Establish the Effectiveness of System Controls on Countering Shoplifting in Supermarkets in Nairobi

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Abstract
Retail chain outlets - commonly referred to as supermarkets in Kenya, have rapidly expanded. This expansion has also rapidly raised cases of shoplifting as a significant cause of inventory shrinkage, where many of these supermarkets are consequently losing millions of shillings. For these supermarkets to combat this threat and control losses due to shoplifting, they have implemented a raft of system controls. This study examined the different system controls that are in place to prevent shoplifting and their effectiveness in countering it, amongst supermarkets in Nairobi. It sought to identify specific or combination of system controls used in different supermarkets and their effectiveness. The study focused on each system control's effectiveness in detecting, deterring and preventing shoplifting upon implementation. The study adopted a descriptive research design with the target population being 49 branches of 4 major supermarkets located in Nairobi. Primary data was collected using self-administered questionnaires. The data gathered using the questionnaires was analyzed using SPSS. The study had a 96% response rate. Descriptive statistics were used to present the frequency information of the data. The study found that there is a strong positive relationship between System controls and Effectiveness in countering shoplifting in supermarkets. Supermarkets are using various system controls to prevent shoplifting. To some of the supermarkets the chosen control was effective but to others, the controls were not effective. The use of system controls is also not widely being used, as the costs associated with the controls act as a deterrent. The study has further recommended areas for which further studies can be carried out. The use of system controls is very effective in detecting and deterring, though expensive to implement. In conclusion, the study observed that there is evidence that system controls are effective in the

detection of shoplifting before the users leave premises and thus effective in reducing losses incurred through shoplifting. Supermarkets should employ more of this control as it deters theft by detection before the goods are removed from the supermarkets. Policy makers should get involved and implement laws to punish people who shoplift. Rebates or tax waivers should also be enacted to make system controls more affordable for supermarket.
Key Words: Shoplifting, System Controls, System Controls, Supermarkets, Retail Chain Outlets

Introduction

Inventories occupy a strategic position in the structure of working capital. They constitute the largest component of current asset for most business enterprises. The turnover of inventory mainly governs a business enterprises turnover, and it is therefore quite natural that inventory that helps in maximizing profit occupies the most significant place among current assets (Bhat, 2008). Shoplifting (Ama & Ifezue, 2013) is one of the leading causes of stock shrinkage; it is intentionally taking or paying less for an item than the sales price. Shoplifting includes carrying, hiding, concealing, or otherwise manipulating merchandise with the intent of taking it or paying less for it. Shoplifting is a crime in the penal code and losses incurred due to shoplifting are ever increasing. Ama and Ifezue (2013) reports that this vice has become a growing concern not only among the affected retailer but also among consumer educators, government, and social scientists. In recent years, there has been an increase in the retail Industry stock shrinkage due to shoplifting from supermarkets. In 2011, the global retail industry lost U.S $119.092 billion due to shoplifting, this is 1.45% of total retail sales (Bamfield, 2011). Traditionally barcodes have been the main and most commonly used technology to identify and track inventory within the supermarkets. Retail outlets have been unable to prevent inventory loss or detect shoplifters before they can act (Huber, 2006). The rise in shoplifting cases has forced Supermarket outlets to adopt new system controls to assist in the control and management of shoplifting. In the United States according to Kosasi and Saragih (2014), supermarkets chains such as Wal-Mart, Wool Worth, TESCO and Target have adopted Radio Frequency Identification (RFID) technology and Electronic Article Surveillance (EAS) technology to identify better and control stock shrinkages. When using RFID or EAS, a label that that emits and receives Radio signals is attached to merchandise and which trigger an alarm if the label crosses a detector at the store exit before disarming at the counter on during purchase (McFarlane, Sarma, Chirn, Wong, & Ashton, 2003). Shoplifting is a primary contributor to the loss in the retail industry, and it can directly affect retail business profits (Huber, 2006). According to the 2008 Global Retail Theft Barometer, worldwide shrink amounted to almost $105 billion. Each year in Kenya retail supermarkets such as Nakumatt, Tuskys, and Naivas among others lose stock through vices such as shoplifting and employee theft. The continued losses have led to an adoption of system controls in the monitoring and controlling of shoplifting within the retail supermarkets (Gibendi, 2014). The main system controls in use locally has been the use of CCTV in the monitoring of client activities using cameras. The global shrinkage rates declined in 2014 by 4.8% to a value of $128.51 billion. This decrease in shrinkage was attributed to the adoption of new system controls such as EAS and RFID (Deyle, 2014). In Kenya according to the Economic

