practices surveys and literature have focused upon developed countries. Therefore, the principal objective of this study is to provide evidence about the extent of using ABC, JIT and TQM, and to investigate its impact on the financial performance. Specifically, the objectives of this study are as follows:

1. Providing an up-to-date description of the level of using ABC, JIT and TQM in the Industrial Jordanian Shareholding Companies.
2. Investigating the associations between companies' financial performance and the level of using ABC, JIT and TQM.

Literature Review

Several studies such as Hendricks and Singhal (1999) have provided evidence that strategic initiatives are associated with improved financial performance. Some proponents of ABC argue that its methods are necessary to trace overhead costs to objects, and thus properly account for batch and product-level costs (Cooper, 1990), manufacturing complexity (Jones 1991), specialty produce costs (Srinidhi 1992) and diverse business environments (Cooper & Kaplan, 1988). Although ABC systems are most of ten associated with manufacturing companies, they can be applied in all types of organizations (Tanju and Helmi 1991). Many authors recommend using ABC to support process improvement (Turney 1991) while several reservations have been expressed regarding the efficacy of ABC (Innes, Mitchell, and Sinclair 2000). JIT is simple in theory but hard to achieve in practice. This is because a problem anywhere in the system can stop all production. Hence, supplies must provide defect-free materials when they are required and equipments must be maintained so that machine failures are eliminated. One example: Coca-Cola enterprises and fast-food operators in USA have adapted JIT strategy and that leads to reducing the costs and to speeding the flow of finished products to customers (Atkinson et al. 2001). Total Quality Management (TQM) has been one of the most popular business models of the last fifteen years, widely embraced by many organizations (Hendricks and Singhal 1999). TQM is a concept based on continuous improvement in the performance of all processes in an organization in the quality of the products and services that are the outputs of those processes. Several quality experts have suggested that a commitment to total quality will result in improved performance in profitability measures (Hendricks and Singhal 1999).

Many previous studies (Roberts and Sylvester 1996; Dixon 1996) suggested that organizations adopted the management initiatives such as ABC, JIT and TQM to obtain benefits that directly or indirectly impact financial performance measures. From the theoretical perspective many evidences regarding the benefits of ABC have been provided (Barnes 1991; Brimson 1991). Empirically researches on ABC have generally consisted of modeling the factors that lead to successful ABC system. Success has been defined as 'use for decision making' (Innes and Mitchell 1995; Krumwiede 1998), satisfaction with the costing system, perceived financial benefits or non financial benefits (Krumwiede 1998; McGowan, 1998). Also some researches such as Cagwin and Bouwman (2000) provided evidence that ABC improves financial performance. A local study done by (Khasharmeh 2002) about the practice of ABC in Jordanian manufacturing companies in 2002 revealed that only 10% of Jordanian manufacturing companies use the ABC system. It also revealed that 75% of the respondents agree and 25% strongly agree that the use of ABC improves the company's performance in general. Huson and Nanda (1995) find that JIT adopters have enhanced earnings per share after controlling for average industry unit costs, margins, turnover and employees per sales dollar. Kaynak (1996) finds that financial and market performances are enhanced for firms using both TQM and JIT purchasing. Easton and Jarrell (1998) find evidence that a very broadly defined TQM is associated with the variance between actual financial performances. Kinney and Wempe (1998), on the other hand, report that JIT positively affects ROI in the 1–4 year period following JIT adoption. Finally Hendricks and Singhal (1999) find a link between change in ROA and implementation of TQM for a sample of quality award winners.

In light of the theoretical framework of this study and related previous studies, the null hypotheses are provided as follows:

H01: Jordanian shareholding companies do not use strategic initiatives (i. e. ABC, JIT, TQM).

This hypothesis aims at testing the level of applying the new strategic initiatives which are widely known in management accounting, it will provide an up-to-date description of the level of using ABC, JIT and TQM in the Industrial Jordanian Shareholding Companies.

H02: Financial managers of industrial Jordanian shareholding companies are not aware enough of the importance of using strategic initiatives (i. e. ABC, JIT, TQM).

It is generally known that using a new strategy in an appropriate way necessitates that users should be aware enough of the benefits which come out as a result of that use, otherwise the importance of utilizing a new strategy will not be sustained, consequently this hypothesis aims at testing the level of awareness of the financial managers in the Jordanian shareholding companies of the importance of utilizing the strategic initiatives in management accounting.

