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THE GROWTH OF MICRO AND SMALL SCALE INDUSTRIES IN THE FACE OF “DUMSOR” IN GHANA: PERSPECTIVE FROM COLD STORES AND PRINTING PRESSES IN ASAFO – KUMASI METROPOLIS

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ABSTRACT

Ghana’s electricity producing trio; VRA, GRIDCO and ECG, in recent times have been plagued by certain operational, financial and logistical difficulties leading to a significant reduction its electricity generation capacity and hence, has had to endure irregular power supply for some time now. It is widely accepted in the country that “intermittent power supply” which is popularly known as “Dumsor”, is now the economy’s number oneterrorist; killing several industries and businesses that rely heavily on electrical power for operation, particularly, the micro and small scale businesses and industries that dominate and contribute significantly to employment creation and income generation. This paper thus focused on industrialists’ coping strategies to the intermittent power supply and how it affects their operations and growth. Eighty-eight (88) Cold Stores and Printing Presses were randomly sampled from the A safo industrial enclave in Kumasi for the study. Findings from the survey revealed that, though most firms adopted some coping strategies, they werenot sufficient as they in turn increased operational cost. Some industrialists had to acquired Power-plants, step-downs, reduce stock in-take, work overnight etc.Despite these efforts, “Dumsor” terrorized industrialists’ operations as firms incurred huge debts; resulting from low sales, spoilt products, machinery destructions, delay in productions and contract completion, andloss of contracts from clients. Generally, cost of operation escalated to a point that some firms had to either lay off workers or shut down their businesses completely.

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INTRODUCTION

Industrialization holds the key to a country’s socio-economic development and to drive an economy towards industrialization, a country must first develop its energy sector. This is because energy is the backbone to all industrial productions in the world (NDPC, 2008). In the view of Oviemuno (2006), abundant and affordable supply of power, particularly electricity is the pre-requisites for the development and growth of micro, small, medium and large scale industries in an economy. He reiterates that it is the significant role power plays in the development of industries that manufacturers always stress on the provision of affordable and reliable electricity supply. In developing countries, Micro and Small Scale Industries (MSIs) dominate and contribute significantly to employment creation, income generation and overall poverty reduction (Aremuand Adeyemi, 2011;Mensah,

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2004; NDPC, 2008). Statistic shows that MSIs employ between 61 per cent and 70 per cent of the labor force in developing countries (Aremu and Adeyemi, 2011). They also provide incomes and revenue to households, local and central governments for development (Albaladejo, 2002; Bala-Subrahmanya, 2008). Amponsah (2010) indicates that, MSIs alone employ about 60 per cent of the workforce in Ghana, and it is through MSIs that Ghana can hope to reduce poverty significantly among its populace by 2015 and hence, the achievement of the Millennium Development Goals. Despite the significant role MSIs play in socio-economic development particularly in the developing countries, irregular and unreliable power supply continue to terrorize their operations resulting in great economic losses (Anderson and Geckil, 2003). According to Burlando (2010), a month-long blackout in Zanzibar - Tanzania caused a large decline in household income among those employed in occupations that required electricity as working hours were reduced drastically during the blackout period. Also, a 12-hour power cut to 226 million people in India in 2001 caused chaos on the rail system,

paralyzed major utilities and hospitals, resulting to an estimated cost of \$98 million (AGCS, 2012). Realizing the dangers of blackouts and role power, particularly electricity plays in boosting the growth of industries and other business in an economy, most governments have made it a priority to providing reliable and affordable power by investing hugely in electricity production and supply. Hence, developing countries in Africa, specifically the West African sub region have developed two flagship programmes to produce energy for the sub region. They are the West African Gas Pipe-line (WAGP) that seeks to generate electricity for industrial purposes by constructing 600km pipe-line to transport natural gas from Nigeria to Benin, Togo and Ghana; and the West African Power Pool (WAPP) which also seeks to integrate the national power utilities into a unified regional electricity market, quadruple inter-connection capacities within the next 20 years and finally generate additional electricity capacity for the sub-region (Camara, 2012).

