Bread Returns Management in Commercial Plant Bakeries: Case Study

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Abstract

Bread is part of the staple diet to many people around the world and commercial plant bakeries are amongst the key players in the bread market. Amongst the key concerns of commercial plant bakeries is sustainability. This paper focuses on bread returns. Bread returns and associated activities contribute to the costs of operating a commercial plant bakery and can impact on sustainability objectives or the lack thereof. Through a case study of three selected commercial plant bakeries in South Africa, this paper identifies the activities involved in the handling of returns as a means of exploring sustainable practices. The research methodology adopted in this paper uses literature review in combination with primary data collected from the selected commercial plant bakeries. The primary data is from interviews and questionnaire survey. Findings indicate that participating bakeries considered bread returns very significant and material given the characteristics of the industry. They are of the view that bread returns including associated waste is a current concern. The bread returns process flow observed in this study, in relation to reverse logistics, bears some similarities with those previously identified for the Swedish bread industry. Key improvement areas were highlighted including take-back clause and agreement in the context of producer/suppler retailer interface, Route-to-market (Sales Channels) contributions to total bread returns, handling and the disposal of bread waste arising from returns, and oversight role in bread returns management.

Keywords

Bread Returns, Plant Bakeries, Reverse logistics, Process flow diagram, Sustainability and Take-backs.

1. Introduction

Manufacturing businesses engage in the process of converting inputs into value-added outputs. Like typical manufacturing businesses, bread producers are also involved in the transformation of raw materials into finished products and one way or the other are increasingly required to meet sustainability objectives from economic, environmental and social perspectives. For plant bakeries, the basic business principles of seeking and realising value through selling a product(s) at a price point above the cost invested in creating it is fundamental. The standard-bread producing industry is a high-volume low-margins type of a business, characterised by ever-fluctuating input costs in the form of raw materials such as wheaten flour, energy, distribution costs, among other notables. Competitively managing sales value and efficiently containing overall costs is one of the cornerstones of commercial plant bakeries looking to meet its sustainability objectives. A complication for commercial plant bakeries is the product itself; it is perishable and has relatively limited shelf life. It is not uncommon to see commercial plant bakeries grapple with the issue of bread returns and losses. Brancoli et al. (2019) deduced that bakeries and retailers' value-chain contributed a loss rate of 80 410 tons of bread per annum. Lebersorger and Schneider (2014) evaluated that individual retail outlets may return between 0% and 53% of unsold bread & pastry to bakers. Eriksson et al. (2017) highlighted that of 2.5 million loaves delivered between years 2011 to 2015 to

the supermarkets in Sweden, 32% of it was returned to the producers. Considering the above literature figures, surely bread returns significantly influence the sustainability of bakery businesses.

Being a perishable product, it pose a serious challenge to producers/suppliers with cost implications. Having returns literally translate to a position that the affected business may have a small window of opportunity to act and eventually can find themselves losing money both directly and indirectly through lost sales, distribution costs, wastages, sunk labour & production costs including other conversion costs expended in producing per unit of output. Furthermore, on the downside, returns incur costs through disposal, reworks, handling and arguably lead to brand reputation damage with compromises to meeting sustainability objectives. Returns also have repercussions to the normal & desired flow of activities that may include interruptions to production planning & scheduling, accounting for the returns, route to market challenges among other notable adverse effects. The aim of the research reported in this paper is to explore the bread return processes in selected commercial plant bakeries. A case study approach of commercial plant bakeries in South Africa is adopted.

The remainder of the paper consists of four sections. An overview of related work on bread returns is presented in Section 2 and the research methodology adopted is described in Section 3. The results of the case study is presented and discussed in Section 4. The paper concludes in Section 5.