H03: No significant relationship exists between the awareness level of financial managers of the importance of using ABC, JIT and TQM and the level of adopting these initiatives.

This hypothesis aimed at testing if there is any relationship between the awareness level of using the strategic initiatives and the actual adaptation of these initiatives, it is expected that high level of awareness might lead to more application of the initiatives and, if that is factual, so the level of adaptation might be predicted with level of awareness.

H04: No significant relationship exists between the level of using ABC, JIT and TQM and the financial performance.

From the theoretical point of view and based on the results of some previous studies it is expected that using strategic initiatives in management accounting will lead to provide management with a considerable information that might enhance the way that the management is running, and ofcourse that will affect the financial performance of the company. Consequently this hypothesis aims at testing the relationship between the level of using ABC, JIT and TQM and the financial performance.

In order to support the result of this hypothesis the following one is also suggested to see if any difference exists between the financial performance of Industrial Jordanian Shareholding Companies which use at least one of the initiatives and those are not.

H05: No significant difference exists between the financial performance of Industrial Jordanian Shareholding Companies which use at least one of the initiatives (i. e. ABC, JIT, TQM) and those companies which do not use any of such initiatives.

Data and Methodology

The study population consists of all Industrial Jordanian Shareholding Companies which are listed at Amman Stock Exchange by the end of 2003. However, the following companies will be excluded:

1. Companies which are still in the foundation phase and which have not yet commenced their business operations.
2. Companies whose shares have not been traded within Amman Stock Exchange during 2003.
3. Companies under liquidation.

The industrial companies sector has been selected for conducting this study because it is one of the largest sectors listed within the Amman Stock Exchange, and which most needs to implement modern concepts of managerial accounting (i. e. ABC, JIT, TQM). The total number of companies included was 59, and phone calls were made to all these listed industrial companies to identify those companies which applied the strategic initiatives. In other words, this total number (59) is thought to be 'large' enough from which to get meaningful and reliable results and 'small' enough not to consider determining a sample. Out of the total (3) companies did not cooperate, so at the end (56) companies were investigated. It is found that six companies are using the ABC and eight companies are using the JIT while just four companies are using the concept of TQM. In total, the number of companies which use at least one of the initiatives was 15 out of 59. The survey was sent to the 59 companies and the financial managers were asked to answer some specific questions and to indicate their level of agreement with a number of closed-end statements. These statements are based on a five-point scale. The survey was personally handed to all respondents. To improve the response rate, all selected companies were then followed up with a phone call and later on by a personal visit to collect the 'filled' copy of the survey. A striking feature of our survey is the response rate. Due to the fact that the headquarters of most of the companies are located in the capital (Amman), and a specific person has been appointed for a period of two months to follow up the respondents and to collect all responses, it is not really surprising that the response rate is about 95%.

DATA COLLECTION TOOL (QUESTIONNAIRE)

The survey instrument was developed based on the discussion presented in the theoretical framework and the questions were developed after a thorough review of strategic management techniques survey questions found in prior research. Questions were reviewed, critiqued by other quality researchers and accounting departments at several universities and went through several rounds of revisions. Careful attention was

given to making sure that the wording of each question was clear, concise and described only one concept. The survey intended to measure the extent to which level Industrial Jordanian Shareholding Companies are using strategic initiatives of managerial accounting (i. e. ABC, JIT, TQM) along with the extent of the financial managers' belief in the importance of such use, and their awareness of such importance. The main four parts of the questionnaire are as follows: Part One which seeks to find out the extent of using the initiatives (i. e. ABC, JIT, TQM) and the respondent's belief in the importance of using such initiatives. Part Two aims to measure the degree of awareness on the implementation of the Activity-Based Costing (ABC) system. Part Three is intended to measure the degree of awareness on the implementation of the Just-In-Time (JIT) production system and finally Part Four is designed to measure the degree of awareness on the implementation of concepts of Total Quality Management (TQM). It is noteworthy that the answers to questions in parts two, three and four have been worded by using the Likert scale for measuring degrees of agreements. So, five answers have been given to determine the extent of responses (i. e. extremely large, large, medium, little and very little).

METHODS OF DATA ANALYSIS

For the purpose of analyzing the data and testing the hypotheses, the current study used the descriptive statistical analysis such as the mean and the standard deviation, also simple regression analysis is used to test the association between the level of awareness of the importance of using the initiatives and the level of adopting these initiatives. Multiple regression analysis is used to identify the improvement in ROA as a mean of financial performance which was associated with the initiatives. Furthermore one sample *t*-test is used to test hypothesis number 5.

