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December 17, 2020

Mr. Michael Lam
Shoppers Drug Mart Owner

Mr. David Wong
Shoppers Drug Mart Front Store Manager
NNNN LLL Street
Burnaby, BC LNL NLN

Dear Mr. Michael Lam and Mr. David Wong,

I am writing to present my report, Analysis on Shelf-Labels at Shoppers Drug Mart. Preparing this report has taught me a considerable amount regarding both paper and electronic shelf-labels. In particular, I would like to extend my appreciation to David as he patiently shared his experiences with the paper shelf-labelling system.

Although the paper shelf-labelling system has been the tried-and-true solution for communicating prices to customers for years, the amount of manual work and time involved leaves much to be desired. Electronic shelf-labels are capable of solving many of the issues that plague the paper system and offer a plethora of features that can both reduce losses and boost sales.

Electronic shelf-labels would undoubtedly require a tremendous initial investment, but the future return on investment is similarly tremendous. Mathematically, Shoppers Drug Mart always achieves a net-profit on switching to an electronic labelling system because product prices will always change. Regardless of the initial investment, the amount of paid hours spent on updating paper shelf-labels every week will eventually surpass the price of switching from a paper to electronic system.

I have thoroughly enjoyed preparing this report and would be happy to answer any questions or concerns. Feel free to contact me at (NNN) NNN-NNNN or by email at jonathho@student.ubc.ca anytime.

Sincerely,

Jonathan Ho

Encl. Analysis on Shelf-Labels at Shoppers Drug Mart Report

Analysis on Shelf-Labels at Shoppers Drug Mart

for
Michael Lam
Shoppers Drug Mart Store Owner
Burnaby, BC

and
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by
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December 17, 2020

Table of Contents

Abstractiv

Introduction1

Data Section3

 The Current State of Shelf-Labels at Shoppers Drug Mart3

 The Update Cycle at Shoppers Drug Mart3

 Maintenance of the Paper Shelf-Label System4

 Advantages of the Paper Shelf-Label System5

 Disadvantages of the Paper Shelf-Label System5

 A Digital Alternative: The Electronic Shelf-Label System6

 Advantages of the Proposed Electronic Shelf-Label System7

 Disadvantages of the Proposed Electronic Shelf-Label System7

 Customer and Employee Preferences8

 Customer Opinion8

 Employee Opinion10

Conclusion12

 Summary of findings12

 Interpretation of findings12

 Recommendations13

References14

Appendix A: Interview Questions16

Appendix B: Customer Survey Questions17

Appendix C: Employee Survey Questions18

Appendix D: Calculations for Average Incidents20

Figures and Tables

Figure 1 Paper Shelf-Label3

Figure 2 Talker Sticker3

Figure 3 Weekly Price Change Schedule at Shoppers Drug Mart4

Table 1 Overview of Advantages and Disadvantages of the Current Shelf-Label System6

Figure 4 Electronic Shelf-Label6

Table 2 Overview of Advantages and Disadvantages of an Electronic Shelf-Label System8

Figure 5 Customer Responses to Readability of Shelf-Labels9

Figure 6 Pie Chart of Customer Shelf-Label Preference Responses10

Abstract

The current paper shelf-labelling system at Shoppers Drug Mart includes many flaws, mostly centered around the time-consuming manual process and human error. Meanwhile, electronic shelf-labels mitigate nearly all flaws by simply being electronic. Although the cost of switching from a paper to electronic system would be an enormous investment, a return on investment is essentially guaranteed over time. With this report indicating both customer and employee approval, Shoppers Drug Mart should consider the following actions:

1. Perform a similar research report with a broader customer and employee opinion source.
2. Should the larger study have similar findings and conclusions, begin researching potential ESL candidates to implement.

Introduction

Shoppers Drug Mart (SDM) is a reputable pharmaceutical and retail chain owned by Loblaw with over 1000 stores located across Canada (*Our Company*). In retail, an important factor that determines whether a customer purchases a product is the price. As such, shelf-labels play the crucial role of communicating prices to customers.

