Assessment of the Factors Responsible for Fire Outbreaks in Kado Market of the Federal Capital Territory of Nigeria

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Abstract

The rate at which fire breaks out in markets in Nigeria is alarming, painful and worrisome. As a result of this problem, Kado market of the Federal Capital Territory of Nigeria was studied with the aim of evaluating the factors responsible for fire outbreaks in the market, in order to generate guidelines to reduce the chances of future fire outbreaks in Nigerian markets. 71 sales points was studied from the available 353 sales points in the market by applying systematic sampling method at every 5th interval. Data were generated from the National Association of Nigerian Traders, managing company of the market, and the sales people in the market by the use of interviews and focus group discussions. They were also generated from the direct observation schedule. Having considered the issues associated with fire outbreaks in the market in respect of the principle of physically-based model as the conceptual framework of this research, among the factors responsible for fire outbreaks include electrical equipment and wiring; intentional fires. Among the recommended guidelines are: the management authorities of markets in Nigeria should make it a law for all the sales people to adhere to electrical precautionary standards in buildings; the management authorities of markets in Nigeria should ensure to improve on the market security, in order to reduce fire outbreaks in markets as a result of arson (intentional fires).

Key words: Fire Outbreaks, Markets, Nigeria, Guidelines.

Background to the Study

Market places are the main sources of livelihood for many people (Amiteye, 2015). They are centres for commercial activities and avenues for wealth accumulation. Unfortunately, in many African countries, Nigeria included, markets are constructed and subsequently utilised without adequate consideration for the hazards of fire outbreaks (Mendelsohn, 2015; Ngugi, 2015).
Fire has been described as the greatest servant but the worst master that may not be easily controlled when it becomes an inferno (Agbonkhese, Yerima, Abba & Kawu, 2017; Olaiya, 2013; Paul & John, 2002). Three things (elements) are required for a fire to begin; they are: oxygen, fuel and a source of ignition. Fire cannot start if any one of these elements is missing. To reduce the chances of a fire to occur, there is a need to take appropriate measures to avoid the three elements to come together (Department for Communities and Local Government, 2006; Euro Fire Protection, 2012). Naturally, when all the three elements for burning are present which are collectively called the fire triangle, then, fire can occur. For any fire to ignite and be sustained, the availability of oxygen, heat and fuel in their right proportions are required (Department for Communities and Local Government, 2006; Euro Fire Protection, 2012). The fuel in this case is anything flammable or combustible that is kept in a market building or in an open space in the market and this includes clothing, papers, flammable liquids and interior design features like furniture, curtains and bedding. During fire outbreaks, the more fuels in an open space, the more severe the resulting fires (Ohemeng, 2010).

The occurrence of fire disasters is sadly not a new phenomenon in Nigerian markets. The rate at which fire breaks out in markets in Nigeria is alarming, painful and worrisome, and they have negatively affected the sales people in markets and the Nigerian economy at large. According to Federal Fire Service of Nigeria (2016), frequent fire outbreak in markets is a serious problem in Nigeria which have led to loss of lives of people and destruction of valuable goods and properties.

Aim and Objectives of the Study

The aim of this research is to evaluate the factors responsible for the fire outbreaks in Kado market, in order to generate guidelines to reduce the chances of future fire outbreaks in Nigerian markets. The objectives of the research are:

- To determine the factors responsible for fire outbreaks from the managing company of Kado market.
- To ascertain the factors responsible for fire outbreaks from the sales people in Kado market.
- To investigate the factors responsible for fire outbreaks in Kado market from the National Association of Nigerian Traders (NANT) in the Federal Capital Territory (FCT) of Nigeria.

Scope of the Study

The whole buildings in Kado market of the FCT of Nigeria were the scope of this study. FCT of Nigeria is located in the centre of Nigeria (Murray, 2007 and Nnodim, 2011). According to Google Earth Map (2016), Kado market is located along Jabi - Karimo road (off Public Works Quarters, and Jabi Reservoir). It is situated in Kado in the Gwarimpa District of the Abuja Municipal Area Council of the FCT of Nigeria.