THE MODELS OF THE STUDY AND ANALYZING THE RESULTS

As mentioned earlier, the survey instrument intended to gather information about the level of using the well-known strategic initiatives: ABC, JIT and TQM in addition to some information about financial managers' awareness of the importance of using these initiatives. Also annual reports were used to collect information about the ROA in order to test to what extent the initiatives are related to the level of financial performance (ROA). As expected, and as has been noted by some other studies such as Balakrishnan, Linsmeier, and Venkatachalam (1996) in their dis-

TABLE 1 Non-users vs. formal users of initiatives

Initiatives (ABC, JIT and TQM)	Number	Percentage
Users	15	26.8%
Non-users	41	73.2%
Total	56	100%

TABLE 2 The Awareness Level of the Importance of Using Initiatives

	ABC	JIT	TQM
Mean	4.475	4.393	4.467
Std.	0.48	0.63	0.51

cussion of strategic initiatives, a firm's pre-adoption operating efficiency will influence its ROA response to the increased efficiency of initiatives use. The strategic initiatives implementation variables measure the extent to which a firm is actually practising the strategic initiatives philosophy. The variables are expressed as a percentage of total possible strategic initiatives implementation, and calculated using the responses to the management practices questions from the survey. As tabulated in table 1, it is noted that (26.8%) of the selected companies showed a use of at least one of the strategic initiatives i. e. ABC, JIT and TQM.

Consequently, the first null hypothesis will be rejected and we can say that the Industrial Jordanian Shareholding Companies are using the strategic initiatives.

THE LEVEL OF AWARENESS

In order to reach a level of good practice of the strategic initiatives, there is a need to get support from the top management. The top management might do so if it is aware enough of the importance of using the strategic initiatives. Top management is responsible for strategic planning, setting goals, authorizing strategic initiatives and allocating resources to enable implementation and support of all plans and initiatives. Top management awareness and commitment is necessary to implement and sustain a quality program and is an essential element for achieving successful implementation of strategic initiatives (Ahire, Golhar, and Waller 1996; Barker and Cagwin 2000). The results of analyzing the answers to the questions were used to measure the top management awareness, and are shown in table 2.

Consequently, and based on the results shown in table 2, it might be

concluded that financial managers of Industrial Jordanian Shareholding Companies are aware enough of the importance of using the strategic initiatives, i. e. ABC, JIT and TQM. The means for initiatives are all above 4, so hypothesis number two is rejected, since the maximum score was 5 which indicates strongly agree.

The Association between Adopting the ABC, JIT and TQM and the Awareness Level of the Importance of Using the Initiatives:

This section comes to test if there is any association between the awareness level of the importance of using ABC, JIT and TQM and the level of practicing the initiatives. It might be argued that if the managers are aware enough of the importance of using the initiatives, then the level of practicing these initiatives is higher in comparison with a case of lower level of awareness. Consequently, testing of hypothesis number three is achieved through estimation of the following regression models:

$$ABCit = a + 1AABCit + eit, \tag{1}$$

where

ABCit represents the level of adopting the ABC,

AABCit represents the awareness level of financial managers of the importance of using the ABC,

eit represents the unexplained error of the regression model utilized.

$$JITit = a + 1AJITit + eit, \tag{2}$$

where

JITit represents the level of adopting the JIT,

AJITit represents the awareness level of financial managers of the importance of using the JIT,

eit represents the unexplained error of the regression model utilized.

$$TQMit = a + 1ATQMit + eit, \tag{3}$$

where

TQMit represents the level of adopting the TQM,

ATQMit represents the awareness level of financial managers of the importance of using the TQM,

eit represents the unexplained error of the regression model utilized.

As shown in table 3 none of the suggested regression models was significant at the level of .05. This result confirms that no relationship exists between the awareness level of the financial managers of industrial Jordanian shareholding companies of the importance of using ABC, JIT and

TABLE 3 Use of Management Initiatives and the Awareness Level

Regression model	Adjusted R^2	F	Sig.
Regression model 1 (ABC)	.253	4.045	.079
Regression model 2 (JIT)	-.087	.277	.613
Regression model 3 (TQM)	.042	1.391	.272

TQM and the level of adopting ABC, JIT and TQM respectively. Consequently hypothesis three is accepted. This result gives an indicator that a high level of awareness is not associated with a real practice of the initiatives, an expected explanation for such results might be that while financial managers are aware enough to the importance of using the strategic initiatives of managerial accounting as shown in the previous results, the top management – which is the decision maker – probably does not take a real action toward adopting these initiatives. So the high awareness level of financial managers does not mean a high awareness level of top management.

