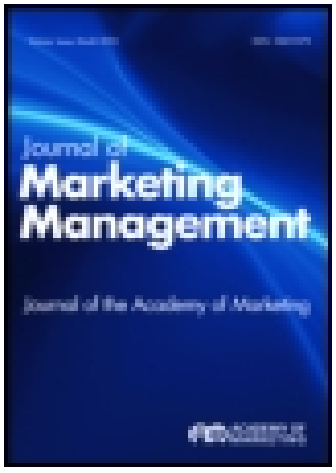

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The Impact of Electronic Point of Sale Technology (EPOS) on Marketing Strategy and Retailer-Supplier Relationships

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EPOS is an established and rapidly growing feature of the UK retail scene with a wide range of potential impacts across the whole value chain. This paper focuses upon the more immediate impact of EPOS on the marketing strategies of retailers and their suppliers and on the retailer–supplier relationship. Emphasis is given to the potential which EPOS presents for the development of new approaches to channel co-operation and for the building of new patterns of strategic alliance.

INTRODUCTION

Electronic Point of Sale Technology (EPOS) is an established and growing feature of the UK retail scene (Parkinson 1987). Nielsen now estimates that around 50% of grocery sales pass across EPOS scanners at check-outs and they predict that this level will reach 70% by 1993 (Colland 1989). Additionally, while the major initial adopters of EPOS have tended to be large grocery supermarket chains, there is evidence to suggest that EPOS is now also being adopted in other retail sectors (*Retail Business* 1984). This paper examines the EPOS phenomenon and suggests a wide range of current and potential marketing impacts.

EPOS DEFINED

Wolfe (1988) defines EPOS as "the collection in real-time at the point of sale, and storing in a computer file, of sales and other related data by means of a number of electronic devices". The most common input device is the bench scanner, although data can also be collected by scales, key pads

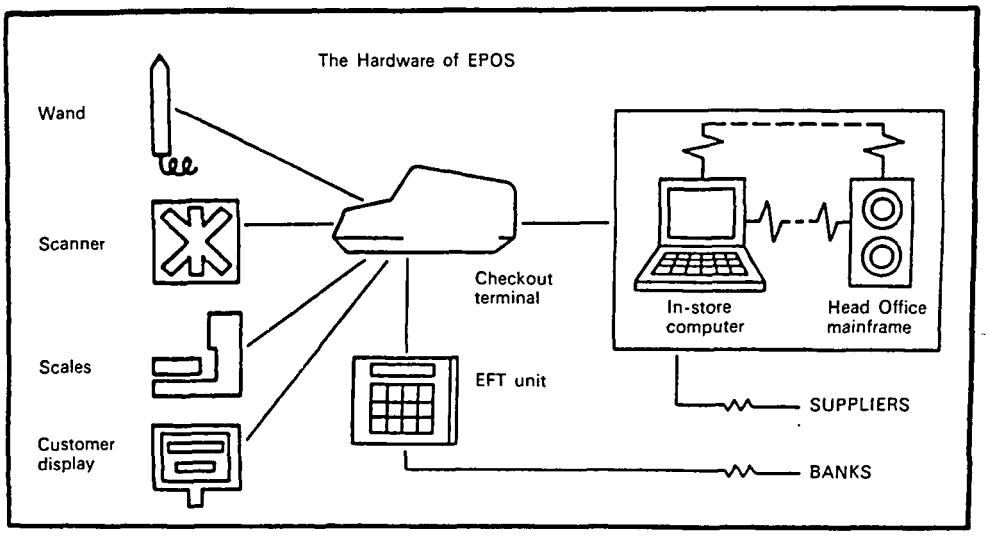

FIGURE 1
Source: Wolfe, A. and Cook, L. (1986), *The Electronic Revolution in Store*, Ogilvy and Mather, London.

and hand-held wands. These data input devices interact with a price look-up file which holds the complete list of items stocked by the retailer and their current selling prices. The customer receives a full printed record (which is duplicated in the store computer's memory) of exactly what and how many items were purchased, the price paid for them, the total amount and how paid, along with the date, time and place of the transaction. A simplified diagrammatic outline of an EPOS system is shown in Figure 1. (For a more detailed account of the technology of EPOS, which requires bar-coding of all products at source, see Jones (1985) and Wolfe and Cook (1986).

