



Safeguarding township tourism in South Africa from counterfeit consumable products through consumer-oriented technological solutions

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Abstract

Tourism is a fragmented industry made up of numerous businesses engaged in the economic activity of providing products and services to meet tourist demands. The hospitality sector is one of the key drivers of the tourism industry, with an integral component of this sector being food and beverage. Recent reports of counterfeit consumable products in South Africa from immigrant shops, and the breakout violence that ensued, have the potential to negatively impact upon township tourism as this is where the majority of the reports arose from. Local food is considered to be a tourism resource that destinations can harness and utilise as a unique selling point to market a region. However, when the quality of the food is, or is believed to be substandard, the effects are damaging to a destination and has the potential of curbing future tourism growth. That notwithstanding, anti-counterfeit measures as well as food verification tools have largely been designed and geared towards manufacturers, producers and suppliers, leaving consumers with the singular option of believing the product packaging. This research asserts the use of technological advances such as quick response codes as consumer-oriented tools with the aim of empowering consumers to be active participants against the illicit trade of counterfeit goods.

Keywords: township tourism, food tourism, food fraud, spaza and counterfeit goods

Introduction

South Africa's tourism industry has grown rapidly since its integration into the global economy after years of international sanctions and has attracted millions of international tourists (Chili and Mabaso, 2016: 202; Hikido, 2017: 2). Since 1994, township tourism emerged as a niche market for special interest visitors and has since then experienced gradual growth. Township tourism is seen as a catalyst for the enhancement of the local economy of marginalised areas (Booyens, 2010: 274). Township tourism products are primarily cultural heritage, historical insights, arts and crafts as well as traditional cuisine (Booyens, 2010: 274).

The consumption of food and tourism is complexly interwoven. This presents a challenge in understanding the circumstances wherein the cuisine is itself the tourism product or merely a by-product of the overall tourist experience (Frisvoll et al., 2016: 76).

Contemporary consumers are noted as having an increased desire for local cuisine. These products are typically purchased on a daily basis from retailers, supermarkets, food stalls and farmers markets. These locally purchased ingredients are also served at restaurants and included in conference menus as a differentiating experience, responding to tourist's desire for sampling local cuisine (Björk and Kauppinen-Räsänen, 2014: 294). As a result, food tourism is a growing market and is seen as a major motivator for tourists travelling globally and returning to familiar destinations for purposes of enjoying cuisine indigenous to a destination (Mnguni and Giampiccoli, 2016: 3).

For tourism destinations, the culture of an area plays a significant role in marketing the destination. A destinations cuisine is not only linked with its culture, but also serves as a



drawcard (Björk and Kauppinen-Räsänen, 2014: 295). Local food is regarded as a tourism resource and can be used by destination marketers as a unique selling point for restaurants and accommodation establishments (Björk and Kauppinen-Räsänen, 2016: 177).

Sadly, South Africa has recently seen a spike in reports regarding counterfeit and pirated consumable products (Gous, 2018; Mahamba, 2018; Shange, 2018; Mchunu, 2018; Mashaba, 2018). Eser et al., (2015: 412) notes that counterfeiting and piracy are huge problems globally, which has adverse effects on consumers and the economy. Counterfeiting has substantial impact on four stakeholders: consumers, legitimate manufacturers, brand owners and society at large (Bian et al., 2016: 4250).

Methodology

This is an observational (desktop-based) research study. Observation is a data collection method wherein researchers observe a specific research field. When analysing data in qualitative research, the researcher goes through the process of identifying themes and describing what they have found out during interviews or observations rather than subjecting the data to statistical procedures (Kumar, 2011: 36). This research through the aid of literature and reports, highlights the recent spate of counterfeit consumer products in South Africa, the supply chain links to tourism and presents a consumer-orientated solution that could mitigate the spread of illicit goods.