Literature Review

Fire management model is the way to curtail the occurrences of fire outbreaks (Amoako, 2014). Fire outbreaks can be managed properly by the use of analysis of fire management models. The two concepts of fire modelling approaches are empirical fire behaviour model and physically-based model approaches. The empirical fire behaviour model is initiated based on the number
of reasonable fire observations and predict the flame size of fire or the rate of fire spread (Joaquim, Francisco, Fernandes & Rigolot, 2010). Physically-based model is on the basis of the principles of burning and the attempt to quantify basic mechanisms of fire (Amoako, 2014). Thus, the conceptual framework of this research focused on the principle of physically-based model. It really emphasised on the principles of burning in the market which is the assessment of the factors responsible for fire outbreaks.

Health and Safety Authority (2006), and Fire Safety Advice Centre (2015) suggested the procedure for undertaking assessment of risks which are: identify the hazard of fires, conduct an assessment of risks of fire safety, and prepare a written statement of safety to handle risks of fire safety. The identification of hazard of fires like fuel and ignition sources that contribute to ignition and initial fire increment is an essential part of the analysis of the traditional hazards. After the identification and qualification of fire hazards in terms of the likely initiation and the rate of spread, it is then needed to identify the fire risks of occupants (Department of Communities and Local Government, 2006; Fire Safety Advice Centre, 2015; Healthy Working Lives, 2016). The risk of individual is defined as the probability that a person will be affected by the consequence that is unwanted (Ale, 2009; Frantzich, 1997; Government of Canada, 2017). The risk of each resident is determined by the action of a person and physical reaction in time of a fire which in turn determines the dependence on the people to give help to enable the resident to escape from the fire room or building.

According to Department for Communities and Local Government (2006), Health Technical Memorandum (2011) and White (2014), the dependencies have been classified and identified as follows: the residents whose condition and care creates a high dependency on people and where immediate escape from the fire would prove potentially life threatening; all the residents of the building, apart from the residents defined as very high dependency and this category also comprises residents with the problems of mental health with no regard to their independent mobility; the movement of the residents of building is not in any way impaired and they are able to physically leave the premises of fires without the help of people. Alternatively, if they experience some movement impairment and they are able to leave with the little help from other people.

Frantzich (1997), Hadjisophocleous and Fu (2004), Health and Safety Executive (2009), and Molen (2010) stated that the societal risk is putting into consideration the number of people under the risk of fire of multiple fatality. In this regard, it is not only the probability of unwanted fire event that is putting into consideration but also the numbers of people that are subjected to the fire hazard. Thus, it can be stated that the societal risk is the number of persons on a specific location multiplied by the individual risk for that location.

**Methods and Procedures**

Descriptive survey method was employed for this research which led to the generation of quantitative research data. The primary research data were generated from the managing company of Kado market, sales people in Kado market, and the National Association of Nigerian Traders (NANT) in the Federal Capital Territory (FCT) of Nigeria. The managing company of Kado market is Abuja Markets Management Limited. According to the Abuja Markets Management Limited (2016), Kado market is comprised of 237 lock-up shops, 25 cold rooms/ware houses, three restaurants, 86 open stalls, one telecommunication centre and one clinic. Thus, by summing up the numbers of lock-up shops, cold rooms/ware houses,
restaurants, open stalls, telecommunication centre and clinic in the market, it mathematically implies that there are 353 sales points in Kado market.

Hence, by using systematic sampling method at every 5th interval, 71 sales points were selected out of the total number of the sales points for this research. The three research methods that were used for the collection of the primary research data are: interviews, focus group discussions and direct observation schedule. Focus group discussions were used to collect the research data from the sales people in the market. Hence, 10 numbers of focus group discussions that are made up of five sales people were organised for the sales people through the help of research assistants. Discussions and a set of interview questions were used to collect data from the staff of NANT and the managing company of the market. Direct observation schedule was used to assess the reasons for factors responsible for fire outbreaks in the market.

**Results and Discussion**

In this section, the factors responsible for fire outbreaks in Kado market were discussed. Table 1 shows the distribution of the factors responsible for fire outbreaks in Kado market. It also shows that the factors responsible for fires outbreaks are common around the cold room section in the eastern part. Thus, it is deduced that the areas of cold rooms in Kado market have the highest factors responsible for fire outbreaks in the market. In Table 1, the cause of fire outbreak represents the factor responsible for fire outbreaks.