THE RATIONALE FOR EPOS

The UK retail sector is a mature market which is characterised by high levels of competition and a traditional focus on productivity improvement (Greenley and Shipley 1988, and Livesey and Hall 1981). These twin imperatives lie behind the rapid adoption of EPOS systems by the majority of the UK's leading retail organisations. EPOS offers benefits which can both enhance productivity and sharpen competitive edge. These benefits are conventionally categorised as "hard" (direct) and "soft" (indirect) (Dawson *et al.* 1987). A brief summary of major claimed EPOS benefits is outlined in Table 1. Hard benefits are essentially those which are relatively easy to quantify and cost (*Retail Business* 1986). These include quicker check-out

TABLE 1
EPOS benefits

Hard	*Soft*
Quicker throughput	More efficient shelf space utilisation
No price labelling of individual products	More rational stocking and merchandising policies
Quicker shelf-filling	Enhanced testing potential (layouts, display, promotion, product and packaging innovations)
Quicker stocktaking	Simpler, quicker, more accurate management control information
Reduced shrinkage	
Consistency/accuracy in pricing	
Automatic re-ordering potential	

throughput, the removal of the need for individual product price labelling, quicker shelf-filling and stocktaking, reduced shrinkage and the more consistent and accurate handling of pricing and price changes. Soft benefits are those related to the strategic and tactical potential of an EPOS database—notably the more efficient use of shelf-space and the potential for more rational stocking and merchandising policies. Additionally, the speed of data availability potentially facilitates the testing of new approaches to store layout, display, promotion and product range. While sophisticated retailers have always sought to produce this kind of management control information, it has often appeared too late to be useful. EPOS offers retailers the potential for comprehensive management information which is simple to obtain, up to date and accurate.

THE MARKETING IMPACTS OF EPOS

It is already apparent that the impact of EPOS is being felt in a wide range of ways across the whole supply and value chain (Lynch 1988). Figure 2 outlines the likely broad spread of these impacts which span not only the more obvious retailer–supplier dimension, but the wider dimensions of the consumer and consumer-protection bodies; the market research industry; advertising and sales promotion agencies and the suppliers of process and packaging machinery.

The consumer dimension

Recent events in the UK have suggested that the consumer impact of the increasing spread of EPOS systems may take unexpected forms. While early research into consumer reactions to EPOS suggested that it was a topic of

