Journal of Balkan Libraries Union

ISSN 2148-077X

http://www.balkanlibraries.org/journal
https://dergipark.org.tr/tr/pub/jblu

# Environmental Scanning Practices of Managers in Oil and Gas Companies in Nigeria

Olaronke Fagbola [a,*], Sunday Popoola [b]

[a] *University of Ilorin, Ilorin, Nigeria*
[b] *University of Ibadan, Ibadan 200132, Oyo, Nigeria*
** Corresponding author. e-mail: fagbola.oo@unilorin.edu.ng*

***Research Article***

**ARTICLE INFORMATION**

***Article history:***
Received 16 January 2023
Received in revised form 20 September 2023
Accepted 30 September 2023
Available online 1 December 2023

***Journal of Balkan Libraries Union***
***Vol. 10, No 1, pp. 13- 23, 2023.***

**ABSTRACT**

This study was designed to investigate environmental scanning practices of the managers in Oil and Gas companies in Nigeria. Ex-post factor design and quantitative research approach were adopted to collect data from the respondents and the copies of the returned questionnaire were valid for analysis yielding 89.9 % response rate. The study revealed that customer, technological and regulatory sectors were the most perceived environmental uncertainty of the respondents. The amount of scanning done had significant correlation with perceived sector uncertainty of the respondents among others. The study recommended that the managers should consider enacting and searching as modes of scanning; perceived sector uncertainty, information sources accessibility and quality so as to enhance their frequency of use of information sources to scan their business environment.

**Keywords:** Environmental Scanning Practices, Oil and Gas, Companies, Managers, Nigeria.



## I. Introduction

Nigeria as a developing country has a monocultural economy. It depends on oil and gas which accounted for over seventy percent (70%) of the total revenue accrued to the country for national development. The local and foreign companies operate in the oil and gas sector of the Nigerian economy. The business environment under which these companies operate comprises of the customers, competitors, legal, political, socio-cultural, technological, economic, and ecological components; and it is highly dynamic, complex, very turbulent, and volatile. These can be attributed to keen market competition, technological sophistication, price war, product differentiation, high costs of business operations, crime rate, customers' high demand for the products, political instability, government policies inconsistency and poor information infrastructure.

Managers operate in business environment in which information is super abundant. Managers in the oil and gas companies in Nigeria have realised that they need to cope with uncertainty in their business environment through scanning for quality information which enable them to formulate business plans and take rational decisions. Consequently, the managers need to collect, filter, interpret, evaluate, and use information to formulate insights, or predict events, and trends about the external environment for planning, decision-making and controlling. They need to scan their business environment to acquire the much-needed information to be better informed. The systematic scanning of information will enable them to stay abreast of changing trends, events, and signals in the business environment. Therefore, it is imperative for them to seek, acquire, and use relevant, and accurate information to gain competitive advantage and take suitable future course of action for the progress of their organisation.

However, it must be noted that several sources of information such as competitors, customers, trade literature, business associates, feasibility study reports, newspapers/magazines and journals among others are available in the external business environment for managers in the oil and gas companies to acquire quality information required for planning and controlling of activities. Moreover, the higher the perceived environmental uncertainty by managers in an organisation, the more they scan their business environment to gather necessary information to manage

uncertainty. Nevertheless, the methods used in scanning the external business environment by the managers in the oil and gas companies depend on the nature of complexity of the problems encountered. Such modes of environmental scanning may include undirected viewing, conditioned viewing, informal and formal search. It is against this background that this study was designed to investigate environmental scanning practices of managers in the oil and gas companies in Nigeria.

## II. Research Problem

In the recent times, the oil and gas companies in Nigeria are faced with major challenges such as keen market competition, price war, rapid change in technology, increase in company taxation, exchange rate instability, export quota and tariff, as well as high crime rate. However, the dynamic nature of the external business environment of these companies necessitated the managers therein to scan the business environment in which they operate. Thus, in Nigeria, using suitable approach for scanning the environment by managers in the oil and gas industry is under researched. Beside this, their perceived environmental sector uncertainty, information source quality, accessibility and use are yet to be established. This necessitated the investigation of environmental scanning practices of managers in the oil and gas companies in Nigeria.

## III. Objectives of the Study

The specific objectives of the study are to:

1. Find the most perceived environmental sector uncertainty of managers in the oil and gas companies in Nigeria;
2. Ascertain the major modes of environmental scanning adopted by managers in the oil and gas companies in Nigeria;
3. Determine the correlation that exists between perceived sector uncertainty and amount of scanning done by managers in the oil and gas companies in Nigeria;
4. Find the most perceived information sources accessibility in scanning the environment by managers in the oil and gas companies in Nigeria;
5. Establish the most perceived information sources quality for scanning the environment by managers in the oil and gas companies in Nigeria;
6. Ascertain the most frequently used information sources for scanning the environment by managers in the oil and gas companies in Nigeria; and
7. Determine if perceived sector uncertainty, information source accessibility, and perceived information sources quality are significant facilitators of frequency of use of information sources for scanning the environment by managers in the oil and gas companies in Nigeria.

## IV. Literature Review

Environmental scanning is a management process adopted by organisations to deal with external environmental information, the products of which would assist tactical and strategic decision making (Zhang et al., 2010). Aguilar (1967) viewed environmental scanning as acquiring information about events and relationships in a company's outside environment, the knowledge of which would assist senior management in the task of charting the company's future course of action. Hough and White (2014) also posited that environmental scanning is a process of identifying, collecting, processing, and translating information about external influences into useful plans and decisions. And according to Lester and Waters (1989), environmental scanning is a management process of using information from the environment to aid decision-making through the process of obtaining, analysing, and using information.