At SDM, shelf labels are simply label paper held in place by a plastic cover, and the maintenance of the paper label system may be an issue. With each new product addition, removal, relocation, or adjustment, the respective labels must also be added, removed, and adjusted accordingly. This label update process requires a significant amount of time and is also susceptible to human error because they must be manually changed.

In the event of an error, SDM experiences losses in multiple ways:

- Shelf label errors reflect incompetence onto the store
- Both customer and employee time are wasted while verifying price-label differences
- Scanning Code of Practice entitles customers to receive additional discounts, further compounding losses for SDM

What is the Scanning Code of Practice (SCOP)?

A code resulting from the collaboration of the Retail Council of Canada (RCC), Neighbourhood Pharmacy Association of Canada, and the Canadian Federation of Independent Grocers (CFIG) that attempts to improve customer relations by emphasizing accurate scanner pricing. An excerpt from a Scanner Price Accuracy Code ticket is as follows:

If the scanned price of a non-price ticketed item is higher than the shelf price, or any other displayed price, the customer is entitled to receive the first item free up to a \$10 maximum. If the item is more than \$10, the customer is entitled to \$10 off the lowest advertised price (“Scanner Price Accuracy Code”).

One possible solution is to switch from paper shelf-labels to electronic ones. With the text being configurable for each electronic label, product prices and labels could both be modified to reflect the corresponding product. In the case that multiple SDM location have electronic shelf-labels, all labels could be centrally managed, ensuring consistency across all store locations.

Additionally, without the need to print thousands of labels for products, electronic labels are an environmentally friendlier option compared to their paper counterparts.

The purpose of this report is to investigate the paper shelf-label system at SDM and determine if electronic shelf-labels are a suitable replacement. To do this, the report analyzes information gathered from SDM employees along with information researched from reviews of electronic shelf-labels. This report discusses the current state of the paper talker system, advantages, and disadvantages of both the paper and electronic shelf-label system, along with customer and employee preferences.

Data Section

The Current State of Shelf-Labels at Shoppers Drug Mart.

The information to be presented was gathered in interviews with current employees using interview questions found in Appendix A. Shoppers Drug Mart (SDM) currently uses a paper shelf-labelling system which involve paper shelf-labels and talkers. Talkers are red stickers that are used to communicate that a product is for sale. Photographs of both a shelf-label and talker are shown in Figures 1 and 2 below. The update cycle, maintenance, advantages, and disadvantages sections follow.



Figure 1. Paper shelf-label.



Figure 2. Talker sticker.

The update cycle at Shoppers Drug Mart. SDM shelf-labels are normally setup to work in a 5+2 day cycle. For Monday through Fridays, new product prices are set in the pricing system, and their prices are reflected in-store by adding and removing talkers. On Friday evenings, another wave of product prices are updated in the system for Saturday and Sunday; and likewise, another wave of talkers must be added or removed for each product price change (Lam,

Vincent. Personal interview. 15 November 2020.). Figure 3 shows the weekly price change schedule below.

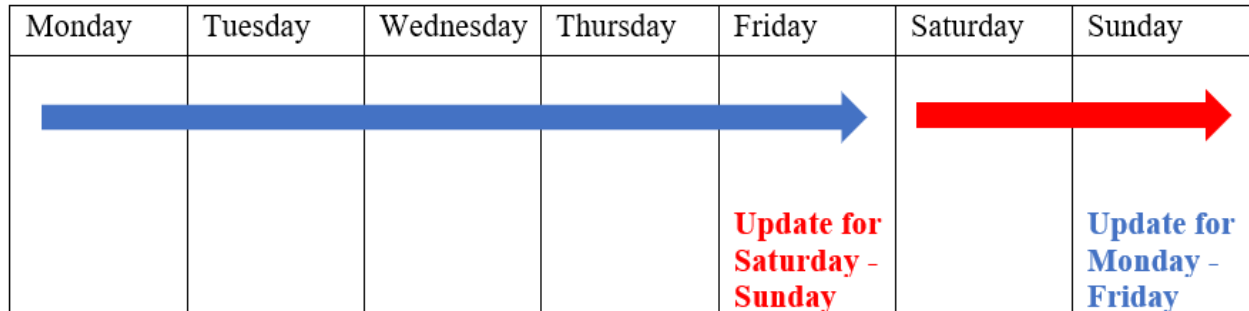


Figure 3. Weekly Price Change Schedule at Shoppers Drug Mart. Arrows represent the duration of the price change. Colours used to emphasize the 5+2 cycle.