Survey (2014), reported cases of stock theft in 2014 decreased to 1,965 from 2,377 in 2013. In recent report by Mulupi (2012), each year supermarket in Kenya lose over ksh 3.5 billion annually to shoplifters. The losses are even higher when one factors in the cost of measures aimed at reducing the crime. Supermarkets and hypermarkets in Kenya have adopted technology currently in use in global retail outlets, such as EAS and RFID. This study, therefore, sought to establish the effectiveness of system controls in reducing or prevent the shrinkage losses incurred by supermarkets in Nairobi, due to shoplifting.

In view of the above review the following study was investigated:

The effectiveness of system controls on countering shoplifting in supermarkets in Nairobi

Theoretical Literature

Preventing shoplifting has been described as an arms race, over the years retailers have adopted system controls that have aided in not just preventing shrinkage from occurring but also establish a record that makes it easier to prosecute the perpetrators (Wyld & Budden, 2009). Some theories have been advanced for the adoption of system controls within the retail market.

Technology Acceptance Model theory (TAM) has helped predict user behaviour and organisation behavior when it comes to the acceptance and adoption of technology. For instance external variables such as belief, attitude and intention to affect the uptake of technology in an organisation (Park, 2009). Two beliefs, perceived usefulness and perceived ease of use directly or indirectly affect users behavioral intention to use and the actual adoption of technology. Perceived use and perceived ease of use directly affect the user towards using new technology. According to Bagozzi (2007) is also important to consider group, culture and social aspects of technology acceptance because organisations and individuals adopt technology deliberately due to social pressure such as shoplifting.

Kenyan supermarkets are still using closed circuit television or CCTV as an anti-theft system control. CCTV signals are publicly distributed but monitored, for surveillance and security purpose. The use of CCTV can be grouped around three areas: Security, Safety, and Compliance. In supermarket Security is the key concern, CCTV can have an impact on the detection and deterrence of internal and external thieves (Cathryn & Andrew, 2014). CCTV allows security personnel to observe deviant behavior taking place, such as incidents of theft of goods from the store. The presence of CCTV or notices indicating the presence of the equipment can also prevent offending behavior because of the perceived increased likelihood of detection (Cathryn & Andrew, 2014). Despite the widespread presence of security cameras in the retail sector, shoplifting remains a major challenge to retailers.

RFID is an example of system control that is being adopted for preventing shoplifting in supermarkets. Special tags are affixed to items for sale in the supermarket. These tags are removed or deactivated by the clerks when the item is checked out. At the exits of the store, a detection system sounds an alarm to alerts the staff when it senses active tags (JKDC Security, 2015). EAS devices work in the same basic manner. A transmitter sends a signal at a defined frequency to a receiver; this creates a surveillance area or detection zone. The detection area is usually created at an exit of a retail store, or in some stores at the checkout counter. When an

EAS tag or label enters the detection zone, it creates a disturbance that is detected by the receiver causing an audible alarm to be activated. EAS systems have a greater ability for detection.