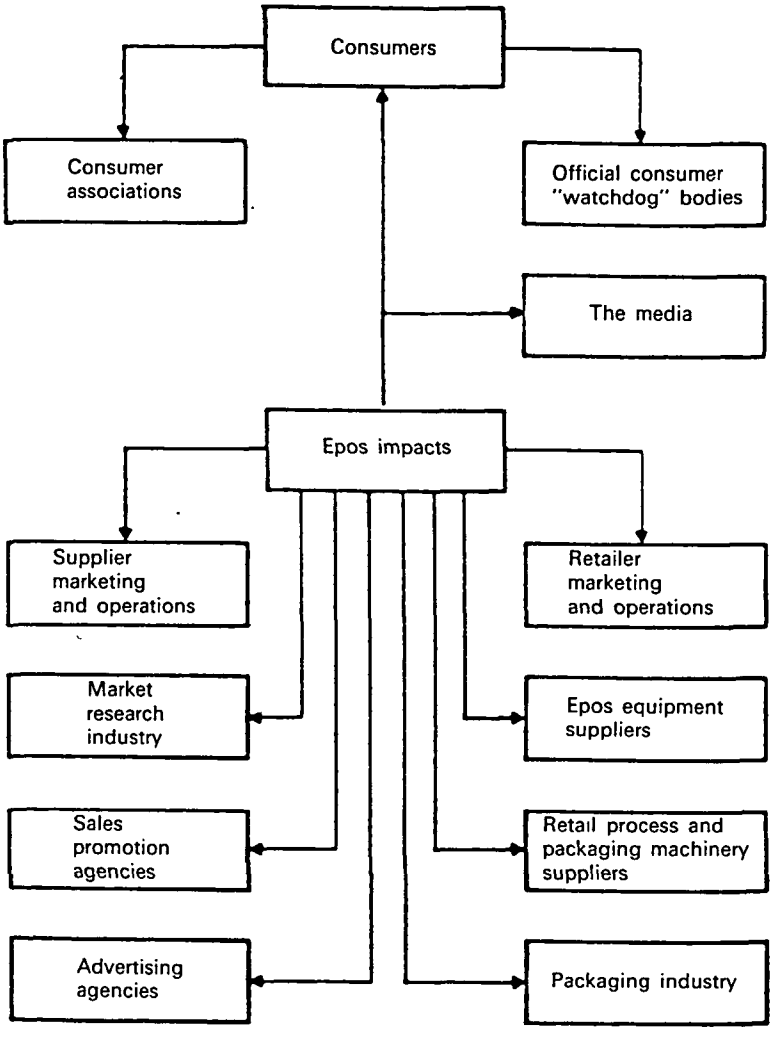

FIGURE 2 Possible impacts of EPOS technology.
Source: Lynch, J. E. (1988), "The impact of electronic point of sale technology on operations and marketing for retail", *British Academy of Marketing, Second Annual Conference*, UWIST, Cardiff, September.

relatively low consumer interest (Lynch and Cook 1988) this may well be changing following a spate of well-publicised prosecutions of EPOS retailers for over-charging (Gorn and Fraser 1988). The absence of traditional individual item price labelling (which is a characteristic of the EPOS approach) makes it necessary for retail organisations to develop effective systems for ensuring that the prices marked on shelf-edges exactly correlate with the prices held in the EPOS computer. The evidence presented by

trading standards officers in court suggests that insufficient attention may have been paid to price consistency across the EPOS system. The originally apparently neutral attitude to EPOS by consumers may well become negative unless this particular issue is resolved and appropriate reassurance given.

Market research

EPOS has obvious potential significance for the market research industry. Significantly, an EPOS system offers the potential for real-time, single-source data capture (Rees 1988). Moreover, where an EPOS system can be linked to an electronically monitored purchase panel, the potential exists to monitor sales and purchase behaviour at the same time. The subsequent database would combine several traditionally separate forms of market analysis in one source and could facilitate new insights into consumer purchasing patterns (Gorn and Fraser 1988).

Promotional testing

The improved market information discussed above could also mean that advertising and sales promotion activity (particularly programmes with short-run objectives) could be subjected to more detailed and specific analysis. Longer-term, the likely wider availability of inter-active cable and split transmission facilities could provide heightened experimentation potential for creative executions and media spending patterns (Staples 1987).

Each of the potential EPOS impact areas outlined in Figure 2 merits detailed research and analysis. This paper concentrates on the likely more immediate impacts of EPOS on the marketing strategies of retailers and their suppliers and on the retailer–supplier relationship.

EPOS AND RETAIL MARKETING STRATEGY

Conceptually, as has been illustrated earlier, EPOS offers a wide range of possible benefits to retailers. While these encompass "soft" as well as "hard" elements, available evidence suggests that many retailers are tending to confine their EPOS use to cost-saving and productivity issues (Hogarth-Scott and Parkinson 1989). The apparent slower progress in realising the more strategic "soft" benefits probably reflects two problem areas. Traditional forms of retail organisation have tended to demonstrate a clear organisational separation between marketing and operations. Piercy and Alexander's (1988) study of marketing organisation in UK retailing has suggested, for example, that while retail marketing departments have considerable responsibility in the areas of market research, advertising and planning, they typically have "a far more limited degree of influence as far

as the products themselves ... are concerned and, perhaps most significantly, even less in the 'hard edge' areas of the selling or merchandise functions". This "separation of powers" effect was also detected in Parkinson's (1987) EPOS study in which he observed that "the researcher was often directed to management responsible for the development of information systems rather than the commercial buying or marketing functions". While the relative recency of marketing departments in retail organisations may account for this situation, the potential barriers to EPOS implementation are clear. Crucial to the successful use of EPOS at the strategic level is marketing expertise in the analysis and interpretation of data and the establishment of appropriate testing mechanisms. Empirical work on EPOS implementation has suggested that one of the major barriers to the strategic use of EPOS information is the sheer volume of data generated and the analytical difficulties in its interpretation (Parkinson 1987 and Lynch and Cook 1988). This problem may represent a strategic window for sophisticated suppliers to offer their marketing expertise to major retail customers as a source of competitive advantage and as a bridge to enhanced long-run relationships. This issue is developed later in this paper.

