Question:

1998-2001 The information-sharing process began with the finance and sales and purchase division. Standalone terminals were used by these departments to handle the operations. In this phase, an amount of around 7 "The Indian Pharmaceutical Industry: Collaboration for Growth," KPMG, INR 80,000 to 100,000 was spent on IT.

The automation of the departments meant that human resource requirements were drastically reduced; IT implementation made possible a significant reduction in the number of employees. In the words of the company's IT manager, Manoj Kashyap, "After the implementation of an IT-based solution, the workforce requirement fell from 400 to 100 and operational efficiency increased from 25 percent to 100 percent." The software used was FoxPro and Visual Basic. 2002-2004 In 2002, the manual system of order-taking was replaced by a telephone system, wherein an operator took the orders from the retailers and immediately transferred the data into the system. This process reduced the probability of errors. In 2004, with the expansion in business, an excess of standalone terminals with separate data repositories was creating data redundancy and inconsistency, so the management team decided to integrate the modules and centralize the databases. Servers were introduced and EasySol8 software was incorporated. (EasySol is an off-the-shelf software for the pharmacy industry.) The application and the databases were contained in the same server. 2005-2006 Parent companies — namely, the manufacturers — started electronically interacting with NDPL. In this way, the purchase orders were sent to the manufacturing companies, and automatic bill generation began. The same operation had previously taken eight hours, but the introduction of a computerized system reduced the time required to 30 minutes, which clearly represented a significant improvement in time management. 2007-2009 As the company continued to grow, 50 new systems were introduced, as were IBM servers. Data and applications had previously resided on the same server, which slowed the performance of the system, and therefore the application servers were separated from the data server. New servers were introduced, which took the server count to four: three application servers and one data server. Thin clients9 were introduced, as were wireless local area networks. By 2009, computerization had been carried out in almost all departments. In addition to the introduction of computerization in the internal systems, electronic interaction also extended to the external entities. Initially, expenditure on software was INR 200,000, which reached INR 300,000 in 2009; hardware expenditure went from INR 300,000 to INR 482,000 in 2009 (refer to Exhibit 5). 8 EasySol is a pharmaceutical sales force automation software. It serves the needs of several verticals, such as distributors, chemists, manufacturers, chain pharmacies and department stores, etc. This software was developed by Excelsior Software Pvt. Ltd., a leading company that specializes in providing software solutions and services to small- and medium-sized companies. 9 A thin client is a "client machine that relies on the server to perform the data processing."

2010-2011 Since the company had incurred huge capital and operational IT expenditures, the decision was made to explore the possibility of cloud computing, which the management believed would reduce the capital IT expenditure. The departments were using a variety of software, which made maintenance and upgrading difficult. Therefore, after much deliberation, the decision was made to adopt cloud computing technology.

Cloud technology10 could help an organization leverage computing resources without investing in the infrastructure. It basically offered computing resources as a service that could be accessed by the Internet using the concept of pay-per-usage. In cloud computing, the onus of maintaining the computing infrastructure was on the cloud provider. The cloud vendors offered various types of cloud models, such as infrastructure as a service (IaaS), platform as a service (PaaS), software as a