Maintenance of the paper shelf-label system. During the weekly changes, SDM employees are responsible for three key tasks: removing expired talkers, printing the updated prices onto new talker stickers, and sticking the new talkers onto the corresponding shelf-labels of each product (Lam, Vincent. Personal interview. 15 November 2020.). According to an assistant store manager of SDM, employees of SDM can expect to spend approximately 3 – 5 hours on Friday shifts and 30 – 60 minutes on Sunday shifts performing talker updates on product shelf-labels. Occasionally, the Friday updates are so large that they require additional time from Saturday morning shifts to fully complete (Bui, Madeline. Personal interview. 19 November 2020.). In terms of paper consumption, each round of talker updates usually requires 50 – 60 pages of special sticker paper (Lam, Vincent. Personal interview. 15 November 2020.). This implies that a single SDM store can easily go through 100+ pages of sticker labels per week.

Approximately once per quarter, SDM changes the layout of products in select sections (oral care, first-aid, candy, etc.). Sometimes this change is made to accommodate the introduction of a new product, removal of an old product, or to simply shift existing products into a different location for efficiency or presentation purposes. These quarterly changes typically cover half the store at a time (about 10 sections) and requires adjustment of each affected shelf-label as well. As such, SDM often uses this opportunity to update the base price of products. Since the shelf-label itself is a much smaller piece of paper, roughly 15 pages of label paper are used to complete the quarterly update. However, the time required for this change is much longer than the average weekly cycle, about 20 hours of work for the entire process. (Wong, David. Personal Interview. 17 November 2020.).

Advantages of the paper shelf-label system. While there are only a few advantages of the current system, they do exist. The current system is easy to understand, teach, and use. When new SDM employees are hired, training them on updating shelf-labels is as simple as sticking and removing talkers on existing shelf-labels. Additionally, the use of talkers is a feature of the paper system. Because the labels are covered by a plastic covering, talker stickers can be used to indicate temporary price drops and removed when the sale is over (Bui, Madeline. Personal interview. 19 November 2020.).

Disadvantages of the paper shelf-label system. As mentioned previously, major weaknesses include the need to manually update each shelf-label or talker, the significant time cost, paper cost, and human error. Additionally, although the use of talkers allows shelf-labels to reflect price changes relatively quickly, each successive talker leaves residue on the plastic

cover, decreasing the visibility of the original shelf-label (Lam, Vincent. Personal interview. 15 November 2020.).

Table 1. Overview of Advantages and Disadvantages of the Current Shelf-Label System.

Paper Shelf-Label System	
Advantages	Disadvantages
<ul style="list-style-type: none"> • Easy to understand, teach, and use • Can use talkers to quickly reflect product sales 	<ul style="list-style-type: none"> • Manual process • Significant time cost • Paper cost • Subject to human error • Sticky residue

A Digital Alternative: The Electronic Shelf-Label System

The proposed solution in this report calls on the use of an electronic shelf-label (ESL) system. Instead of using paper labels, ESLs utilize an LCD or E-ink module to display product information to customers. An image of an ESL module is shown below in Figure 4. The advantages and disadvantages are discussed below.



Figure 4. An electronic shelf-label. Image source: <https://www.eink.com/electronic-shelf-label.html?type=application&id=5>

Advantages of proposed electronic shelf-label system. There are many advantages of ESLs, some of which are model-specific features; however, the basics tend to always include: significantly reduced manual labour, reduced paper waste, and consistent pricing across the store system, point of sale, and shelf-label (Chalberg). Depending on the model of ESL, other advantages could include: inventory tracking, central management of all SDM product prices, customer data collection, product finding, and much more (Chalberg; Lynn; Swedberg). The list of advantages can vary and extend so far that it would be beyond the scope of this report to determine which model SDM should consider. Perhaps the largest benefit that merits reiteration is the reduced labour cost. With every price change, the cost of paying an SDM employee to spend hours updating talkers or shelf-labels is reduced to near zero. Over time, this compounds into a return on investment measured upwards of 400% over 5 years (Valk). Furthermore, the many hours that employees normally spend on updating shelf-labels and talkers could then be put towards customer service, loss prevention or other duties.