Despite the difficulties which EPOS data are creating for many retailers, it should be noted that several of the UK's most sophisticated retail operators do appear to have made the imaginative organisational leap towards more strategic use of their EPOS systems. Precise quantification of progress here is difficult to obtain since successful retailers are naturally reluctant to broadcast commercial secrets to an intensely competitive environment. For this reason anecdotal evidence has a greater than usual value. One of the UK's top retailers (which dominates their sector and has over 1,000 stores world-wide) has given information to the author on a non-attributable basis which suggests that they are deriving considerable strategic benefits from sophisticated EPOS data analysis. This retailer initially followed the conventional pattern of focussing on short-run productivity benefits. Savings and improvements were made in labour management, price control and stocking. Staff savings were made in the pricing area (because of the removal of the need for individual item pricing) and via increased throughput at the check-out. Accurate pricing in store is a traditional retail problem area and the respondent organisation's own calculations were that under-pricing represented a startling 0.5%–1.0% of sales. EPOS radically improved performance in this crucial area. Additionally, in terms of stock control, the retailer has been able to make stock level reductions of up to 20%, with stock replenishment being more efficiently handled using reliable EPOS data rather than conventional and unreliable manual counting methods.

These "hard" benefits have, however, proved to be the tip of the iceberg and more important strategic benefits are now being realised. Product ranges are reported to have been dramatically rationalised (in two instances

by up to 40%) with no detrimental sales or consumer effects. A model has been built of the preferred characteristics of new line introductions and this has become an integral element in the new product selection and assessment process. Promotional policy has become more flexible and sophisticated. Sensitivity analyses have been conducted to uncover the relative value of different promotion sites in store and the differing impacts of different kinds of promotional activity. Price sensitivity experiments have also been conducted along with tests of optimal shelf-space allocation.

These important developments may well be over-shadowed in the long run by two broader and more attitudinal impacts on senior management of the ready availability of EPOS data. Firstly, wide regional performance and responsiveness variations have been detected. This has facilitated and encouraged a move towards a more regionally varied and locally flexible marketing policy. Secondly, there is evidence of greater willingness to experiment and to test new marketing approaches. While the information reported in this section is anecdotal and anonymous, it nonetheless merits consideration as a clear pointer of the extent to which EPOS can open new strategic avenues to retailers with the skill and imagination to unlock its as yet largely unrealised potential. It is also apparent that increasing retailer skill and sophistication in EPOS data manipulation will create a whole new range of challenges, opportunities and pressures for suppliers. This aspect of EPOS evolution is considered below.

EPOS AND SUPPLIER MARKETING STRATEGY

Porter's (1979) classic article on the forces shaping strategy in an industry lists five key elements. These are the threat of new entrants; the bargaining power of customers; the bargaining power of suppliers; the threat of substitutes and jockeying among current contestants. The increasing availability to retailers of EPOS generated sales information represents one such significant force. Even before the advent of EPOS it had been apparent for some years that retailer concentration and control of distribution had been swinging power in the channel into retail hands (Davies *et al.* 1984, Akehurst 1983 and Caulkin 1987). EPOS exacerbates this trend. If retailers are increasingly in possession of more rapid and detailed EPOS-generated information concerning the profitability and performance of the products they stock, they have the ammunition to drive for more responsiveness from their suppliers (who typically in the UK do not have access to this kind of information). Hogarth-Scott (1989) and Parkinson (1987) have suggested that EPOS information reduces the options available to suppliers in a number of ways including less control over the price of the product to the consumer, shelf-allocation and re-ordering. Retailers also obtain important advantages in testing and experimentation potential. Caulkin (1987) predicts that these developments will have the constraining effect of tying suppliers ever more tightly into the

retailer's business systems and driving them into an essentially reactive mode.