2. Literature Review

Quesada (2003) noted that reverse logistics (RL) is *"The management of any type of items (used or not, finished products or just components, parts or materials), which, for different kind of reasons are sent by one member of the supply chain to any other previous member of the same chain. In addition, flows taken place out of the original chain, whose origin is located in the original supply chain, are also included provided they are consequence of activities of repairing or recovering added value or material".* Reverse logistics of consumable products example food products tend to differ from non-consumables although the fundamentals underlying the activities can be similar. For instance, Shankar & Ravi (2013) investigated practices of reverse logistics in manufacturing industries that includes food & beverage industry and pointed-out that different sectors adapted RL systems uniquely depending on their operational demand and environmental complexity. RL brings many benefits that include value recovery. Moghaddam et al (2018) recommended that in RL cost minimization, profitability maximization, and use of technology to evaluate level of satisfaction were sensitive to the demand of the products. Shankar & Ravi (2013) proposed that a successful RL program was very probable if technology was utilised, Morgan et al (2015) echoed the same sentiments highlighting the importance of information technology infrastructure as the vehicle to achieve superior logistics performance and of equal importance is collaboration among supply-chain players. Given the fact that commercial plant bakeries can be classified under fast moving consumer goods (FMCG) i.e. goods that are sold & consumed much quicker, reverse logistics is arguably integral to the bakeries and may have its peculiarities. A key consideration is take-back agreements.

In general, a take-back agreement is an agreement between manufacturers and their customers that requires a manufacturer to take back a product at the end of its useful life, typically for recycling. Take-back agreement in the context of producer/suppler retailer interface refers to a situation in which the supplier of the product(s) is responsible for any unsold goods delivered to the retailer but that the supplier bears all the take-back costs associated with the handling of the unsold goods. Regarding bakeries and retailers, take-back agreements puts the financial responsibility for unsold bread on to the supplier. The retailers do not pay for the unsold bread, also known as 'returned bread' as they only pay for the products they sell (Eriksson et al., 2017). In take-back agreements, it is the supplier's responsibility to manage the forecasting and planning for bread production quantities, managing the ordering and the associated reverse logistics operations, including withdrawal and collecting the unsold bread from retailers, and its disposal.

In some case, take-back agreement or clause can be tacit; an example is the trading relationship that existed between retailers and Swedish bread producer Saltå Kvarn (Ghosh and Eriksson, 2019). Von Broembsen (2017) wrote on the power retailers have over producers, relative to saying producers or suppliers face the brunt of takebacks. The possible existence of take-back clause/agreement in the South African retail supplier interface stems from the fact that buyers (retailers) have bargaining power over suppliers/producers ,only four retail brands controls huge chunk of retail market share. Retailers have exposure to a wide pool of suppliers hence suffers minimum switching costs, standard pan bread can be loosely referred to as a "processed" commodity that means that is not a very highly differentiated product, some retailers can arguably easily do backward integration given that they already sell private label/house brand bread. Table 1 contains a summary of causes/reasons of bread losses with takeback agreement (TBA) seen as a possible contributing factor.

Table 1 Shows TBA as contributing factor to bread losses

Causes/Reason for losses	**Description Factor**	**Country**	**Source**
Drivers –failure to forecast demand and negotiate with customer. Advertising campaigns, Competitor behaviour influence demand of bread.	Subtle / Unwritten TBA Clause on bread	Sweden	Ghosh and Eriksson (2019)
Staff behaviour. Little correlation on sales price, shelf life and pack size.	TBA between suppliers and retailers.	Sweden	Brancoli et al (2019)
Size of supermarket and location. Lack knowledge of how much bread is need by supermarket management. The need to comply with Willy's rule of concept to prevent penalties on internal audits, impact on bonuses and career opportunities to management.	TBA Clause on bread. The Willys concept handbook.	Sweden	Eriksson et al (2017)
Over-ordering by retailers.	TBA Clause	Sweden	Ismatov (2015)
Changing customer patterns due to seasonal variation.	TBA	Austria	Lebersorger and Schneider (2014)
Market forces of demand and supply.	TBA	Netherlands	Schrauwen (2013)
Behaviour of retailers to over-order.	TBA Clause	USA	Buzby & Hyman (2012)
Consumer behaviour of the need of fresh bread and full shelves. Rejection of short-dated stock.	TBA	Nordic Countries	Stenmarck et al (2011)
Bread loss rates mainly influenced by factors as TBAs. Staff behaviour Little correlation on sales price, shelf life and pack size.	TBA between suppliers and retailers.	Sweden	Brancoli et al (2019)
Over-ordering by retailers.	TBA Clause	Sweden	Ismatov (2015)
Changing customer patterns due to seasonal variation.	TBA	Austria	Lebersorger and Schneider (2014)
Market forces of demand and supply.	TBA	Netherlands	Schrauwen (2013)
Behaviour of retailers to over-order.	TBA Clause	USA	Buzby & Hyman (2012)
Consumer behaviour of the need of fresh bread and full shelves. Rejection of short-dated stock.	TBA	Nordic Countries	Stenmarck et al (2011)

