

## WHITE PAPER

---

# Total Cost of Ownership for Point-of-Sale and PC Cash Drawer Solutions: A Comparative Analysis of Retail Checkout Environments, 2004 Update

---

Sponsored by: IBM

---

Christopher Boone  
September 2004

Randy Perry

## IN THIS WHITE PAPER

The white paper presents a total cost of ownership (TCO) analysis of IBM's point-of-sale (POS) and PC cash drawer (PCCD) solutions in the United States and Europe to uncover the actual costs associated with both systems over their lifetime of use. The goal of this white paper is to help retailers understand the differences in total costs between POS and PCCD checkout systems as they evaluate future purchases.

## EXECUTIVE SUMMARY

The retail industry remains highly competitive and cost-sensitive; thus, even the smallest shifts in the flow of profit can result in a major advantage. To stay competitive, leading retailers have increasingly turned to information technology (IT) to capture and analyze data to improve operations and customer experiences. Topping the list of retailer IT investment priorities are store systems. Today, store systems are evaluated on how they can improve worker productivity and customer satisfaction to boost sales.

Data gathered at the POS drives a retailer's business, not only monitoring financial returns daily but also providing information necessary for inventory management, merchandising planning and allocation, supply chain management and execution, sales and marketing, and customer service.

Moreover, retailers typically rely on individual pieces of hardware to support their businesses for several years. Therefore, the costs and benefits of the POS devices must be clearly delineated in order to aid retailers when they are making decisions on spending.

With this information in mind, IDC conducted a series of interviews with retailers in the United States and Europe. This research focused on users of IBM's PCCD and POS solutions and sought to identify the implications of investment in either option. It aimed to define for retailers the TCO and the functional benefits of using these systems.

The costs and benefits of the POS devices must be clearly delineated in order to aid retailers when they are making decisions on spending.

## Total Costs

The standard perception in the retail environment, according to those surveyed, is that not only is PCCD cheaper to buy initially than POS, but it also offers cheaper operating costs than POS. However, the TCO model reveals that, in reality, *PCCD is more costly* to run than POS, even within the first year of use and for each subsequent year. PCCD costs on average over 30% more than POS after five years of use.

The TCO model reveals that, in reality, *PCCD is more costly* to run than POS, even within the first year of use and for each subsequent year.

Beyond the total costs, IDC's research and analysis uncovered the following findings:

- When analyzed individually, system hardware costs, peripheral costs, software costs, and staffing costs are all cheaper over the life of a POS system than a PCCD system.
- POS systems improve customer service by speeding up transactions, thereby increasing throughput.
- Asset utilization of POS systems is greater than that of PCCD systems due to lower costs per customer served and longer life span of POS systems.

When analyzed individually, system hardware costs, peripheral costs, software costs and staffing costs are all cheaper over the life of a POS system than a PCCD system.

As retailers seek to update legacy checkout systems to improve customer service and operational efficiency, they must consider each system's TCO, not just the initial cost, when making the final purchasing decision. The reduction of costs by a few basis points can lead to dramatic improvements of retailers' bottom-line results. IDC's analysis of POS and PCCD in retail environments reveals clear and compelling advantages for POS over PCCD.

## SITUATION OVERVIEW

The retail industry remains highly competitive and cost-sensitive; thus, even the smallest shifts in the flow of profit can result in a major advantage. Over the past few years, retailers have faced a number of specific challenges, including:

- Uncertainty of global economies
- Overcapacity of stores
- Blurring of retail subindustry lines
- Fragmentation of shopper demographics
- Emergence of multichannel retailing

To grapple with these issues, leading retailers have increasingly turned to information technology (IT) to capture and analyze data to improve operations and customer experiences. Topping the list of retailer IT investment priorities are store systems. Today, store systems are evaluated on how they can improve worker productivity and customer satisfaction to boost sales. With competitors only a few steps (or mouse clicks) away, now more than ever retailers need to rely on data to ensure they have the right product at the right place and right price to meet customers' changing needs.