Disadvantages of proposed electronic shelf-label system. Despite the numerous advantages, a switch to an ESL system still includes disadvantages. The initial investment is undoubtedly high. Although no amount of research could reveal a number or rate for replacing paper shelf-labels with ESLs, multiple sources have hinted that the period at which ESLs tend to pay themselves off is about 12 – 16 months (TRUNO; Valk). Another disadvantage is error propagation. As an extension of ESLs being centrally managed, should a pricing error occur for a product within the central management system, that error would propagate to all ESLs corresponding to the product. Finally, as with any change, it will be necessary to retrain staff on using the new technology of the ESL system (Mertlich).

Table 2. Overview of Advantages and Disadvantages of an Electronic Shelf-Label System.

Electronic Shelf-Label System	
Advantages	Disadvantages
<ul style="list-style-type: none"> • Reduced manual labour • Reduced paper waste • Consistent pricing information • Inventory tracking • Central management • Data collection • Product finding • Much more 	<ul style="list-style-type: none"> • High initial investment • Error propagation • Need to retrain staff

Customer and Employee Preferences

The examination of customer and employee opinions should also be considered prior to SDM selecting between paper or electronic shelf-labelling systems. Survey questions can be found in Appendix B and C of the report. Below are the results from analyzing survey responses from the two groups.

Customer Opinion. When asked about the visibility of the paper shelf-labels, 12 out of the 24 respondents selected “easy to read” with the other half choosing “sometimes difficult to read”. Meanwhile, of the 21 respondents who have visited a store with ESLs, 16 responded with the ESLs being “easy to read” and the remaining 5 choosing “sometimes difficult to read”. Figure 5 summarizes the data below.