Eriksson et al. (2017) pointed out that total wastage was very high in bread compared to other categories of foodstuffs studied and noted that 90% of the bread pre-packed market had one form or the other of takeback agreement. This entail that the bread producer had full responsibility for the handling and administration of bread returns or waste. Brancoli et al. (2019) used primary data from a Swedish bakery and retail stores, and identified takeback agreement as the main driver of foods waste highlighting that the retailers only pays for sold products and the producer bears the cost of the unsold products including their collection and treatment. Through interviews, Rohm et al. (2017) established that producers were responsible for bread deliveries and take-backs within few days before expiring. The needs and demands of consumers to demand fresh bread on the shelves exacerbated bread take-backs. This also made sales forecasting difficult leading to the notion that retailers and producers understood and accepted that bread wastage is inevitable and unavoidable. In Sweden, Ghosh and Eriksson (2019) witnessed the adverse impact of takeback agreement. The bread producer Saltå Kvarn had to leave the market citing revenue loss contributed by unbearable relationship at the producer–retailers interface that manifested through unwritten or subtle takeback agreement. This arrangement forced Saltå Kvarn with no room to manoeuvre but to absorb all the cost generated in handling bread returns and its disposal thereof. From a business position, it became unprofitable and led to down scaling and closure. Schrauwen (2013) echoed the same sentiments on takeback agreement pointing out that it is the cause of returns to bread producers, mentioning that the truck that delivers the fresh bread uplifts the unsold ones. Retailers views this arrangement as a service by the bakeries. Stenmarck et al. (2011) deduced that consumers expect full shelves and rejected short-dated bread leading to unsold and unsaleable bread that will end up as waste for the producer or supplier.

In summary, takeback agreement seems to have a significant direct influence on the amount of bread returned to producers/suppliers. There appears to be a premise that bread producers have accepted the notion that bread returns is an unavoidable consequence of trade.

Table 2 below shows examples from the literature on how bakeries are sustainably managing returns. Dyllick & Hockerts (2002) defined corporate sustainability as meeting the direct and indirect needs of stakeholders in an organisation without compromising the organisations ability to meet future stakeholders' needs. Pursuing the three bottom line approach to sustainability can help commercial plant bakeries improve their financial performance, enhance corporate image and reputation, and reduce regulatory problems to the business and organisation.

Table 2 Examples of how bakeries are sustainably managing returns

Causes/Reason for losses	Country	Source
Proposed that short-dated bread (close to expiry) should be saved by freezing to avoid wastage. Pig farmer picked up free waste bread at retailers for animal feeds.	Finland	Alhonnoro (2020)
Bread supplier/producer collect-unsold bread from retailers and sell it to farmers as animal feed. Bread suppliers applies returns cost recovery model i.e. factor in the cost of returns in the pricing of bread (product).	Sweden	Eriksson, at al (2017)
Supermarket chains introduced price reductions on pre-packed bread close to expiry and as donations to charity.	Norway	Stensgård & Hanssen (2016)
For a city bakery with 20-30 branches, unsold bread get consumed by the staff or re-used for making bread crumps. Some goes to donations and the other to fed livestock.	Switzerland	Beretta et al (2013)
Researcher proposed a project to valorise bread waste to glucose used in bakery yeast production and as proteins for cattle feed. Second proposal; daily old bread can be used as ingredient for new bread and production of bread crumps, sold for half the price and thereby gaining more profit than selling it as cattle feed.	Netherlands	Schrauwen (2013)