The business environment of the Nigerian oil and gas companies is highly dynamic, volatile, and turbulent. It comprises of the customers, competitors, legal, political, socio-cultural, technological, economic, and ecological components and managers therein need to collect, filter, interpret, evaluate, and use information to formulate insights, predict events, and trends about the external environment for planning, decision-making and controlling. Previous studies found that managers who perceive greater environmental uncertainty tend to do more scanning (Jain, 1984; Ghoshal and Kim, 1986; Qiu, 2008). The scanning methods adopted by the managers ranged from ad-hoc, informal activities to systematic, formalised efforts, depending on the organisation's size, experience, and its perception of the environment (Thomas, 1980; Klein and Linneman, 1984; Preble et al., 1988).

Choo (2001) gave four modes of environmental scanning of managers in organisations namely undirected viewing, conditioned viewing, enacting, and searching. Undirected viewing takes place when the organisation perceives the external environment of its business to be unanalysable and so does not intrude into it to understand it. Information needs are all ill-defined and fuzzy, and much of the information acquired are non-routine or informal, usually gained through chance encounters. However, managers in the organisation are satisfied with limited, soft information and do not seek detailed, hard data. Thus, information acquisition is casual and opportunistic, relying more on irregular contacts and casual information from external, and people sources. Information utilisation is concerned mainly with reducing the high levels of environmental equivocality.

Conditioning viewing occurs when the organisation perceives the environment to be analysable, but is passive about collecting information and influencing the environment. Information needs focus on a small number of relatively well-defined issues or areas of concern. These are often based on widely accepted industry assumptions, norms, beliefs, and values. Information searching makes use of standard procedures, typically using internal, non-people sources, with a significant amount of data coming from external reports, databases, and sources that are highly credible and widely used in the industry. Thus, viewing is conditioned in the sense that it is limited to the routine documents, publications, and information systems that have grown up through the long time. Since the environment is assumed to be knowable, there is less need for equivocality reduction,

with a great number of rules that can be applied to assemble or construct a plausible interpretation.

Enacting takes place when the manager in the organisation perceives the environment to be unanalysable but then proceeds to intrude actively into the environment to influence events and outcomes. Information needs are those needed for experimentation and testing the environment. This could involve identifying areas for fruitful intervention. Information searching is from external sources and channels that the organisation has created through its intervention, and this may include feedback about the actions that the organisation has taken. Managers in organisations that adopt enacting viewing gather information by trying new behaviour and seeing what occurs. They experiment, test, and stimulate, and they ignore precedents, rules, and traditional expectations (Daft and Weick, 1984). Information use is focused on the actions that have been taken; and this information is used to reduce equivocality, to test existing rules and procedures.

Searching takes place when managers in the organisations perceive the environment to be analysable and they actively intrude into the environment to gather an accurate and complete set of facts about the environment. Information needs are based on well-defined search goals that are broad, detailed, and open-ended. The organisation is prepared to be amazed by unexpected findings that show new information needs. Information searching is for hard, formal, often quantitative data, typically from surveys, market research activities that are rigorous and objective. The organisation is likely to have its own scanning unit/section whose staff systematically analyses data to produce forecasts, trend analysis, and intelligence reports. Information seeking is broad, open, and based on a willingness to revise or update existing knowledge. Decision-making is based on logical and rational procedures, often including system analysis and quantitative techniques.

It must be noted that the perceived frequent change in the business environment, particularly the external environment of the organisation exerts much pressure on the managers therein to scan for quality information for competitive advantage. Robinson (2015), and Kehinde (2010) opined that environmental scanning of managers in organisations must also address technology, success of competitors' products in the market and the whole environment, including economic, legal, cultural, and demographic background. Auster and Choo (1994) reported that the chief executives in the Canadian publishing and telecommunications industries concentrated their scanning on competitors, customers, regulatory, and technological sectors of the environment; and that newspapers, periodicals, subordinate managers, and staff were the most frequently used sources in scanning.

Managers in business organisations like the oil and gas companies operate in information rich environment. Several sources of information such as newspapers/magazines, textbooks, radio/television, subordinate/superior staff, Internet/e-mails, online databases, reports, customers, competitors, colleagues, telephone/telex, computer printouts, journals, theses and dissertations, patents, standards and specifications, dictionaries, handbooks/manuals, trade literature, and government documents/officials among others are available to them to scan their business environment. However, it must be borne in mind that accessibility to information sources is very crucial to the scanning of the business environment of the managers in organisations like the oil and gas companies. Accessibility here means ease of location and retrieval of information from the available sources. Previous studies reported that managers preferred information sources that are perceived to be more accessible than those perceived to be of higher quality (Stubbart, 1982; O'Reilly, 1982; Culman, 1983; Jain, 1984; Auster and Choo, 1994; Popoola, 2000; Babalhavaeji and Farhadpoor, 2013).

Nevertheless, some studies established that the perceived quality of information from a source influence its use to scan the business environment of managers (Taylor, 1986; Halpern and Nilan, 1988; Auster and Choo, 1994; Hough and White, 2004; Fadehan et al., 2008; Jogaratnam and Wong, 2009). In fact, managers scan their business environment to obtain quality information to formulate business strategy and take rational decisions. Information that is accurate, reliable, complete, timely, sufficient, unique, comprehensive, and unbiased are of high quality. Information source quality has been established to influence frequency of its use to scan the environmental sectors of managers in organisations (Correria and Wilson, 1997; Popoola, 2000; Choo, 2001; Teo and Choo, 2001).

The advent of electronic information resources such as the Internet, e-mails, online databases, trade literature, reports, newspapers / magazines, theses and dissertations, indexes and abstracts, dictionaries, handbooks and manuals, patents, and data archive among others provide great opportunities to managers in business organisations to adopt in scanning their business environment to improve their managerial performance. Previous studies also established that managers in organisations monitor competitors' Web pages and external databases in their environmental scanning activity (Bournois and Romani, 2000; Benczur, 2005). Erdelez and Ware (2001) remarked that when informal channels are not available, and especially when information gathering on competitors is problematic, the Internet is considered as the most appropriate tool. Adetutu (2018) reiterated that managers in the oil and gas industry should seize the opportunity offer by the Internet to gather needed information, take good decisions, monitor, and evaluate their organisational performance.