Ancillary and related technological advances in retailing, such as Electronic Data Interchange (EDI) may reinforce this pressure. EDI, which is already used by several leading UK retailers, is defined as "the transfer of structured data, by agreed message standards, from computer to computer by electronic means" (*Retail Business* 1988). This means that one company can produce documents on its computer and send them electronically to a trading partner's computer. EDI in conjunction with EPOS offers the potential for a fully automated sales and stock handling system. Significantly, there is evidence from the US that willingness and capability to participate in EDI is being used by retailers in their criteria for selection of trading partners (Norris 1984 and Emmelhainz 1987).

While this represents an apparently gloomy scenario for suppliers, there appears to be one significant way forward which more sophisticated suppliers are already beginning to adopt (Bell 1988). This lies in the harnessing of supplier marketing and information processing skills and expertise in ways that the retailer may find a source of competitive advantage. As has been noted earlier, much of the strategic potential of EPOS for retailers is largely unrealised because of organisational and data reduction problems. One important illustration of the potential that exists for suppliers to employ their own expertise to build proactive rather than reactive relationships with retailers is provided by current developments in the area of Direct Product Profitability (DPP). This concept is discussed below.

DIRECT PRODUCT PROFITABILITY (DPP) AND RETAILER–SUPPLIER RELATIONSHIPS

DPP has been defined as "the direct contribution made by a product to the distributor's unallocated fixed costs and pre-tax profits after considering all direct revenues and costs associated with the product as it moves through the distribution system (Pinnock 1987). The DPP concept, which offers retailers considerable potential benefits in understanding and shaping the real sources of profitability, is not a new idea (DPP 1987, Savery 1987 and Buzzell *et al.* 1965). However, as Andrew and Maier (1989) have observed, "it is only relatively recently that technological advances have facilitated the development of information systems capable of handling the detailed data required for direct cost and profitability calculations". EPOS derived information is a key catalyst in the increasing adoption of DPP approaches by both retailers and suppliers (*Beverage World* 1985). (An illustrative DPP calculation is shown in Table 2.)

While a detailed discussion of DPP's complexities and limitations is beyond the scope of this paper, it should be noted that there is already evidence that the DPP concept is being used by sophisticated suppliers to

TABLE 2

How to calculate DPP

Illustrative figures for Brand A, packed in 24s with a nominal r.s.p. of 36p		
Net unit selling price (from computer)	35.9p	
Revenue per case	£8.616	
Buying price (from invoice)	£6.900	
Over-riders, etc.	£0.863	
Gross margin per case	£2.579	(29.9%)
Direct handling costs per case (from analysis of total operating costs)	£2.234	
Net DPP per case	£0.345	(4%)
Rate of sale per week (from scanners)	10.2	cases
Hence DPP per week for Brand A	£3.52	
Shelf facings	0.833	feet
Hence DPP per linear foot per week	£4.23	

Source: Wolfe, A. and Cook, L. (1986), *The Electronic Revolution in Store*, Ogilvy and Mather, London.

enhance and strengthen the nature of their long-term relationships with major retail customers. In the USA it is reported that DPP is often used as a selling tool by suppliers (Bishop 1987) and it is not without significance that many suppliers have been pro-active in DPP studies (*Beverage World* 1985). An illustration of this trend was provided in a presentation given by Simon Bell (1988) of UB Brands to the 1988 IGD Seminar on Information Decision Making. UB Brands utilised a DPP matrix (illustrated in Figure 3) to evaluate range rationalisation possibilities which were the subject of a subsequent field experiment. Significantly, the key to the successful implementation of the 3-month test programme was the collaboration obtained from a major retail customer. Following the experiment, UB report the deletion of 19 lines from their national range with an increase in overall sales and profitability. More crucial, perhaps will be the likely positive impact of this activity on the supplier's credibility in subsequent negotiations.

