INTERACTIVE SESSION: TECHNOLOGY

Developing Mobile Apps: What's Different

Just about all businesses today want to deploy mobile apps. Studies show that mobile consumers look at their phones an average of 1,500 times each week and spend 177 minutes on their phone per day. With every swipe, tap, and zoom, customers are coming to expect the same experience in all their dealings with businesses. Businesses today know they must respond, and they want mobile apps developed in a very short time frame. That's not so easy.

Developing successful mobile apps poses some unique challenges. The user experience on a mobile device is fundamentally different from that on a PC. There are special features on mobile devices such as location-based services that that give firms the potential to interact with customers in meaningful new ways. Firms need to be able to take advantage of those features while delivering an experience that is appropriate to a small screen. There are multiple mobile platforms to work with, including iOS, Android, and Windows 10, and a firm may need a different version of an application to run on each of these. System builders need to understand how, why, and where customers use mobile devices and how these mobile experiences change business interactions and behavior. You can't just port a website or desktop application to a smartphone or tablet. It's a different systems development process.

Alex and Ani learned this when developing mobile app for employees in its stores to help customers make selections and then complete the purchase transaction. Alex and Ani, founded in 2004, designs, produces, and sells high-quality, eco-friendly jewelry in the United States using artisanal techniques and is dedicated to helping its customers find inner peace and positive energy. Having customers in Alex and Ani stores wait in long checkout lines ran counter to the company's philosophy and brand image.

Working with Mobiquity, a developer of enterprise mobile solutions, Alex and Ani created a mobile point-of-sale and payment solution where Alex and Ani's Bangle Bartenders can swipe credit cards, scan bar codes, and print, allowing customers to sign and receive a copy of the credit card receipt at the time of purchase while they are in the store aisles. They do not have to wait in line for a cashier. The mobile app helps store sales staff to be more attentive to customers while reducing time to pay for purchases. This enhances the in-store customer experience, improves brand perception, and provides better customer service, thereby increasing sales revenues.

The starting point for developing a mobile app is to identify the mobile moments (occasions when someone would pull out a mobile device to get something done) where a mobile app would be especially helpful. Alex and Ani's chief technology officer Joe Lezon and head of retail operations Susan Soards mapped out the mobile moments where employees interact with customers. They then specified the context—the situation, preferences, and attitudes of customers and employees in these mobile moments. Lezon and Soards determined where physically in the store mobile moments occur, how long they last, the stage of the checkout process, what information is available, and customer expectations.

The second step is to design the mobile engagement. Businesspeople, designers, and app developers get together to decide how to engage a customer during mobile moments and which moments benefit both the customer and the company. A mobile app for moments that benefit both customers and the company is more likely to be successful. Alex and Ani had a small team draw pictures to design the mobile engagement, mapping out exactly how an employee would use an iPod Touch application and a credit card reader/printer linked directly to the company's point-of-sale system to engage customers. The design specifications included screen layouts, the sequence of events, and transactions needed at each step.

The third step is to engineer people, processes, and platforms to deliver the mobile experience. An effective mobile app often requires changing the firm's internal systems, such as those for inventory management, customers, and reservations. Changes such as new APIs and tuning the systems to respond more quickly to requests account for 80 percent of the cost of most mobile projects. (*API* stands for "application program interface," a set of routines, protocols, and tools for building software applications, specifying how software components should interact.) Alex and Ani connected their mobile app to the company's point-of-sale systems as well as to systems with detailed product information.

The fourth, final step is to monitor performance and improve outcomes. Alex and Ani analyzed its mobile retail application to determine how much

the length of time for checkouts decreased and which customers completed transactions. The new mobile system gave Bangle Bartenders more time to spend with customers, eliminated customer lines, and helped increase holiday sales by more than 300 percent. Alex and Ani was able to increase the number of checkout points from four to 10 in most of its 28 U.S. stores.

Mobile apps should not be built for the sake of going mobile but for genuinely helping the company become more successful. The mobile app must be connected in a meaningful way to the systems that power the business. Chicago-based TTX, which provides rail cars and freight rail management services to the railroad industry, found that the most critical aspect of its mobile application development project was having a firm idea of what it was trying to accomplish with the app. In 2014 the company developed a mobile app to improve billing accuracy and boost the productivity of its maintenance crews in its 50 maintenance shops that operate along the railroads. The app took about six months to design and build in-house.

The purpose of the app was to improve record-keeping involved in TTX's maintenance work, which takes place in rough outdoor conditions where connectivity is spotty or nonexistent and is performed by employees who often wear gloves. Maintenance crews had used paper and pencil to record their notes on the rail car repairs. The mobile application was based on a Windows platform for a plastic-encased PC with a touchscreen. TTX CIO and Vice President Bruce Schinelli and his systems development team recognized that what the app needed to do was to replace pen and paper, and it had to work that well in the field. That early understanding of how the mobile app would provide value to the business drove the entire system design and implementation. Schinelli believes that if a company makes the wrong assumptions about the purpose of its mobile application, it will have to do a lot of rework. For TTX, the hard work was making sure its system builders knew exactly how the mobile app would work out in the field.

Sources: Mary K. Pratt, "As Mobile Apps for Employees Proliferate, CIOs Get Involved," searchCIO.com, accessed February 10, 2016; Alex and Ani, "Alex and Ani mPOS," www.mobiquity.com, accessed February 22, 2016; Linda Tucci, "Enterprise Mobile App Development: No Easy Answers," searchCIO.com, accessed February 22, 2016; and Brian Solis, "Mobile Is Eating the World," Sitecore Corporation, February 2016.

CASE STUDY QUESTIONS

1. What management, organization, and technology issues need to be addressed when building a mobile application?
2. How does user requirement definition for mobile applications differ from traditional systems analysis?
3. Describe how Alex and Ani's sales process before and after the mobile application was deployed.

Review Summary

13-1 *How does building new systems produce organizational change?*

Building a new information system is a form of planned organizational change. Four kinds of technology-enabled change are (1) automation, (2) rationalization of procedures, (3) business process redesign, and (4) paradigm shift, with far-reaching changes carrying the greatest risks and rewards. Many organizations are using business process management to redesign workflows and business processes in the hope of achieving dramatic productivity breakthroughs. Business process management is also useful for promoting total quality management (TQM), six sigma, and other initiatives for incremental process improvement.

13-2 *What are the core activities in the systems development process?*

The core activities in systems development are systems analysis, systems design, programming, testing, conversion, production, and maintenance. Systems analysis is the study and analysis of