However, some past studies confirmed that managers in the manufacturing companies most frequently use customers, colleagues, subordinate staff, Internet, electronic databases, newspapers / magazines, business associates, government documents, reports, broadcast media and trade literature to scan their business environment (Auster and Choo, 1994; Pawar and Sharda, 1997; Correria and Wilson, 1997; Ogunmokun, 1999; May et al., 2000; Bournois and Romani, 2000; Sawyer et al., 2000; Raymond et al., 2001; Erdelez and Ware, 2001; Teo and Choo, 2001; Hosseini, 2010; Popoola, 2011; Babalhavaeji and Farhadpoor, 2013).

This study is anchored on the theory of man's information environment. The theory states that man as a user of information operates in an information-rich environment. He has to identify his information needs and acquire the needed information, process it to make sense of its environment, create new information and knowledge to make informed decisions. This theory is relevant to the present study because managers in the oil and gas companies are rational consumer of information. They carry out their task performance in a business environment that is information-rich and super abundant. Also, they have to seek for the needed information, acquire and process it to make sense of its environment, create new information and knowledge, to make rational decisions on charting the right future course of actions for the company.

No doubt, the work of managers in the oil and gas industry worldwide is information intensive. More so, managers in the oil and gas companies in Nigeria have realised that their business environment is unpredictable due to variations in events occurring therein. They have recognised that information collection and use from their business environment is very important for strategic planning and decision-making. Also, monitoring the events going on in their business environment, particularly, the external environment would assist them in the business operations of their companies. It is against this backdrop that the present study investigates the environmental scanning practices of managers in the oil and gas companies in Nigeria.

## V. Methods

The research design adopted was ex-post facto type because the researchers did not have direct control of the environmental scanning of managers in the oil and gas companies in Nigeria, because its manifestation had already occurred. By and large, it is inherently not manipulable. The study population comprised of 1,358 managers in fifteen (15) oil and gas companies in Nigeria. The stratified random sampling technique was used to draw a sample size of nine hundred and fifty-one (951) from the population size of one thousand, three hundred and fifty-eight (1,358) managers using probability proportionate to size of 70%. A questionnaire titled environmental scanning of business organisations (ESBO) scale was used for data collection. It was divided into two main parts. Part A dealt with personal information of the respondents such as age, sex, education, job tenure, and marital status. Part B dealt with environmental scanning of the respondents such as perceived environmental uncertainty, modes of scanning the business environment, amount of scanning done, perceived information source accessibility and quality to scan the environment, and information source use in scanning the environment. It has a reliability coefficient of 0.82.

Table 1 presents the results of copies of the ESBO Scale administered to nine hundred and fifty-one (951) managers sampled from fifteen (15) oil and gas companies in Nigeria, out of which eight hundred and fifty-five (855 or 90% ) responded.

TABLE I
QUESTIONNAIRE ADMINISTRATION AND RETRIEVAL

| S/N | Name of Companies | Population | Sample size | Number | | Response rate (%) |
|---|---|---|---|---|---|---|
| | | | | administered | responded | |
| 1 | Addax Petroleum. | 45 | 32 | 32 | 32 | 100 |
| 2 | Connoco Philip | 52 | 36 | 36 | 36 | 100 |
| 3 | Total Energies | 150 | 105 | 105 | 100 | 95 |
| 4 | Exxon Mobil | 146 | 102 | 102 | 100 | 98 |
| 5 | Nexen Inc | 85 | 60 | 60 | 60 | 100 |
| 6 | Petrol Bras | 60 | 42 | 42 | 42 | 100 |
| 7 | Stat Oil | 65 | 46 | 46 | 46 | 100 |
| 8 | Con Oil | 120 | 84 | 84 | 64 | 76 |
| 9 | Afren Energy | 75 | 53 | 53 | 50 | 94 |
| 10 | Express Petroleum | 70 | 49 | 49 | 45 | 92 |
| 11 | Capital Oil | 110 | 77 | 77 | 50 | 65 |
| 12 | Oando Oil | 130 | 91 | 91 | 76 | 84 |
| 13 | Mis Oil | 55 | 39 | 39 | 32 | 82 |
| 14 | Bebtro | 50 | 35 | 35 | 30 | 86 |
| 15 | Agip Oil | 145 | 102 | 102 | 92 | 90 |
| | Total | 1,358 | 951 | 951 | 855 | 90 |

## VI. Findings

The sex distribution of the respondents shows that (325 or 38 per cent) were female managers, while (530 or 62 per cent) were male managers. Out of the 855 respondents (222 or 26 per cent) are single and (633 or 74 per cent) are married. The age distribution of the respondents ranged between (36 and 55 years; = 38.65; SD = 8.75) years. Out of the eight hundred and fifty-five (855) respondents, (214 or 25 per cent) have bachelor's degree certificate, (308 or 36 per cent) have postgraduate diploma certificate, (248 or 29 per cent) have master's degree certificate, and (85 or 10 per cent) have doctorate degree. Their length of service in the oil and gas industry varies between (10 and 35 years; = 18.25; SD = 6.21) years.

The distribution of the respondents by area of responsibility shows that (242 or 28 per cent) managers were from general management, (150 or 18 per cent) managers were from sales and marketing, (90 or 11 per cent) managers were from research and development, (86 or 10 per cent) managers were in finance and accounting, (110 or 13 per cent) managers were in human resources management, and (177 or 21 per cent) managers were in production. This implies that the largest proportion of the respondents were working in the general management department, followed by the production departments and next to it sales and marketing department.

