Assessment of Risks from Fire Disaster at Onitsha Main Market, Onitsha

By

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Abstract

*The research aims to assess the risks of fire disasters at Onitsha Main Market***.** *The study used a quantitative research strategy, adopting a survey design. Structured questionnaires were used to collect quantitative data. A purposive sampling procedure was used to randomly select three respondents among 121 lines in the market and 35 administrative respondents, totalling 400 respondents. There is always an economic cost for every fire incident: the damage to properties and valuable items that can never be recovered due to the fire incident. Therefore, the study suggested some recommendations, which include reverting to the original plan of the market, provision of adequate water supply and spreading the pipe through different lines and zones in the market; rectifying the problem of illegal connections, dangerous and unsupervised wiring in the market and removal of illegal structures in the market, dismantling of the attachment should be considered.*

Keywords: Fire, Risk, Disaster, Market, Urbanization

Introduction

In Nigeria, trading is the most popular activity in the informal sectors of the economy, carried out in the urban market (Ogeah & Omofonmwan, 2013). Lipsey (1963) defines a market as the medium through which goods and services are exchanged to the consumer. Okafor and Onokerhoraye (1986) describe the market as the public assemblage of buyers and sellers at a location at a regular time. Ikelegbe (2005) also gives an in-depth description of an African urban

market as heavily congested, operated by the authority of city councils having open stalls, locked-up stalls and toilet facilities, drainages, refuse dump sites, and electricity and water supply in some cases. All the markets have allotted open spaces or garages where inter-regional traders bring in their wares for retailers and wholesalers to buy. Commercial activities occur beyond the market to the adjoining streets and roads close to the markets.

The continuous expansion and urbanization in Anambra state have continued to attract the population to the state, especially Onitsha, which houses the state's commercial centre. The urban market is a source of employment generation (Ogeah and Omafonmwan (2013). The urban market creates employment opportunities for many market operators (Popoola et al., 2016). Aside from traders that sell manufactured within the market, some people engage in small enterprises such as shoe repairers, tailors and public transport drivers. While urbanization can reduce poverty, rapid and uncontrolled urbanization can lead to hazards and risks, including fire hazards (World Bank, 2020).

Alabi *et al*. (2022) noted that markets are the most vulnerable to fire disasters in urban areas. Major urban markets in Nigeria have witnessed more fire incidence than the rural market, and this can be seen by how compacted, overcrowded and, in most cases, poor planning the urban markets are (Izuora, 2017).

Urban planners in Nigeria are continually challenged with the problem of managing the frequent urban business, market structure and fire disasters (Oladoku & Emmanuel, 2014). The effect of fire could be much more than a loss of a source of livelihood, business and property, and some fire incidents result in the death of people, some of whom are the breadwinners of their families.

This article on fire incidents in Onitsha Main Market focuses on the recurrence of fire outbreaks in markets in Anambra state, which has become a yearly emergency, and the need and urgency to plan and work on preventing or mitigating this annual occurrence of fire outbreaks.

Materials and Methods

The study area is Onitsha Main market, located in Anambra state and shares common features with the state. Anambra state is one of the 36 states in Nigeria and among the top 10 states according to population. Anambra state and its neighbouring town are in transition between Nigeria's sub-equatorial and tropical hinterland climatic belts, 6.275766 latitude and 7.006839 longitudes.

The study adopted a purposive sampling procedure. This sampling procedure is essential as it involves categorizing and selecting persons or groups who are well informed about or experienced with a phenomenon of interest. The primary target respondents were the chairman, section heads in charge of fire disaster management in the market, line chairmen and ordinary traders.

Given that there are a large number of undocumented traders in the markets that meet the required criteria. The study randomly selected three (3) traders based on the information the Onitsha Main Market executives provided on the number of zones and lines in the market. The entire population comprising all the managers, chairpersons and section heads in the markets, ministry and agencies, therefore, formed the sample size totalling 35 respondents. Also, a total of 365 respondents comprising regular traders at the market formed the sample size for the study, making the sample size a total of 400 respondents. The data collection instrument used is a questionnaire with both open-ended and closed-ended questions.