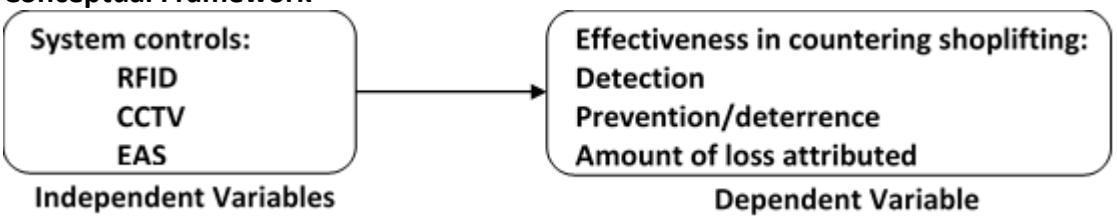
Empirical Experience

A study conducted by Huber (2006) in Australia on the use of RFID within the supply chain to minimise shrinkage, details how retail outlets have had to do away with barcode as a method of controlling shoplifting in the supply chain. He further reviewed publications that embrace new RFID technology to supplement the existing use of barcodes in the supply chain processes. Product shrinkage is an inevitable dilemma in the retail industry, and it is a general indicator of how well a retail outlets loss prevention strategy is performing. Retailers who want to minimise shoplifting have had to compliment existing legacy systems with new system controls to manage their supply chain (Huber, 2006).

RFID and EAS are technological method for preventing shoplifting from supermarkets. Special tags are affixed to items for sale in the supermarket. These tags are removed or deactivated by the clerks when the item is checked out. At the exits of the store, a detection system sounds an alarm to alerts the staff when it senses active tags.

In the UK, there is a growing expectation that retail stores must have CCTV, it is increasingly viewed as part of the retail fabric of the store. CCTV offers a very broad range of potential benefits to the stores, recent developments in the use of digital CCTV systems linked with more sophisticated software programmes are likely to yield even further benefits, particularly relating to shoplifting. Despite the widespread presence of security cameras in the retail sector, shrinkage remains a major challenge to retailers. This may be because the public associated CCTV with generating low-quality grainy images, a perception stemming from CCTV footage broadcast on TV programmes such as Crime Watch, casting doubts on the ability of a surveillance system to visually identify a shoplifter or tackle internal theft.

Conceptual Framework



Methodology

A cross sectional survey research design was used to collect descriptive data from Supermarket operating in the Nairobi on the effectiveness of system controls. The population of study in this research was the 49 branches of 5 major supermarkets in Nairobi. The big five supermarkets in Kenya are Nakumatt, Tuskys, Naivas, Eastmatt and Uchumi. However, Uchumi supermarket was excluded as it was experiencing existential problems during the period of the study. Census method of sampling was used (Afande, 2015). In this mode of sampling, all the 49 branch outlets formed the sample size. The study used self-administered questionnaires to collect

primary data. To make the data collected meaningful, the data gathered was analysed using descriptive statistics. Using Statistical Packages for Social Sciences (SPSS) tool, the data collected was classified, tabulated and summarized using descriptive measures, percentages and frequency distribution tables, while tables and graphs have been used to present the findings. To determine the effectiveness of system control in preventing shoplifting a chi-square test of independence was performed.

Results and Discussion

System Controls Effectiveness

In this section the researcher sought to find out of the three system controls i.e. RFID, EAS, and CCTV which is currently in use, and their effectiveness in the prevention and monitoring of shoplifting within the branches.

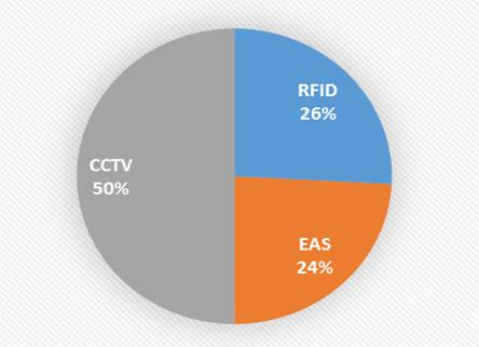


Figure 1: System controls in place

Figure 1 shows CCTV is the preferred physical control of choice for the respondents. 50% of the respondents are using CCTV, 26% are using RFID, and 24% are using EAS as system controls to prevent and control shoplifting.

