

INVESTIGATION AND ANALYSIS

PRE ANALYSIS

Prior to interviews and other planned analysis, a few observations about the small business had been made.

- Not much capital because it's not a large shop so casualties like barcodes scanner might not be reasonable.
- Everything is done by hand.
- Updating of books doesn't happen exactly when the transaction takes place in order to save up time.

For data collection there were choices of four different methods of investigation and data collection:

- **Observation:** This involves me going and seeing for myself what exactly happens and how everything goes about at the tuck-shop from the view of the employee/owner.
- **Interviews:** They require me to plan questions and talk to the owner about the business.
- **Using existing documentation:** This involves me using the documents (Receipts for reorder, accounting books ... etc.) and analyzing them to understand them more
- **Questionnaire:** This method did not seem very feasible to carry out as customers might not know what the bigger problems the tuck shop are. Another reason is the fact that most of them won't want to participate in answering for one reason or the next. This led me and Mr. Mafukidze to make a decision on omitting this method and then using results acquired from a combination of the other three would be the best way forward.

OBSERVATIONS

Friday 09 January 2015

BUSINESS PATTERNS

From 0800hrs till about 1600hrs I spent a full business day alongside Mr. Jonathan Mafukidze to see exactly what goes on and how busy it gets etc. Quickly I noticed that the business peak hours were from about 0800hrs to 1000hrs and from 1400hrs onwards. This is a usual pattern if the patterns of a normal family are put into consideration, in that family providers (Usually Parents) are attending work at the non-peak hours.

- Morning Customers mainly come to buy Bread, Cereals and Milk, Tea...
- Afternoon customers usually come for refreshments and snacks.
- Evening customers (1430hrs onwards) usually buy Sugar, Salts. Probably necessities that might have ran out during the day from my assumptions,

CHECKING OUT

The checking out process is very simple but can be time consuming for the cashier does the exchange of goods followed by a book update where he writes down which product has been sold and for how much. This list is compiled for the whole business day and stock checking is done every day to check balances, profits realized during the day and to see how much stock is available.

ACCOUNTING

Accounting is done every day after closing hours and early hours before opening each transactions using a simple accounting method similar to the petty cash book method.

EXISTING DOCUMENTATION

Using the record books Mr. Mafukidze gave me permission to use the old books of accounting and I was able to analyze the system. It seems as if Mr. Mafukidze used a system which consists of about one page a day of daily transactions and sections where he would use a simple accounting technique to balance the books. Although the books weren't currently being used because if I used the current books this will hold back the performance of the business. The method is completely the same which allowed me to use the older books to make a fair judgement

DAILY TRANSACTIONS

LOBEL'S #27 BAKERSWICH - #27	BUNS - #4 BREAD - 1 #1	GUARD #1
04/11/14		
BREAD - 66 #66		
EGGS - 24 #4		
ROYCO USANI MIX - 2 #1		
BUNS - 60 #6		
FREZERIS - 22 #2,20		
COKE KLS - 10+4 #7		
FAUSTA KLS - 11 #1,50		
ANEDOL GINGER HWS - 1 RS		
JOGUSTA - 28 #2,80		
STUMBO LOLI POP - 1 R2		
MILKS - 4 R2		
DAHDS GUM - 12 R6		
MAXX MAXX - 6 R6		
HIBLE DADS - 2 R2		
MAPUTI - 3 R8		
SNACKS ASSORTED - 23 #2,30	CALCULATED CASH - #1,20	
CHIMOMBE - 1 #1	ACTUAL CASH - #1,50	
LACTO - , #1	CALCULATED PAYOS-R 38	
MADE WASHING POWDER - 1 #1	ACTUAL PAYOS-R - 119,05	
ALWAHS PADS - 1 #1,20		
CASAMIA TIME BSCIS - 2 #1	\$10.00 SHORT.	
CHOCZIS - 1 #1	\$8.10c OVER.	
MAZOB ORANGE CRASH - 1 #1,30	\$1.90c SHORT.	
LUCH STAR TINNO FISH - 2 #2		
AREND CHOCOLATE BSCIS - 3 #1,50	OVER - COKE KLS - 2 #1	
AREND MARIE BSCIS - 3 #1,50		
PURE DROP 2L - 1 #4,50	SHORT - R01	
KORN KURLS - 1 #1		
COKE 2L - 1 #3	MAXX MAXX 2R2	
EVERSHARP 15 M - 1 R2		
MAZEMBA - 1 RS	MAPUTI - 3 R3	