Results

I. Evaluating the risk

Table 1: Risk Evaluation

Risk Evaluation	**Frequency**			**Percentage**		
	Yes	**No**	**Total**	**Yes**	**No**	**Total**
Fire drills	86	314	**400**	21.5%	78.5%	**100.00%**
Regular training	171	229	**400**	42.75%	57.25%	**100.00%**
Fuel reduction at the source	211	189	**400**	52.75%	47.25%	**100.00%**
Actions on fire drills	80	320	**400**	20.00%	80.00%	**100.00%**
Risk of persons in the premises considered	154	246	**400**	38.5%	61.5%	**100.00%**
Ignition reduction at the source	149	251	**400**	37.25%	62.75%	**100.00%**
Emergency action plan	63	337	**400**	15.75%	84.25%	**100.00%**
Oxygen reduction at the source	80	320	**400**	20.00%	80.00%	**100.00%**

Source: Researcher's fieldwork and computation, 2023

Table 1 evaluates the risk of fire incidents in the market—four hundred respondents comprise the trader and the official. From the data presented in Table 4.1, 78.5% and 57.25% indicated that there are no fire drills nor regular training of fire department at the Onitsha main market, it shows that there are no fire drills, regular training in the market and hence actions or results from fire drills are not implemented which was confirmed by 80.00% of the respondents. Also, 61.5% of the respondents affirmed that there is no reduction in the ignition source of fire in the market, and 80% and 84.25% indicated that neither is there a reduction in the source of oxygen and no emergency plan procedure, respectively. This aligns with the 61.5% of the respondents who believe that the risk of traders in the market is not considered; hence, the risk of traders at the primary market is very high. However, in risk evaluation, 52.75% of the respondents affirm that there is a reduction in what could fuel the fire at the source.

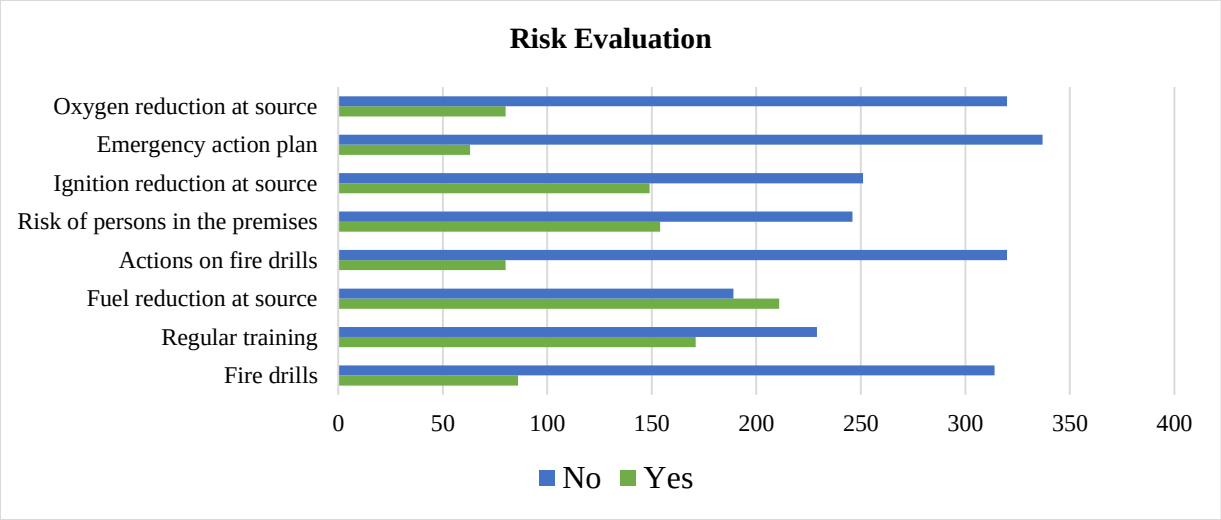


Fig 1 Chart Showing Risk Evaluation of Onitsha Main Market

Table 2: Potential for fire, heat and smoke spreading uncontrollably in the market

Response	**Frequency**	**Percentage (%)**
Very High	274	68.5
High	74	18.5
Moderate	29	7.25
Low	17	4.25
Very Low	6	1.5
Total	**400**	**100**

Source: Researcher's fieldwork and computation, 2023

Table 2 shows the data collected on the possible uncontrollable fire outbreak in the market. Of the 400 respondents, 68.5% rated the possibility of an uncontrollable fire outbreak in the market very high.