**Table 1: Distribution of the Factors Responsible for Fire Outbreaks in Kado Market**

<table>
<thead>
<tr>
<th>S/N</th>
<th>CAUSES OF FIRE OUTBREAK</th>
<th>COMMON LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Electrical Issues</td>
<td>Eastern Part</td>
</tr>
<tr>
<td>2.</td>
<td>Use of Gas Cookers</td>
<td>Around the Cold Room Section in the Eastern Part</td>
</tr>
<tr>
<td>3.</td>
<td>Use of Kerosene Stoves</td>
<td>Around the Cold Room Section in the Eastern Part</td>
</tr>
<tr>
<td>4.</td>
<td>Arson</td>
<td>Around the Cold Room Section in the Eastern Part</td>
</tr>
</tbody>
</table>

Source: Researchers’ Field Work, 2017

**Electrical Issues Responsible for Fire Outbreaks in the Market**

The discussions with the NANT and the managing company of Kado market revealed that no major fire outbreak has occurred in Kado market. All the fire outbreaks in the market were controlled at the early stages of fires. However, the interview questions administered to the managing company of Kado market indicated that the main cause of fire outbreak in Kado market is electrical equipment and wiring; this was also observed in the cold room section in the eastern part of the market. The interview questions administered to NANT showed that most fire outbreaks in Kado market are caused as a result of non-adherence to the electrical precautionary standards in buildings; this was also noticed in the cold room section in the eastern part of the market.

**Use of Gas Cookers and Kerosene Stoves Responsible for Fire Outbreaks in the Market**

The focus group discussion with the sales people in Kado market showed that cooking with gas cookers is one of the causes of fire outbreaks around the cold room section in the eastern part of the market. The interview questions administered to the managing company of Kado market revealed that one of the causes of fire outbreaks in Kado market is cooking with naked fires
like fires from the kerosene stoves around the cold room section in the eastern part of the market. It was noticed that around the cold room section in the eastern part of the market, people cook with the kerosene stoves that are kept inside the empty cartons in the illegal restaurants, in order to reduce the disturbance from the breeze that affects the flames of kerosene stoves. In this case, strong wind can cause the empty cartons to ignite by blowing the flames of fires to them and thereby setting up other combustible materials on fire which can further set the entire market on fire. Plate I shows the cooking with a kerosene stove inside empty cartons in an illegal restaurant in Kado market.

Plate I: Cooking with a Kerosene Stove inside Empty Cartons in an Illegal Restaurant around the Cold Room Section in the Eastern Part of Kado Market
(Source: Researcher’s Field Work, 2017).

Arson Responsible for Fire Outbreaks in the Market

The focus group discussion with the sales people in Kado market revealed that one of the causes of fire outbreaks in Kado market is arson (intentional fires) and according to them, a good example is the fire outbreak that occurred around the cold room section about five years ago but it was controlled at the early stage.

Conclusion and Recommendations

The relevance of markets was overviewed as they are the main sources of livelihood for many people; they are centres for commercial activities and avenues for wealth accumulation. The issues associated with the factors responsible for fire outbreaks in markets were also overviewed.

The research findings showed that the factors responsible for fire outbreaks in Kado market are: electrical equipment and wiring, and they are the main cause of fire outbreak in the market; most fire outbreaks in the market are caused as a result of non-adherence to the electrical precautionary standards in buildings; one of the causes of fire outbreaks in the market is arson (intentional fires); cooking with gas cookers is one of the causes of fire outbreaks in the market;
one of the causes of fire outbreaks in the market is cooking with naked fires like fires from the kerosene stoves. Therefore, the following guidelines are recommended to reduce fire outbreaks in Nigerian markets:

i. Since the main cause of fire outbreaks in the market is electrical equipment and wiring, it is therefore very important that all the issues pertaining to the electricity that generate fires should not be taking for granted by the management authorities of markets in Nigeria.

ii. The management authorities of markets in Nigeria should make it a law for all the sales people to adhere to electrical precautionary standards in buildings.

iii. The management authorities of markets in Nigeria should ensure to improve on the market security, in order to reduce fire outbreaks in markets as a result of arson (intentional fires).

iv. The management authorities of markets in Nigeria should regularly organise training for the sales people in markets on how to avoid fire outbreaks from the use of gas cookers.

v. The management authorities of markets in Nigeria should ban cooking with naked fires like fires from the kerosene stoves, and there must be appropriate actions to that effect, in order to reduce fire outbreaks from them.

The study did not investigate from the sales people in the study area concerning the assessment of damages that were caused by the previous fire outbreaks with their resultant effects on them, and this is a gap in knowledge. Therefore, it is recommended that in subsequent study of this nature, this gap should be filled.

References