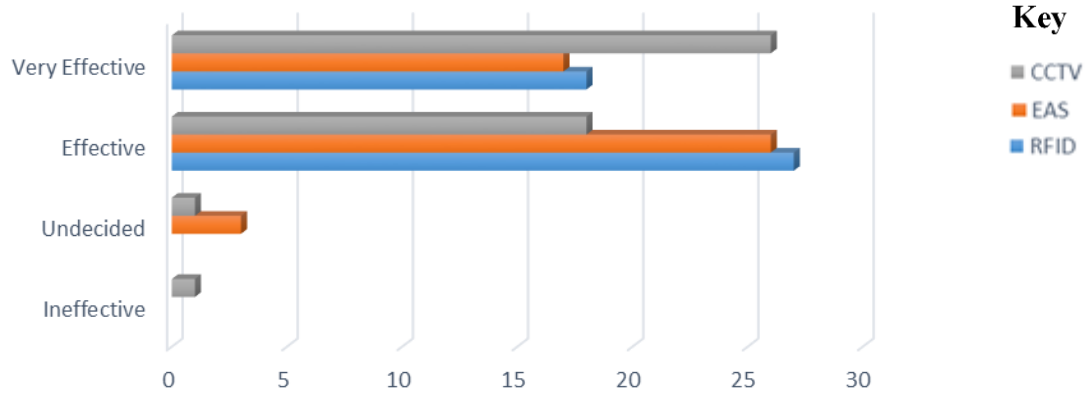


Figure 2: System controls effectiveness

Figure 2 shows, 36% of the respondents found the EAS controls very effective, 55% found the control effective while 6% were undecided on the ability of EAS to control or prevent shoplifting. One of the respondents was not using EAS as a control. CCTV is in use by most of the respondents, and as shown in Figure 4.6 above, 56% have found CCTV very effective in the prevention and control of shoplifting. 39% found it effective, but 2% said it was ineffective while 2% were undecided on the ability of CCTV to prevent or control shoplifting. In branches

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that are currently using RFID as a control, 57% of the respondents said it was effective while 38% of the users said RFID was very effective in controlling and preventing shoplifting. 5% of the interviewees were not using RFID as a control.

System control ability to detect, deter and reduce shoplifting

In this section the researcher sought to find out the ability of the three system controls to detect, deter and reduce shoplifting within the branches.

Table 1: RFID detecting, deterring and reduction

	RFID Detecting	RFID Deterring	RFID Reduction
Very Ineffective	-	-	-
Ineffective	2%	3%	15%
Undecided	-	15%	21%
Effective	36%	41%	38%
Very Effective	62%	41%	26%

Table 1 shows the ability of RFID to detect shoplifters. 62% of respondents said that RFID was very effective in detecting shoplifting, 36% found it effective but 2% found it ineffective in detecting cases of shoplifting. In the Table on ability of RFID to deter shoplifting, 41% of respondents found it very effective while 41% found it effective. 3% did not find it effective while 15% could not decide on the ability of RFID to deter shoplifting. The Table shows that 38% consider RFID effective in reducing cases of shoplifting, 26% found it very effective while 21% of the respondents were not able to decide on if the RFID was effective or not effective in shoplifting reduction. 15% of the respondents to the question said it was ineffective.

Table 2: EAS detecting, deterring and reduction

	EAS Detecting	EAS Deterring	EAS Reduction
Very Ineffective	-	-	6%
Ineffective	-	3%	3%
Undecided	10%	24%	21%
Effective	59%	59%	58%
Very Effective	31%	14%	12%

Table 2 shows, 59% of the respondents said EAS was effective in detecting shoplifting occurrences, according to the figures 31% of the interviewees stated that EAS is very effective as a control while 10% of the respondents were undecided on the effectiveness of EAS as controls. In EAS deterring, 59% of respondents thought that EAS was effective in deterring shoplifting while 14% said it was very effective. 3% said EAS was ineffective while 24% were undecided on the ability of EAS in deterring shoplifting. As shown above, 58% of the respondents thought EAS was effective in the reduction of shoplifting while 12% said EAS was very effective. 3% of the interviewees felt EAS was ineffective while 6% said EAS was very ineffective in the reduction of shoplifting. 21% of the respondents were undecided of EAS effectiveness in reducing shoplifting.