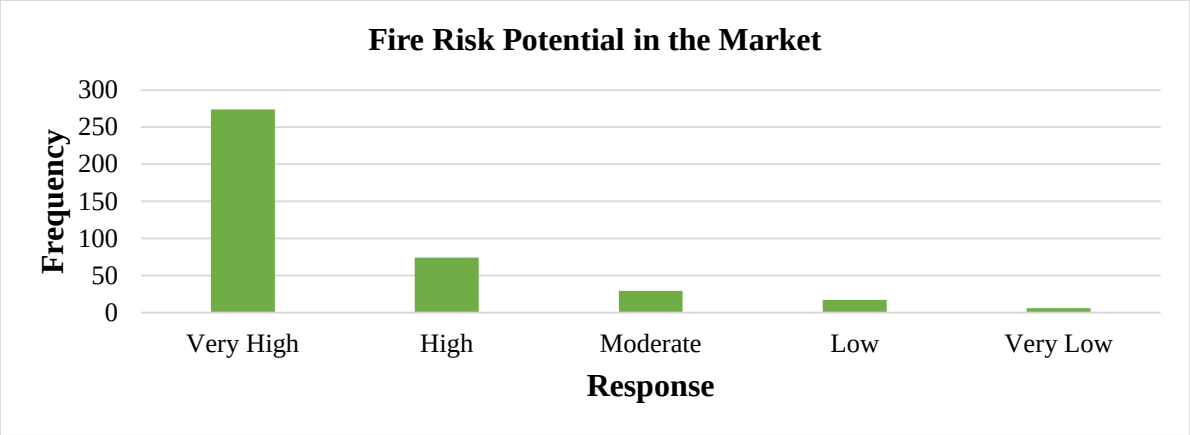


Fig 2: Chart showing the Fire risk potential at Onitsha Main Market

Table 3: Rate of fire safety awareness and knowledge of traders in the market

Response	Frequency	Percentage (%)
Very Good	40	10.00
Good	34	8.5
Moderate	120	30.00
Poor	57	14.25
Very Poor	149	37.25
Total	**400**	**100**

Source: Researcher's fieldwork and computation, 2023

Table 3 presents data on the fire safety awareness and knowledge of traders in the market. 37.25% of the respondents rated that the fire safety awareness and knowledge of market traders could have been better.

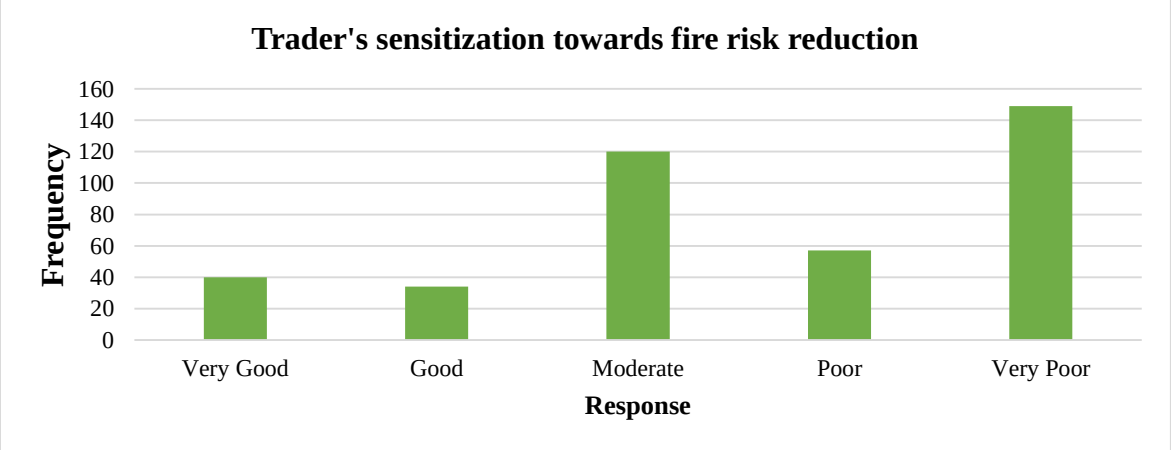


Fig 3: Chart showing Rate of fire safety awareness and knowledge of traders in the market

