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A GEOGRAPHICAL ANALYSIS OF THE COLLAPSED SACHET WATER FACTORIES IN KANO METROPOLIS, KANO, NIGERIA

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Abstract

Decrease in the supply of portable drinking water across most settlements in Nigeria and the continuous increases in demand for drinking water gave birth to sachet water otherwise called 'Pure Water". The study into this industry is imperative, as it provides drinking water to many households in addition to employing many youths, thereby decreasing unemployment and enhancing economic growth. However, it has been observed that many of the factories within the industry collapse barely few years after commencing operation. This research therefore aims to examine the causes of the collapse sachet water factories (CSWFs) in Tarauni, Kumbotso, Dala, Nassarawa, Municipal, Gwale and Ungoggo of Kano Metropolis, Nigeria. Survey research design was adopted. One hundred and sixty-nine (169) samples of CSWFs and their employers were identified, questionnaires were distributed to proprietors. Result of a descriptive statistics has shown that 8 of the 16 challenges have significant impact with ownership structure and government bureaucracy having the largest with 7.58 score. A correlation analysis has suggested that the factors have a mean score of 5.231 and standard deviation of 1.60075. The paper thus recommends provision of industry specific loans for sachet water operators by the Bank of Industry; owners should employ professionals to conduct intensive market survey and develop a realistic business plan, in order to minimize failures; Cooperative organization should be formed by the SWFs, to support their member, in case of difficulties.

Keywords: Sachet Water, Pure Water, Factory, Collapse Factory, Collapsed Factories

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INTRODUCTION

Nigeria is rich with ample of natural and human resources that could be harnessed for its economic growth and national development. Despite the huge country's available resources, it has been plague with a numerous glitches ranging from collapse of infrastructural facilities, insecurity, poor management policy on macroeconomic, low utilization capacity and massive unemployment and tied with persistent of monoculture nature of the economy (Oladele & Ezinwo, 2017; Izediuno et al., 2018). Thus, the Small Scale Industries (SSIs) are contributing in the transformation of traditional or local industries to modern, innovative and inventive, utilizing regional resources inform of industrial raw-materials. These SSIs absorb significant number of working age population, by providing jobs and serve as an ingredient for economic growth (Izediuno et al., 2018; Oladele & Ezinwo, 2017; Imafidon & Itoya, 2014; Aremu & Adeyemi, 2011). One of the most important of such SSIs is the sachet water or 'pure water' as it is popularly known. Sachet water is 500ml heat sealed bags of drinking water that came into the Nigerian market in the early 1990s to address the need for safe drinking water source. It has been established that 70% of adult Nigerians consume at least one bag of sachet water daily. This gave rise to millions of such factories across the country (Oladimeji, 2019).

Sachet water industries in Nigeria are, by definition and characteristics, small scale by nature. Like many of the SSIs, they are observed to be closing down operations. Although SSIs in Nigeria generally are tied to a number of challenges such as capital, trust, markets, which led to the nation loss of prospects for economic growth as well as sustainable development (Oduntan, 2014).

Conceptual Definition and Characteristics of SSIs

There is no single accepted definition of SSIs as such it would be based on the capacity of industry, country's level of development and its usually change overtime. The basic definitional yardstick remains unchanged, which include; asset based, financial strength, and number of employees. In case of developed nations such as United Kingdom, SSIs are defined based on financial strength and number of employees, where the SSI has an annual turnover of not more than £6.5 million, with a total balance sheet of not more than £3.26 million and having the maximum of 50 employees, as stated by the UK's Companies Act 2006 (TI, 2021); Canada with maximum of 100 employees and annual gross revenues of between $30,000 and $5 million (Oduntan, 2014; TBCS, 2019). While in Germany and Belgium SSIs are defined based on number of employees: total of two hundred and fifty (250) employees and one hundred (100) employees respectively. Oduntan (2014) reported that the European Union has modified and homogenized the concept of SSIs by labeling industries with less than ten (10) employees as micro, small scale having fifty (50) employees and medium scale having two hundred and fifty (250) employees. In the USA, however, small scale industries are having maximum of one hundred (100) employees and five hundred (500) employees considered as medium scale industries. Based on the Central Bank of Nigeria circular on monetary policy No 22 of 1988, SSI was labeled as one having a maximum of 500,000 Naira as annual turnover (Ali, 2003).

