The Automated Wal-Mart- A Thought Experiment
(Disclaimers are on the last page.)
Sandeep Krishnamurthy
http://faculty.washington.edu/sandeep
sandeep@u.washington.edu

The Idea
Imagine a completely automated Wal-Mart. When you enter the store, there are, generally, no employees to help you. At most times, the only people in the store are customers. If you show up between 3 and 6 a.m., you might see employees performing shelf-stocking activities. A clean-up crew shows up at 6:30 a.m.

How could this be possible, you ask? Don't you need people to run a store? In this document, I will demonstrate that it is now possible to run a store using various technologies.

Remember, this is a thought experiment. Such a store does not exist today. However, it might in the future. This is intended to provoke thought and reasoned conversation. I expect that this document will mainly be used in educational settings.

The Typical User Experience

Entry
Entry to the unmanned Wal-Mart is through a biometric security system. Registered customers enter the store by simply pressing their thumb on a reader. Readers are available at two heights to accommodate various ages and profiles. A two-door entry system ensures that only authorized visitors might enter. Video and still images are taken of every entering customer for security purposes.

New visitors are directed to kiosks outside the store for the registration process. Here, they have to fill out a short form, provide a major credit card and have a picture taken. Then, they provide a thumbprint to authenticate their identity and they are instantaneously registered.

Greeting
Entering customers are greeted by an automated greeting assistant. A typical message would be- "*Welcome to Wal-Mart! I hope you have a great shopping day. Today, we have a special on children's toys on aisle 26. Do you have a question I can answer?*"

The automated assistant is built on kiosk technology and possesses a virtual physiognomy that is designed to make users comfortable. The voice of the automated assistant is chosen to be pleasing. Due to the cost-savings generated through in-store automation, automated greeting assistants are available throughout the store. The gender of the assistant is matched with the demographic profile associated with a

The Automated Wal-mart is an idea of Sandeep Krishnamurthy. Please contact him at sandeep@u.washington.edu if you have questions or want to contribute.

1

store section- e.g. the automated assistant in the sporting goods section uses a male voice and linguistic structure.

Automated greeting assistants possess a detailed knowledge base about the products displayed in the store. This knowledge base includes information about various alternatives, in-store specials etc. Visitors might browse the automated greeting assistant's knowledge base to have specific questions answered. Questions might include- "Do you have the latest Elmo toy?", "Where can I find craft activities for kids?".

Customers could either engage an automated greeting assistant or go straight on to their intelligent shopping carts.

Intelligent Shopping Cart
Most consumers bring their shopping lists with them from home on their PDAs. They choose an intelligent shopping cart which is equipped with a PSA- a Personal Shopping Assistant. Consumers can transfer their shopping list from a PDA to a PSA in an instant. If a consumer does not have a PDA, s/he can simply upload the list using a Web interface before coming to the store. Alternatively, a consumer might type in their shopping list directly on to a PSA.

The PSA assists consumers by- a) retrieving specials and promotions for items that are similar to what the consumer picked and b) providing them with a map that minimizes their walking time in the store. The map points out the location of the item by aisle, shelf and location- e.g. end of aisle 23, middle shelf.

If the PSA does not recognize something, it will say so. It provides a Spellcheck program to minimize spelling errors. The PSA remembers old lists created by the consumer allowing it to serve up information speedily.

Help Finding an Item
If a consumer cannot find what s/he is looking for, help is just a button away. Consumers could press the Instant Help button on their intelligent shopping cart. The Instant Help button connects consumers to a call center where trained care representatives provide targeted assistance. Globally dispersed call centers allow for instant assistance- the company promises help within 10 rings or 10% off on the entire purchase (max. $20). Care representatives can interact with the PSA on the intelligent shopping cart to accurately locate and map items.

Emergency
In the event of an emergency, the customer can press the red 911 button located at three positions on the shopping cart. Representatives from the local emergency services (police or ambulance) will rush to the scene and assist the customer. Emergency service personnel are allowed to bypass the biometric security system to enter the store using a special key.