Literature Review

Township tourism

Tourism has made huge strides in South Africa and has been identified as a catalyst for economic development. From a global perspective, poverty eradication and confronting unemployment dominates the development agenda of many nations (Ramukumba and Ferreira, 2016: 1). While large corporations dominate and are great for the economy and job creation, in South Africa, small micro and medium enterprises (SMMEs) in agricultural trade, tourism and construction industries, account for nearly 70-80% of employment and 30% of the gross domestic product (Rambe et al., 2016: 593). More specifically, tourism is a fragmented industry made up of numerous businesses engaged in the economic activity of providing products and services to meet tourist demands. Tourism requires various links between tour operators, travel agents, hotels, restaurants, and other service providers if it is to be sustainable (Salihoglu and Gezici, 2018: 42).

Township tourism is often referred to as a component of 'slum tourism', an increasingly popular activity whereby tourists visit economically impoverished areas in the global South (Koens and Thomas, 2016: 1642). In South Africa, it is known as township tourism and in Brazil it is known as favela tourism. These kinds of tourism allow tourists to participate in an altruistic sense of good citizenship by positively contributing to the economic development of an area in severe need of resources (George and Booyens, 2014: 452)

Townships, a by-product of Apartheid's spatial planning, are predominantly home to black South Africans and as the most densely populated and often the poorest areas, townships battle high unemployment numbers and significantly higher levels on informal economic activity (Piper and Charman, 2016: 332). Soweto, an acronym for South Western Townships, is the largest township in South Africa. It was established in the early 1900's, a product of segregated planning to accommodate labourers employed in mining and other sectors around Johannesburg, while the city centre was reserved for white residents (Booyens, 2010: 277). Many townships around South Africa share similar tales of creation. After 1994 when South Africa became a democratic republic, township tourism emerged as a result of urban tourism

(George and Booyens, 2014: 450). Despite apartheid being dismantled in 1994, its patterns of racial segregation and labour stratification remain in place today (Hikido, 2017: 3).

The common *modus operandi* of local tour operators on township tours, is the use of walking tour guides who guide tourists through a number of attractions such as visiting shebeens (a local tavern where tourists are offered the local maize-based Umqombothi beer), herbalists, performance artists, craft vendors and no tour is complete without dabbling into the local cuisine (Koens and Thomas, 2016: 1642).

Figure 1: Tourists on a guided township tour in Langa, Cape Town, South Africa



(Source: Footsteps to Freedom, 2018)

Townships stand out as places of poverty and crime and the likelihood of crime against tourists' increases when in areas with high crime rates. Tourists who feel unsafe at a destination tend to formulate negative destination images, which results in the decline of tourism activity in that area (George and Booyens, 2014: 450). Within this backdrop in the minds of tourists, improving the quality standards of tourist destinations becomes an important aspect of meeting demands and ensuring tourist satisfaction (Salihoglu and Gezici, 2018: 42). Food and food safety bears no exception and forms a critical and memorable component of a tourists' trip.

Food tourism

Historically, food has always been considered as a drawcard for tourists, with destinations competing to provide tourists with the best culinary experiences (Tsai and Wang 2017: 56). Within the tourism literature, a number of terms can be observed to be describing food tourism such as food and wine tourism, tasting tourism, gourmet tourism, and the more widely known culinary or gastronomic tourism. However, Ellis et al., (2018: 252) clearly distinguishes



between the terms, noting that culinary tourism refers to food related activities with regards to cultural consumption whereas food tourism refers more specifically to physical experiences that are motivated by the desire to involve oneself in the consumption of local cuisine. In other words, the essence of food tourism lies in the physical embodied and sensual experience itself, while culinary tourism focuses on the cultural knowledge received from the physical experience. Food tourism can broadly be defined as the participation of tourists in food-related activities during a trip, which involves purchasing local foods (Tsai and Wang, 2017: 56). There is however, an ongoing debate on whether food tourism should be a distinct form of tourism or should just be incorporated as a form of cultural tourism.