EXPLANATION

The daily transaction paper shown on the previous page is divided into 3 sections

Section A

Consists of all the transactions that took place on the business day, it contains details of the products bought, the amount the total of the products costs and the quantity of the products purchased through the duration of the day.

Section B

This section contains the accounting done on a day to day basis. The owner works out the total amount he has received for his goods in section A and then he compares this value with the money he has in his possession from the day. Expenses are reduced and the money is supposed to balance out leaving probably the profit he would have made for the day and if the numbers don't add up he can tell that some money is short.

Section C

This section is basically calculates all the expenses that he would have paid for during the day. It includes the reordering expenses, security expenses. These expenses are the ones reduced in the calculations of daily balances.

The concept of this page is drawn up every single day using the same layout.

ACCOUNTING BOOKS AND RECEIPTS

DATE	STOCK ITEM	UNITS RECD	UNITS SOLD	BALANCES	S. VALUE
25/01/15	COKES 2L			12	
26/01/15	COKES 2L		1	11	\$#3
27/01/15	COKES 2L		2	9	\$#6
28/01/15	COKES 2L		3	6	\$#9
29/01/15	COKES 2L		2	4	\$#6
30/01/15	COKES 2L		1	3	\$#3
31/01/15	COKES 2L		3	0	\$#9
01/02/15	COKES 2L			12	
02/02/15	COKES 2L			11	\$#3
03/02/15	COKES 2L		2	9	\$#6
04/02/15	COKES 2L		1	8	\$#3
05/02/15	COKES 2L	12	2	6	\$#6
06/02/15	COKES 2L				
07/02/15	COKES 2L				
08/02/15	COKES 2L				