Despite Ghana being part of the above Flagship programmes, its power supply has failed to meet the increasing demand which now cripple the economy particularly the growth of industries and other businesses that rely heavily on electricity (Chronicle, 2013). Ghana's industrialization is heavily dependent on electricity supplied from the hydro-electric power sources – Akosombo, Kpong and Bui dams. Other minor sources include Tarkoradi and Tema Thermal plants. However, inadequate supply from these sources to meet the growing demand had made the country suffer up to four major energy setbacks since independence (Abeeku and Kemausuor, 2007; Braimah and Amponsah, 2012), with the current one (2014-2015 power crises) being the fifth and the longer of all. According to the utility providers (V.R.A., E. C. G., and GRIDCO) and the Energy Commission, the country's total available capacity at peak as at 2013 stood at 1,634MW against a peak demand of 1,765MW, leaving a backlog of 131MW and a projected peak demand of 1900MW+ for 2014 and 2015 (Energy Commission, 2012, 2013). The energy supply and demand mismatch coupled with the utility providers' recent operational, financial and logistics difficulties have significantly reduced the country's electricity generation capacity resulting in power rationing exercise and unannounced frequent blackouts within the expected supply periods (Chronicle, 2013).

This phenomenon is threatening the ability of Micro and Small Scale industries (MSIs) to continue to play their poverty reducing roles of employment creation and income generation in the economy. In 2007, Ghana suffered similar power crises and the Daily Graphic (19th March, 2007) reports that, Volta Aluminium Company (VALCO) suspended its operations following inadequate power supply and over 500 workers laid off while a skeletal staff of 200 remained to maintain the plant. Due to the suspended operations of VALCO, Pioneer Kitchenware Limited (PKL) had to import raw materials for the production of cooking utensils which formed the bulk of their products and produced at a capacity of 2,400 metric tons in the year, representing 40 per cent of installed capacity. Currently, most industries and businesses are going through similar challenges. Kumasi, the country's second largest and industrialized city has had to endure irregular power supply for some time due to the current (2014-2015) power crises

(Dumsor-Domso) in the country. The paper thus investigates the coping strategies some micro and small scale industries adopt to the power rationing (load shedding) exercise and unannounced frequent power outages within the supply periods, particularly Cold Stores and Printing Presses that depend heavily on electrical power for operation in Asafo, an industrial enclave in Kumasi Metropolis. It further investigates how the power crisis terrorizes the operations and growth of these industries in the enclave.

The Study Area

The study was undertaken in Asafo, an industrial enclave in Kumasi Metropolis, popularly known as "Asafo Cold Stores and Printing Presses". Kumasi is the second largest city in Ghana in terms of administrative, commercial and industrial functions and as such, suffers massively from the power rationing exercise. About 74 per cent of the active labour-force in the metropolis engages in commercial and industrial activities. The Asafo industrial enclave is located directly within the Central Business District (CBD) and is noted for its commercial and industrial activities which operate on small and medium scale level. Cold Stores and Printing Presses in the metropolis are heavily concentrated in this enclave. The Cold Stores offer wholesale services to retailers in different parts of the metropolis and the region. Most of the country's bigger printing presses are also concentrated in this enclave and offer services to almost all parts of the country, particularly the forest and savannah belt. Other small scale industries such as Shoe and Slippers Manufacturers, Welding, Auto mechanics etc. can also be located in this enclave.

MATERIALS AND METHODS

The paper surveyed literature on intermittent power supply and the growth of Micro and Small Scale Industries (MSIs). A cross-sectional survey approach was then adopted to study the phenomenon over a limited period of time when the power crisis was at its peak. Field survey was carried out on cold stores and printing presses in Asafo from late May to the end of June, 2014 for empirical data. The study of cold stores and printing presses was justifiable on the grounds that they dominate and depend solely on electrical power for operation in the enclave. A total of 42 wholesale Cold Stores and 46 large Printing Presses were randomly sampled for empirical data. The study collected data on firms operations "before the power crisis" and "during the power crisis" for comparative analysis. Hence, the paper analyses and presents data on firms' operation in the months of November and December, 2013 when power supply was reliable and also in the months of March and April, 2014 when the power crises was at its peak. Data collected on the MSI's operations before and during the power crisis were analyzed in two forms. The analysis of the first form of data started after editing and coding responses from the industrialists, with rationalization using Statistical Package for Social Sciences (SPSS) and Microsoft Excel. The SPSS was used in generating the measures of central tendency and dispersion (mean and range) that was required in establishing the average regularity of electricity supplied and required by the industrialists, the duration of interrupted power supplied, energy cost, expenditures, revenues, profits of the entrepreneurs and any additional cost firms incurred as a result