Food experiences and tourism have become increasingly vital for the economic growth and development of local economies. At the same time, the links between food and tourism are increasingly recognised as a prospective means of multiplying tourist spending (Mynttinen et al., 2015: 455). It has been widely noted (Kim et al., 2009: 423; Lee and Scott, 2015: 95; Tsai and Wang, 2017: 56) that tourists typically spend 40% of their travel budget on food. Food is playing a rather important role in the marketing of destinations, for example, Texas is famous for barbeque, Boston for fresh seafood, Italy is well known for cheese and pizza, France for wine and champagne, Switzerland for chocolate etc. Therefore, the consumption of food and beverages competitively contribute to the marketing and promotion of tourist destinations (Kim and Eves, 2012: 1458; Björk and Kauppinen-Räsänen, 2014: 295; Björk and Kauppinen-Räsänen, 2016: 177). According to Mynttinen et al., (2015: 456) the ability to experience new foods provides an incentive for visiting specific destinations in order to take part in novel experiences.

Authenticity is a critical component of the food tourism experience as food is recognized as being from a specific place and culture, with linkages to identity as well as iconic dishes (Ellis et al., 2018: 257). Food experiences play a prominent role in tourist's decision making process and satisfaction, which increases or decreases the probability of a return visit based on their experience (Mynttinen et al., 2015: 455). The concept of local food also encompasses a wider meaning by including the increasing interest in sustainability, food of production systems and consumer confidence in the food. The quality of tourists' dining experiences, specifically the food taste, quality and sensory aspects of the food is fundamental in creating positive attributes regarding a destination (Choe and Kim, 2018: 2). Alderighi et al., (2016: 324) discovered that positive experiences of local food specialities significantly affected the likelihood of tourists' revisiting the destination and in some cases the very same location, suggesting that local foods have a market expanding effect.

Trust is an essential concept of successful businesses and high levels of trust help reduce conflict while at the same time strengthening customer satisfaction and commitment in service (Roy et al., 2017: 309). The recent spate of counterfeit goods found in South African spaza shops (Mahamba and Mashaba, 2018), run the risk of damaging perceptions concerning the consumption of local food in the country, especially where rural and township tourism is concerned.

Negative perceptions around destinations such as health advisories, risk diverting tourists to other destinations, which they deem safer or halt travel plans to affected and neighbouring regions completely as evidence by the decline in tourism numbers as a result of numerous disease outbreaks such as the Severe Acute Respiratory Syndrome (SARS), Ebola, and the Avian flu virus (Cahyanto et al., 2016: 195). As Mizrachi and Fuchs (2016: 59) note, risk perceptions are far more meaningful in a tourist's decision-making process than the risk reality at the destination.

The National Department of Health in South Africa recently issued a statement warning consumers to be on the lookout for, and to not purchase nor eat counterfeit consumer food

products from informal traders. The Minister of Health Dr Aaron Motsoaledi, acknowledged the discovery of two factories producing counterfeit consumer food products, in the form of spices and bottled water and indicated that those operations had since been shut down. The Minister further urged communities to come forward with any counterfeit foodstuffs as he is yet to be presented with any official evidence of counterfeit foodstuffs emanating from spaza shops (Child, 2018). Unfortunately, counterfeit consumer products are becoming difficult to differentiate from original products due to the sophistication of modern equipment (Eser et al., 2015). And as Skinner and Haysom (2016: 6) note, 70% of households normally source food from informal outlets such as spaza shops.

Spaza shops

South Africa imposes no restrictions on refugees with regards to their movement or place of residence, leaving the potential for both conflict and integration into local communities (Crush et al., 2017: 785). Townships remain the first point of settlement for a majority of migrants and refugees entering South Africa. Since 1994, the country experienced an influx of African immigrants who identified South Africa as a safe place to conduct business and achieve economic emancipation. As a result of this attitude towards South Africa, African immigrants began establishing spaza shops in droves (Piper and Yu, 2016: 660).

The most prominent retail establishments in South African townships are neighbourhood grocery or convenience stores colloquially referred to as 'spaza' shops (Piper and Charman, 2016: 332). Spaza shops in South Africa are supported by the government, with the aim of spurring on economic empowerment, especially for previously disadvantaged communities. By and large, spaza shops begin as house shops, selling a few items and gradually evolve. In some cases, shop owners largely depend on makeshift structures as their base of operations (Mukwarami et al., 2018: 50)

Figure 2: Illustration of "spaza shop" (Brick and mortar structure)



(Source: Nxumalo, 2017)

Figure 3: Illustration of “spaza shop” (Shipping container container structure)