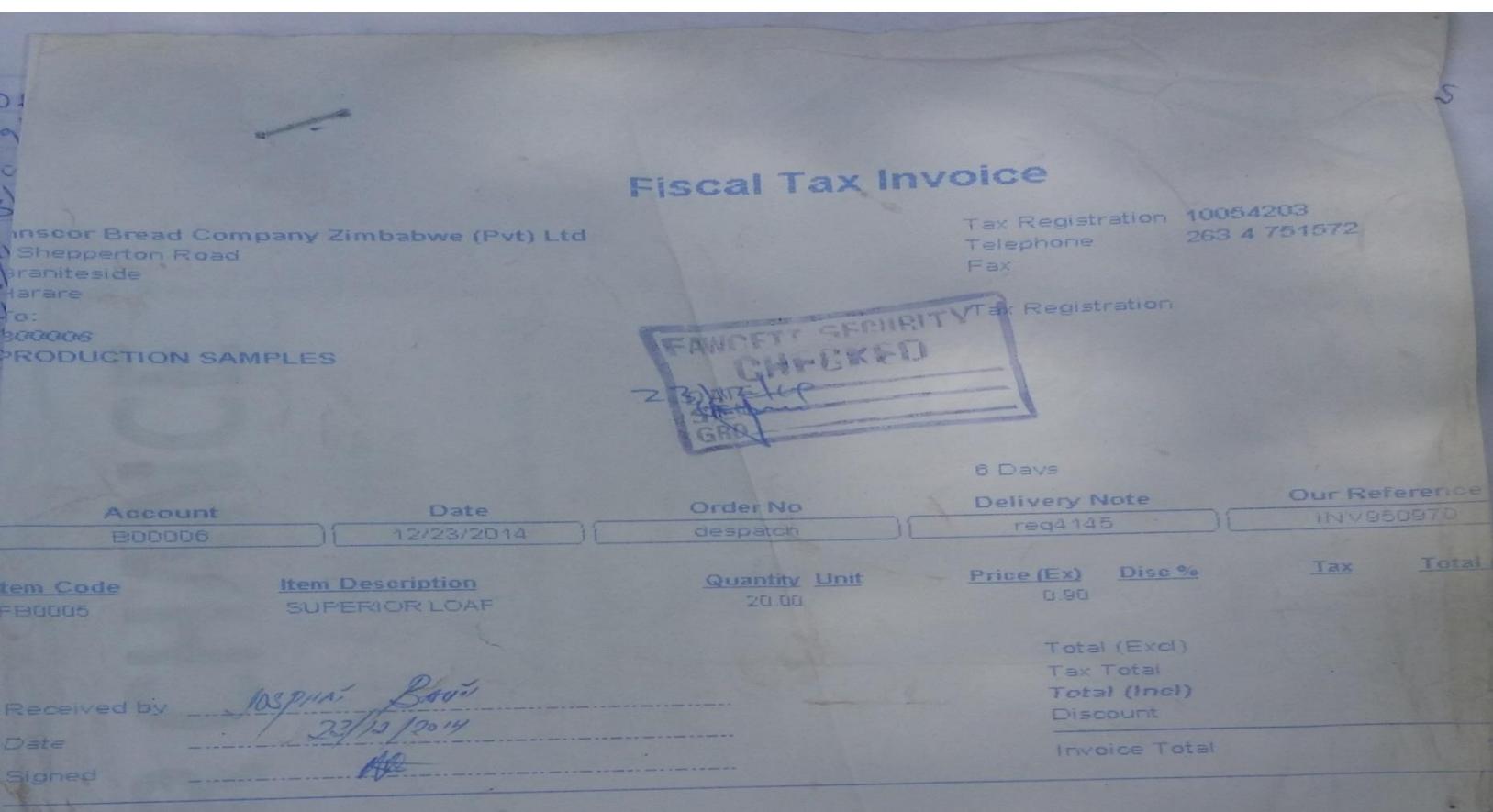
ACCOUNTING BOOKS EXPLAINED

Accounting is done for each product and not exactly product groups. In the accounting books each of the products has their own particular page. Above we see the coke 2 liters page. This is a beverage made by coca cola. The page has 6 sections, Date, Stock Item, Units received (Re- ordered units), Units sold, Balance and sale value.

- The units received section is for recording the quantity of products that are there at the moment and the ones added when reordered.
 - The units sold section is for the recording when the product is sold and how much is sold.
 - The balance section is for the working out of how much is left in stock after every transaction.
 - The value section is basically the calculation of how much each of the transactions cost. It is just calculations the product of the unit sold and the unit cost.

REORDERING PROCESS

The picture below shows the receipt of the reordering process. All it shows is the addresses, dates and details of the transaction. This invoice is received every time he reorders stock although the format varies with each manufacturer and source. The business doesn't enquire any transport charges for some items, in this case bread as it is delivered to the shop.



STOCK LIST

Below we have an example of the inventory list containing about one half of the entire stock list. All it contains is product details, cost, name and an ordering number system that can be used as a unique form of identification.

The page number is used in reference to the unique page where by the each individual product has its individual accounting is done as the earlier example.

INDEX

SE	STOCK ITEM
1	MAXX SAXS ASSORTED
2	MALPUTI
3	CASAMIA MARIE BISCUITS
4	PASCAL CHOCOLATE
5	CRYSTAL LOLI-POP
6	AMAZON POPS
7	CRYSTAL JOGUETA LOLI POP
8	DAHAB GUM
9	MATEMBA
10	CRYSTAL MIXES
11	ALWAJS THICKN PADS
12	COTTON WOOL
13	TISSUE PAPER
14	LION MATCHES
15	GREEN BAR
16	SONA BATH SOAP
17	PEARLS BATH SOAP
18	GEISHA BATH SOAP
19	BLACK SHOE POLISH
20	BROWN SHOE POLISH
21	MAXI SMOOTH CAMPOR
22	BLUE SEAL VASELINE 50ML
23	BLUE SEAL VASELINE 100ML
24	PERFUMED GLYCERINE
25	ROSE GLYCERINE
26	CLERS HAND/BODY LOTION
27	CANDLES
28	TREE LEAVES
29	QUICK BREWS TEA BAGS