of the frequent power outages. The Microsoft Excel was also used to generate figures (charts) required for analysis in the study. The analysis of the second form of data also involved making comprehensive statements and analytical descriptions about the coping strategies and cost incurred during the power crisis from the perspectives of the industrialists.

RESULTS AND DISCUSSION

The paper presents results on the characteristics of the MSIs Interviewed, the regularity of electricity supplied to firms and what the MSIs actually require, their coping strategies, effects on productions (outputs), revenues and profits; and other additional cost they incur as a result of the frequent power outages.

Characteristics of Cold Stores and Printing Presses in Asafo

Ownership of Industry

In terms of sex of the owners of the industries, females dominate in the Cold Store industry with 78.6 percent whilst males constitute 21.4 percent. Conversely, males dominate in Printing Press activities with 60.2 percent ownership whilst 39.8 percent are female (see Figure 1). Hence, Cold Store operation is mainly female’s activity while the Printing Presses being a male activity.

labour absorption strength was 6 workers. This indicates that, Cold Stores in Asafo are generally small scale industries as their average labour absorption capacity exceeds five but not more than fifteen (Mensah, 2004 and Osei *et al*, 1993). With respect to Printing Presses, 30.4 percent were micro scale industries employing between 1 -5 workers, with the remaining 69.6 percent being small scale industries and employs between 6 – 15 workers. The Printing Presses’ average labor absorption capacity was 8 workers. This also indicates that, printing presses in Asafo are mainly small scale since their average labour absorption capacity was between six and fifteen as defined by Mensah, 2004 and Osei *et al* (1993).

Regularity of Electricity Supply to MSIs in Asafo Industrial Enclave

The regularity of electricity supply to enterprises was assessed by considering the difference between the hours industrialists require power for operation per day and the average hours of electricity supply received by the industrialists per day during the power crisis.

Electricity Demand and Supply by Cold Stores per day

Electricity is constantly required by all Cold Store Operators to keep their products (fishes and chicken) frozen. As illustrated in Figure 3, the Cold Store Operators required a 24-hour