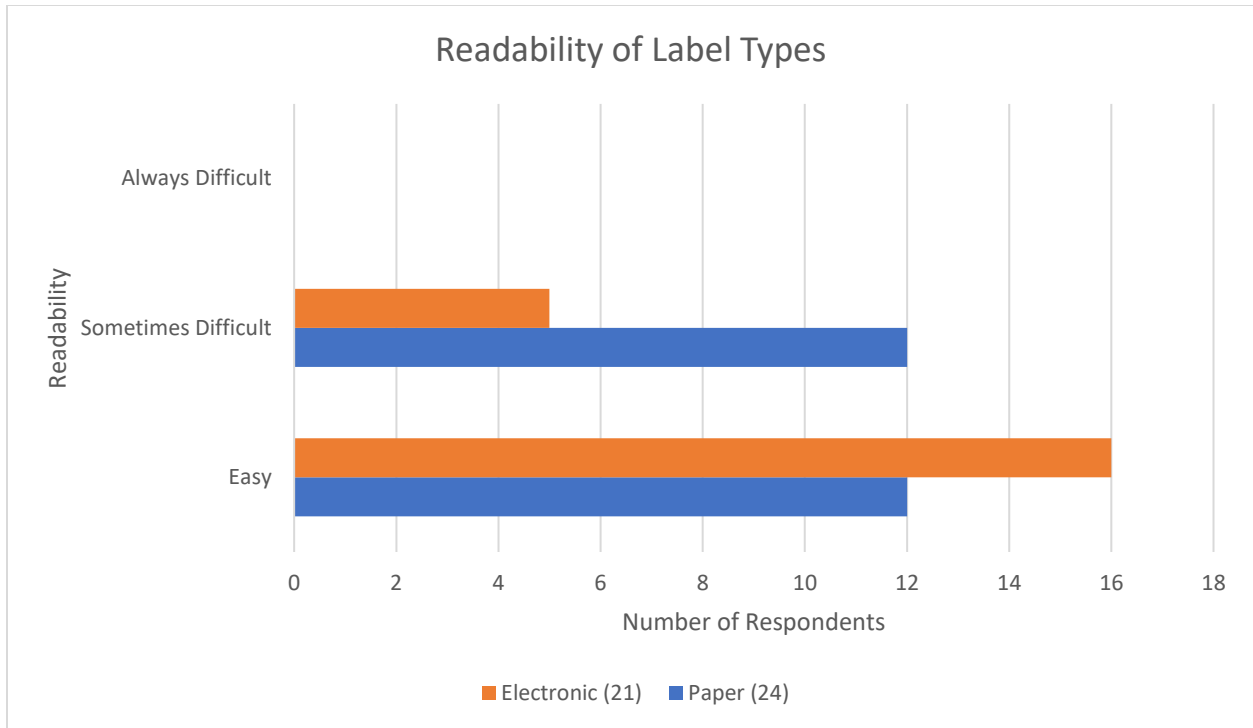


Figure 5. Customer Responses to Readability of Paper and Electronic Shelf-Labels.

Although no respondents selected “always” difficult to read in either paper or electronic labels, the ratio of “easy” to “sometimes difficult” is markedly better for ESLs (16/5) compared to paper shelf-labels (12/12). A possible explanation for this readability difference is the sticky residue left behind from talkers on the paper shelf-label system.

Finally, when given the option of shopping in a store with paper shelf-labels, electronic shelf-labels, or no preference, 2/24 chose paper, 10/24 chose electronic, and 12/24 had no preference. Figure 6 visualizes the preference results below.

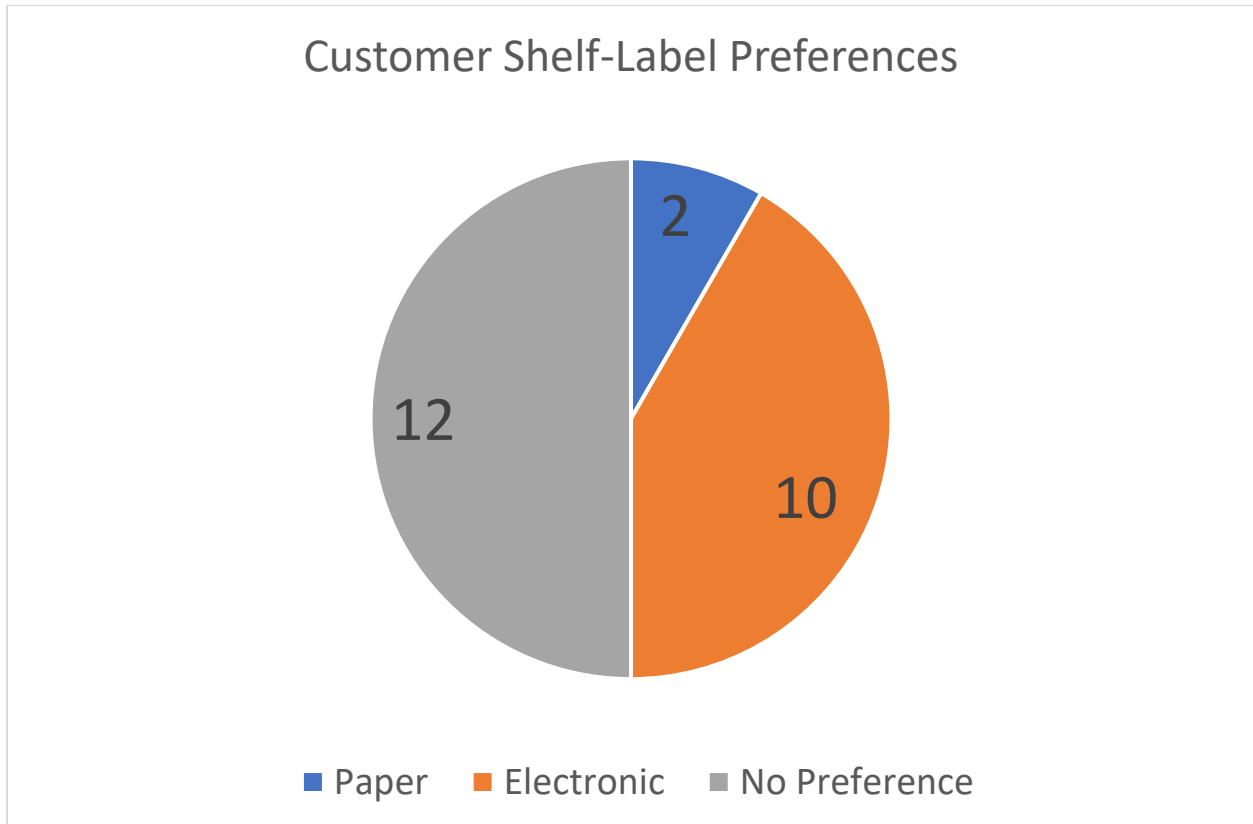


Figure 6. Pie Chart of Customer Shelf-Label Preference Responses.