Characteristics of SSIs in Nigeria

Small Scale Industries are characterized with flexible operation, low gestation period, low level of skills, use indigenous raw materials, intensive mode of production and generally involved in hired labour, mainly not more than 50 workers (Ifechukwu, 2000; Ali, 2003; Ogbuabor et al., 2013; Oladele & Ezinwo, 2017; Izediuno et al., 2018). Further to the above Etumeahu et al. (2009) identified more characteristics that include limited capital outlay, owned by an individual or a group few people, financed by personal or family resources, uses labor intensive techniques and has a maximum turnover as well as annual balance sheet total.

Contribution of SSIs

SSIs exist mostly in clusters in some of the European States such as Netherlands, France, Britain, Italy and likes have proved to be effective by becoming high industrial belts (Ottaviano & Puga, 1997; Labrianidis, 2001). These belts include Italian textile industrial clusters in the Prato city, the Hot Banana industrial belts across European nations, including the area between Milan and London, containing Northern Italy, Southern Germany, South East France, the Ruhr area, the Ile de France, Belgium, the Netherlands, and South East England. These regions become more integrated in terms of commercial activities, improved regions economic growth and development (Reeg, 2017).

SSIs promote indigenous technology and provide 70% job opportunities to inhabitants and account 90% of the total enterprises in Caribbean and Pacific nations (Izediuno et al., 2018). The existent of SSIs in California, San Francisco, Sacramento, San Diego and Los Angeles in United States of America, contributed to their economic growth (Giulianu et al., 2016; Lee et al., 2018). Indeed, it contributes 23% of Bangladesh Gross Domestic Product (GDP) and accommodated 80% of the total employment in the nation industrial sector (Cortright, 2007; BER, 2017; Hassan et al., 2019). SSIs accounted for about 60% of the China's Gross Domestic Product (GDP) and provided 82%of employment opportunities to working age population). In Pakistan SSIs accounts 80% of labour force and contributed more than 50% of GDP (Zhang, 2005; Chirisa, 2009; Liu, 2008; Syed et al., 2017; Reeg, 2017).

In Kenya, the SSIs played a significant role in promoting the Gross Domestic Product (GDP) by 13% in 1993, 20% in 2011 and 25% in 2014. In addition, the SSIs provided jobs opportunities to a great number of working age population, which reduced unemployment rate and positively reflected on economic development (UNDP, 2015). As such, the SSIs in Nigeria conveys a vital impact in wealth and income distribution, rapid increase of socio-economic development, indigenous technology development, self-dependency and entrepreneurial development (Aremu, 2004). The Nigerian SSIs accommodates 98% of working age population (Oladele & Ezinwo, 2017). It assists in fighting against unemployment and poverty. This becomes one of the major instruments of poverty eradication, combating unemployment that would facilitate efficient economic growth (Ogbuabor et al., 2013; Oduntan, 2014).

The Nigerian manufacturing industries have marked significant decline in the mid-80s in terms of Nigeria's gross value added, that fall from 17% in early 1980s to 13% in 1987; 10.7% in 1993 and 12.1% in 1994 (Ajayi, 2011). The contributions of industries in Gross Domestic Product declined from 9.2% in 1981 to 6.8% in 1987; 5.5% in 1993 and floated about 6.0% between the years of 1994–2002. The number of manufacturing industries escalated from 421 in 1964 to 1,293 in 1975 and 2,360 in 1989 and reduced to 1,891 in 1993. Whereas, the industrial employees increased from 64,965 in 1964 to 93,270 in 1969 (eastern region excluded) decreased to 27,102 in 1989 but again increased in 1985 to 244,243 (Schatzl, 1973: MAN, 1983; Ajayi, 2011; Adisa et al., 2014).