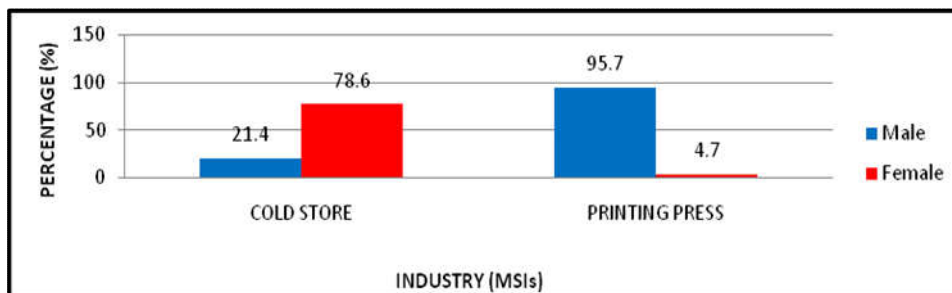


Figure 1. Sex of Industrial Ownership in Asafo Source; Field Survey, April, 2014

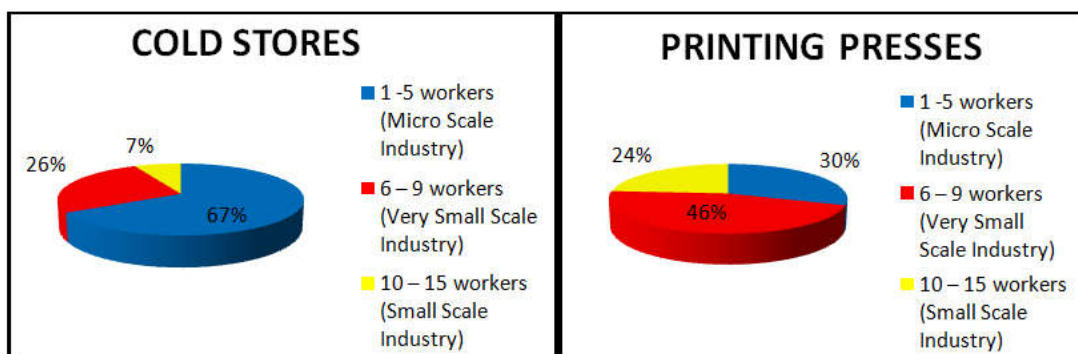


Figure 2. MSI's Labour Absorption Capacity Source; Field Survey, May/June, 2014

Scale (Size) of MSIs

In terms of industrialists’ labour absorption capacity, most Cold Stores in Asafo, about 66.7 percent employs between 1 - 5 workers (micro scale industries), with the remaining 33.3 percent employing between 6 – 15 workers (small scale industries), (see Figure 2). Generally, Cold Store’s average

constant electricity supply per day to power their cold-rooms and refrigerators (fridges) to continuously keep their fishes and chicken frozen, if not they will go bad. However, the industrialists did not get the required power supply due to power rationing exercise and frequent power outages within expected supply hours, and sometimes low voltage/current.

The Electricity Company of Ghana (ECG) assured industrialists it would supply them with 48 hours of constant power out of every 72 hours. In other words, firms would only receive a 2 day of constant power supply out of every 3 days. However, the survey revealed that even in the midst of the one day power shortage, the industrialists experience intermittent power supplies (frequent power outages) within the 48 hours the ECG announced it would supply them. The industrialists only received an average of 39-hours constant electricity supply out of the 72 hours and not the actual 48-hours announced by the ECG during the crisis. This indicates that, Cold Stores only received an average of 13 hour constant electricity supply per day (every 24 hours) during the power crisis (see Figure 3).

Electricity Demand and Supply by Printing Presses per day

Printing Press firms required a 12 hour constant supply of electricity per day and it was only needed during their working hours (6am – 6pm) to power their machinery for printing, cutting, separating colours and for plate making. However, the industrialists only received an average of 7-hour constant power supply out of the required 12 hours per day during the crisis.

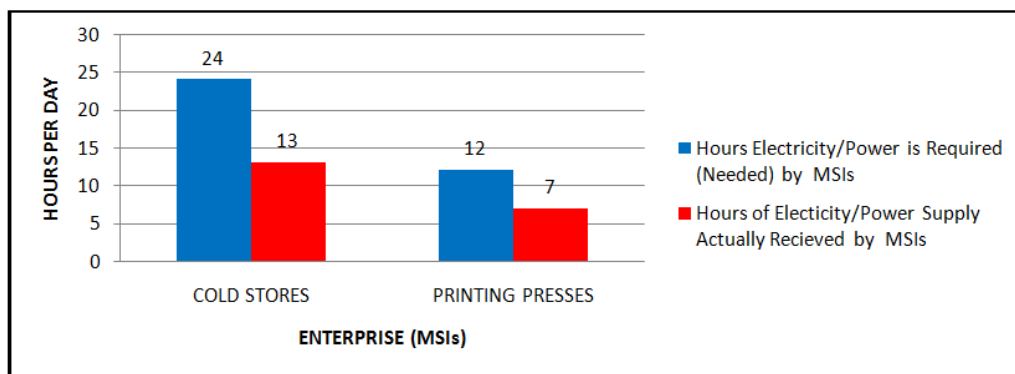
adequate power because of a stoppage in Gas supply from Nigeria (Nigeria stopped supplying Gas to Ghana) and as a result, Ghana could not get ample Gas to feed the thermal plants to generate enough power. They (ECG) reiterated that, the Akosombo hydro-Power plant also could not generate adequate power for supply as some of its turbines had broken down and needed replacement(Interview with DzifaBampoh (Public Relations Officer, ECG-Kumasi) on June 17,2014).