INDEX

RE	PHAS	STOCK ITEM	MRP	PRICE
R1	91	ROMI MASARING	#1.00	#1.00
R1	92	NELLA COOKIES	#1.00	#1.00
#0.50	93	PAIN DEZEE	#1.00	#1.00
#0.50	94	LIGHT BULBS (UNIGRANITION)	#1.00	#1.00
R1	95	PHILLIP LIGHT BULBS	#1.00	#1.00
R1	96	EVERSHARP 15 MINI KNIFE	#0.20	#0.20
R1	97	MAQ WASHING POWDER	#0.40	#0.40
R 7022	98	KHAKHI CURRY	#1.00	#1.00
#1.00	99	EXERCISE BOOK	#0.20	#0.20
R1 FOR	100	COOLMAN FRESH	#1.00	#1.00
#1.20	101	FRESH MILK 500ML	#1.00	#1.00
#1	102	SILU MAIZE MEAL 10KG	#1.00	#1.00
# 7023	103	SHUMBA MAIZE MEAL 10KG	#1.00	#1.00
R2	104	SHUMBA MAIZE MEAL 5KG	#1.00	#1.00
#1.60	105	SUPER POWER MAIZE MEAL 5KG	#1.00	#1.00
#1	106	LACU MILK	#1.00	#1.00
#1	107	BREAD	#1.00	#1.00
#1.50	108	JOOSHUTI	#1.00	#1.00
#1.50	109	SPICE MAPUTI	#1.00	#1.00
#1.50	110			
#1	111	TEA LOAF	#1.00	#1.00
#1	112	ARSENAL LEMON CRMS	#1.00	#1.00
#2	113	NEWS PAPER	#1.00	#1.00
#1.50	114	GILLETTE RAZOR BLADE	#1.00	#1.00
#1.50	115	CHICO COTOLATE BISCUIT	#1.00	#1.00
#1.20	116	FRIMAX	#1.00	#1.00
#0.50	117	BOOM PASTE	#1.00	#1.00
#1	118	SHUMBA LILI POP	#1.00	#1.00
#1.00	119	VUCA BAKED BEANS	#1.00	#1.00
#2.50	120	D'LITE CHOCOLATE 350ML	#1.00	#1.00

INTERVIEWS

I decided to start interviews after the observation stage to try and see what reasonable questions I could ask and to see exactly what I couldn't understand without wasting much of the interviewee's time.

1st Interview

On Friday 6th February 2015

I went to the tuck shop and asked Mr. Mafukidze a few questions about the business. Below is a transcript of how the interview happened

Me: What seems to be the main problem with your system in your eyes?

Mr. Mafukidze: The constant recording of everything in books and the amount of things that have to be updated at a time for the system to be fully working

Me: As each transaction occurs how any details have to be updated?

Mr. Mafukidze: There are about four pieces I will have to update of course there is the transaction list that records everything about the transaction with the product details and quantity. Then we have to keep count of which product is bought and how many times a day because there's a day to day book keeping system. Finally we have the product account itself that keeps the accounts of each product balanced and the stock list in case I buy a new item.

Me: Updating this seems to take time with all these books needing to be updated does this affect the flow of customers.

Mr. Mafukidze: Only when there are a lot of customers coming in at once, but I don't update everything as the transactions go I only add details to the transaction log then I only update the daily books at the end of the day. The balancing of the individual product accounts doesn't have a set date though the books are reviewed every month they are only updated more frequently depending on the item itself.

Me: Please Confirm with me to say that the main problem is updating everything at once and therefore time management?

Mr. Mafukidze: That's exactly what I'm saying also books are very unreliable, they can be stolen, lost on a fire I feel as if I just want to get books out of the way, in terms of quantity and move to something that is more reliable and more secure.

Me: What exactly do you mean by more secure?