3. Research Methods

This researcher adopted mixed method research ; the most appropriate technique given the prevailing circumstances and the industry legalities, such as COVID-19 restrictions, South African milling-bake industry regulatory requirements among others .The mixed methodology employed covering mainly qualitative aspects associated with management of bread returns, to an extent incorporates quantitative data to support the related qualitative factors. The research is conducted in two phases, first phase looks at the literature related to bread returns management from the focal point of bread producers/supplier .The second phase is an empirical study of bread returns and management.

This research follows a case study approach and its focus is on commercial plant bakeries in South Africa. The South African commercial bread industry is characterised by four leading brands arguably having a national footprint, each owned by its respective parent organisation and collectively controlling a significant market share of the industry. Each parent organisation owns a handful of plant bakeries arguably spread across the country. In the mix is a handful of independent bakeries geographically spread and competing with the leading brands from the big four producers. Both the big four players combined with independent players add up to roughly over 50 commercial bread - producing sites. In this paper, the focus is limited to commercial bread producers; those who produce a standard 700g loaf via automated or semi-automated production lines and not anything other than bread as a product. Three commercial plant bakeries were selected as case study. A high-level process flow diagram is developed from two of the three bakeries from a first-hand account of the various activities and processes associated with bread returns from the focal point of the plant bakery's dispatch department in the case study companies. A draft copy of the developed process flow is presented to participants in each of the case study companies for commenting. To augment observation the researcher went further to gain a further understanding of some of the participants operations through their online-published sustainability reports available on their websites as well as other credible internet reports.

4. Results and Discussion

The case study companies in this paper are referred to as Bakery A, Bakery B and Bakery C, for anonymity. The process maps developed for the case study companies are shown in Figures 1 and 2 below.

Figure 1: Bread Returns Process flow diagram for Bakery A.