Industrialists’ Copping Strategies to the Power Crisis

Premising on the finding that industrialists in Asafo were not supplied with the required electricity for operations (production), the paper examines the coping strategies adopted by the industrialists in response to the power crisis (frequent power outages).

Copping Strategies Adopted by Cold Stores

Cold Store Operators adopted some strategies to cope with the frequent and unannounced power outages. As indicated in Table 1, about 21.4 percent of the industrialists purchased power plants (generators) to ensure that they had constant power even in times of power outage.



Source; Field Survey, May/June, 2014

Figure 3. Hours of Electricity Supply required and received by Industries per day

Table 1. Copping Strategies Adopted by Industrialists

Cold Stores			Printing Presses			Total	%
Copping Strategy	Number of Firm	%	Copping Strategy	Number of Firm	%		
Power Plant	9	21.4	Power Plant	11	23.9	20	22.7
Step-down	39	92.8	Step-down	38	82.6	77	87.5
Employee layoff	17	40.5	Employee layoffs	21	45.7	38	43.2
Reducing inputs (carton of fishes and chicken)	42	100	Working overtime (Overnight)	41	89.1	-	-

Source; Field Survey, May/June, 2014

The above statistics (Figure3) indicates that, industrialists in Asafo suffered an average of 11 hours of power outage per day as against 13 hours of power supply. Hence, it was not the best of times for manufacturers particularly those in the small and medium scale enterprises category as the hours of power supply in the city was not adequate to support their operations. The Electricity Company of Ghana (ECG) could not meet the power demands of the industrialists because of inadequate power generation from the country’s three thermal plants (Aboase, Tema and Tarkoradi thermal plants) and the Akombo hydro-electric power station. According to the authorities of the Company (ECG), the thermal plants could not generate

Also, 92.8 percent of the firms acquired stabilizers (step-downs) to regulate power fluctuation (high and low voltage) and unannounced frequent power outages that causes destruction to their fridges and cold-rooms. Besides, all firms (100 percent) had to reduce the quantity of their stocks due to low patronage by customers in order to avoid debt (products keeping long and going bad) whilst 40.5 percent had no option but to lay-off some of their employees as a strategy to cut down expenditure (reduce salaries paid to workers). On average, 3 workers were laid-off by the cold stores.

Printing Presses

The Printing Presses also adopted similar coping strategies to that of the Cold Stores (see Table 1). About 23.9 percent of the industrialists purchased power plants to supplement the ailing electrical power whilst 82.6 percent acquired stabilizers to regulate power fluctuation that cause destruction to their machinery. Besides, 45.7 percent of the firms laid-off some of their employees. An average of 4 workers was laid-off by the printing presses. Another strategy the Printing Presses adopted was to work overnight; about 89.1 percent of the firms worked throughout the night when they become aware that they will not get power the next day in order to meet contract deadlines. Generally, the coping strategies of the industrialists are similar to those adopted by larger scale industries in Ghana during the 2007 power rationing exercise. For instance, Volta Aluminium Company (VALCO) laid-off over 500 workers, leaving a skeletal staff of 200 to maintain the plant. Besides, the company operated below its installed capacity with Power plants at a high cost (Graphic, 2007).

Effects of irregular power supply on MSIs

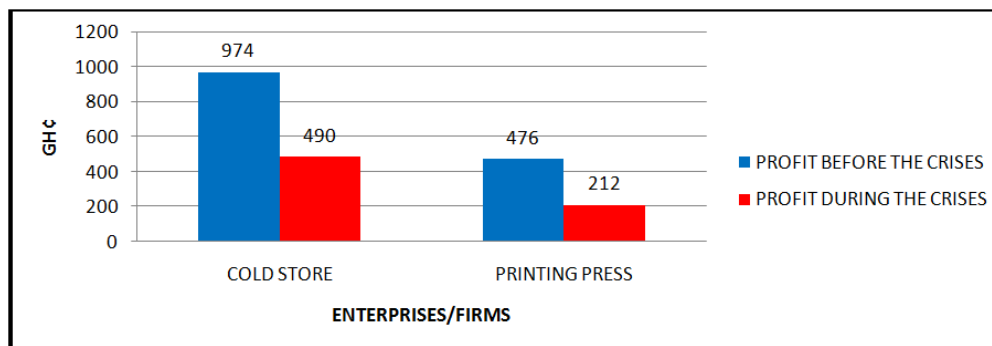
Despite industrialists adopting the above coping strategies in Table 1.1, their operations were engulfed and terrorized by the interrupted power supply. The frequent and unannounced power outages in the metropolis affected industrialist's costs of production and revenue. An assessment of the total costs of production (expenditure) and revenues accrued "before" and "during" the crises enabled the paper to determine how the intermittent power supply affected the entrepreneur's profit margins.