In environmental scanning research, perceived environmental uncertainty is often measured using Duncan's (1972) two dimensions of environmental complexity and variability. The simple/complex dimension is the number of environmental factors taken into consideration when taking decision, while the static/dynamic dimension is the degree or rate at which these factors remain stable or change continually over

time. Previous studies also used complexity and variability, as well as dynamism and complexity, to measure the perceived environmental uncertainty of managers (Daft et al.,1988; Choo, 1994; Revilla, 2010; Farhadpoor et al., 2014).

The perceived environmental uncertainty of the respondents is assessed mathematically and expressed thus: PEU = PA + PC

Where:

PEU: Perceived environmental uncertainty.

PA: Perceived variability of each environmental sectors.

PC: Perceived complexity of each environmental sectors.

Thereafter, the respondents assessed the variability of the six environmental sectors by answering the question: what is the degree of changes occurring in each environmental sector? They assessed the complexity of each of the environmental sectors by answering the question: what is the level of complexity of each environmental sector? The response format used for both cases ranged from High = 5 to Low = 1.

Table 2 presents perceived environmental uncertainty of the respondents.

TABLE II
PERCEIVED ENVIRONMENTAL UNCERTAINTY OF THE RESPONDENTS

| S/N | Environmental sector | PV | | PC | | PEU) |
|---|---|---|---|---|---|---|
| | | Mean ($\bar{X}$) | SD | Mean ($\bar{X}$) | SD | Mean ($\bar{X}$) |
| 1 | Customer. | 4.68 | 0.35 | 4.31 | 0.26 | 8.99 |
| 2. | Competition. | 4.30 | 0.22 | 3.26 | 0.11 | 7.56 |
| 3. | Technological. | 4.65 | 0.11 | 4.12 | 0.13 | 8.77 |
| 4. | Regulatory. | 4.44 | 0.18 | 3.31 | 0.11 | 8.75 |
| 5. | Economic. | 4.70 | 0.11 | 2.89 | 0.13 | 7.59 |
| 6. | Socio-cultural. | 3.52 | 0.12 | 3.41 | 0.22 | 6.93 |

Keys:
PV: Perceived variability
PC: Perceived complexity
PEU: Perceived environmental uncertainty

The customer, technological and regulatory sectors are the most perceived environmental uncertainty of the respondents, followed by economic and competition sectors. Concerning the modes of environmental scanning of the respondents. They were presented with the four modes of environmental scanning that organisations such as oil and gas companies are likely to adopt, that is undirected viewing, conditioned viewing, enacting, and searching. They were asked to indicate the most used mode of scanning the environment adopted by their companies. Out of the 855 respondents (470 or 55 per cent) indicated conditioned viewing, (188 or 22 per cent) enacting, (128 or 15 per cent) undirected viewing, and (68 or 8 per cent) searching. The major modes of scanning the environment adopted by the companies surveyed are conditioned viewing and enacting.

Table 3 depicts the amount of scanning of the environmental sectors by the respondents. The amount of scanning done was measured by asking the managers to state the extent of keeping themselves informed about developments in each environmental sector; and frequency of information about each environmental sector coming to their attention. The response format ranged from high = 5 to low = 1.

TABLE III
ENVIRONMENTAL SECTORS' SCANNING OF THE RRESPONDENTS

| S/N | Perceived environmental sector | Amount of environmental scanning | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Frequency of information about sector coming to attention | | | | Level of Interest in keeping informed about sector | | | |
| | | $\bar{X}$ | SD | r | Sig.P | $\bar{X}$ | SD | r | Sig.P |
| 1. | Customer. | 4.92 | 0.12 | 0.51 | 0.001 | 4.88 | 0.12 | 0.49 | 0.008 |
| 2. | Technological. | 3.81 | 0.12 | 0.39 | 0.006 | 4.42 | 0.10 | 0.40 | 0.004 |
| 3. | Competition | 4.73 | 0.10 | 0.35 | 0.008 | 4.78 | 0.12 | 0.45 | 0.003 |
| 4. | Regulatory. | 4.76 | 0.11 | 0.48 | 0.003 | 4.61 | 0.11 | 0.48 | 0.001 |
| 5. | Economic | 3.78 | 0.10 | 0.49 | 0.004 | 3.58 | 0.11 | 0.38 | 0.005 |
| 6. | Socio-cultural. | 2.81 | 0.11 | 0.36 | 0.009 | 2.71 | 0.10 | 0.33 | 0.002 |

In respect of the amount of scanning, respondents indicated that information about the customer, technological, and economic sectors came most frequently to their attention. Respondents were most interested in keeping themselves informed about the customer, regulatory, and competition sectors. The amount of scanning is significantly correlated with perceived sector uncertainty ($r = 0.442$, $p < 0.01$). All the correlation coefficients are positive and statistically significant ($p < 0.01$). The correlation coefficients between perceived sector uncertainty and frequency of information about sector coming to the attention (frequency measure of scanning) of the respondents vary between (r = 0.352 and 0.511; = 0.43). The correlation coefficients between perceived sector uncertainty and the level of interest in keeping informed about the sector (the interest measure of scanning) among respondents vary between (r = 0.331 and 0.489; = 0.42).

Table 4 presents information sources accessible to scan the environment by the respondents. The respondents were asked to rate their accessibility to information sources to scan the environment on a four-point scale, that is very easily accessible = 4; easily accessible = 3; occasionally accessible = 2; and never accessible = 1.