The majority of customers clearly have no preference in the paper vs ESL debate. This is logically sound, as long as customers can understand the information that shelf-labels are providing, whether the information is communicated via a paper shelf-label or ESL is irrelevant.

As for the customers with a preference, the opinion is in favour of ESLs with multiple respondents citing electronic being the “environmentally friendly” option.

Employee Opinion. The employee survey results follow a similar trend to the customer results.

When given the option between having paper shelf-labels, ESLs, or no preference, not a single employee chose paper. 11 out of the 13 chose electronic and the remaining 2 did not have a preference.

This can perhaps be explained from the results of two other survey questions. The employees were asked how many hours they worked along with how often they encountered incidents regarding shelf-labelling inaccuracies within a week. Due to the nature of the survey questions, precise averages are impossible to calculate, but averages at the low end (using the upper limit of hours and lower limit of incidents) and high end (using the lower limit of hours and upper limit of incidents) can be calculated. Using the gathered information, which is shown and calculated in Appendix D, the incidents per hours worked can be concluded to be somewhere between 0.132 and 0.275 incidents per hour. In terms of an 8-hour shift, this equates to roughly 1 – 2 incidents.

Customer incidents are a negative experience for all involved parties, and with ESLs being a potential preventative measure, SDM employees would logically prefer it over the paper counterpart.

Conclusion

Summary of Findings

The main advantages of paper shelf-labels are ease of use, understanding, and teaching, along with the use of talkers to indicate sale prices. The disadvantages include being a manual process that requires significant time and paper cost, subsection to human error, and the sticky residue from talker stickers that can affect shelf-label visibility.

On the other hand, the main advantages of electronic shelf-labels include a massive reduction in manual labour, reduced paper waste, consistent pricing information, inventory tracking, central management, data collection, product finding, the ability for staff to allocate time to other more important duties, and much more. The disadvantages of ESLs are the high initial investment cost, need to retrain staff, and the possibility of error propagation.

Customer surveys show that the vast majority either prefer ESLs (12/24) or do not have a preference (10/24); only 2 out of 24 customer respondents prefer paper shelf-labels.

All SDM employees surveyed either prefer ESLs (11/13) or do not have a preference (2/13); no SDM employee prefer paper shelf-labels.

Interpretation of Findings

Although switching from paper shelf-labels to ESLs would require a high upfront cost, each year after the first adds to the compounding return on investment. Moreover, the many disadvantages of the paper system become advantages in the electronic system while still retaining the old

strengths. The removal of manual price changes severely reduces the chances of human error, which decreases the losses that SDM suffers in store reputation, customer and employee time, and product discounts from SCOP. While ESLs still have disadvantages, the high initial investment quickly disappears with time, the possibility of error propagation is as simple as fixing the root of the error and the need to retrain staff is something that will always be true for any new technical deployment.

With widespread approval from both customers and employees, SDM should consider the switch from paper to an electronic shelf-labelling system.

Recommendations

Given the many limitations of this report:

- Small sample sizes
- Samples sources from a single SDM store
- Inability to find accurate figures for the initial investment,
- Current pandemic limiting information gathering from individuals working in stores with ESLs already installed

Consider the following suggestions:

1. Perform a similar research report with a broader sample source and size using this pilot study as a template
2. Should that larger study have similar findings and conclusions, begin researching potential ESL candidates to implement

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Appendix A: Interview Questions

I am an undergraduate student at UBC engaged in a technical writing project. The purpose of the following interview is to obtain primary data for an analysis and investigation that aims to provide recommendations for improving shelf-labels at Shoppers Drug Mart. Together with information sources researched online, this interview will serve the ultimate purpose of providing recommendations for increasing the accuracy and efficiency of shelf-labels. The survey contains 7 questions and should take about 20 minutes of your time. Your responses are voluntary and anonymous. Thank you, I appreciate your generous participation in my interview.