Challenges Facing SSIs in Nigeria

Financial hitches foil SSIs from accessing funds easily and remain a major obstacle to sustain its operation and poor business history that highly associated with the inability of the owners to raise funds to expand the business in Nigeria (Imafidon & Itoya, 2014). Limited access to foreign exchange has generally affected operational scale (Adisa et al., 2014).

SSIs have deficiency in property protection and have not been able to reap the benefits of technological transition that restricted industrial digital technologies (OECD, 2018). This had led to very weak innovations and poor skills workforce, which prevented them from engaging in e-commerce (Pandey, 2013). Therefore, dishonesty of SSI manufacturers created artificial shortages which led the suppliers to escalate the price (OECD, 2016, 2017).

Low of patronage, low demand of local products and poor markets are other challenges of SSIs. The SSIs are facing a number of difficulties in advertising their products as a consequence of rising competition between them (OECD, 2015). In addition,

with the emergence of liberalization era that have yields to stiff competition on foreign goods, due to weak financial based of the SSIs, they cannot afford to spend huge amount in advertising their products (Pandey, 2013). However, the SSIs failed to make products marketing analysis, good service to customers, potential markets areas, good quality product and design that led to the lack of patronage and low demand of local products (OECD, 2015: Buhari, 2017). This necessitated SSIs to sell their products to money lenders or middlemen to whom they depend on for raw-materials. Thus, negatively affect the growth and development of SSIs (Desai, 2006; Buhari, 2017).

The ownership structure of SSIs is dominated by sole proprietors. Liman (2014) and Adisa et al. (2014) have found that SSIs with sole ownership mostly collapse due to the death of owner that set it up.

Etumeahu et al. (2009) listed some common challenges which he classified as Administrative (accounting, finance, personnel and managerial issues); Operating (marketing, inventory control, production, operations); strategic (planning, marketing research and financial analysis) and external (infrastructure issue, corruption and technology).

Past Initiatives Aimed at Promoting Small Scale Industries in Nigeria

In order to develop SSIs, a number of programmes have been introduced by the government, leading to the adoption of economic reform. The Structural Adjustment Programme (SAP)was introduced in the 1980s with aimed of rejuvenating the weakened SSIs spirit, so as to cope with the new task of small scale industries (Pandey, 2013).Shift from intensive capital to small scale industries, the National Directorate of Employment (NDE), was created on 24 October, 1986 and began operation in January 1987 with the basic goal of stimulating small scale industries, vocational skill development, rural employment promotion programme and special public work programme. The NDE ran various schemes with concessionary interest rates including: Mature People Scheme (MPS), Graduate Job Creation Loan Scheme (GJLS) and likes. The projects enclosed flour milling, soap making, food processing with aimed to support SSIs. The National Poverty Eradication Programme (NAPEP) introduced in 1999 under the regime of President Olusegun Obasanjo aims at eradicating poverty, via improving SSIs capacity and to cushion the consequence terrible of economic hardship met by enormous of unemployed Nigerians (Oni & Daniya, 2012).

The aim of this research therefore is find out the causes of the collapse of Sachet Water Factories (a subclass of SSIs) in Kano metropolis, Nigeria. This would be achieved through the following objectives:

1. To identify the location of the collapse sachet water in the study area
2. To trace the date of establishment, the date of collapse and calculate the length of operation
3. To examine the factors responsible for the collapse

This research will focus on the collapsed Sachet Water Factories across 7 of 8 local government areas that make up the Kano Metropolis, the capital city of Kano State, Nigeria. These are Tarauni, Nassarawa, Ungoggo, Kumbotso, Gwale, Dala and Municipal Local Government areas.