---

## POS Transactions Establish Core Retail Data

Since the mid-1990s, the retail industry has seen some impressive changes in the use of technology to enhance profit, with cash register tapes, PCCD solutions, and electronic POS solutions providing invaluable data. Data gathered at the point of sale drives a retailer's business, not only monitoring financial returns daily but also providing information necessary for inventory management, merchandising planning and allocation, supply chain management and execution, sales and marketing, and customer service.

Moreover, retailers typically rely on individual pieces of hardware to support their businesses for several years. Therefore, the costs and benefits of the POS devices must be clearly delineated in order to aid retailers when they are making decisions on spending.

As the global economy slowed between 2001 and 2003, retailers were hesitant to increase IT spending. Therefore, they held on to legacy checkout systems perhaps a few years longer than average as capital expenditures were kept to a minimum. With the 2003 holiday shopping season capping off a strong retail year, however, retailers are now evaluating new checkout systems to refresh outdated hardware. According to IDC survey research in the United States, 26% of retailers expect their IT budgets to increase in 2004 while 18% expect their IT budgets to decline.

In light of recent global trends, IDC conducted a series of interviews with retailers in the United States and Europe. This research focused on users of IBM's PCCD and POS solutions and sought to identify the implications of investment in either option. It aimed to define for retailers the TCO and the functional benefits of using these systems.

---

## TCO Analysis of IBM's POS and PCCD Solutions

IDC conducted a TCO analysis to gain deeper understanding of the costs related to the purchase of PCCD and electronic POS checkout systems. We used a model based on the experiences of users of IBM's products over a five-year lifetime of use in the United States and Europe. Using this data, we extrapolated information for the sixth and seventh years. The research covered 52,837 POS and PCCD terminals from different retail operations (see Table 1 for further details).

When comparing the two systems, the model matched costs against the benefits businesses received. The main challenges that retailers face when deciding to buy checkout systems are:

- Understanding total costs.** Retailers need a clear picture of all the costs associated with purchasing a POS system so that budgets can be planned and justified.
- Improving customer satisfaction.** Every technological investment should support the customers' shopping experience without harming normal operations. The standard requirement now is that the investment should raise customer satisfaction and improve normal operations.

The main challenges that retailers face when deciding to buy checkout systems are understanding total costs, improving customer satisfaction, and maintaining 24 x 7 performance reliability.

- ☒ **Maintaining 24 x 7 performance reliability.** The checkout is the most crucial step in any shopping experience, and retailers cannot afford for checkout systems to fail at any time. Maintaining 24 x 7 performance reliability becomes increasingly important as retailers extend their hours of operation to meet customers' needs.

**TABLE 1**

Respondent Profile

Retail segment	United States		Europe	
	POS	PCCD	POS	PCCD
Specialty	50%	70%	43%	88%
Food service	27%	0%	17%	12%
Grocery	8%	0%	20%	0%
Other	15%	30%	20%	0%
Average customers served per unit per hour	25.8	19.4	18.6	14.2
Average number of units per respondent	1,024	864	1,395	53
Employees	POS		PCCD	
<100	8%		14%	
100–499	17%		60%	
500–999	33%		13%	
1,000+	42%		13%	
Revenue (\$M)				
<\$10	12%		17%	
\$10–49	11%		17%	
\$50–99	33%		33%	
\$100+	44%		33%	
Number of locations				
1	5%		12%	
2–99	32%		50%	
100–499	37%		25%	
500+	26%		13%	

Source: IDC, 2004

**Total Costs**

The standard perception in the retail environment, according to those surveyed, is that PCCD is not only cheaper to buy initially than POS, but it also offers cheaper operating costs than POS. However, as Table 2 and Figure 1 show, the TCO model reveals that, in reality, *PCCD is more costly* to run than POS, even within the first year of use and for each subsequent year.

The TCO model reveals that, in reality, *PCCD is more costly* to run than POS, even within the first year of use and for each subsequent year.