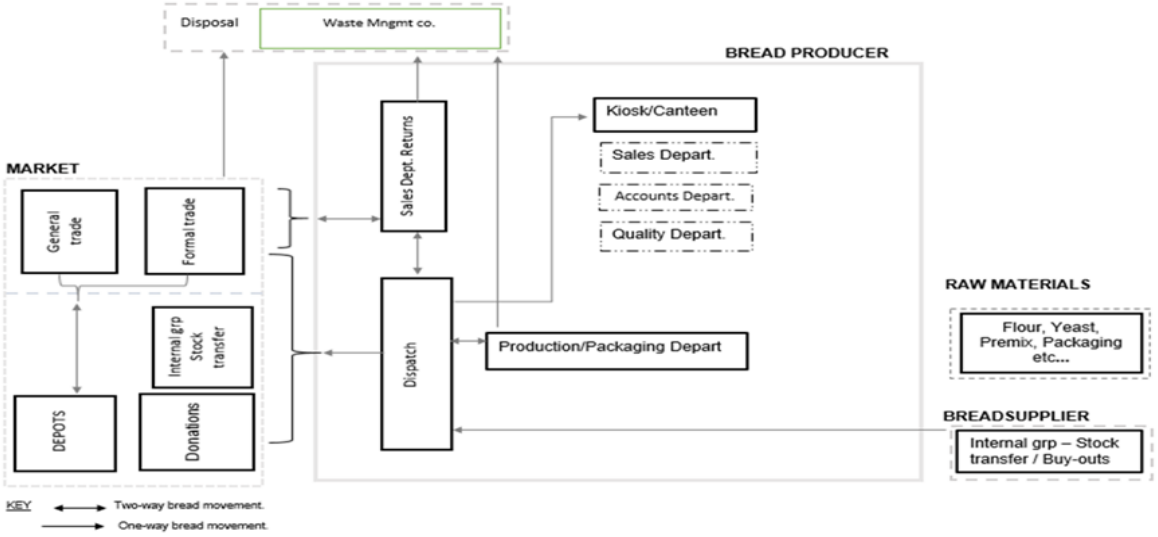
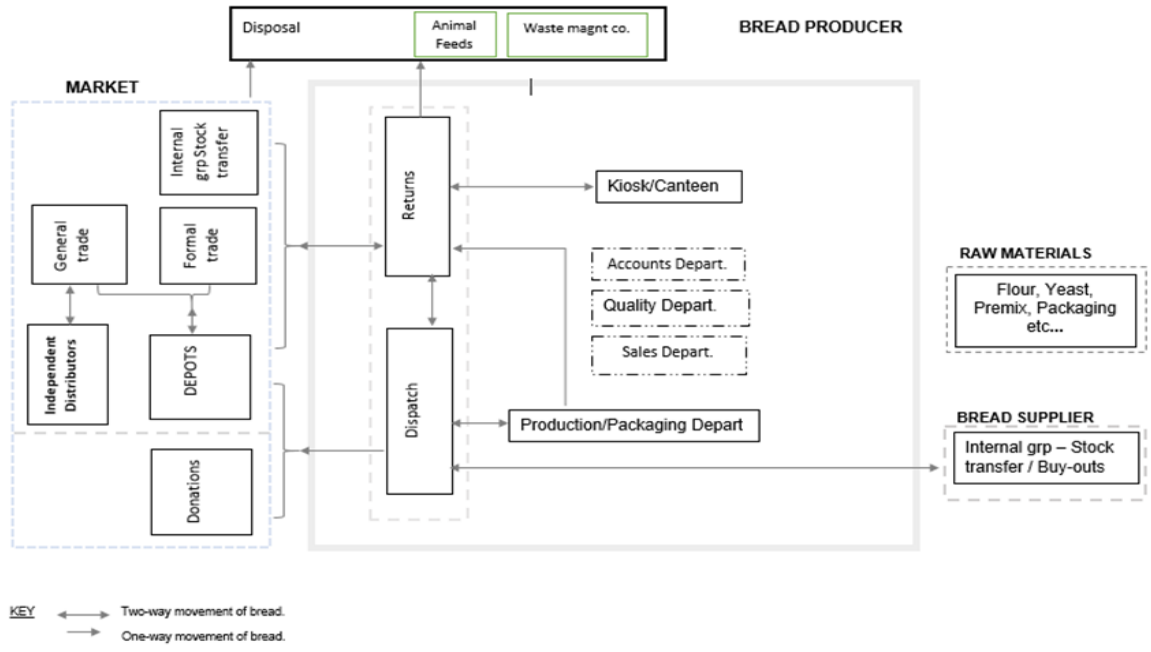


Figure 2: Bread Returns Process flow diagram for Bakery B.

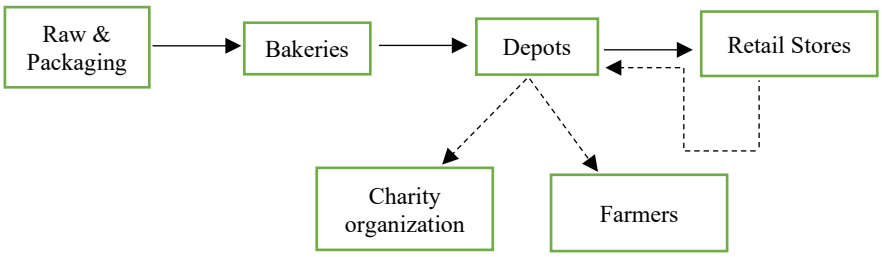


Bakery A has number of customers that feeds from the bakery as represented by Figure 1. They have a policy that whatever bread they sell through intra group transfer, due to one reason or the other is a one-way “ticket” (i.e. they do not accept returns neither saleable nor non-saleable). This is supported by high standard strict in-process controls that ensures whatever leaves the dispatch meets set specifications. The bakery operates its own fleet of delivery vehicles, managing their routes daily. Delivery drivers doubles as deliveryman and sales representative for example in the informal trade channel and are responsible for upliftement of takebacks. Bread returned from market is reconciled and selected into saleable and non-saleable under the direct responsibility of

sales department. After following set standard procedures & guidelines involving inspection, verification and relevant paperwork, saleable bread goes to the dispatch for loading, and then back to the market, non-saleable bread is loaded into the compacter for eventual disposal at conciliatory price.