Table 4: Rating the fire safety measure adequacy in the market

Response	Frequency	Percentage (%)
Very Good	40	10.00
Good	17	4.25
Moderate	92	23.00
Poor	114	28.5
Very Poor	137	34.25
Total	**400**	**100**

Source: Researcher's fieldwork and computation, 2023

Table 4 shows the general rating of the fire safety measures in the market; out of the 400 respondents used for the study, 34.25% of the majority rated the fire safety measures as deplorable.

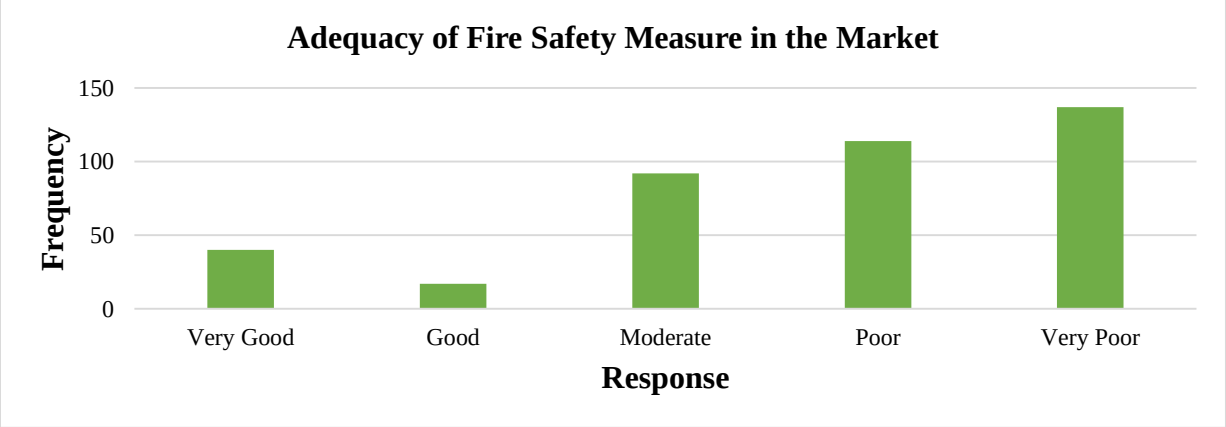


Fig 4: Chart showing fire safety measure adequacy in the market

II. Assessment of Fire Fighting equipment

Table 5 Fire Extinguisher (FE) Assessment

Fire Extinguisher	Frequency			Percentage		
	Yes	No	Total	Yes	No	Total
Fire extinguisher conspicuousness	103	297	**400**	25.75%	74.25%	**100.00%**
Preclude misuse of Fire extinguisher	177	223	**400**	44.25%	55.75%	**100.00%**
Suitability of Fire extinguisher	103	297	**400**	25.75%	74.25%	**100.00%**
Any fire hydrants/ fire fighting equipment	17	383	**400**	4.25%	95.75%	**100.00%**
Is there a functioning borehole in the market	69	331	**400**	17.25%	82.75%	**100.00%**
use of fire extinguisher with less exposure	74	326	**400**	18.5%	81.5%	**100.00%**

Source: Researcher's fieldwork and computation, 2023

Table 5 shows the assessment of fire extinguishers in the market. 74.25% of the 400 total respondents for the study indicated that the fire extinguisher was not visible. 55.75% of the respondents preclude misuse of fire extinguishers. On the suitability of the fire extinguisher in the market, 74.25% believe that the fire extinguisher is not suitable. However, 95.75% indicated no fire hydrants or fire fighting equipment in the market. Lastly, there is no functioning borehole in the market, and there are also indications of more exposure when using fire extinguishers, as supported by 82.75% and 81.5%, respectively.