TABLE IV
INFORMATION SOURCES ACCESSIBLE TO SCAN THE ENVIRONMENT OF THE RESPONDENTS

| S/N | Information sources | Mean ($\bar{x}$) | SD |
|---|---|---|---|
| 1. | Sub-ordinate staff. | 3.99 | 0.12 |
| 2. | Colleagues. | 3.99 | 0.12 |
| 3. | Newspapers / Magazines. | 3.98 | 0.11 |
| 4. | Radio / Television. | 3.97 | 0.11 |
| 5. | Customers. | 3.95 | 0.10 |
| 6. | Reports. | 3.92 | 0.12 |
| 7. | Government officials | 3.88 | 0.12 |
| 8. | Government documents. | 3.86 | 0.12 |
| 9. | Internet / Emails. | 3.84 | 0.11 |
| 10. | Professional associates. | 3.80 | 0.11 |
| 11. | Memoranda. | 3.80 | 0.11 |
| 12. | Trade Literature. | 3.76 | 0.11 |
| 13. | Competitors. | 3.52 | 0.11 |
| 14. | Textbooks. | 3.50 | 0.10 |
| 15. | Trade association. | 3.49 | 0.11 |
| 16. | Company files. | 3.44 | 0.11 |
| 17. | Conference proceedings. | 1.33 | 0.11 |
| 18. | Theses and dissertations. | 1.30 | 0.11 |
| 19. | Company archive. | 1.18 | 0.11 |
| 20. | Journals. | 1.15 | 0.10 |
| 21. | Indexes and abstracts. | 1.10 | 0.10 |

The information sources that are very easily accessible to scan the environment by the respondents are sub-ordinate staff, colleagues, newspapers/magazines,

radio/television, customers, and reports. It is very astonished to find that authoritative sources, that is, conference proceedings, theses and dissertations, company archive, journals, and indexes/abstracts were never accessible to the respondents to scan their business environment.

Concerning the information source quality to scan the environment, information relevance and reliability are used as two indicators of source quality. Relevant information is operationally defined as information that is needed and useful as regards the goals and activities of the respondents' company. Information is reliable when it is authoritative and dependable. It is the information that is personally trusted. In the questionnaire, respondents answered two questions on the quality of each source:

- How relevant is the information from each source about the environment?
- How reliable is the information from each source about the environment?

For each of the provided list of twenty-one (21) sources, the respondents indicated their responses to these questions on a five-point scale. The response scores from these two questions are summed into an index of the perceived quality of each source as presented in Table 5 which depicts perceived information source quality to scan environment by the respondents.

TABLE V
PERCEIVED INFORMATION SOURCE QUALITY TO SCAN ENVIRONMENT OF THE RESPONDENTS

| S/N | Information sources | Mean ($\bar{x}$) | SD |
|---|---|---|---|
| 1. | Company files. | 4.99 | 0.10 |
| 2. | Colleagues. | 4.99 | 0.10 |
| 3. | Customers. | 4.98 | 0.10 |
| 4. | Sub-ordinate staff. | 4.96 | 0.10 |
| 5. | Reports. | 4.95 | 0.10 |
| 6. | Trade Literature. | 4.95 | 0.10 |
| 7. | Professional Associates. | 3.99 | 0.11 |
| 8. | Memoranda | 3.98 | 0.11 |
| 9. | Internet / E-mails. | 3.97 | 0.11 |
| 10. | Textbooks. | 3.95 | 0.11 |
| 11. | Government documents | 3.94 | 0.11 |
| 12. | Government officials | 3.92 | 0.11 |
| 13. | Newspapers / Magazines. | 3.90 | 0.10 |
| 14. | Radio / Television. | 2.96 | 0.12 |
| 15. | Competitors. | 2.94 | 0.11 |
| 16. | Trade Associations. | 2.99 | 0.11 |
| 17. | Conference proceedings. | 1.99 | 0.09 |
| 18. | Theses and Dissertations | 1.96 | 0.09 |
| 19. | Company Archive. | 1.92 | 0.07 |
| 20. | Journals. | 1.60 | 0.05 |
| 21. | Indexes and Abstracts. | 1.50 | 0.44 |

In terms of source quality, company files, colleagues, customers, subordinate staff, reports, and trade literature are perceived to provide information of the greatest relevance and reliability in scanning the environment by the respondents. However, it is very surprising to discover that authoritative sources such as journals, conference proceedings, company archive, theses/dissertations and indexes/abstracts are perceived to be of lowest quality, meaning that the information they provide is seen to be less relevant and reliable in scanning the business environment of the respondents.

Table 6 shows the frequency of use of information sources to scan the environment by the respondents. The respondents were provided with the list of the twenty-one (21) information sources which they indicated their frequency of use on seven-point scale, that is daily = 7, weekly = 6, bi-monthly = 5, monthly = 4, quarterly = 3, annually = 2, and never used = 1.

TABLE VI
FREQUENCY OF USE OF INFORMATION SOURCES TO SCAN THE ENVIRONMENT BY THE RESPONDENTS

| S/N | Information sources | Mean ($\bar{x}$) | SD |
|---|---|---|---|
| 1. | Company files. | 6.98 | 1.26 |
| 2. | Subordinate staff. | 6.98 | 1.26 |
| 3. | Newspapers / magazines. | 6.96 | 1.19 |
| 4. | Customers. | 6.94 | 1.19 |
| 5. | Colleagues. | 6.93 | 1.19 |
| 6. | Internet / E-mails. | 6.93 | 1.19 |
| 7. | Radio / Television. | 6.92 | 1.19 |
| 8. | Reports. | 6.92 | 1.19 |
| 9. | Trade literature. | 6.90 | 1.19 |
| 10. | Memoranda. | 6.88 | 1.18 |
| 11. | Government documents. | 6.84 | 1.18 |
| 12. | Government officials. | 6.82 | 1.17 |
| 13. | Professional associates. | 5.99 | 1.17 |
| 14. | Competitors. | 5.96 | 1.17 |
| 15. | Textbooks. | 4.88 | 1.00 |
| 16. | Trade association. | 4.84 | 0.94 |
| 17. | Conference proceedings. | 1.48 | 0.10 |
| 18. | Company archive | 1.40 | 0.09 |
| 19. | Journals. | 1.38 | 0.07 |
| 20. | Theses and dissertations. | 1.30 | 0.05 |
| 21. | Indexes and abstracts. | 1.28 | 0.02 |

Table 6 shows the frequency of use of information sources to scan environment by the respondents. The most frequently used information sources to scan the environment by the respondents are company files, subordinate staff, newspapers/magazines, customers, colleagues, Internet/E-mails, radio/television (broadcast media), reports and trade literature. It must be noted that the respondents used both personal and impersonal sources of information when scanning their business environment. Thus, it is very surprising to see that the respondents never used conference proceedings, company archive, journals, theses/dissertations, and indexes/abstracts that are credible and authoritative sources of information to scan their business environment.