Bakery B supplies bread to the market via a number of sales channel as shown in Figure 2 .Unlike Bakery A, they do supply to independent distributors serving the informal trade. Independent distributors allowed takebacks from the market subject to limitations. Returned bread is graded and isolated into saleable and non-saleable. Saleable short-date bread sometimes finds its way to the bakery's kiosk/canteen for consumption. Non-saleable bread is send for disposal as waste; is sold to farmers as animal feeds. In some cases, if demand from farmers is low, it is released into a skip bin. A contracted waste disposal company would empty the skip bin at a cost to the bakery. There are some similarities in the process flow maps and comparable to those of some other countries. Ghosh and Eriksson (2019b) referred to a higher-level process flow map depicting reverse logistics in a Swedish bakery (see Figure 3.) The importance of a process flow map is to make it clearer to understand activities associated with product movement to the market via sales and returns via takeback arrangement. Summarily, as shown in Fig 3, the process flow depicts the moment of bread back to the Supplier (Depot) from Retail stores and Depots feeds the retained bread to charity organisation and farmers signifying reverse logistics process.

Fig. 3. Reverse Supply Chain in Swedish bread industry



Source: Ghosh and Eriksson (2019b)

The profile of the commercial plant bakeries under study is as highlighted in Table 3. All the plant bakery units under study are owned by different parental organisations and have moreorless similar profiles, so is their process map. Some insights from the participants of the case study provided a perspective along highlighting some differences and similarities in practice.

Table 3 Bakeries Profile Summary

Attributes	**Bakery B**	**Bakery C**
Bakery size classification	Medium	Medium
Average number of loaves produced & sold per day	75 000 -200 000	75 000 – 200 000
Capacity Utilisation (Actual Output/Design Capacity)	91.3%	87.5%
Production Efficiency (Actual Output/Effective capacity)	87.2%	90.9%
Ratio of Effective Capacity on a weighted scale	48,4%	51,6%

Respondents from Bakery A and Bakery B acknowledges that returns are currently an issue in their organisations. The Sales Manager has an oversight role in the management of returns in Bakery A whilst full-time dedicated Receiving Controller reporting directly to Distribution Manager is responsible for Bakery B. Respondent from Bakery A perceived returns as all bread returned from the trade whilst respondent from Bakery A view returns as only short-dated returns (bread with approximately 50% of shelf life left). Some differences exist regarding perceptions on sales channels contribution to total bread returns (see, Table 4). Bakery A correspondent sees the Formal trade channel as the 'very serious' contributor to total returns citing the trading terms with certain chain stores for example issues to do with Swell allowance as the main contributor to such. A "no retains policy" on intra-group trading identified in bakery A and depicted on the process flow diagram (see Figure 1),is a possible and viable reason to a 'no issue at all' for that respective sales channel however, to the contrary respondent from Bakery B identified returns from intra-group trading as a 'minor' issue.

Summarily, different sales channels contribute to total returns at various degrees, some level of similarities in channel contributions were identifiable. Arguably, from observation, a combination of factors such as the trading terms (at supplier retail interface), and trade volumes that passing through a specific sales channel has a direct effect on the ranking considerations as shown on Table 3.