(Source: Gordon, 2015)

Figure 4: Illustration of “spaza shop” (Zinc structure)



(Source: Pather, 2018)

Most immigrants do not, in most cases, voluntarily embark on entrepreneurial activities. Rather, it is in response to the lack of alternative opportunities and difficulty securing worthwhile employment, making entrepreneurship the only viable option (Piper and Yu 2016: 660; Mukwarami et al., 2018: 51). Embarking on entrepreneurial activities isn't an easy decision for small-scale immigrant entrepreneurs to make as well due to common socio-economic challenges which include limited market information, low levels of personal liquidity,

poor access to credit facilities, high transaction costs, over-regulation and intense competition (Crush and Sujata, 2017: 5).

The last decade, however, has seen growing tensions between South African traders and foreign traders in the townships where they have been portrayed as taking over the township retail market by selling cheaper products (Piper and Charman, 2016: 332; Mukwarami et al., 2018: 49). This is significant when one considers that South Africa experiences high levels of food insecurity, while increasing food prices exacerbates the problem, forcing consumers and small business such as restaurants and accommodation establishments to seek out cheap consumer products in order to stay competitive (Skinner and Haysom, 2016: 6).

However, recent reports spurred on by social media regarding counterfeit and pirated consumable products, alleged that immigrant shop owners were reproducing and packaging well known consumer products thereafter selling them to the community (Gous, 2018; Mahamba, 2018; Shange, 2018; Mchunu, 2018; Mashaba, 2018). As a by-product of these reports, immigrant shops were looted in different parts of the country.

Figure 5: Looting of immigrant spaza shop after reports of counterfeit goods being sold



(Source: Kunene, 2018)

The resulting violence prompted raids on spaza shops by council, home affairs and police officials. In one of the raids, 13 shops were thoroughly inspected with some of the health hazard items including meat packages that did not indicate any sell by dates, illicit cigarettes expired and rotten foods as well as unlabelled frozen mixed vegetables. Of these 13 shops, 12 were immediately shutdown (Mahamba and Mashaba, 2018). Crush et al., (2017: 783) argues that some of the outbursts of violence on immigrant spaza shops are caused by social issues such as high youth unemployment and deep held resentment by local spaza shop owners who can't seem to operate their businesses as successfully as their immigrant counterparts. The recent looting that ensued seems to comport with portions of that narrative



because why else would residents loot products for consumption which they originally believed to be unhealthy or substandard.

South Africa is currently struggling to make meaningful gains on poverty, inequality and unemployment largely due rampant corruption and related malfeasance. That notwithstanding, piracy and counterfeit goods inflict added pressure on the economy, especially in townships (Phaahla, 2018).

Counterfeit goods are a global problem and these tarnish the image of brands with consumers. The subsequent sections will present evidence on counterfeit consumer goods, what these reported consumer goods are used to produce and their shared links with tourism and more specifically food tourism.

Counterfeit supply chains

The trade in counterfeit products is nothing new but over the last three decades it has developing into a global challenge. In 2015 trade in counterfeit goods was projected to be \$1.77 trillion (Bian et al., 2016: 4249). Counterfeit and piracy are illicit businesses wherein which unlawful networks thrive through the distribution of often substandard and even dangerous goods. These illicit goods range from mild to life threatening (Eser et al., 2015: 412; Sullivan et al., 2017: 1289). In recent years, the purchase of counterfeit goods has become a global issue and threatening the global economy, with China being regarded as the leading producer of counterfeit products. It has been noted that approximately 600 million counterfeit products produced in China are circulating the global market place, equivalent to at-least 87% of counterfeit sales globally (Kozar and Huang, 2018: 128).

Counterfeit and pirated goods make unauthorised usage of other products' trademarks and brand value for financial gain while duping consumers into believing they are making a genuine purchase (Eser et al., 2015: 412; Rojek, 2017: 28; Quoquab et al., 2017: 837).

There two categories of counterfeit goods, namely; covert (deceptive) and overt (non-deceptive) counterfeiting. Covert counterfeiting, is when the consumer does not know they are purchasing unauthorised and fake goods and he/she believes they are purchasing the original product. Overt counterfeiting is when consumers purchase fake goods intentionally and knowingly (Quoquab et al., 2017: 839).