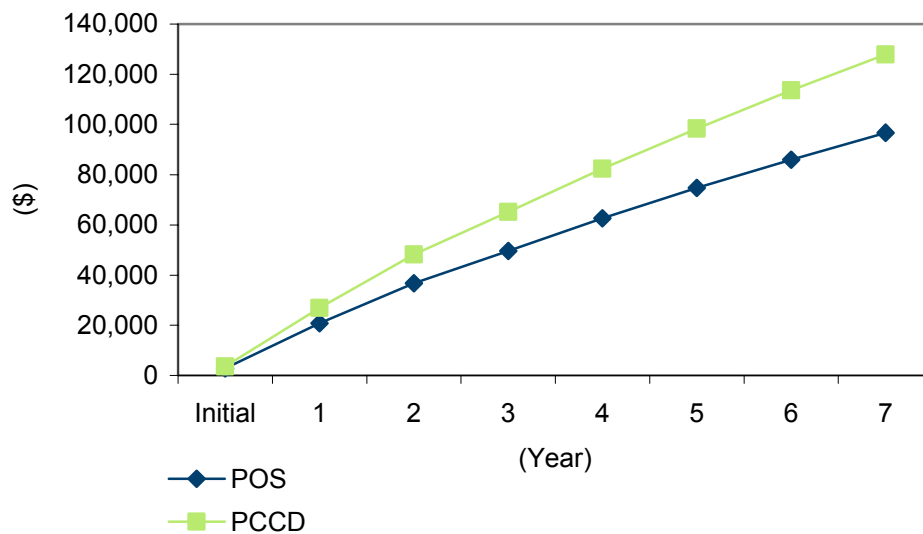
**TABLE 2**

Total Costs per Checkout System (\$)						
Segment	Year 1		Year 3		Year 5	
	POS	PCCD	POS	PCCD	POS	PCCD
Software and peripherals	1,196	1,065	1,245	1,138	1,301	1,363
System	2,885	4,259	3,484	5,931	4,076	7,302
Staffing	16,698	21,609	44,899	58,104	69,365	89,766
<b>Total</b>	<b>20,779</b>	<b>26,933</b>	<b>49,628</b>	<b>65,173</b>	<b>74,742</b>	<b>98,431</b>

Source: IDC, 2004

**FIGURE 1**

Total Costs per Checkout System



Note: The research has highlighted that a PCCD solution is typically in use for no more than five years.

Source: IDC, 2004

The overall savings are multiplied many times over when we account for the fact that buying checkout solutions often involves purchasing equipment for many stores as part of a chain. To underscore these points, we note that the average difference in total costs between POS and PCCD in year one is \$6,154 per unit in favor of POS. By year five, the average difference in total costs between POS and PCCD reaches \$23,689 per unit in favor of POS. If we look at the data another way, we note that PCCD costs on average over 30% more than POS after five years of use. If we assume a discount rate of 10% (the standard discount rate used in IDC models) and apply this rate to the average savings of POS over PCCD for each year over five years, we calculate a net present value of \$18,363 in savings, making POS the clear cost-conscious choice.

PCCD costs on average over 30% more than POS after five years of use.

To better understand the differences between these two solutions, we break down the individual costs that are involved: system, software and peripherals, staffing, and other costs.

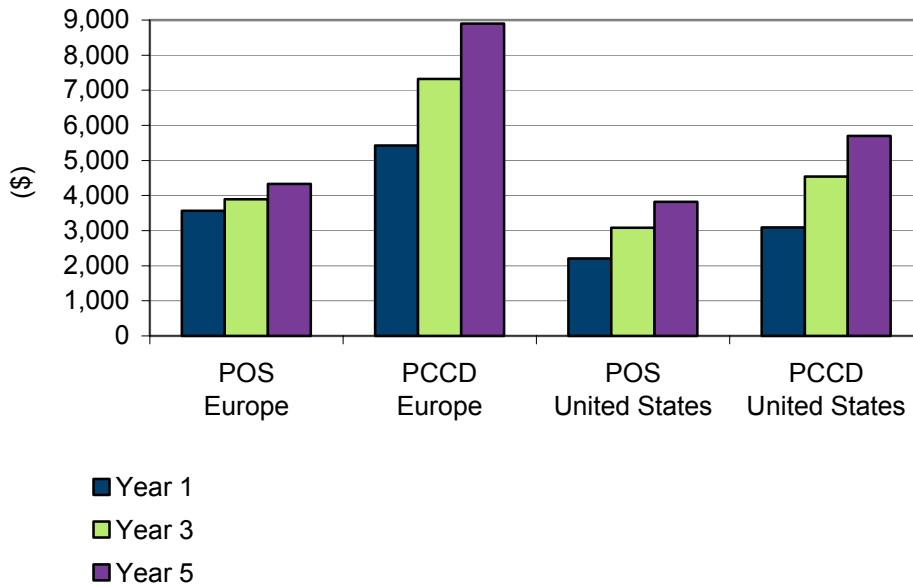
### **System Costs Are Important to Consider in Their Totality**