This comprises of inputs (fishes and chicken, labour and power), transportation, taxes and tariffs. On the other hand, their average total weekly revenue was GH¢49,594.00. However, the industrialists average total weekly cost of production during the power crisis (in the months of March/April, 2014) was at GH¢ 32,746.00 while GH¢ 33,236.00 was the revenues accrued. The expenditure and revenue pattern of the industrialists "before" and "during" the power crisis indicates that their average total weekly profit fell by 49.7 per cent as their weekly profits decreased from GH¢ 974.00 to GH¢ 490.00 (see Figure 4). This is because, firms had to reduce their stocks, that is carton of fishes and chicken taken daily due to low patronage in order to avoid debt on products remaining in the cold-rooms for longer time and getting spoiled. One entrepreneur remarked that;

"Before the power crisis, some customers used to purchase 5 cartons of my products (fishes and chicken) daily but now (during the crisis), they have reduced it to 2 or 3 because they are afraid they might not get enough power at their shops, residence and work places to keep the fishes and chicken frozen if they buy more" (Interview with Ama J. J at Asafo Cold Stores, June, 2014).

Printing Presses

Unlike Cold Store Operators who earn revenue daily through sale of products (fishes and chicken); the Printing Presses instead operate on contract basis. They execute contracts with their own operating capital after which customers pay them. Before the power crisis, the industrialists' average total weekly



Source; Field Survey, May/June, 2014

Figure 4. Industrialists Average Total Weekly Profit Fluctuation

Table 2. Industrialists' Average Energy Cost "Before" and "During" the Power Crisis

Firm	Before the Power crisis		During the Power Crisis	
	Firms' average total energy cost (electricity)	Firm's average total energy cost for using Electricity only	Firms' average total energy cost for combining the usage of electricity and Power plant	Percentage of increment in firms' energy cost for using both electricity and Power plant
Cold Stores	GH¢ 619.00	GH¢ 565.00	GH¢ 1,271.00	105%
Printing Presses	GH¢ 287.00	GH¢ 221.00	GH¢ 576.00	101%

Source; Field Survey, May/June, 2014

Cold Stores

Before the power crisis (in the months of November/December, 2013), the industrialists average total weekly cost of production (expenditure) was GH¢ 48,620.00.

The costs comprised of inputs (such as papers, inks, pins), wages and salaries paid to workers, taxes and electricity. On the other hand, their estimated average total revenue accrued weekly was GH¢ 4,864.00, resulting in a weekly profit margin

of GH¢ 476.00. However, during the power crisis, the industrialists' revenues decreased significantly and hence, weekly profit margins fell by 55.5 per cent. For instance, with low level of production, labour costs (measured in terms of wages) remain constant which subsequently affected entrepreneurs' total profits as revenues substantially fell. The industrialists' average weekly cost of production during the power crisis was at GH¢ 3,854.00 whilst revenues accrued increased marginally to GH¢ 4,066.00, hence earned an average weekly profit of GH¢ 162.00. The statistics shows that industrialists' total weekly profit fell from GH¢ 476.00 to GH¢ 212.00 (see Figure 4). The industrialists' profit margin decreased substantially during the power crisis and this happened because the frequent power outages delayed their production (completion of contracts), especially firms that did not have power plants to supplement the ailing electricity. As a result, most firms who did not have power plants were not able to meet clients' time schedule, hence lost their contract to others who had electricity or power plants elsewhere.