It is also, of course, apparent that the DPP approach utilised in the UB de-listing experiment has potential dangers for suppliers. If employed injudiciously DPP could become little more than a device whereby more exploitative retailers could encourage suppliers to weaken their brand franchise and reduce consumer choice. The key to success for suppliers would appear to lie in the development of proactive and creative DPP approaches. For example, Bell (1988) reports in the same seminar that UB use DPP to test a product's theoretical profitability *before* it is passed to final development, thereby enhancing its success potential. Additionally, powerful and sophisticated suppliers such as Procter and Gamble are using DPP

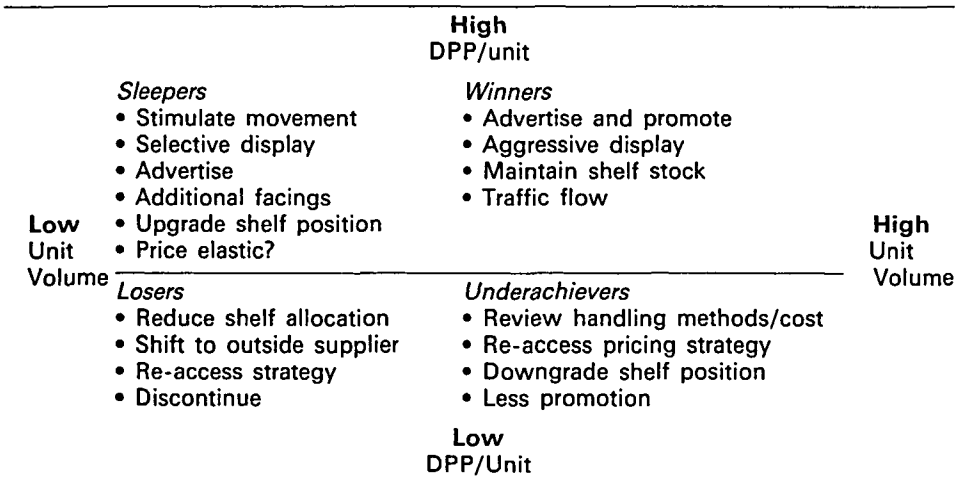

FIGURE 3 DPP merchandising matrix

Source: Bell, S. (1988), "Using information systems for decision making, *Retail and Distribution Management*, July/August, pp. 23–24.

analyses to extend retailer–supplier discussions to a wider arena, including pack design, case configuration, space allocation and shelf position (Maltman 1989). Procter and Gamble describe their DPP objective as the establishment of "very clear win–win relationships between manufacturers and retailers" (Maltman 1989).

The traditional model of retailer–supplier relationships in the UK is that of conflict. It may well be, as Colland (1989) has observed, that recent developments in information technology will facilitate the breaking down of traditional barriers between retailer and supplier to the mutual advantage of both parties. Significantly, perhaps, the most recent UK survey of DPP practice found that the prime reason given for starting to use DPP by both retailers and suppliers was listed as "develop specific relationships" (Touche Ross and the Institute of Grocery Distribution 1989) (See Table 3.) Certainly, it seems reasonable to assert that sophisticated use of EPOS information and information-driven techniques such as DPP offers suppliers and retailers the opportunity to redefine their relationship along more harmonious and collaborative lines.

SUMMARY AND CONCLUSIONS

EPOS has been shown to be a significant force in UK retailing and a development whose importance seems certain to increase as both retailers and suppliers become more skilled in its application and more aware of its wider strategic and tactical potential. These wider impacts (and the

TABLE 3

Why did you start using DPP?

	Retailers		*Manufacturers*	
	1988	*1989*	*1988*	*1989*
Establish industry leadership	2	3	4	3
Understand own performance	**1**	4	**1**	2
Marketing/sales driven	–	4	3	2
Develop specific relationships	–	**1**	2	**1**
Competition is using it	–	2	5	4

Source: Touche Ross/I.G.D. (1989), *Direct Product Profitability: Results of the Second UK Industry Survey*, July.

significance of EPOS for far wider constituencies than simply retailers and suppliers) merit priority research attention. Within this very wide research agenda, it is suggested that particular attention be given to the potential of EPOS to facilitate new approaches to channel co-operation and to the development of new patterns of strategic alliances and partnerships which cut across traditional boundaries.

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