Figure 2 shows that the initial costs of buying checkout systems favor PCCD. However, the figure also shows that when ongoing costs are taken into account, POS is consistently more cost-effective than PCCD over time.

When ongoing costs are taken into account, POS is consistently more cost-effective than PCCD over time.

**FIGURE 2**

**System Hardware Costs per Checkout System**



**Notes:**

Costs include annual upgrades, maintenance, and initial software.

POS system includes processor, hard disk drive, nontouch screen, printer, cash drawer, operating system, and handheld scanner.

PCCD system includes hard disk drive, nontouch screen, card(s) to attach peripherals, printer, cash drawer, operating system, and handheld scanner, although items were not necessarily all IBM products.

Source: IDC, 2004

**Software and Peripherals Costs Are Also Ongoing**

In IDC's opinion, investments in supporting software and peripherals for any checkout system are as important to consider as the initial costs. New features and functionalities emerge among POS applications in shorter cycles than hardware refreshes. Additionally, POS applications need to integrate store back-office applications and enterprise applications that will likely be upgraded more frequently than POS system hardware. Peripherals also tend to have shorter refresh cycles than POS system hardware because of heavy use and new developments. Retailers evaluating their options need to consider when they plan to upgrade software and peripherals and determine which POS system best supports their needs while keeping costs to a minimum.

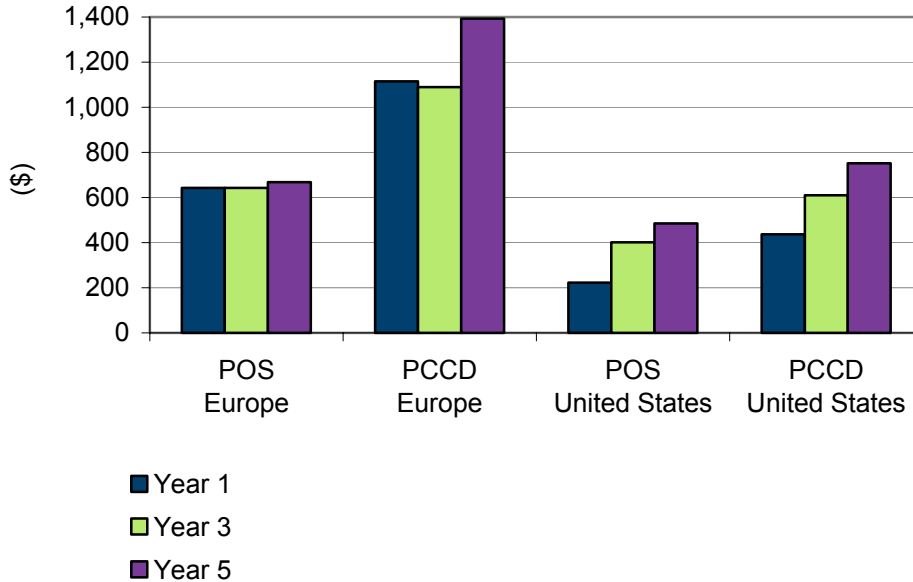
As Figure 3 shows, the research supports POS over PCCD in terms of ongoing peripherals and additional software costs.

Regardless of the geographical variations, annual operating costs for software and peripherals for POS are lower than those for PCCD, partly because PCCD requires far higher levels of maintenance and upgrade.