Table 4 Ranking of Sales Channels in relation to contributions to total bread returns

ROUTE TO MARKET (RTM)	Not at all	Minor	Moderate	Serious	Very Serious
Formal trade (e.g. Supermarket Chains ,Retailers)		Bakery B			Bakery A
Informal trade (e.g. Spaza Shops, Tuckshops)	Bakery B		Bakery A		
Independent distributors (e.g. Contracted Distributors)		Bakery A Bakery B			
Parent company depots (e.g. own Depots)	Bakery A	Bakery B			
Other	Bakery A Bakery B				

Respondent from Bakery A sees using the services of a Waste Management Company as the most appropriate way of managing bread disposal/waste citing security benefits .Bakery A respondent expressed reliance on the demand created by farmers as the most sustainable and appropriate way. For the general understanding of what sustainability is, Bakery A respondents gave a divergent opinion, chose to relate it to an unavoidable consequence of trade and respondents from Bakery B chose not to answer at all.

Key highlights from the case studies indicate that producers/suppliers distribute bread to the market and the very bread returns to the producer/supplier as takebacks. The market is composed of different channels that include formal trade, informal trade, independent distributors, and depots including contracted waste disposal management companies. The process flow diagrams developed from plant observations in this research contrast to the reverse supply chain diagram from literature though some similarities exist. One interesting observation is that returns in Bakery A are under the oversight role of the sales department rather than the usual Distribution Manager or the distribution department as in Bakery B. From a business perspective, arguably, it makes more sense for the sales department to have full responsibility in the handling and management of bread returns given the characteristics of a baking business of high-volume low margin. Another interesting observation is in the handling and disposal of waste, returned non-saleable bread is disposed as waste however, Bakery A send all its waste to a compacter located at site and eventually is sold to and collected by a recycling company. Bakery B sells waste directly to Pig Farmers who will collect it on demand, if no demand for waste exists; it is disposed via a waste management company at a cost to Bakery B. Having a bread compactor improves on hygiene associated with the handling of waste, importantly gives a bakery the impetus to sell its waste thus recovering some value.
There are scope for increased performance in the management of bread returns and this may be achieved in various ways for example optimising the bread returns process, adopting improved process maps, innovating the returns disposal methods. There are also tax implications. In this regard, it can be recommended that bread producers/suppliers may be able to leverage on tax incentives that comes through corporate donation. A good case law is of Lucky Stores vs Commissioner quoted in Barton & Sager (1996); US tax court passed a judgment that four-day-old bread could be valued at full retail price for tax purposes when determining contributions deduction related to charity work. Bread producers can recoup maximum recoverable value subject to meeting prescribed conditions and requirements for tax purposes on bread that could have ended up as waste.

5. Conclusion

In commercial plant bakeries, bread returns, and associated activities can substantially impact on the costs of operating a plant bakery and sustainability objectives. Through observations of case study commercial plant bakeries in South Africa, it can be concluded that commercial plant bakeries can run a well-coordinated supply chain system with reverse logistics activities that co-exist very well. Bread takebacks is the fundamental culprit contributing to returns and non-saleable returns can be significant. Returns in general are material to the success of operating a commercial plant bakery given the characteristics of the standard bread baking industry. Not all returns that is send for disposal as waste is ‘not’ fit for human consumption, in some cases it can be a matter of simply a squashed bread rendering it unappealing to the eye though absolutely fit for consumption. Bakeries should find innovative ways to improve and seek new ways that will lead to the reduction and possible elimination of returns through investment in research & development. While the focus of this paper is on South African plant bakeries, findings can be generalized to commercial plant bakeries internationally. Future work should seek to

validate the emerging patterns of process flows in commercial bread returns and the implications for managing the returns process.

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Biography

Innocent Muzivi is an MSc Manufacturing Management graduate of the University of Hertfordshire (UH) UK. He is a multi-skilled business professional; has over 15 years of hands-on industry experience with different leading organizations covering FMCG, food processing & manufacturing industry sectors, has served in various functional roles & responsibilities in technical, operations and commercial. Currently employed as a Regional Technical Sales Manager for a South African based subsidiary to a global leading ingredients manufacturer & supplier to the brewing & baking industry. He earned his BSc Food Science & Technology degree from the University of Zimbabwe, is a qualified Chartered Certified Accountant (ACCA–UK) additional to a graduate diploma in Marketing Management among other reputable certifications.

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