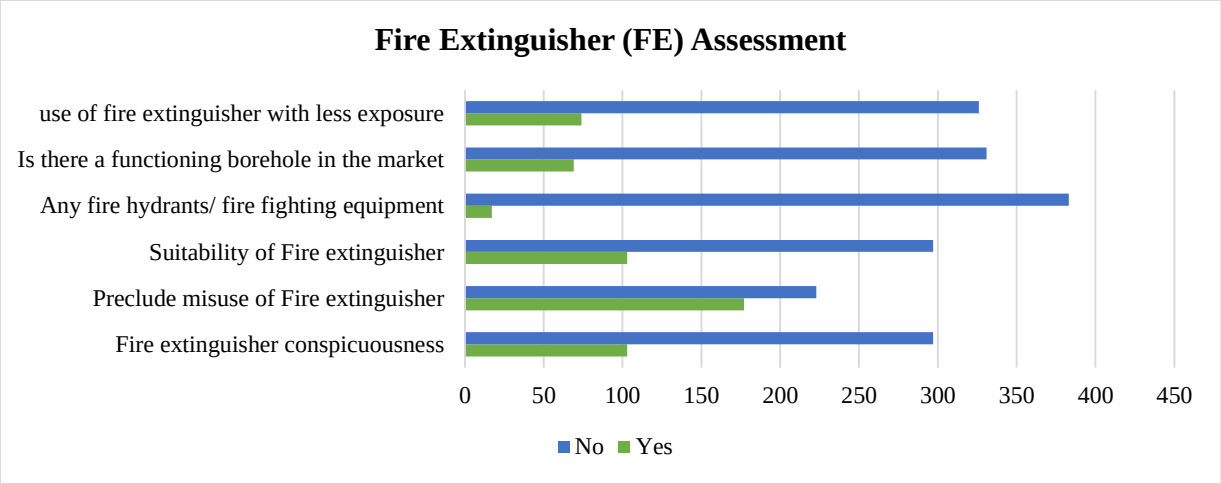


Fig 5: Chart showing Fire Extinguisher (FE) Assessment

Table 6: Assessment of the spread of fire extinguishers in the market

Response	**Frequency**	**Percentage (%)**
Very Good	6	1.5
Good	12	3.0
Moderate	34	8.5
Poor	51	12.75
Very Poor	297	74.25
Total	**400**	**100**

Source: Researcher's fieldwork and computation, 2023

Table 6 shows the assessment of the spread of fire extinguishers in the market. Four hundred respondents were also used in taking a critical assessment, and 1.5% think that the spread of fire extinguishers in the market is perfect, 3% indicate that they are good, and 12.75% of the respondents indicated that the spread is moderate. However, 12.75% of the respondents indicated that the spread is poor, while the people who indicated that the spread is very poor make up 74.25% of the total respondents.