The simple correlation analysis based on Pearson's Product Moment Correlation (PPMC) method was used to test the correlation that exist between information sources used, perceived information sources accessibility and quality, and perceived environmental uncertainty of the respondents. Information sources accessibility ($r = 0.489$; $p < 0.01$), information sources quality ($r = 0.614$; $p < 0.01$; and perceived environmental uncertainty ($r = 0.558$; $p < 0.01$) had significant correlations with information sources use in environmental scanning of the respondents. However, to determine if perceived environmental uncertainty, and information sources quality are facilitators of frequency of information sources use, the multiple regression analysis was performed. The result of the data analysis is reflected in Table 7.

TABLE VII
SUMMARY OF MULTIPLE REGRESSION ANALYSIS OF FREQUENCY OF USE OF INFORMATION SOURCES TO THE SCAN ENVIRONMENT OF THE RESPONDENTS

| Variable | B | SE(B) | Beta | t | Sig.P |
|---|---|---|---|---|---|
| Constant. | 0.98 | 0.32 | --- | 3.15 | 0.008 |
| Perceived information source quality. | 0.58 | 0.19 | 0.45 | 3.07 | 0.006 |
| Perceived information source accessibility. | 0.49 | 0.13 | 0.31 | 3.86 | 0.003 |
| Perceived environmental uncertainty. | 0.62 | 0.12 | 0.51 | 5.14 | 0.003 |

Keys:
B: Unstandardised regression coefficient
Beta: Standardised regression coefficient
SEE: Standard error of estimates
Df: Degree of freedom: (3; 851)
Adjusted R = 0.79
Adjusted R2 = 0.63
Fratio = 8.22

It is obviously seen from Table 7 that perceived environmental uncertainty (PEU); perceived information sources accessibility (PISA) and perceived information sources quality (PISQ) when taken together, are significant facilitators of frequency of use of information sources (FUIS) to scan the environment by the respondents (Fratio = 8.221; df = 3, 851; $p < 0.01$. The adjusted R2 of 0.625 implies that perceived environmental uncertainty, perceived information sources accessibility and quality are critical facilitators that explained the 63% of variance in frequency of use of information sources to scan the environment by the respondents. In addition, perceived environmental uncertainty (B = 0.622, t = 5.14; $p < 0.01$); perceived information sources accessibility (B = 0.488, t = 3.86; $p < 0.01$) and perceived information sources quality (B = 0.581, t = 3.07; $p < 0.01$) individually has significantly facilitated frequency of use of information sources to scan the environment by the respondents. Most importantly, perceived environmental uncertainty (βeta = 0.513 or 51%) has the greatest relative contribution to the facilitation of frequency of use of information sources to scan the environment by the respondents, next to it is perceived information sources quality (βeta = 0.446 or 45%) and perceived information sources accessibility (βeta = 0.311 or 31% relative contribution to the facilitation of frequency of use of information sources to scan the environment by the respondents.

## VII. Discussion of the Findings

The dynamic nature of the Nigerian business environment is of great concern to managers in the oil and gas companies. There are several external environmental sectors namely social, political, economic, legal, cultural, technological, educational, and geographical that are sending signals which managers in the oil and gas companies must respond to for the survival of their companies. This study found that the customer, technological and regulatory sectors were the most perceived environmental uncertainty by the respondents. Edward (2020) noted that customer, regulatory and technological sectors were the most critical and perceived environmental uncertainty by the managers in oil companies in Saudi Arabia. Robinson (2015), and Kehinde (2010) opined that environmental scanning of managers in organisations must address technology, success of competitors' products, legal/regulatory, economic, cultural, and demographic background. Abdulrahman (2019) reported that economic, regulatory, technological and customer were perceived environmental uncertainty by the managers in petroleum industry in Libya and Iraq.

This study also revealed that the major modes of environmental scanning adopted by managers in the oil and gas companies in Nigeria are conditioned viewing and enacting. Conditioned viewing occurs when the manager is exposed to information concerning selected areas or certain types of information. In addition, the manager is ready to evaluate the relevance of such information as it is encountered to the organisational success. However, enacting happens when the manager actively searches for information to address a specific issue in a relatively limited and unstructured manner. A typical example of enacting is the monitoring of the financial market to check the results of a new product pricing policy. Scanning methods adopted by the managers in an organisation can range from the adhoc, informal activities to systematic, formalised efforts based on the size of organisation, experience, and perception of the environment (Preble, 1978; Thomas, 1980; Klein and Linneman, 1984; Auster and Choo, 1994). Andrew (2021) noted that most managers in the Nigerian manufacturing companies should adopt conditioned viewing and enacting modes of scanning when acquiring information from their business environment.