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Table 3: CCTV detecting, deterring and reduction

	CCTV Detecting	CCTV Deterring	CCTV Reduction
Very Ineffective	-	-	3%
Ineffective	11%	-	-
Undecided	5%	9%	3%
Effective	24%	17%	37%
Very Effective	60%	74%	57%

In table 3 above, 60% of them said CCTV was very effective in detecting shoplifting, 24% thought it was effective in detecting while 11% of the respondents thought CCTV as an ineffective in detecting shoplifting, 5% were undecided on CCTV being able to detect shoplifting. As shown below, 74% of the respondents found CCTV very effective in deterring shoplifting while 17% of the interviewees said it was effective in deterring. 9% were undecided on CCTV as a deterrent. According to 57% respondents, CCTV is very effective in reducing shoplifting while 37% thought it was effective. 3% of the interviewees said it was very ineffective or were undecided on its ability to reduce shoplifting.
The high number of respondents who responded that EAS and RFID were effective in deterring, detecting and reducing shoplifting must know or understand how the devices work. When properly implemented and setup this is a control that shoplifter cannot beat. It becomes tough to hide items tagged with RFID or EAS since this tags use waves to communicate with the detector. No matter where they hide the items, the waves are still readable by the detector thus making it an effective control.

Test of System Controls Effectiveness

Table 4: System controls chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.632[a]	2	0.026
N of Valid Cases	44		

Table 5: System controls symmetric measures

	Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval Pearson's R	0.741	0.133	1.613	0.114[c]
N of Valid Cases	44			

Table 5 shows there is a strong positive relationship between System controls and Effectiveness in countering shoplifting in supermarkets as indicated by correlation of 0.741. In Table 4, the p-Value of 0.026 is less than the acceptable significance level (α). 2 cells (33.3%) have expected count less than 5. The minimum expected count is 41. There is a relationship between system controls and effectiveness in countering shoplifting in Supermarkets. The analysis above further shows that the sampled data can be applied to the general population at 95% confidence level.

Conclusion

Finding from the study reveal that supermarkets are using all three system controls, EAS and RFID are very effective in detecting, preventing and reducing shoplifting. Supermarkets have adopted EAS and RFID system controls as an effective control against shoplifting. Most Supermarkets are still relying on CCTV as the main system control in use to combat shoplifting. TAM theory as described by Park (2009) is his study, can help explain why many supermarkets mostly use CCTV to prevent against shoplifting. The perceived usefulness and perceived ease of use directly of CCTV has greatly contributed to why most supermarkets rely on them to preventing shoplifting. Many of the supermarkets have not fully embraced EAS and RFID as system controls for countering shoplifting. Hamid (2015) in his study has noted that one of the major factors that have hindered the adoption of EAS in the prevention of shoplifting is the high investment concerns as the tags and hardware and infrastructure. This has limited RFID use to high-value products, but as the adoption of RFID and availability of RFID increase the manufacturing cost are set to reduce making them cheap to purchase.