The survey revealed that, Profit margins of Cold Stores increases as more cartons of fishes and chicken are sold and the vice versa. However, carton of fishes and chicken sold by the entrepreneurs daily during the power crisis reduced drastically due to low patronage and that in turn affected their revenues accrued weekly, leading to a fall in weekly profits. Also, some cold store operators had to reduce their product prices for customers to purchase them when they were not supplied with power and their products were going bad, hence incurred debts. Firms had to paid salaries (wages) to employees monthly despite halt in work on some days. Some also spent huge sums of money in generating their own power for operation in times of power outages. This increased their total cost of production and that in turn affected their revenues accrued and profits margins. Besides, the power crisis terrorizes some industrialists to the extent that 3 cold stores operators' Cold-room (Refrigerator) and 2 printing presses machinery got damaged and had to go out of business completely.

Additional Cost and Issues Emanating From the Intermittent Power Supply

Power Plants for Energy Generation

Some industrialists acquired power plants at a great cost to supplement the ailing electrical power and to ensure that they had constant power for operation. Few industrialists, about 22.7 per cent could only acquire and utilise power plants because of the high cost involved in their purchase and usage which increases operational cost. On average, the industrialists incurred an average of GH¢ 12,050.00 to acquire power plants for constant power supply in times of power outage, particularly the cold store operators in order to continuously keep their fishes and chicken frozen and avoid loss of products resulting in huge debts.

Other industrialists who did not have power plants and relied solely on electricity revealed that, the small power plants (generators) can power their machinery (the cold-rooms and the printing machines) for operation unless the bigger ones whose cost is very high and they could not afford.

Increased Energy Cost

Before the power crisis, all the firms depended solely on electricity for production, hence had to pay for electricity cost only. Cold Store Operators' average energy (electricity) cost before the power crisis was GH¢ 619.00 while the Printing Presses had an average energy cost of GH¢ 287.00. However, during the power crisis, 21.4 percent of Cold Stores and 23.9 percent of Printing Presses acquired power plants to supplement the electrical power and that increased their average total energy cost to GH¢ 1,271.00 and GH¢ 576.00 representing 105 percent and 101 percent increase respectively (see Table 2). Conversely, Cold Stores and Printing Presses who had no option but to depend solely on the ailing electrical power had to pay an average energy cost of GH¢ 565.00 and GH¢ 221.00 respectively despite the intermittent supply. Though this amount was a little lower as compared to the amount they paid in November/December, 2013 when power supply was constant throughout the months, most of the industrialists complained that the amount they pay in the midst of the intermittent power supply (March/April, 2014) was still high. This is because; the amount they pay during the crisis is almost the same as what they used to pay when the power supply was reliable and constant through the months. According to the industrialist, the amount they pay should have reduced significantly, considering the number of days within the months they were not supplied with power for operation.

Damages to Machinery

The frequent power outages and power fluctuation (low and high voltage) caused destructions to cold store operators' fridges and cold-rooms; specifically the motors and they had to incur extra cost in either servicing them or buying new ones. About 69.0 percent of Cold Stores also incurred an extra cost of GH¢ 489.00 on average in the months of March/April, 2014, ranging between GH¢ 80.00 and GH¢ 1,600.00 on machinery damage. Besides, when Printing Presses are working (printing) and the power goes off unexpectedly, their printing machines automatically reversed anti-clockwise which destroy their machines at times and require the service of technicians. The study revealed that about 78.3 percent of Printing Presses incurred an average cost of GH¢ 326.00 in the same months ranging between GH¢ 55.00 and GH¢ 1,500.00 on machinery damages caused the power outages. This finding supports a study by Corwin and Miles (1978) that, one of the numerous economic effects of the 1977 New York City blackout was the destruction caused to plants, equipment and machinery resulting in huge economic cost.