TEST OF ASSOCIATION BETWEEN STRATEGIC INITIATIVES
AND FINANCIAL PERFORMANCE

Testing of hypothesis number four is achieved through estimation of the following multiple regression:

$$ROA_{it} = +1ABC_{it} + 2JIT_{it} + 3TQM_{it} + e_{it}, \quad (4)$$

where

ROA_{it} represents the change on return on assets,

ABC_{it} represents the level of adopting the ABC,

JIT_{it} represents the level of adopting the JIT,

TQM_{it} represents the level of adopting the TQM.

The result of testing model 4 shows a significant relationship between financial performance and the level of using strategic initiatives. Consequently, and based on the figures shown in table 4 and table 5, hypothesis number four is rejected, so it might be argued that the level of using ABC, JIT and TQM has a positive effect with the financial performance. This confirms with the results of the previous studies which found a significant positive association between the use of management initiatives and improvement in financial performance.

Furthermore, a t -test is utilized in order to test hypothesis number five which examines if any difference exists between the financial perfor-

TABLE 4 The results of regression model 4

<i>F</i>		152.73
<i>P</i> -value		0.000
<i>R</i> ₂		0.762
Adjusted <i>R</i> ₂		0.743
Coefficients (dependent variable: ROA)		<i>T</i> Sig.
Constant	5.265	.000*
TQM	3.693	.004*
JIT	2.717	.020*
ABC	2.590	.025*

* Significant at $\alpha = 0.05$

TABLE 5 Correlation matrix of the study variables

	ROA	ABC	JIT	TQM
ROA	1.00	—	—	—
ABC	.265*	1.00	—	—
JIT	.346	.195**	1.00	—
TQM	.393	.287**	.673**	1.00

* Significant at $\alpha = 0.05$, ** significant at $\alpha = 0.01$.

mance of Industrial Jordanian Shareholding Companies that use at least one of the initiatives (i. e. ABC, JIT, TQM) and those do not use any of such initiatives. The results of the formal test of the hypothesis are reported in table 6. The model is significant with an *F*-statistic of 6.841 and the level of significance was .031.

Consequently, a significance difference exists between the financial performance of Industrial Jordanian Shareholding Companies which use at least one of the strategic initiatives and those companies which do not use any of such initiatives. Such results confirm the previous results in

TABLE 6 ANOVA analysis

ROA	<i>F</i>	Significance	<i>T</i>
Equal variances assumed	6.841	.031*	1.587
Equal variances not assumed	—	—	1.587

* Significant at $\alpha = 0.05$.

terms of the relationship between the using of strategic initiatives and improvement in financial performance.

Conclusion and Recommendations

As management accounting continues to evolve and become more involved in the strategic management of the firm, it is important for management accountants to understand not only how to account for strategic initiatives (e. g., TQM), but also how these initiatives should be implemented and managed to achieve maximum benefit for the firm. This paper investigates whether the financial managers of the Industrial Jordanian Shareholding companies are aware of the importance of using the initiatives and whether strategic initiatives are associated with improvement in financial performance in the manufacturing sector or not. The primary goal of the firm is to achieve and improve financial profitability (Galbraith 1985; Chenhall 1997) and it is vital that firms have empirical evidence of the effectiveness of strategic initiatives. This is particularly true in the case of ABC, JIT and TQM since there is considerable doubt as to the efficacy of ABC, JIT and TQM as initiatives that can assist in achieving improved financial performance. Based on the empirical results, it is found that 26.8% of the Industrial Jordanian Shareholding Companies are using at least one of the strategic initiatives. Moreover, the empirical evidence shows that the awareness level of the importance of using the strategic initiatives is high among the financial managers, but such a high level is not associated with the level of adopting these initiatives. Furthermore, it is found that there is a strong positive association between using ABC, JIT and TQM and improvement in financial performance. This is consistent with prior research such as Balakrishnan, Linsmeier, and Venkatachalam (1996) and Huson and Nanda (1995). A fruitful direction for further research would include replicating similar models on a larger sample and a longer time series to see whether these results continue to hold for the ASE. The conclusion of the study was directed from the results of this research that might be subject to some limitations. One of these is the model specification, consequently some of the results depend on the accuracy of the linear regression models. If the model is not relevant so the results would be distorted. The other limitation to be mentioned is the dealing with the industrial sector and ignoring the other sectors in the ASE. Furthermore, although the respondents were targeted top executives with knowledge of ABC, JIT and TQM, it is possible that their responses do not represent actual company practices.