Recommendation

It was noted that supermarkets have not fully embraced system controls in the form of RFID and EAS. These two technologies have enormous benefits when it comes to preventing shoplifting by ensuring the shoplifters are caught before they leave the premises. The acquisition cost may be high, but the saving gained by preventing shoplifting make it a very effective system. The study thus recommends the implementation of RFID and EAS as a way of preventing shoplifting and tracking of items in the supermarket. The favorable result of the study indicates that system controls are effective having been used in countering shoplifting. The findings of this study confirm the results and benefits attained so far in the implementation of these controls it, therefore, recommends the use of these system controls in the countering of shoplifting and in the process saving the supermarkets losses incurred because of shoplifting. The initial investment may be high, but the supermarkets will definitely recoup with saving accrued by preventing losses due to theft. With the favorable results indicating that system controls are effective in curbing shoplifting the researcher recommends that policymakers make tough laws that see shoplifter get harsh punishment to discourage shoplifting. System controls are in themselves expensive but have enormous benefits to the retail industry, the researcher, therefore, recommends exemptions of importations of tax to make system control more affordable to the supermarkets. This research was conducted in the four major Supermarkets located in the city of Nairobi. The researcher recommends that further research be conducted on other supermarkets in cities and towns to be adequately representative of Kenya. Further research should also be carried on the use of RFID and EAS in supermarkets, such a study would attempt to find out the best and cheap RFID and EAS devices that supermarkets implement without incurring high acquisition costs.

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References

Park, S. Y. (2009). *An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-Learning.* South Korea: Department of Educational Technology, Konkuk University.

Afande, F. O. (2015). Effects of customer loyalty schemes on consumer behavior in supermarkets in Nairobi. *Journal of Marketing and Consumer Research*, 77.

Ama, N. O., & Ifezue, A. N. (2013). Consumers' attitude toward shoplifting and shoplifting preventive devices in Botswana. *Online Journal of Social Sciences Research*, 111-122.

Bamfield, J. (2011, October 1). The global retail theft barometer 2011. *The Worldwide Shrinkage Survey*, 1-20.

Bhat, S. (2008). *Financial management (Second Edition).* New Delhi: Excel Books.

Bagozzi, R. P. (2007). The legacy of the technology acceptance model and a proposal for a paradigm shift. *Journal of the Association for Information Systems*, 1-13.

Cathryn , S., & Andrew, W. (2014, January 16). *Technology measures to prevent shoplifting*. Retrieved March 24, 2015, from Starr Security Web site: http://www.starrsecurity.com/technology-measures-to-prevent-shoplifting.html

Deyle, E. (2014). *A study of the cost of merchandise theft and merchandise availability for the global retail industry.* Thorofare: Checkpoint Systems, Inc.

Gibendi, R. (2014). *Alarm as Kenya's retail sector loses Sh 3 bn a year to shoplifters*. Retrieved March 24, 2015, from Daily Nation: http://www.nation.co.ke/lifestyle/smartcompany/Kenyas-retail-sector-loses-Sh3bn--shoplifters/-/1226/2517416/-/c60idj/-/index.html

Hamid, N. (2015). Relationship between technological factors and innovation adoption among technology-based SMEs in Malaysia. *Global Journal of Business and Social Science Review*, 210-217.

Huber, N. (2006). *Minimizing product shrinkage in the supply chain through the use of radio-frequency identification: A case study on a major Australian retailer.* New South Wales: University of Wollongong.

KDC Security. (2015, March 5). *Electronic article surveillance - newly rise and full of opportunities*. Retrieved July 24, 2015, from www.jkdcsecurity.com: http://www.jkdcsecurity.com/news/Electronic_Article_Surveillance__-_Newly_Rise_and_Full_of_Opportunities-en.html

KNBS. (2014). *Economic survey.* Nairobi: Kenya National Bureau of Statistics.

Kosasi, S., & Saragih, H. (2014). How RFID technology boosts walmart's supply chain management. *International Journal of Information Technology and Business Management*, 1-9.

McFarlane, D., Sarma, S., Chirn, J., Wong, C., & Ashton, K. (2003). Auto ID systems and intelligent manufacturing control. *Engineering Applications of Artificial Intelligence*.

Mulupi, D. (2012). *Kenya's retail sector losing $35m to shoplifters annually*. Retrieved March 16, 2015, from http://venturesafrica.com: http://venturesafrica.com/kenyas-retail-sector-loosing-35m-to-shoplifters-annually/

Wyld, D. C., & Budden, M. C. (2009). Upping the ante: using RFID as a competitive weapon to fight shoplifting and improve business intelligence. *The International Journal of Managing Information Technology (IJMIT)*, 1-10.