Regardless of the geographical variations, annual operating costs for software and peripherals for POS are lower than for PCCD.

**FIGURE 3**

Peripheral and Software Costs per Checkout System



Note: Costs include peripherals and software upgrades not included in the original bundled system package.

Source: IDC, 2004

**Staffing Costs Should Not Be Ignored**

It is impossible to review the differences between the two systems without looking at staffing costs. When included in the total cost of each system per unit, staffing costs make up the largest portion of total costs by far. The results of the research show that, even though more time is needed to install and launch the more sophisticated POS and to train the staff that will use it, the total cost difference between POS and PCCD still favors POS (see Figure 4). According to the survey responses, the reason is that POS has a faster rate of serving customers and, therefore, requires fewer total staff hours, even within the first year. The higher throughput of POS compared with that of PCCD also means greater sales volume in the same amount of time, further offsetting POS training costs.

The results of the research show that, even though more time is needed to install and launch the more sophisticated POS and to train the staff that will use it, the total cost difference between POS and PCCD still favors POS.

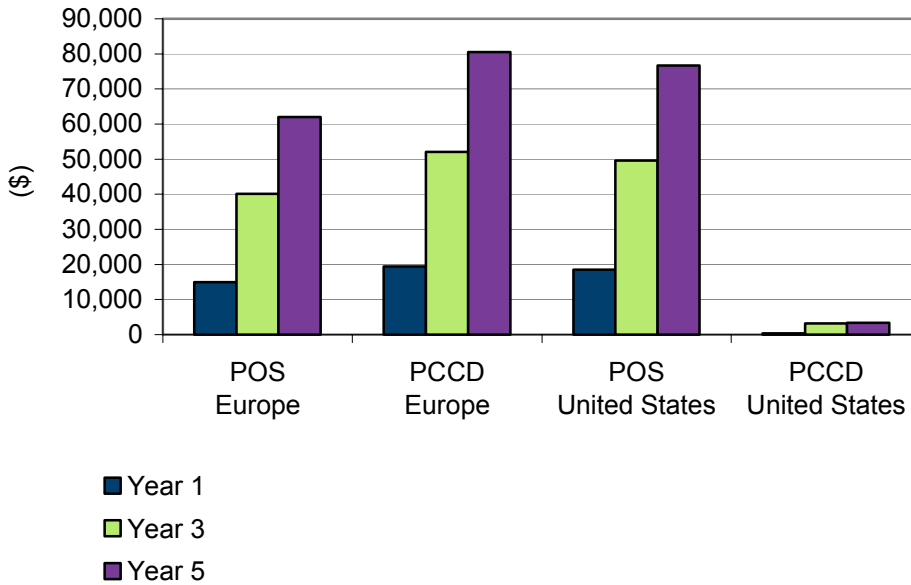
POS also enables better information management as well as more reliable stock processing and product identification. All of these benefits improve productivity in the retail environment and result in a more efficient relationship with customers. Such advantages, along with shorter sales transaction times and increased throughput, are especially important for retailers with high staff turnover rates to remember when comparing POS with PCCD.



In terms of dollars, POS reaches an average total five-year cost savings in staffing of \$22,326 and \$18,477 in the United States and Europe, respectively.

**FIGURE 4**

Staffing Costs per Checkout System



Note: Costs include training, launch, and lost productivity due to downtime and costs in excess of two operational full-time employees per system.

Source: IDC, 2004

**Benefits**

**POS Systems Enhance Customer Service**

Short lines and speedy service are major considerations for retailers installing either system. There are obvious benefits in terms of the number of customers served, which results in an increase in sales. Although the information is influenced by store size, it is evident that POS delivers faster service and thus reduces the amount of time customers spend in checkout lines. Respondents to the survey were especially clear on this point, as the following direct quotes demonstrate:

- "We've definitely improved business efficiency and customer service, as now we can control the products a lot more..."
- "Definitely faster checkouts; we've found them not only to be faster but more efficient with the information availability..."
- "Speed of the transaction is very important to us. Errors have also been reduced..."

