

8-25-1995

The Performance Impact of Information Technology in Specialty Retailing

Jonathan W. Palmer
University of Oklahoma

Follow this and additional works at: <http://aisel.aisnet.org/amcis1995>

Recommended Citation

Palmer, Jonathan W., "The Performance Impact of Information Technology in Specialty Retailing" (1995). *AMCIS 1995 Proceedings*. 177.
<http://aisel.aisnet.org/amcis1995/177>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISEL). It has been accepted for inclusion in AMCIS 1995 Proceedings by an authorized administrator of AIS Electronic Library (AISEL). For more information, please contact elibrary@aisnet.org.

The Performance Impact of Information Technology in Specialty Retailing

Jonathan W. Palmer
University of Oklahoma

Generating competitive advantage through the use of information technology is an important part of company strategy. The study examines two different perspectives on the impact of IT on performance within the specialty retailing industry. The Quick Response (QR) perspective looks at specific technologies as driving organizational performance. With QR, retailers deploy a variety of information technologies, including point-of-sale (POS), bar-coding, automated inventory management, electronic data interchange (EDI), and electronic invoicing. The strategic congruence perspective suggests that organizations must align their organizational and IT strategies to improve performance. These perspectives mirror a tension inherent in the literature on IT strategy and firm performance. The QR perspective leads to the first key research question: *Is QR effective in every situation or only for a given strategy?* The strategic congruence perspective generates the other key research question: *Does the alignment of corporate strategy and information technology strategy improve organizational performance?*

Methodology

The research combines the use of a cross-sectional survey with a case study methodology. The survey identified strategies, the use of technologies and applications, and firm performance across a sample of specialty retailing firms. The study utilizes a survey of 75 specialty retailers. Eight case studies provide additional insight into the fundamental research questions and compare firms on the dimensions of performance, use of QR, and strategic alignment.

The research used the firm as its unit of analysis. The target audience for the questionnaire was the top IT professional in each firm. Since the research explored the intersection of IT and corporate strategy, the top IT professional was uniquely positioned to give insight into these issues.

RETEX, a consortium of specialty retailing firms, offered its membership as a sample population. The membership included firms with regional, national, and international focus; firms engaged in a variety of different product lines (fashion, health, food, specialty items, entertainment products); and firms with differing approaches to IT. The questionnaire was mailed to 200 RETEX members and resulted in 75 usable responses.

Findings

The results of the study show strong support for the positive impact of Quick Response on organizational performance including comparable store sales, sales/s.f., number of new SKUs, and stock turn. Adoption of basic QR was found in 47% of the sample and

advanced QR was found in 20% of the respondents. The results are less clear in the area of strategic alignment. Although 79% of the firms were in alignment, they did perform more effectively than those not in alignment.

The firms using QR technologies and were compared to non-QR firms to test the QR hypothesis.

H1. Firms adopting QR will outperform those firms not adopting QR..

QR had an impact on several of the performance measures including Comparable Store Sales, New SKUs, Sales/s.f. and Stock Turn (see Exhibit 1).

Exhibit 1

H1. Quick Response and Performance

Performance Measures	QR	n=35	Non-QR	n=40		Supported?
	Mean	S.D.	Mean	S.D.	F	
Comparable Store Sales	1.59	.49	1.33	.48	4.60*	Yes
New SKUs	1.56	.50	1.29	.47	4.74*	Yes
Sales/Customer	1.41	.50	1.63	.49	(3.31)+	No
Sales/s.f.	1.57	.50	1.30	.47	5.19*	Yes
Stock Turn	1.36	.49	1.15	.36	3.95*	Yes

Parentheses indicate non-QR outperforming QR significance + $p < .10$ * $p < .05$

The firms exhibiting alignment between their IT strategy and general organizational strategy were compared to non-aligned firms to test the alignment hypothesis.

H2. Firms with a match between pipeline strategy and IT strategy will outperform those with a mismatch.

Comparable Store sales, Sales/s.f. and Stock Turn exhibited little difference between matched and non-matched firms. In new SKUs matched firms performed better, in Sales/ Customer non-matched firms performed better, but neither difference was significant (Exhibit 2).

Exhibit 2

H2. Match and Performance

Performance Measures	Matching	n=59	Non-Matching	n=16		Supported?
----------------------	----------	------	--------------	------	--	------------

	Mean	S.D.	Mean	S.D.	F-ratio	
Comparable Store Sales	1.51	.50	1.43	.43	.28	No
New SKUs	1.51	.50	1.27	.46	2.83+	No
Sales/Customer	1.44	.50	1.71	.47	(3.49)+	No
Sales/s.f.	1.46	.50	1.50	.52	(.08)	No
Stock Turn	1.28	.45	1.29	.47	(.00)	No

Items in parentheses indicate non matching outperform matching significance + $p < .10$

Corporate and IT dimensions and their impact on each of the performance measures was also examined. Larger firms were better performers on New SKUs, while smaller firms were better in terms of Sales/customer. Vertical integration did not show a significant effect on any of the performance measures. Centralization showed a significant effect on Sales/Customer. In-house IS did not show a significant effect on any of the performance measures. IT Investment did show an impact on New SKUs and Stock Turn; new SKUs was negative, Stock turn was positive and both were significant. The results show SIC as having significant effects on New SKUs and Sales/s.f.