This study also found that the amount of scanning done was significantly correlated with perceived sector uncertainty of managers in the oil and gas companies in Nigeria. Similarly, past studies confirmed that the managers who perceived greater environmental uncertainty tended to do more scanning (Jain,1984; Ghoshal and Kim, 1986; Choo, 1994; Popoola, 2000; 2003; Majid and Kowtha, 2008; Ojo, 2008; Hosseini, 2010; Farhadpoor et al., 2014). It was revealed in this study that sub-ordinate staff, colleagues, newspaper/magazines, radio/television (broadcast media), customers, and reports were the major information sources accessible to scan the environment by the respondents. Previous studies reported that managers preferred information sources that are perceived to be more accessible than those perceived to be of greater quality (O'Reilly, 1982; Culman, 1983; Jain, 1984; Auster and Choo, 1994; Popoola, 2000; Popoola, 2003; Babalhavaeji and Farhadpoor, 2013).

This study found that the most perceived information source quality to scan the environment by the respondents were company files, colleagues, customers, subordinate staff, reports, and trade literature. It is very surprising that authoritative sources of information, that is, conference proceedings, theses and dissertations, company archive, journals, and indexes/abstracts were never perceived of high quality to scan the environment by the respondents. Some past studies confirmed that the perceived quality of information from a source or channel influenced its use to scan the business environment of managers (Taylor, 1986; Hapern and Nilan, 1988; Auster and Choo, 1994;

Popoola, 2000; Hough and White, 2004; Fadehan et al., 2008; Joshua, 2021).

However, the most frequently used information sources for scanning environment by managers in the oil and gas companies in Nigeria were company files, subordinate staff, newspapers/magazines, customers, colleagues, Internet/e-mails, radio/television, reports, trade literature, memoranda, government documents, and government officials. This means that managers in the Nigerian oil and gas companies used both personal and impersonal sources of information to scan their business environment. Some previous studies established that managers in the manufacturing companies most frequently utilised customers, colleagues, subordinate staff, Internet, electronic databases, newspapers/magazines, reports, government documents, broadcast media, and trade literature to scan their business environment (Correria and Wilson, 1997; Pawar and Sharda, 1997; Bournois and Ramani, 2000; Choo, 2001; Teo and Choo, 2001; Erdelez and Ware, 2001; Raymond et al., 2001; Popoola, 2006; Jorosi, 2008; Popoola, 2011; Babalhavaeji and Farhadpoor, 2013; Popoola and Ayankola, 2018).

More importantly, perceived environmental uncertainty, perceived information sources accessibility and quality were found to be individually and jointly significant facilitators of frequency of use of information sources to scan the business environment of the respondents. Perceived environmental uncertainty, perceived information sources accessibility and quality are critical facilitators that explained 63% of variance in frequency of use of information sources to scan the business environment of the respondents. More so, perceived environmental uncertainty has the greatest relative contribution of 51%, next to it, perceived information sources quality with relative contribution of 45%, and perceived information sources accessibility having relative contribution of 31% to the facilitation of frequency of use of information sources to scan the business environment of managers in the oil and gas companies in Nigeria.

## VIII. Conclusion

The changes, events, and trends in the business environment of an organisation continually create signals and messages for the managers to respond to. Managers in organisations detect or receive these cues and apply information to adjust to the new condition when managers perceived that the environment is unpredictable; they feel uncertainty, and this situation happens, when they feel that they have no information to formulate strategy and make rational decision. They tend to scan their business environment to acquire relevant information and use it to improve their present and future business operations. This study found that customer, technological and regulatory sectors were the most perceived environmental uncertainty by the respondents. The conditioned viewing and enacting were the major modes of scanning the environment adopted by the respondents. The amount of scanning done was significantly correlated with the perceived environmental uncertainty of the respondents. Most importantly, perceived environmental uncertainty, perceived information sources accessibility and quality are individually and jointly significant facilitators of frequency of use of information sources to scan the business environment of the respondents.

Based on the findings of the study, it is therefore, recommended that the board of management of the oil and gas companies in Nigeria should encourage their managers to scan their business environment with much attention devoted to customer, technological and regulatory sectors that were perceived uncertain. They should endeavour to give needed attention to perceived sector uncertainty, perceived information sources accessibility and quality to improve frequency of use of information sources of their managers for better performance and competitive advantage.

**References**


Abdulrahman, M. A. (2019). Perceived environmental uncertainty, information acquisition and use by managers in petroleum industry in Libya and Iraqi. *Journal of Management and Religion*, 5(2), 120 - 131.

Adetutu, R.O. (2018). Internet as a tool for gathering information in oil and gas companies. *Journal of Political Economy and Technology*, 4(2), 50 – 58.

Andrew, S.S. (2021). Usefulness of information management for company performance. *Management Science*, 5(3), 50 - 61.

Aguilar, F. (1967). *Scanning the business environment*. Macmillan.

Auster, E. & Choo, C.W. (1994). How senior managers acquire and use information in environmental scanning. *Information Processing & Management*, 30(5), 607-618. https://doi.org/10.1016/0306-4573(94)90073-6.

Babalhavaeji, F. & Farhadpoor, M.R. (2013). Information source characteristics and environmental scanning by academic library managers. *Information Research*, 18(1), 1 - 12. http://informationr.net/ir/18-1/paper568.html

Benczur, D. (2005). Environmental scanning: How developed is information acquisition in western European companies? *Information Research*, 11(1), 1-18. http://www.informationnr.net/11-1/paper241.html

Bournois, F. & Romani, P.J. (2000). *L'intelligence economique et strategique dons les entreprises francaises*. Economica.

Choo, C. W. (2001). Environmental scanning as information seeking and organisational learning. *Information Research*, 7(1), 1-37. http://informationR.net/ir/7-1paper112.html

Choo, C. W. (1994). Perception and use of information sources by chief executives in environmental scanning. *Library and Information Science Research*, 16(1), 23 – 40. https://doi.org/10.1016/0740-8188(94)90040-X

Correria, Z. & Wilson, T.D. (2001). Factors influencing environmental scanning in the organisational context. *Information Research*, 7(1), 22 – 28. http://InformationR.net/ir/7-1/paper121.html

Correria, Z. & Wilson, T.D. (1997). Scanning the business environment for information: a grounded theory approach. *Information Research*, 2(4), 1 – 23. http://informationr.net/ir/2-4/paper21.html.