Although the information is influenced by store size, it is evident that POS delivers faster service and thus reduces the amount of time customers spend in checkout lines.

Whether the store is small, large, or part of a chain, customers will spend less time in line when POS is installed. Speedy customer service is as important to a small retail convenience store as it is to a specialty retailer, which sees sharp peaks during the day. Obviously, the less time customers have to wait for checkout, the more likely they are to return.

Whether the store is small, large, or part of a chain, customers will spend less time in line when POS is installed.

Another benefit is that store managers are able to reassign employees to other shop floor customer service duties, such as answering queries. The flexibility that companies realize as a result of using POS technology fosters customer loyalty and keeps costs low and is one key aspect in how the choice of technology can have a dramatic impact on customers' shopping experiences, without being seen as an unnecessary gimmick.

**Asset Utilization Is Better with POS Systems**

To retailers interviewed, efficient service is fundamental to the choice of technology. IDC's model also looked at the cost per customer served on each system. The clear winner on this measure is POS, as Table 3 shows.

This significant cost difference is due partly to the quicker customer service achieved with POS, as evidenced by the responses of customers to the survey. Put in actual numbers, the average total PCCD system cost per customer served is between 33% and 87% greater than that of POS. Rapid service has evident benefits for customers, and it is just as crucial for retailers that are trying to get the most out of their IT investments. Having spent the money, retailers will want to keep operating costs low, whatever the customer base. On this measure, the TCO model and research clearly demonstrate that reducing cost per customer favors POS.

The average total PCCD system cost per customer served is between 33% and 87% greater than that of POS.

**TABLE 3**

Costs per Customer Served (\$)

Year	Europe		United States	
	POS	PCCD	POS	PCCD
1	2.93	5.30	2.41	3.24
3	2.63	4.89	2.40	3.21
5	2.69	5.03	2.52	3.36

Source: IDC, 2004

Retailers interviewed also commented that overall operating efficiency is also improved with POS. According to customer responses, the software used for the POS system extends beyond traditional systems management boundaries to simplify the complexity of systems management efforts, aligning these efforts with a company's core business processes. The system's ability to link up through both local and wide

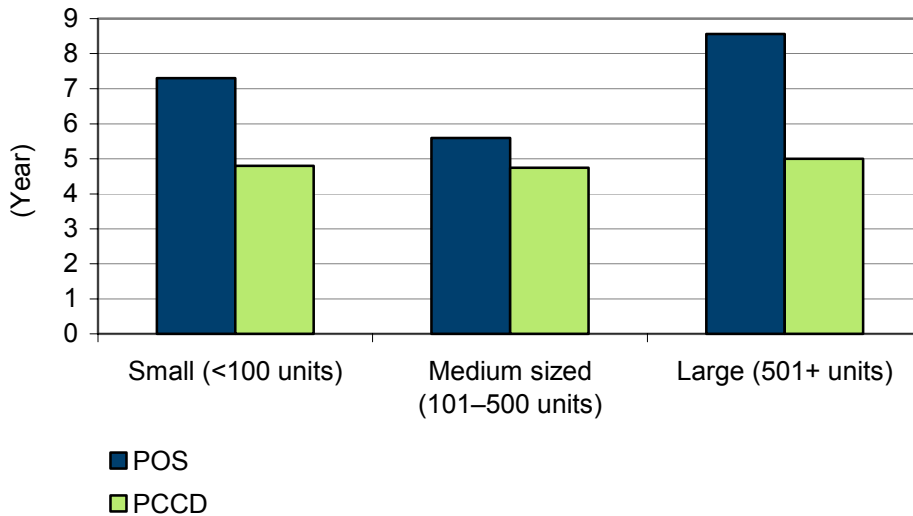
areas allows the streamlining of ordering and a quick, flexible response to new or localized retail opportunities. It also allows for intelligent use of stock storage, making the flow of products more efficient and therefore more profitable. Again, these capabilities improve customer satisfaction as can be seen in the responses of the interviewees, who highlighted that they opted for POS rather than PCCD for the following reasons:

- ☒ "Faster checkout and internal department performance improvement..."
- ☒ "Just-in-time stock deliveries..."