MATERIAL AND METHODS

Inventory was employed to identify the collapsed sachet water factories (CSWFs). Cross-sectional survey design was adopted to explore insight from employers of CSWFs. The quantitative data in form of latitude and longitude of existing CSWFs was sourced. It was used to trace the date of establishment and the date of collapsed, as well as the factors responsible for their collapse. The coordinates of existing CSWFs were sourced from location, the date of establishment, the date of collapsed and factors responsible for their collapsed, were sourced from employers via response to the questionnaire administered. The population of the study consists of only employers of CSWFs, about three hundred and fifty (350) across the seven local

government areas, namely; Tarauni 26, Kumbotso 40, Municipal 60, Gwale 48, Dala 40, Ungoggo 75 and Nassarawa 59, as shown in Table 1. Materials used were the Geographic Position System (GPS). The location of local governments of the CSWFs was established using mapping and coordinates. The ArcGIS 9.3 was used to process coordinates and produce map of the local governments of the CSWFs. The Microsoft Excel was used to calculate the length of operation. The Statistical Package for the Social Science (SPSS Software, version 26) was used in driving a mean score, standard deviation and correlation between challenges variable and collapsed Sachet Water Factories, using Descriptive Statistics.

The Taro Yamane Sample Size Method was used to draw the Sample. The Taro Yamane Statistical Formula expressed as follows;

n = N/ 1+N (e) 2

Where: n = the required sample size from the population under study

N ≈ the whole population under study

E ≈ the precision or sampling error which is usually 0.10, 0.05 or 0.01

A total of one hundred eighty-three (183) CSWFs and one hundred eighty-three (183) CSWFs employers were identified. A sample of ninety-three (93) CSWFs and ninety-three (93) CSWFs employers were derived and administered questionnaires using the Snowballing Sampling Methods. It was also used in the selection of respondents, to explore the date of establishment, the length of operation and factors responsible for their collapsed. The data on the location of the CSWFs was presented on the Map; the data for the date of CSWFs and the date of collapsed were presented on Chart. Finally, the factors responsible for the CSWFs were subjected to a descriptive statistics.

LOCATION AND EXTENT

The Kano Metropolis covers 499 km^2 (Barau, 2007), the location of the study area lies between latitudes 11^o 52' N and 12^o 08' N and longitudes 8^{o}25'E and 8^{o}38'E and consists of seven Local Government Areas as follows: Dala, Gwale, Municipal, Nassarawa, Tarauni, Kumbotso and Ungoggo Local Government Areas as shown in figure 1.

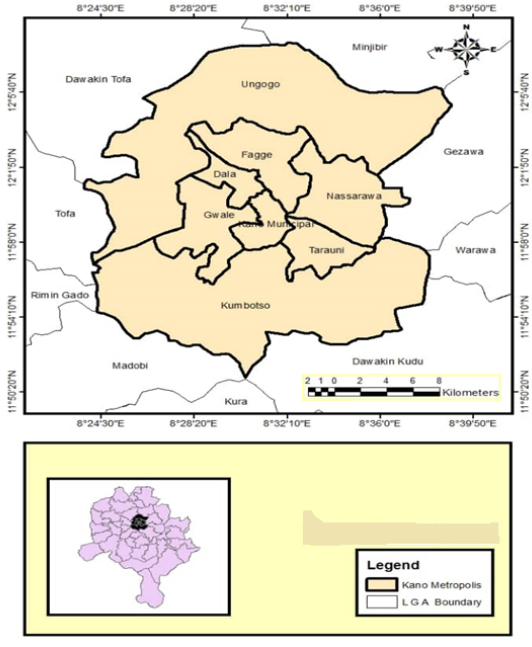

Figure 1: Shows the Local Government locations of CSWFs

Source: Geography Dept, FCE (T) Bichi, 2022

RESULTS AND DISCUSSION

The Collapsed Sachet Water Factories (CSWFs) located in Tarauni, Nassarawa, Munincipal, Kumbotso, Gwale, Dala and Ungoggo Local Government Areas of Kano Metropolis. The Table 1 below shows Local Governments location for CSWFs.