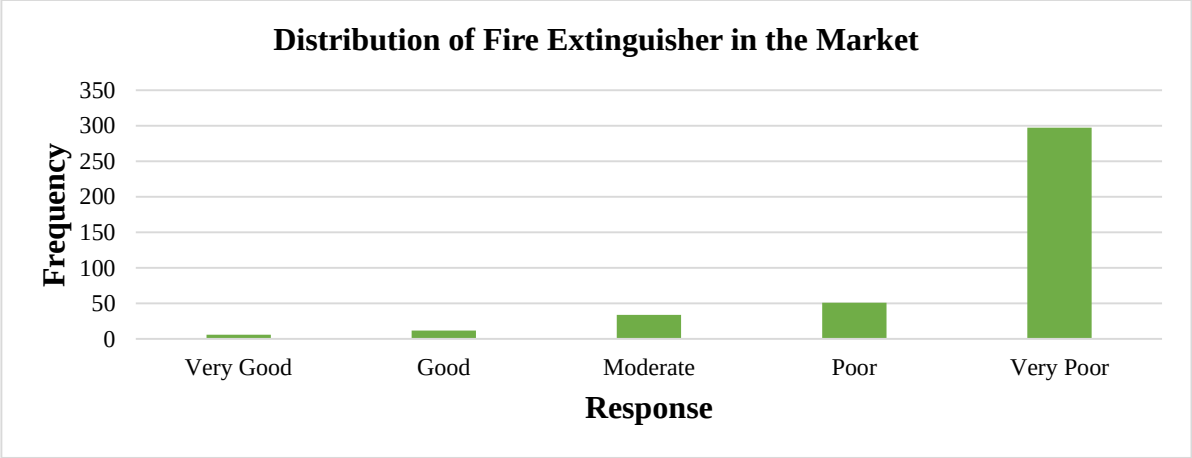


Fig 6: Chart showing the distribution of fire extinguishers in the market

Discussion of Findings

Evidence from the fire safety risk assessment carried out at Onitsha Main Market was categorized into risk evaluation and fire extinguisher assessment. The intent was to rigorously identify the market's current position regarding its capacity to manage fire outbreaks and identify various lapses.

There needs to be more capacity, better planning and unpreparedness related to fire management at Onitsha Main market. There is no fire management capacity to conduct fire drills in anticipation of any fire incidents, even though the market and other significant markets in Anambra state have consistently witnessed a high and frequent rate of fire incidents for over a decade. 78.5% and 57.25% of the respondents indicate no fire drills or regular market fire department training. One then wonders what effort the management put in protecting the market against these incessant fire outbreaks, even as the respondents indicated no reduction in the ignition source of oxygen. This clearly shows that the market management has done nothing, which is the reason for the incessant fire outbreaks in the market, as there is no fire management in place. Another fascinating thing is the abysmal rate of awareness and knowledge of traders about fire safety, which may have been

the reason for the poor management of fire and the failure to hold the market management accountable.

Similarly, due to the market's poor fire management, a more adequate allocation of fire extinguishers, boreholes and fire hydrants must be allocated. Even when fire extinguishers are available, they must be visible and misusage the equipment which poses a big problem.

In combatting the problem of market fire, urban renewal should be taken as a huge priority. Many major markets in Nigeria need to be more crowded and congested. Markets in Nigeria are littered with unplanned structures with little space for air circulation. While the government has attempted to reduce the fire disaster in the market through urban renewal schemes, decongestion of the market through relocations and resettlement of major markets to more spacious land use, these efforts are mainly after the disaster had occurred and most times political undertone is interpreted in it. The government are reactive in the issue of fire safety in the market. The reactionary measures are usually just the government acting on impulse to appear proactive only with little or no follow-up after the initial shock of the disaster. Well-planned markets with spaces and evenly allocated space for garages, restrooms, fire hydrants, and boreholes will have low fire risk compared to unplanned and overcrowded urban markets. Managing fire incidents in urban areas and markets requires a holistic approach to preventing and mitigating fire. Planning of fire safety in the urban centres and precisely in the market starts from planning and developing policies which may be strange to traders and may require infrastructural adjustment in the market, but this can be hindered by lack of capacity in developing countries like Nigeria as a result of inadequate information, including data collection, analysis and modelling. These will affect any policy or mitigation strategies in urban areas of developing countries (Masoumi *et al.*, 2019).

Conclusion

For every fire incident, there is always an economic cost: the damage to properties and valuable items that can never be recovered due to the fire incident. The best way to control fire disasters is by preventing them. Trends of fire disasters in markets in Anambra state have shown consistent loss of goods and properties worth billions of naira. Shop owners, the breadwinners of their families, had their shops and goods burnt to the ground. The children's school fees and upkeep, their health, food, and well-being, and the psychological effect that comes as a shock from the fire incident cannot be quantified or monetized. However, it has a devastating effect that could lead to permanent loss of livelihood. Sometimes, a fire outbreak could lead to a fatal accident, resulting in deaths and permanent disability or damage to people exposed to the fire disaster. Economic cost also comes from the disruption of economic activities and daily transactions in the affected market, which will affect the state's internally generated revenue and generally affect the government commitment to developing the state and their agenda disrupted due to one single fire incident.

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