Regarding overt counterfeited goods, Quoquab et al., (2017: 839) report that despite knowing the low quality and danger of purchasing counterfeit goods, there remains a high demand for these products among consumers in Malaysia. This rings true in South Africa as evidenced by the number of stores and markets openly selling counterfeit luxury goods merchandise across the country. The most commonly counterfeited goods are luxury items such as branded apparel, watches, jewellery, perfumes, sunglasses and purses. As a result of counterfeit goods being unregulated, they would seldom be found in High Street or shopping mall settings. They are likely to be found at flea markets, street vendors and illicit shop-fronts (Rojek, 2017: 29).

Figure 6: An illustration of retail shops openly selling counterfeit goods



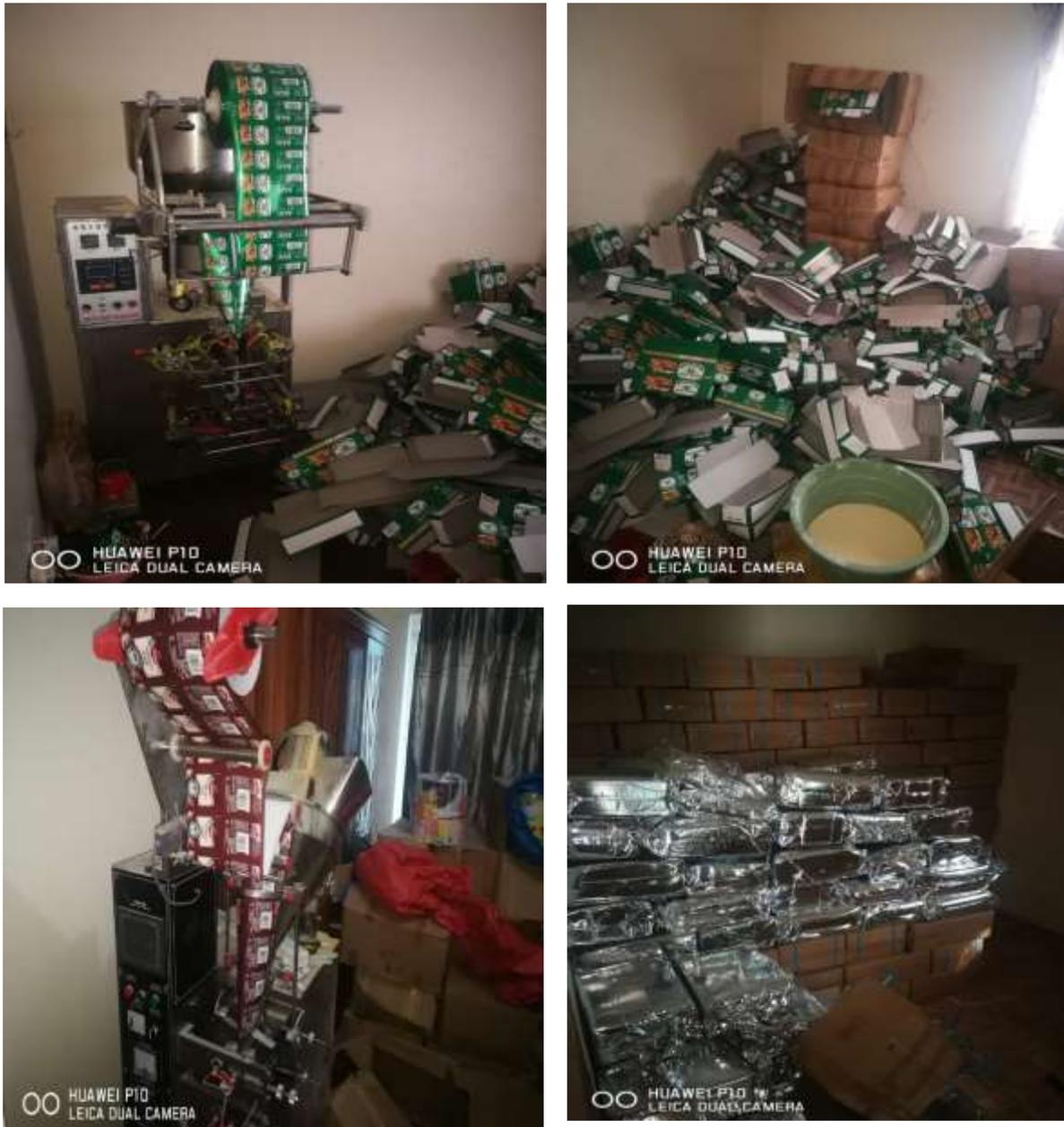
(Source: Mull, 2013)