Case Studies

The findings of the survey, while surprising, left several important questions unanswered. Eight specialty retailers were selected for further research. The retailers were selected on the basis of their performance, use of QR and pipeline and IT strategic combination. The case studies concentrated on three QR related questions:

1. When does QR make a difference?
2. What influences firms to adopt QR?
3. Why has the full range of Quick Response shown such low levels of adoption?

and three strategic congruence questions:

1. When does strategic alignment make a difference? Are there size, SIC and IT investment differences?
2. Is strategic alignment less a factor for firms with other competitive advantages?
3. Has strategic alignment become a competitive necessity?

Case Findings

The cases addressed the key QR and strategic alignment questions. Three high performing firms found that QR was important to supporting key operations. The other high performing firm did not adopt QR, because they saw other competitive advantages available to the firm, the technologies were too difficult, and there were not provable

economic incentives for suppliers. Two low performing firms had problems in implementing QR, while two others chose not to develop QR because of their supplier relationships. Adoption of QR is influenced by several factors including level of current IT sophistication and supplier relationships (see Exhibit 3).

Exhibit 3
Summary of Case Findings: Quick Response

	QR Users	QR Non-Users
QR makes a difference	Retailers have economies of scale IT used to support specific applications (e.g. distribution, forecasting)	Other key success factors, too expensive, technologies unproven, difficulties in implementation
Adoption of QR	Existing IT base Supplier support	Multiple, smaller suppliers or single key supplier Lack of partner sophistication
Low Levels of Adoption	Lack of top management support Lack of proven business case	Lack of top management support, lack of proven business case, other key success factors

Strategic alignment was present in six of the eight cases (see Exhibit 4). Three high performing firms saw alignment as reflecting the strong connection between IT and corporate strategy. The high performing firm not in alignment, felt IT was designed for a set of functions, not necessarily supporting the larger corporate strategy. The three low performing firms in alignment were having difficulty in gaining sufficient corporate support for IT initiatives, and exhibited several implementation problems. The mis-aligned, low performing firm had several competitive issues beyond IT, but again saw IT relegated to a support function within the firm.

Exhibit 4
Summary of Case Findings: Strategic Alignment

	Aligned Firms	Non-Aligned Firms
Size	Larger	Smaller
SIC	Commodity	Non-commodity
IT Investment	No difference	No difference
Other competitive advantages	Alignment supports other key success factors	Other key success factors

Strategic alignment as a competitive necessity	Strong top management support has become a competitive requirement	Other key success factors
--	--	---------------------------

Discussion and Conclusions

Quick Response appears to have an impact on performance, but only 47% of the survey respondents have adopted QR. Firms not adopting QR cite several key reasons including difficulty with the technology, lack of supplier IT sophistication, and difficulty in proving economic benefit. Those companies with more stable, commodity-like products found QR more useful, while those with more fashion-oriented products were less likely to adopt QR. It was also clear that the larger the number of suppliers, the more difficult the economic justification for QR.

Specialty retailers show strong alignment between corporate and IT strategies. With 79% of the respondents showing a strong match between IT and pipeline strategy, the issue that remains is whether or not strategic alignment is improving firm performance. The results of this study do not suggest that strategic alignment has moved from providing a competitive advantage to becoming a virtual competitive necessity.

Contribution

The contribution of this research can be viewed on several dimensions. The study shows strong support for the QR perspective. QR was found to significantly influence a variety of performance measures. The research expands the academic and practitioner understanding of QR: the different uses of QR across levels, and the reasons for adoption including existing IT, potential for economies of scale, and supplier support. In terms of strategic alignment, the work suggests that alignment has become a competitive necessity. The strong presence of strategic alignment in the survey results challenges contingency theory and the strategic alignment perspective. Explanations for the results may be explained as a factor of institutionalization or the strong industry tendency to use IT in support of internally focused, transaction efficient strategies.

References

Benjamin, Robert I., David W. de Long, and Michael S. Scott Morton, "Electronic Data Interchange: How Much Competitive Advantage?" *Long Range Planning* (UK), Vol. 23, no. 1, February 1990, p. 29-40.

Bouchard, L., "EDI: Status Report," Anderson Graduate School of Management, UCLA, September 1992.

Chain Store Age Executive, "Quick Response: What It Is; What It's Not," March 1991, p. 48-58.

Executive Briefing, "Competing for the American Consumer: Partnering for Quick Response," April 1992, p. 1-3.

Fisher, Marshall L., Janice H. Hammond, Walter R. Obermeyer, and Ananth Raman, "Making Supply Meet Demand in an Uncertain World," *Harvard Business Review*, May/June 1994, p. 83-93.

Holland, C., G. Lockett and I. Blackman, "Planning for Electronic Data Interchange," *Strategic Management Journal*, 1992, 13, 539-550.

Johnson, Steven J., "Retail Systems: No Longer Business As Usual," *Journal of Systems Management*, August 1992, p. 8-10, 34-35.

Konsynski, Ben R. and F. Warren McFarlan, "Information Partnerships--Shared Data, Shared Scale," *Harvard Business Review*, September-October 1990, p. 114-120.

Malone, T.W., J. Yates, and R.I. Benjamin, "Electronic Markets and Electronic Hierarchies," *Communications of the ACM* 30 (1987); 484-97.

Retail Information Systems News, "Uncovering the Keys to Quick Response," Supplement, January 1993.

Rochester, J.B. (ed.), "The Strategic Value of EDI," *I/S Analyzer*, Vol. 27, no. 8, August 1989, p. 1-16.

Zinn, Laura, "Retailing Will Never Be The Same" *Business Week*, July 26, 1993, p. 54-60.