To Identify the Location of the Collapse Sachet Water in the Study Area

Table 1: Shows the Collapsed Sachet Water Factories in Kano Metropolis

S/N	Name of LGA	Total No of CSWfs	Sample Size
1	Tarauni	26	17
2	Nassarawa	59	27
3	Munincipal	62	27
4	Kumbotso	40	22
5	Gwale	48	24
6	Dala	40	22
7	Ungoggo	75	30
Total		**350**	**169**
Source: Field Survey, 2021			

Figure 2 below; shows the seven (7) Clusters of CSWFs in Kano Metropolis. Based on the Table 1 above, it can be seen that Ungoggo Clusters has the highest number of Collapsed Sachet Water Factories, followed by Municipal, Nassarawa, Gwale, Dala, Kumbotso and Tarauni respectively.

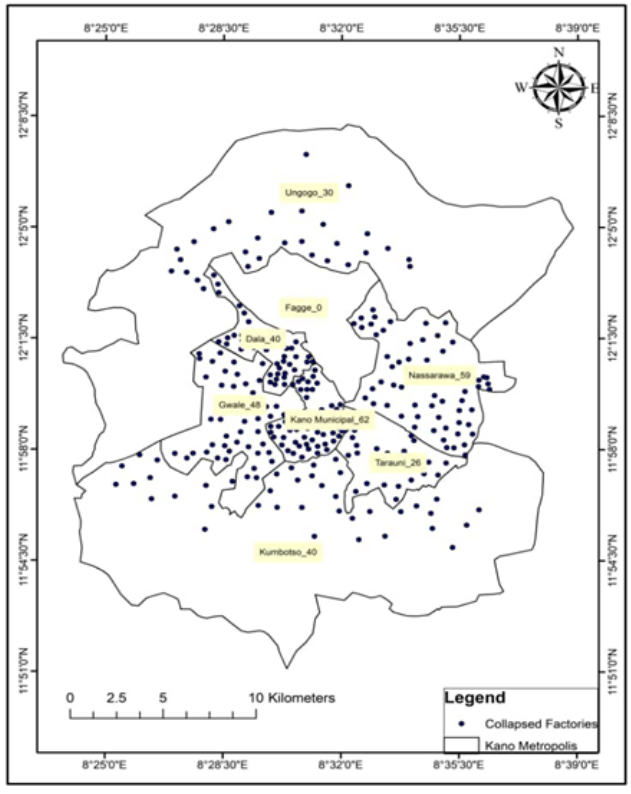

Figure 2: Shows the Clusters locations of CSWFs

Source: Geography Dept, FCE (T) Bichi, 2022

To Trace the Date of Establishment, the Date of Collapse and Calculate the Length of Operation

Respondents were asked to identify the Establishment date, date of Collapse and Operational length of CSWFs in Kano Metropolis. The results were shown in figure 3 and 4.