The rise in counterfeit goods in South Africa is attributed to the country being seen as the one of the biggest economies in Africa, with a high retail market (Legg, 2013). The risks of counterfeit goods vary in scope and scale depending on the type of counterfeited product (Sullivan et al., 2017: 1289). That notwithstanding, counterfeit consumable goods, (food and beverages) in contrast to counterfeit goods (e.g. fashion items, accessories etc.), pose an even greater risk to society as nutrition related non-communicable diseases are on the rise globally (Mandle et al., 2015: 1).

Counterfeit consumable goods are quite worrisome; this trade is commonly referred to as food fraud. Food fraud is a collective term used to encompass the deliberate and intentional substitution, addition, tampering, or misrepresentation of food, the ingredients contained in the food, its packaging or false and misleading information regarding a product for the explicit purpose of financial gain (Charlebois et al., 2016: 211; Lord et al., 2017: 485).

As recently as July 2018, South African Police Services (SAPS), uncovered and shutdown a factory worth R77 million (around \$5 million), producing counterfeit consumable products, such as herbs, spices, and yeast. Other products included sanitary towels and shoe polish (Fisher, 2018; Gous, 2018).

Figure 7: Counterfeit factory in Hartswater, Northern Cape, South Africa.



(Source: South African Police Service 2018)

The products represented in Figure 7, are common household products originally produced by Robertsons - South Africa's largest and well known spice brand (Robertsons, 2018) as well as Gold Star Instant Yeast – the leading consumer yeast brand in South Africa (Anchor Yeast, 2018).

Figure 8: The original packaging for Robertsons Spice and Goldstar Instant Yeast



(Source: Smart Afro, 2018; Makro, 2018)

The intentional deception of consumers is the differentiating element between food fraud and food safety incidents. Figure 7 presents a clear case of food fraud (Kendall et al., 2018: 3). So sophisticated is the packaging of counterfeit goods that they easily pass for the original product, while consumers remain assured that they have purchased the original product. This illicit trade unfortunately impacts upon many industries, and tourism is no exception.

Counterfeit consumable goods and tourism

The hospitality sector is regarded as being the main driver of the tourism industry, while hotels, transportation, tour providers, food, drink and craft firms are the pillars within the tourism sector supply chain. As a result of tourism being a fragmented industry, tourists demand, use and consume various products and services which flow from a variety of sources, and chief among these suppliers, more especially in townships are spaza shops (Salihoglu and Gezici, 2018: 42).

According to Petersen et al., (2018: 72) the South African food system is characterised by a highly-concentrated core formal economy but also comprises of a sizable informal periphery constituting roughly 32-45% of the food market. Alternative food supply systems such as spaza shops and food vendors are quite common in South African townships, with an occurrence rate of about 19.2 outlets per 1000 residents, which is quite high. A large majority of township residents and businesses acquire their food supplies from these outlets and in some case on a far frequent basis than larger supermarket chains.

Not only are the products in figure 8, commonly used products in South African homes, these products are responsible for unique and authentic South African dishes. These signature dishes can be found at any cultural, township or food tourism experience. These signature dishes as indicated in figure 9, include but are not limited to food products such as umqomboti (traditional beer), Amagwinya (vetkoek), jeje (traditional bread), usu (tripe) to name a few.