- 1) What are some things that you like about the paper shelf label system?
- 2) What are some aspects of the paper shelf label system that could be improved?
- 3) How often are shelf-labels/talkers updated?
- 4) How much time do these tasks take?
- 5) How many labels are printed for each update/change?
- 6) How often do incidents involving shelf-labels come up?
- 7) What are your thoughts on an electronic shelf-label system? Better/worse? Why?

Appendix B: Customer Survey Questions

I am an undergraduate student at UBC engaged in a technical writing project. The purpose of the following survey is to obtain primary data for an analysis and investigation that aims to provide recommendations for improving shelf-labels at Shoppers Drug Mart. Together with information sources researched online, this survey will serve the ultimate purpose of providing recommendations for increasing the accuracy and efficiency of shelf-labels. The survey contains 6 questions and should take about 2 minutes of your time. Your responses are voluntary and anonymous. Thank you, I appreciate your generous participation in my survey.

1) I have visited a store with paper shelf-labels.

- a) Yes
- b) No
- c) N/A

2) I find paper shelf-labels _____ to read and understand.

- a) Easy
- b) Sometimes difficult
- c) Always difficult
- d) N/A

3) I have visited a store with electronic shelf-labels.

- a) Yes
- b) No
- c) N/A

4) I find electronic shelf-labels _____ to read and understand.

- a) Easy
- b) Sometimes difficult
- c) Always difficult
- d) N/A

5) I prefer to shop in a store with _____ shelf-labels.

- a) Paper
- b) Electronic
- c) No preference

6) Comments (Optional):

Appendix C: SDM Employee Survey Questions

I am an undergraduate student at UBC engaged in a technical writing project. The purpose of the following survey is to obtain primary data for an analysis and investigation that aims to provide recommendations for improving shelf-labels at Shoppers Drug Mart. Together with information sources researched online, this survey will serve the ultimate purpose of providing recommendations for increasing the accuracy and efficiency of shelf-labels. The survey contains 6 questions and should take about 2 minutes of your time. Your responses are voluntary and anonymous. Thank you, I appreciate your generous participation in my survey.

1) In a week, I spend approximately _____ on activities related to updating price-labels and talkers.

- a) 0 – 30 minutes
- b) 31 – 59 minutes
- c) 1 – 2 hours
- d) 3 – 5 hours
- e) 6 – 9 hours
- f) 10 – 14 hours
- g) 15+ hours

2) On average, I work _____ per week at Shoppers Drug Mart.

- a) 4 – 8 hours
- b) 8 – 16 hours
- c) 17- 24 hours
- d) 25 – 32 hours
- e) 33+ hours

3) In a week, I approximately encounter _____ incidents regarding shelf-label inaccuracies.

- a) 0
- b) 1 – 2
- c) 3 – 5
- d) 6 – 10
- e) 11+

4) My position is a _____ at Shoppers Drug Mart

- a) Cashier/Merchandiser
- b) Cosmetician
- c) Supervisor
- d) Assistant Manager
- e) Manager

5) I would prefer my Shoppers Drug Mart to have a(n) _____ shelf-label system.

- a) Paper
- b) Electronic
- c) No preference

6) Comments (Optional):

Appendix D: Calculations for Average Customer-Shelf-Label Incidents

Low End	Hours Worked	Incidents
	7	1
	7	1
	16	1
	16	1
	16	3
	24	3
	24	11
	32	1
	32	3
	32	3
	40	3
	40	6
	40	6
Sum	326	43
Avg		0.131902
Per 8 hr Shift		1.055215

High End	Hours Worked	Incidents
	4	2
	4	2
	8	2
	8	2
	8	5
	17	5
	17	11
	25	2
	25	5
	25	5
	33	5
	33	10
	33	10
Sum	240	66
Avg		0.275
Per 8 hr Shift		2.2

The calculation for the low end of estimated incidents is on the left. The right shows the calculation for high end of estimated incidents.