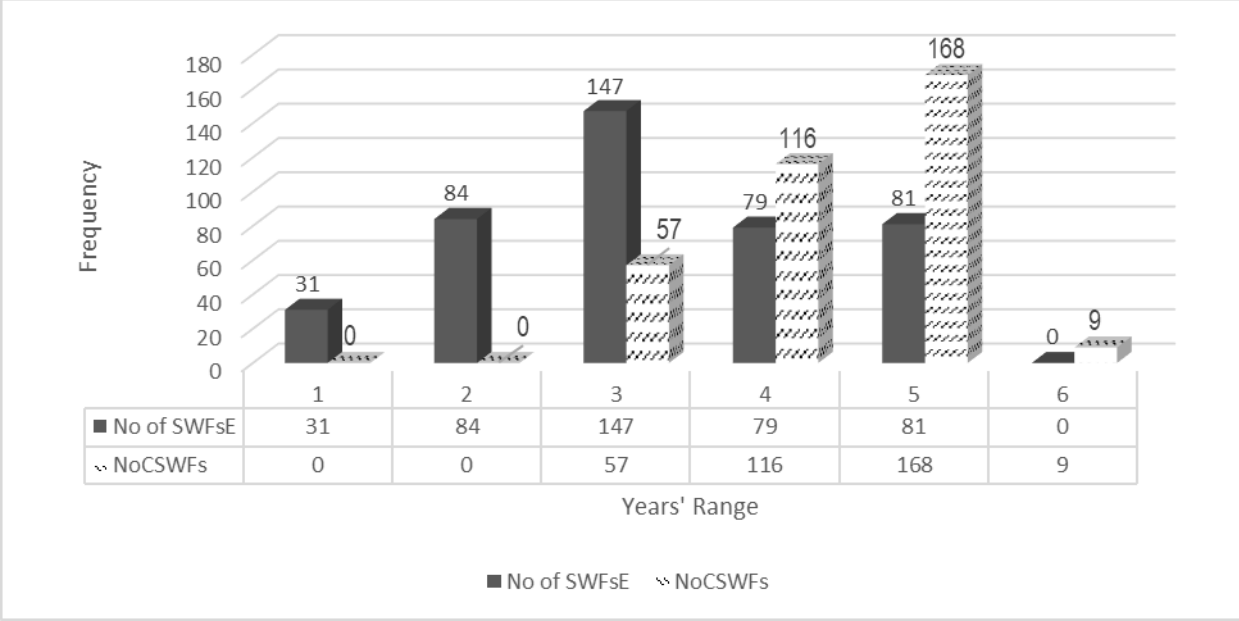

Figure 3: Bar chart showing the Number of Sachet Water Factories Established (No of SWFsE), Number of Collapsed Water Factories (NoCSWFs) and corresponding years For the Years' Range Axis: 1= 1995-2000; 2= 2001-2005; 3=2006-2010; 4=2011-2015; 5=2016-2020; 6=2021

Source: Field Survey 2020

To further clarify the data contained in Figure 3 above, there is need to identify the length of operations for these factories. Figure 4 below is a pie chart that illustrates the years taken for the factories to collapse. Although the average length of operation is found to be 8 years as reported by Ifechukwu (2000), the minimum length is 2 years and the maximum recorded is 17 years. 38.16% of the sample spent 10 years in operation.

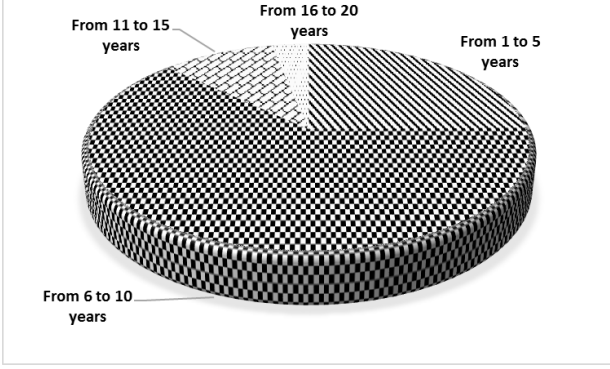

Figure 4: Length of operation of collapsed Sachet Water Factories in Kano

Source: Field Survey 2021

To Examine the Factors Responsible for the Collapse

Respondents were required to score the perceived reasons for the collapse of the sachet water factory they were involved with. The data collected is shown in Table 2 below.

Table 2: Challenges and Degree of Magnitude Towards the Collapse of SWFs Descriptive Statistics

	N	Min	Max	Mean	Std. Dev	Skewness	
						Stat	Std. Er
Trust	93	1	10	6.13	4.480	-.287	.250
Infrastructure	93	1	10	7.48	4.061	-.999	.250
Government Bureaucracy	93	1	10	7.48	4.061	-.999	.250
Unfair Competition	93	1	10	5.16	4.512	.153	.250
Ownership Structure	93	1	10	7.58	4.012	-1.060	.250
Management problem	93	1	10	4.29	4.358	.567	.250
Environmental Factor	93	1	10	3.71	4.151	.882	.250
Market Problem	93	1	10	3.23	3.904	1.191	.250
Family Interference	93	1	10	4.58	4.429	.424	.250
Access to Finance/Capital	93	1	10	4.29	4.358	.567	.250
Multiple Tax and Levy	93	1	10	3.42	4.012	1.060	.250
Poor Power Supply	93	1	10	4.68	4.448	.378	.250
Foreign Exchange	92	1	10	6.77	4.340	-.599	.251
Policy Inconsistencies	93	1	10	6.71	4.358	-.567	.250
Access to Modern Technology	93	1	10	1.87	2.675	2.773	.250
Non-availability of Raw Material Locally	93	1	10	5.84	4.512	-.153	.250
Valid N (list-wise)	92						