Figure 9: Uniquely South Africa dishes



(Source: Morné, 2018; Devinelykay, 2017; Gramha, 2018)

Food fraud is big business (Smith et al., 2017: 251). In recent decades, the Chinese domestic food chains were also battling a similar problem with merchants being economically motivated to re-label, reproduce and resell sub-standard food resulting in the overexploitation of consumers. In 2008, the Sanlu melamine poisoning, associated with milk utilized in the production of infant formula, led to the deaths of 6 infants from renal failure (Kendall et al., 2018: 2).

As Mnguni and Giampiccoli (2015: 25) noted, local food has the ability to build brand identity, a valuable tourism drawcard and when effectively managed could further generate local pride and create employment opportunities. Thus, the future growth of township tourism and food tourism in townships in particular hinge on the perceived quality of the food. The food and service quality are key marketing priorities because they are regarded as the threshold for customer loyalty which guarantees positive word of mouth and also repeat visits (Mohaydin et al., 2017: 35). As George and Booyens (2014: 450) noted, without a sense of security, tourists will formulate negative destination images which would result in the decline of tourism and in this case more specifically township tourism. Nevertheless, van Ruth et al., (2017: 70) notes that the current food safety management systems are not specifically designed for food fraud control or mitigation.

Consumer-orientated solution

South Africa pays close attention towards ethical consumption and the ethical-labelling of goods. There are three very notable and prominent campaigns, namely; (i) Proudly South African (a national campaign and labelling initiative launched in 2001 to support South Africa businesses and motivate citizens to purchase local products), (ii) Fairtrade Label South Africa

(the Southern African branch of Fairtrade International) established in 2009; and (iii) the Southern African Sustainable Seafood Initiative (SASSI), launched in 2004 by the World Wildlife Fund (WWF) (Hughes et al., 2015: 149). For the tourism industry there is Fair Trade Tourism that is aimed at promoting responsible and authentic tourism experiences (Fair Trade Tourism 2018).

Figure 10: Examples of ethical-consumer campaigns in South Africa



(Source: Seeklogo, 2018; Fairtrade South Africa, 2018; Verster, 2016; Plett-tourism, 2015)

Food packaging is used as an attractive medium and communication tool allowing customers to distinguish between products through the use of labels. Labels may come in the form of tags, graphics or descriptions attached to a food product or package (van der Merwe et al., 2014: 100).

Figure 11: Illustration of a typical South African food label (A)



(Source: Labels for Africa, 2018)

Figure 12: Illustration of a typical South African food label (B)



(Source: Labels for Africa, 2018)

The labelling of food products is a broadly applied practice in South Africa and it is regulated. South African businesses are expected to abide by the Foodstuff, Cosmetics and Disinfectants Act (Act 54 of 1972) and its various amendments. However, as evidenced above, food labelling on products when confronted with high quality counterfeit consumer goods would fail to inform customers in real-time of the authenticity of the product they are about to consume. Don't judge a book by its cover the idiom goes, however, these days one can't even judge a wine by its label. Counterfeiting has become so sophisticated and widespread that even labels aren't immune to the antics of unscrupulous criminals (D'hoore, 2017: 45). Charlebois et al., (2016: 211) notes that food fraud is not a new phenomenon and that the authenticity of foods as well as the veracity of food labels remain key concerns of academics and consumers.

According to D'Hoore (2017: 45) from a packaging point of view, South Africa's current wide selection of anti-counterfeit applications includes visible overt solutions such as colour changing inks or holograms and semi-concealed solutions requiring reading devices. These mechanisms are mostly geared towards manufacturers and not consumers.

Measures used to identify and trace products by manufacturers include the application of serial numbers and barcodes on products. However, much of these food tracing and authentication technologies have been developed with the manufacturer, producer and suppliers in mind and they are entrusted with securing the food supply chain while consumers are expected to trust the end product and its contents. In the event such authentication mechanisms would be falsified, customers would still not know because they have no means to read the information contained in serial number or barcodes (Fenoff and Spink, 2017: 304).

Today, consumers are far more sceptical of what is in their food and where the food originated from, and as a result some consumers would like real-time verification of the food they are about to purchase without having to rely on a visual inspection (Cawthorn et al., 2015: 165; Fenoff and Spink, 2017: 304; Peng et al., 2018: 1).

A more recent, albeit not new innovation, may enable consumers to authenticate food and foods items before purchasing the product. This innovation is known as a quick response barcode or “QR” code.