Loss of Products

Cold Stores who did not have any alternative source of power (power plants) lost some of their products when they were not supplied with enough power to keep them frozen. About 76.2 percent of them incurred an average debt of GH¢ 913.00 in the months of March/April, 2014 on spoilt products ranging between GH¢ 95.00 and GH¢ 1,720.00 due to inadequate power supply. The Printing Presses on the other hand lost their produce through printing mistakes (error printing). The study noticed that when Printing Presses were working (printing)

and power goes off unexpectedly; their printing machine reversed from clock-wise to anti-clockwise direction. If that happens, they have to wait till the power come back to reset the machine before any printing can be done. However, if the power comes back and the industrialists are not around to quickly reset the machine, the machine will automatically start printing wrongly in an anti-clockwise direction instead of clockwise printing resulting in loss of papers and toner. The setting of the printing machine also delays work as it is time consuming. Statistics from the study indicates that about 71.7 percent of the Printing Presses lost an average of GH¢ 383.00 in the months of March/April, 2014, ranging between GH¢ 50.00 - GH¢ 645.00 on printing errors resulting from unexpected power outages that occurred frequently within the expected supply periods. A similar effect was reported in Asia, where business ventures and households' machinery and refrigerators were destroyed and food spoiled (Peters, Kesavan and Palmer, 2011).

Acquisition of Step-downs (Stabilizers)

Since frequent power outages and power fluctuations (low and high voltages) caused destructions to industrialist machinery/equipment, they acquired stabilizers to regulate the flow of electrical current in their machinery. Most them, about 87.5 per cent acquired one or more stabilizers at an average cost of GH¢ 245.00 to regulate power fluctuations and reduce the destructions caused to their fridges, cold-rooms, and the printing machines. This finding supports a survey carried by Amponsah (2010) in which he asserts that, firms incurred extra cost to acquire stabilisers to regulate the flow of electrical currents through their equipment. However, Amponsah's assertion that firms acquire uninterrupted power supplies (UPS) to support their machineries and to protect them from destruction was however not confirmed. The industrialist indicated that, UPS could not support their machinery due to their high voltage, hence neither purchase nor use some.

Recommendations and Conclusion

It is now evident that the Irregular power supply (load-shedding and unannounced frequent power outage) in Kumasi Metropolis is terrorizing the operations and growth of micro and small scale industries (MSIs) particularly the cold stores and printing presses in Asafo industrial enclave. Most of the firms are of the view that "Dumsor" is an unpardonable national crisis, attributable to poor mismanagement of the electricity subsector by successive governments which now cripples the economy; hence the "dumsorization" of the economy ought to stop now and forever. To them "Dumsor" should not just be seen as national crises but a terrorists in the economy; hence government should augment investments in electricity subsector to generate enough power for industrial activities and to boost the growth of industries towards sustained poverty reduction and the achievement of the Sustainable Development Goals (SDGs). The paper therefore recommends that government seeks for external support to put a lasting solution to the power crises "dumsor" that terrorizes the operation of industries (business) and crippling the economy's growth. Since most industrialists (MSIs) in Kumasi Metropolis are located together in clusters such as

Asafoindustrial enclaves, the Metropolitan Assembly (KMA) should collaborate with the Electricity Company of Ghana (ECG) to provide the industrial enclaves with separate transformers to regulate power supplied to the industrialists. This is to ensure that, in times of power rationing exercise or load shedding, the industrial areas or enclaves will be provided with enough power for operations particularly in the working hours. For instance, Cold Stores and Printing Presses in Kumasi metropolis are concentrated in Asafo; hence a separate transformer can be provided to ensure that they are supplied with enough power for operation during the day time.

Also, most industrialists 'challenge against the acquisition of power plant is the high cost involved, which they cannot afford. The government should make effort to provide subsidised power plants with flexible terms of payment to enable industrialists to purchase for operation. The industrialists should also come together and obtain credit facilities (loans) from financial institutions with flexible terms of payment, particularly those with lower interest rates and extended payment period to purchase power plants to supplement the ailing electrical power. All industrialists should also acquire Step – Downs to regulate the flow of electrical current in their machinery (equipment) since frequent power outages and Power fluctuation (low and high voltage) cause destructions to machinery resulting in great economic loss. In view of the fact that electricity supply in Ghana and Kumasi Metropolis is inadequate to meet industrialists demand, government and other independent power producers should invest in other alternative power sources such as solar energy, wind energy, wood fuels power, small and mini-hydro power and landfills energy to supplement the hydro and thermal power sources which the country largely depend. This will be vital in raising the country's electricity generation capacity towards meeting industrial needs in the country.

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