From Table 2 above, the descriptive statistics shows that, access to modern technology, market problem, multiple tax and levy, environmental factors, management problem, access to finance/capital, family interference and poor power supply respectively appeared to be the least significant impact challenges that lead to the collapse of SWFs in Kano Metropolis. As reported by Basant & Sebastine 2006; Bargal, 2009; Agwu & Emeti 2014; Ajala & Gana 2015**;** Feyitimi et al., 2016; OECD, 2016. While, the most important challenges have been found to many with unfair competition, non-availability of raw materials locally, trust, policy inconsistencies, foreign exchange, infrastructure, government bureaucracy, ownership structure, lead to the CSWFs in the study area. This is in line with the findings of Liu, 2008; Aremu & Adeyemi, 2011; Pandey, 2013; Imafidon & Itoya, 2014; Agwu & Emeti 2014; Feyitimi et al., 2016; Reeg, 2017; Eder, 2018; OECD, 2018.

Table 3: Correlation Between Challenges and Collapse Sachet Water Factories

	N	Min	Max	Mean	Std. Dev	Skewness	
	Stat	Stat	Stat	Stat	Stat	Stat	Std. Error
Industrial Identity	93	1	93	47	26.991	0	0.25
CHALLANGE LEADING TO COLLAPSE	92	2.13	8.88	5.231	1.60075	-0.042	0.251
N (list-wise)	92						

It can be seen from the result of the correlation (Table 3) that the challenges listed earlier have a mean score of 5.231 with the standard deviation of 1.600075. This shows that it could lead to the collapse of the factories.

CONCLUSION

About three hundred and fifty (350) Sachet Water Factories (SWFs) collapsed in Kano Metropolis from 1995 to 2021. Ungoggo Local Government having the highest with 75 and Tarauni Local Government with the least number of 26. The period 2006 – 2010 was the period the highest number of CSWFs was established, while 2021 has the lowest. The highest number of SWFs collapsed between 2016 and 2020 and no SWFs collapsed from 1995-2000 and 2001-2005. The CSWFs have an average life span of eight (8) years and minimum of two (2) years. The result of the descriptive statistics has confirmed that 8 of the 16 challenges are very significant with Ownership structure and government bureaucracy having the most significant impact. Generally, the challenges combined have a score of 5.231 out of 10 capability of causing the factories to collapse.

RECOMMENDATIONS

1. Association of Table Water Factories (ATWAF) should form a formidable cooperative that would support sole proprietorship with a soft-loan or non-interest loan, if the need arise, with a view to sustain its operation.
2. Association of Table Water Factories (ATWAF) should collaborate with the Small and Medium Enterprises Development Agency (SMEDAN), for the provisions of factory facilities.
3. The proposed ATWAF cooperative should be organizing quarterly seminars to SWFs employers about complex rules and regulations on the dynamics of SWFs .
4. The owners of Sachet Water Factory (SWF) should make a hydrological water survey, in order to have access of water.
5. The stakeholders should locate SWF in accessible area, in order to supply water, in case of scarcity of water
6. The Ministry of Commerce and Industry, Kano State Chamber of Commerce Mine and Industry and National Association of Small-Scale Industry, should collaborate to have a proper record of SWFs, in order to monitor their operation
7. The Kano Chamber of Commerce, Mines and Agriculture (KACCIMA) should organize seminars for SWFs employer, on how to govern SWFs operation
8. Modern machines should be provided, via the Bank of Agriculture (BOA) loans, with aim of improving productivity of SWFs
9. SWFs clusters should be provided, in area where electrical power is available, with a view to reduce operational cost
10. SWFs owners, should conduct intensive market survey, in order to avoid markets failure
11. Cooperative organization should be formed by the Sachet Water Factories stakeholders, to support their member, in case of financial problem

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