A QR code, as illustrated by figure 13, is a two dimensional barcode that contains substantial information with improved security and information storage capability than serial numbers or traditional barcodes. Stored information may include production processes, product characteristics, promotional and marketing strategies and this information can be made available to consumers immediately and wherever they may be located (Di et al., 2017: 19; Lombardi, 2017: 15; Hong and Sinha, 2018: 2).

Figure 13: QR code



(Source: Microsoft, 2018)

QR codes are today being actively used in a variety of commercial settings e.g. webpages, advertising, manufacturing, retail, healthcare, transportation, e-payment transactions etc. With the proliferation of mobile devices such as smartphones globally, this enables QR codes to be utilised as an efficient and cost effective means of rapidly dispersing information (Hong and Sinha, 2018: 2). In South Africa, smartphone ownership is expected to reach 65% by 2020 and these devices can be used as powerful authentication tools. With smartphones, consumers are able to have accessible and affordable authentication devices via copy-resistant marks or code that can be read through a smartphone application in real-time (D’hoore, 2017: 45).

In South Africa, companies such as SnapScan are already utilizing QR codes as an electronic payment system and it is utilised by more than 30 000 merchants (SnapScan, 2018). In Argentina the National Seeds Institute (INASE), as depicted in figure 14, introduced QR codes labelled seed packages in an attempt to promote safety within the Argentine seed industry by protecting farmers from fake seeds and in order to facilitate traceability (Reconnaissance, 2017).

Figure 14: The National Seeds Institute of Argentina's use of QR codes



(Source: Reconnaissance 2017)

One of the leading companies promoting the use of QR codes as a means of product verification is ScanTrust a Swiss based company, that uses cloud-based proprietary product identifiers imbedded in QR codes to authenticate and track products (Taylor, 2017).

Figure 15: An Illustration of the ScanTrust application



(Source: Taylor, 2017)



ScanTrust is also the same company that developed the seed verification and authentication application on behalf of the Argentine seeds industry. As cross-border supply chains increase in complexity and counterfeit goods swell up, traditional tracking mechanisms will be increasingly challenged and new digital tools will be required to secure supply chains as well as protect consumers (Taylor, 2017). Lastly, QR code utilization in smartphones can also capture invaluable, real-time geographical data, which could allow law enforcement agencies the ability to take immediate action in destroying counterfeit syndicates (D'hoore, 2017: 45).

Conclusion

Consumers, whether they be individuals or business, need to be able to authenticate the products they consume in order reduce the risk of consuming and spreading of counterfeit consumable food products, as well as to be able to ramp up the reporting rate of those selling counterfeit consumer products. Law enforcement practitioners could be alerted to possible counterfeit goods hotspots, without having to investigate fragmented reports such as those that have recently caused a stir in South Africa, more especially on social media platforms.

Where tourism businesses are concerned, such as hospitality establishments and restaurants, the ability to verify information on consumer products would increase tourist confidence in the quality of food served at a destination and improve the perceptions of tourism offerings e.g. Township tourism in Soweto, uMlazi or Khayelitsha. Such mechanism would help counter negative perceptions tourists or tour operators may have regarding the safety and quality of the food to be consumed.

More importantly is that such mechanisms place the power in the hands of consumers and do not leave the responsibility solemnly on the shoulders of law enforcement as well as manufacturers who may sometimes be under-resourced to tackle the challenge that is counterfeit good sales.

Within this research and regarding consumer-orientated mechanisms for food authentication and verification, QR codes are presented as a possible cost-effective and straightforward implementable solution for combating counterfeit goods, but this solution would not succeed in a vacuum. Manufacturers would need to educate consumers on the use of QR codes and not utilize QR codes as mere promotional tool as this would certainly cause a decline in the use of QR codes, from a customer's perspective, in combating the spread of counterfeit goods and product authentication.

From a technological perspective, there are new developments such as the use of sensors, radio-frequency identification (RFID) tags etc. used to efficiently verify and locate food packages, however, these technological advance remain too expensive for mass implementation and are not consumer-oriented solutions to the problem of food verification.

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