References

- Ahire, S. L., D. Y. Golhar, and M. A. Waller. 1996. Development and validation of TQM implementation constructs. *Decision Sciences* 27 (1): 23–56.
- Atkinson, A., R. Banker, R. Kaplan, and S. Young. 2001. *Management accounting*. Englewood Cliffs, NJ: Prentice Hall.
- Balakrishnan, R., T. J. Linsmeier, and M. Venkatachalam. 1996. Financial benefits from JIT adoption: Effects of customer concentration and cost structure. *The Accounting Review* 71 (2): 183–205.
- Barnes, F. 1991. IES can improve management decisions using activity-based costing. *Industrial Engineering* 23 (9): 44–50.
- Barker, K. and D. Cagwin. 2000. New evidence relating TQM to financial performance: An empirical study of manufacturing firms. Accounting School of Business The University of Texas at Brownsville.
- Brimson, J. 1991. *Activity costing: An activity-based costing approach*. New York: Wiley.
- Cagwin, D. and M. Bouwman. 2000. The association between activity-based costing & improvement in financial performance. School of Business. University of Texas at Brownsville.
- Chenhall, R. H. 1997. Reliance on manufacturing performance measures, total quality management and organizational performance. *Management Accounting Research* 8:187–206.
- Cooper, R. 1990. Cost classification in unit-based & activity-based manufacturing cost systems. *Journal of Cost Management* 4:4–14.
- Cooper, R. and R. Kaplan. 1988. Measure cost right: Make the right decisions. *Harvard Business Review* 66 (5): 96–105.
- Dixon, J. 1996. Total quality management in ISO 9000 registered organizations: An empirical examination of the critical characteristics associated with levels of financial performance. PhD diss., Florida State University.
- Easton, G., and S. Jarrell. 1998. The effects of total quality management on corporate performance: An empirical investigation. *Journal of Business* 71 (2): 253–307.
- Galbraith, K. 1985. *The new industrial state*. Boston, MA: Houghton-Mifflin.
- Hendricks, K. and V. Singhal. 1999. Don't count TQM out. *Quality Progress* 32 (4): 35–42.
- Huson, M. and D. Nanda. 1995. The impact of just-in-time manufacturing on firm performance. *Journal of Operations Management* 12 (3/4): 297–310.
- Innes, J., and F. Mitchell. 1995. A survey of activity-based costing in the

- UK's largest companies. *Management Accounting Research* 6 (2): 137–53.
- Innes, J., F. Mitchell, and D. Sinclair. 2000. Activity-based costing in the UK's largest companies: A comparison of 1994 and 1999 survey results. *Management Accounting Research* 11 (3): 349–62.
- Jones, L. 1991. Product costing at caterpillar. *Management Accounting* 72 (2): 34–42.
- Kaynak, H. 1996. The relationship between just-in-time purchasing of total quality management & their effects on the performance of firms operating in the USA: An empirical investigation. PhD diss., University of North Texas.
- Khasharmeh, H. 2002. Activity-based costing in Jordanian manufacturing companies. *Administrative Sciences* 29 (1): 213–27.
- Kinney, M., and W. Wempe. 1998. Further evidence on the extent and origins of JIT's profitability effects. Working Paper, Texas A&M University.
- Krumwiede, K. 1998. The implementation stages of activity-based costing and the impact of contextual and organizational factors. *Journal of Management Accounting Research* 10: 239–77.
- McGowan, A. 1998. Perceived benefits of ABCM implementation. *Accounting Horizons*, March:31–50.
- Nixon, B. 1998. Research and development performance measurement: A case study. *Management Accounting Research* 9 (3): 329–55.
- Roberts, M. and K. Silvester. 1996. Why ABC failed and how it may yet succeed. *Journal of Cost Management* 10 (Winter): 23–35.
- Srinidhi, B. 1992. The hidden costs of specialty products. *Journal of Management Accounting Research* 4 (Fall): 198–208.
- Tanju, D. and M. Helmi. 1991. ABCs for internal auditors. *Internal Auditor*, December:33–7.
- Turney, P. 1991. How activity-based costing helps reduce cost. *Journal of Cost Management* 5 (Winter): 29–35.