Checking Out

Consumers are responsible for the checkout process. However, the burden on the consumer is reduced due to intelligent shopping cart technology.

All items in the store are [RFID](#)-tagged. When the consumer approaches the checking line, the intelligent shopping cart provides a total on the PSA by reading the RFID tags.

Consumers can check out using one of two options- a) Choose to pay using *Intellicheckout*- a.k.a. the zero hassle checkout process or b) Choose to pay using cash, credit or debit card. *Intellicheckout* works by creating a billing system where consumers get billed monthly for their purchases.

Returns

All returns are handled outside the store. Consumers can print out a return form and drop it off at their post office or other convenient locations.

Shopping Analysis Service

Consumers might subscribe for a shopping analyis service for $3 a month. This is waived for those who shop 12 consecutive months at the store or those who spend more than $200 per year. The shopping analysis provides a breakup of a) how much the consumer purchased each month, b) breakouts by categories and c) promotion analysis- i.e., how many times the consumer bought an item on sale.

Special Situations

Expensive Items

Items that are small and expensive are frequent targets of shoplifters. e.g. Ipods. Such items are placed in a special enclosure. To enter this enclosure, consumers will have to reauthenticate- i.e., provide their biometric id one more time to enter. This allows the store to minimize damages due to shoplifting.

Carding

The law requires that stores check the ID (or "card") of customers who buy cigarettes and alcohol. This can be accomplished through automated carding technology. Each customer who wishes to purchase cigarettes or alcohol is required to provide an image of their driver's license. This image is scanned by a pattern-matching algorithm to ensure that the minimum age criterion is met. Once this image is attached to a consumer profile, a biometric authentication meets carding requirements. If the image is unclear due to an old card, the customer would have to wait for authentication via phone from a call center.

Help with Bulky Items

Intelligent shopping carts may not be taken outside the store premises. This is because the electronic components might be damaged by inclement weather and other

factors. Heavy items may be transferred to a dumb shopping cart after checkout and this cart might be taken to the car.

Some consumers will require help with bulky and heavy items that they cannot carry out themselves. This is accomplished through a help system. Customers who require help press a button after they check out. A staff member employed by an independent contractor meets them at the front.

Analysis
<u>Why is this better for the company?</u>

The company comes out ahead by-
- Greater profit margins by reduction of labor cost.
- Greater information on consumers allows the company to predict demand and personalize offerings and service.
- Better consumer service attracts more consumers.

<u>Why is this better for the consumer?</u>

The consumer benefits from-
- Improved service due to greater control over process.
- Improved consumer security through the use of technology.
- Greater post-sales information through the shopping analysis service.

Discussion
Once again, please remember this is a thought experiment. Such a store does not exist today. However, it might in the future. This is intended to provoke conversation.

If this sounds interesting to you, please email me at sandeep@u.washington.edu with a 1-page response. Please indicate if you are generally for this idea or against it or have a fairly neutral view about it. My goal is to provide a voice to as wide a set of people on this issue. I will err on the side of including thoughtful responses rather than incoherent rants. No hate mail, please.

If you email me a response, I will assume that you are providing me with permission to post it on my web site- http://faculty.washington.edu/sandeep/automated.

Disclaimers

1. This document represents the summary of a thought experiment and nothing else. It is an academic exercise that is intended for educational purposes.
2. I anticipate this leading to an academic conversation about the place of automation in retailing and its societal implications. I expect that scholars and students will react to this document through written commentary.
3. I am not affiliated with Wal-Mart nor have I been in the past in any professional capacity. I am an occasional shopper.
4. I have no knowledge that Wal-Mart has considered in the past or is currently considering such a proposal.
5. This document is not meant as a criticism of the business practices of Wal-Mart in any way. I have no knowledge of the information technology practices at Wal-Mart.
6. I could have easily picked Target or any other store for that matter.
7. I am also not affiliated with any anti-Wal-Mart group nor have I been in the past.