The IBM POS solution has a longer lifetime than the IBM PCCD solution, bearing in mind some geographical differences (see Figure 5). When the lifetime is spread across a chain of stores, the dollar effect of the longer lifetime for POS is widened. The research model confirms that POS consistently delivers benefits for up to 70% longer than PCCD.

**FIGURE 5**

Life Span of Solutions



Notes:

The research has highlighted that PCCD is typically in use for no more than five years. System's lifetime for hardware and peripherals is defined as "until chassis is replaced." System's lifetime for software is defined as "until major upgrade is required."

Source: IDC, 2004

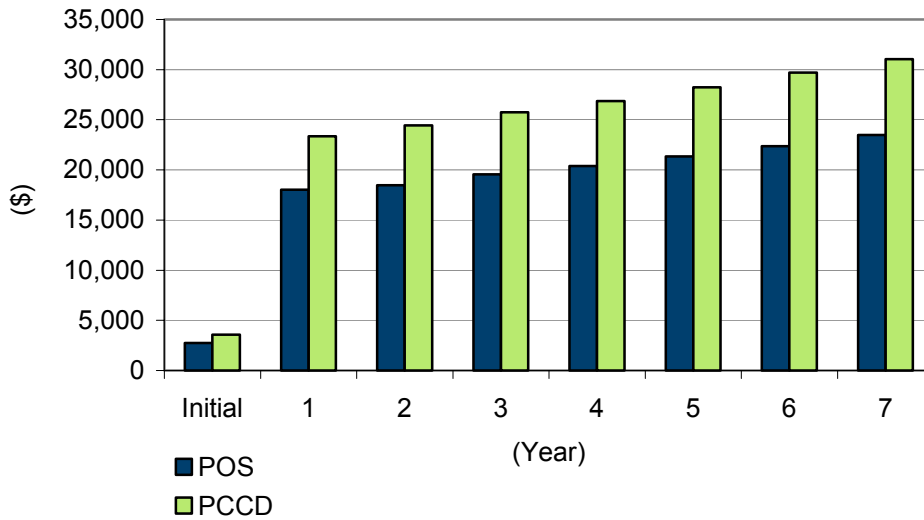
## CONCLUSION

As retailers seek to update legacy checkout systems to improve customer service and operational efficiency, they must consider each system's TCO, not just the initial cost, when making the final purchasing decision. The reduction of costs by a few basis points can lead to dramatic improvements of retailers' bottom-line results. IDC's analysis of POS and PCCD systems in retail environments reveals clear and compelling advantages, notably lower costs and improved customer service, for POS over PCCD. We conclude the following from our analysis:

- ☒ The TCO model verifies that POS is the lower-cost option, despite the initial price, even within the first year of operation.
- ☒ The full extent of the advantages associated with POS is obvious when the true costs of operation are taken into account, as validated by respondents to the survey from which the model was developed.
- ☒ There is a widening gap between the average annual costs for POS compared with those for PCCD over time, as shown in Figure 6. This means that the cost advantage for POS is greater the longer it is in use. Over the life of the systems, these cost differences have a major impact on the bottom line.
- ☒ Benefits of the use of POS over PCCD are significant; the most tangible are better customer service, improved reliability of service, longer system performance, and employee productivity. These benefits not only improve efficiency and fosters customer loyalty — they also mean that POS offers a superior contribution to both the bottom and top lines. These are financial measures that every retailer appreciates, both in challenging market conditions and during good times. Features have also been identified by some respondents as fundamental to their decision to invest in POS over PCCD.

**FIGURE 6**

Annual Costs per Checkout System



Note: The research has highlighted that PCCD is typically in use for no more than five years.

Source: IDC, 2004

## METHODOLOGY

This IDC white paper has been developed through a process of in-depth interviews with a number of IBM business partners and executives as well as a quantitative survey of end-user organizations coupled with TCO modeling and analysis.

## Copyright Notice

External Publication of IDC Information and Data — Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2004 IDC. Reproduction without written permission is completely forbidden.