Mr. Mafukidze: By more secure I mean that it should have something that makes sure that only I can use. If you look in my daily books there's always some money missing every day

that could maybe be from my actions or someone could be recording transactions that weren't paid for. So I want this to be minimized.

Me: I hope some form of authentication like let's say a password that needs to be entered of course at start up and maybe a bit more. But I can't stop people from physically coming in and stealing during the day.

Mr. Mafukidze: I understand that but I think a password will reduce the problem.

Me: So for now we discovered three problems, authentication, reliability and time management.

Mr. Mafukidze: Exactly those are the major issues!

Me: Thank you Sir for your time. I might have some follow up interviews just to get more information on any further problems or if I notice something that I believe the system could benefit from.

Mr. Mafukidze: I would appreciate that, thank you.

Mr. Mafukidze.

T. F. Mukarakate.

ANALYSIS AND CONCLUSIONS

FROM 1ST INTERVIEW

After reviewing the interview I came up with these conclusions

- The lack of constant updating of books causes either some object to not be accounted for in monetary terms.
- The lack of consistent updating causes minimal but very noticeable inconsistencies with the stock counts.
- Lack of authentication can cause some transaction to be recorded in the books that never got paid for.
- Mr. Mafukidze is slightly worried about the vulnerability of his books of accounting in terms of theft and the loss of data.
- Solving the time management problem could be the answer to a few other problems like the reliability of his books.

REQUIREMENT SPECIFICATION AND OBJECTS

After careful analysis of the observations, documents and interviews I came up with the basic but not final list objectives of the systems

The system must

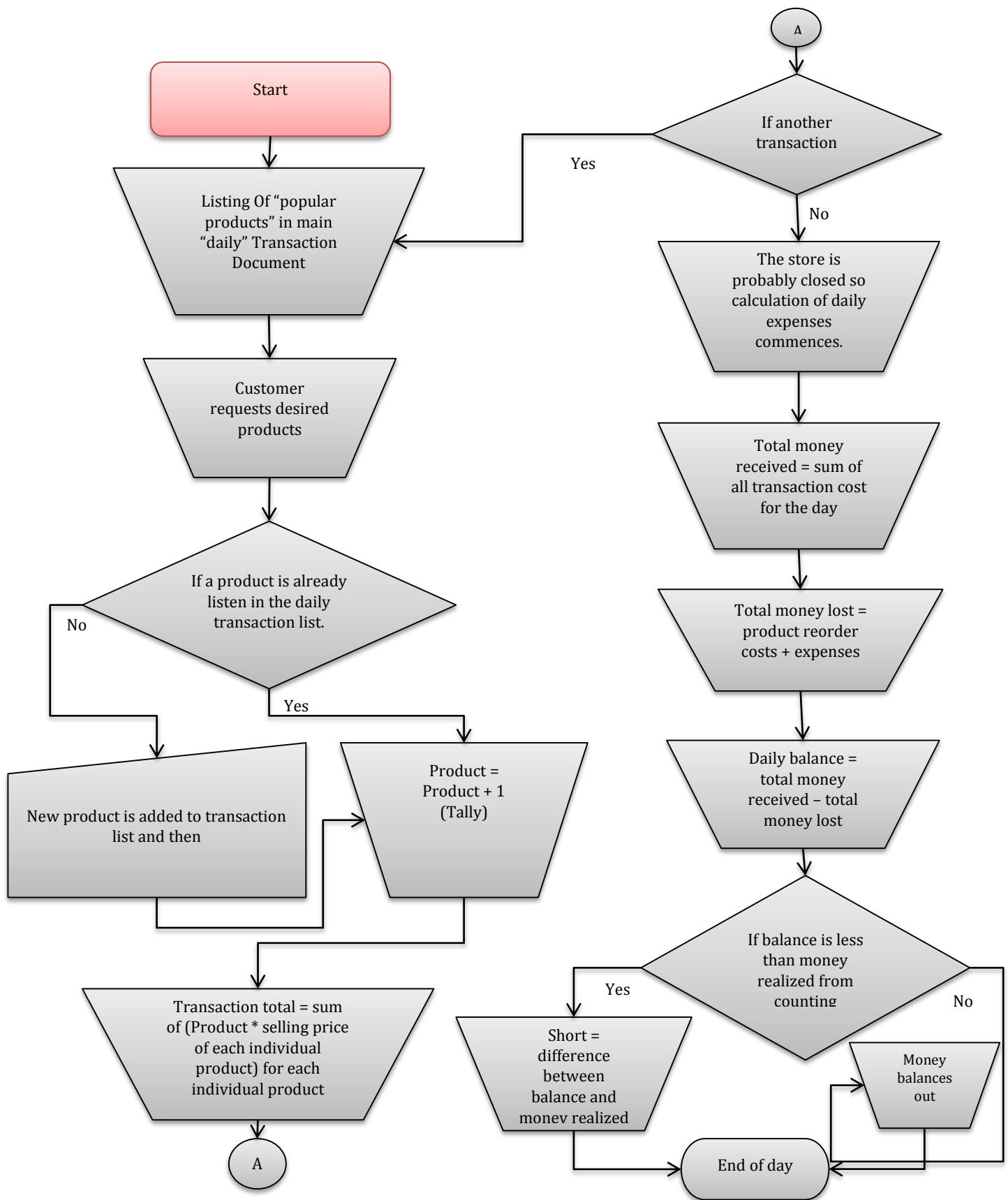
- Be reliable in terms of keeping data safe and must have some form of a backup storage to keep data safe.
- Reduce the use of books maybe up to one book for back up during power cuts so that data isn't lost compared to the four books.
- Must have some form of authentication to allow only Mr. Mafukidze and probably his future employees or trusted people to enter the system.
- Must be quick access all the way in the sense that this is a battle against time and the main problem is to allow everything to work smoothly.
- Allow the owner to check the progress of the business like quantity of products available and which items are most popular and need reordering.

This of course is the first draft of the objectives and the final list will be stated during the design stage.

Mr. Mafukidze.

T. F. Mukarakate.

DATA FLOW OF CURRENT BUSINESS PROCESSES



SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

Minimum requirements

- Intel Atom processor
- 500 MB of RAM, Intel family Graphics.
- 50 MB Free Storage space, 50 GB free storage
- Mouse
- Keyboard
- Works best with touchscreen for transaction input reasons.
- Monitor

SOFTWARE REQUIREMENTS

- Microsoft Access 2007 onward: as the system will be a database system and will be designed in Access.
- Any .Net framework after 2008.

ALTERNATIVE SOLUTIONS

There could have been other ways to get rid of the problems but they might not work as well as the desired system.

- Better security in terms of letting people in and out of the tuck shop and where the money is located.
 - The use of an alarm system
 - Use of a money safe can be the ideal solution for the theft problem.
- Development of a faster book keeping method. This will be hard as it requires time and accounting knowledge and the fact that new books will have to be bought and layout designed to suite the new method.
- An extra employee to cover the other jobs like daily stock checking, although this will lower profits overall slightly as there is one more employee that has to be paid.
- The other employee can half the work at the till which means the till will work twice as fast but the issue of profit reduction still stands.

FEASIBILITY STUDY

A few questions had to be answered to see if the desired system is possible and practical (cost beneficial analysis)

Technical Possibilities of the system

- So far we see that a solution for the listed problems above might be technically possible to fit in the system.

Is the system economical to produce?

- All efforts will be made to make the system as simple as possible to avoid unnecessary complications and costs.

Is the system economical to run?

- There is a presence of power (most of the time) and a basic computer the system will fully function and there will be no other cost.

Social and other effects

- The system will minimize the owners work in terms of stock checking and updating of records.
- The system will minimize the time wasted by book keeping and provide faster service for the customers.

Workforce Skill

- The workforce isn't very skilled in the concepts of computers but the system will have to be extremely simple and therefore can be used by anyone no matter how computer literate.

Long term benefits of the system?

- The system will replace all the books and all the complications, it will make the business run smoother in many aspects especially the accounting parts.