Culman, M.J. (1983). Environmental scanning: the effect of task complexity and source accessibility on information gathering behaviour. *Decision Science*, 14(2), 194 - 206.

Daft, R.L., Sormunen, J. & Parks, D. (1988). Chief executive scanning, environmental characteristics, and company performance. *Strategic Management Journal*, 9(2), 123 – 139. https://doi.org/10.1002/smj.4250090204.

Daft, R.L. & Weick, K.E. (1984). Toward a model of organisations as interpretation systems. *The Academy of Management Review*, 9(2), 284 - 295. https://doi.org/10.2307/258441.

Duncan, R.B. (1972). Characteristics of organisational environments and perceived environmental uncertainty. *Administrative Science Quarterly*, 17(3), 313 - 327. https://doi.org/10.2307/2392145.

Edward, A.A. (2020). Information acquisition and use for strategic management. *Journal of Information and Technological Innovation*, 5(2), 30 – 42.

Erdelez, S. & Ware, N. (2001). Finding competitive intelligence on Internet start-up companies: a study of secondary resource use and information–seeking processes. *Information Research*, 7(1). http://informationR.net/ir/7-1/paper115.html. Paper 115.

Fadehan, O.A., Atinmo, M.I., & Popoola, S.O. (2008). Information source quality and use as correlates of business performance of community banks in Osun State, Nigeria. *Library Progress International*, 28(2), 165 -188.

Farhadpoor, R.M., Bahmani, B. & Hamidi, M. (2014). Perception of the characteristics of external environment of organisations and its effect on managers' environmental scanning in using information resources. *Library Philosophy and Practice. https://digitalcommons.unl.edu/libphilprac/* 1204.

Ghoshal, S. & Kim, S.K. (1986). Building effective intelligence systems for competitive advantage. *Sloan Management Review*, 28(1), 49 – 58. https://doi.org/10.1016/0024-6301(87)90187-7

Halpern, D. & Nilan, M.S. (1988). A step toward shifting the research emphasis in information science from the system to the user: An empirical investigation of sources evaluation behaviour seeking and use. In C.L. Borgman & E.Y.H. Pai (Eds.), *Proceedings of the 51st American Society for Information Science (ASIS) Annual Meeting*. October 23 – 27, 1988 (pp.169-175). American Society for Information Science.

Hosseini, I. (2010). *Environmental scanning study in acquisition and use of information by the managers of private publishers in Tehran city*. [Unpublished master thesis]. Islamic Azad University, Tehran.

Hough, J.R. & White, M.A. (2004). Scanning actions and environmental dynamism: gathering information for strategic decision-making. *Management Decision*, 42(6), 781 - 793. https://doi.org/10.1108/00251740410542348.

Jain, S. (1984). Environmental scanning in U.S. corporations. *Long Range Planning*, 17(2), 117 – 128. https://doi.org/10.1016/0024-6301(84)90143-2.

Jorosi, B.N. (2008). Environmental scanning in Botswana's SMEs: a study of the manufacturing industry. *Libri*, 58(4), 224 – 233. https://doi.org/10.1515/libr.2008.023

Jogaratnam, G. & Wong, K. K. F. (2009). Environmental uncertainty and scanning behaviour: an assessment of top – level hotel executives. *International Journal of Hospital and Tourism Administration*, 10(1), 44 – 67. https://doi.org/10.1080/15256480802557275.

Joshua, A. A. (2021). Environmental scanning and organisational performance in Nigerian electronic firms. *Journal of Economics and Technology Management*, 4(2), 20 – 28.

Kehinde, O. J. (2010). Environmental scanning: the strategic key for the Nigerian entrepreneur to exploit emerging market opportunities. *Journal of Management Research*, 2(1), 44 – 58.

Klein, H.E. & Linneman, R.E. (1984). Environmental assessment: an international study of corporate practice. *Journal of Business Strategy*, 5(1), 66 – 75. https://doi.org/10.1108/eb039048.

Lester, R. & Waters, J. (1989). *Environmental scanning and business strategy*: *volume 75 of library and information research report*. British Library.

Majid, S. & Kowtha, R. (2008, May). *Utilising environmental knowledge for competitive advantage*. CONF-IRM Proceedings, 62, May 18-20, 2008 (pp.1-11). AIS Electonic Library. http://aisle.aisnet.org/confirm2008

May, C.R., Stewart, W.H., & Sweo, R. (2000). Environmental scanning behaviour in a transitional economy: evidence from Russia. *Academy of Management Journal*, 43(3), 403-427. https://doi.org/10.5465/1556402.

Ogunmokun, G.O. (1999). Environmental scanning practices and export performance in international marketing: a study of Australian exporters. *International Journal of Management*, 16(1), 9-12.

Ojo, O. (2008). Appraisal of the impact of environmental scanning on corporate performance in selected Nigerian banks. *Manager Journal*, 7(1), 89-100.

O'Reilly, C.A. (1982). Variation in decision makers' use of information sources: the impact of quality and accessibility of information. *Academy of Management Journal*, 25(4), 756 - 771. https://doi.org/10.10.2307/256097.

Pawar, B.S. & Sharda, R. (1997). Obtaining business intelligence on the Internet. *Long Range Planning*, 30(1), 110 - 121.

Popoola, S.O. & Ayankola, I. A. (2018). Self-efficacy, information accessibility and utilisation as determinants of creativity of managers in packaging companies in Nigeria. *Journal of Information Engineering and Applications*, 8(7), 38 – 50. www.iiste.org

Popoola, S.O. (2011). Relational analysis of creativity, information seeking behaviour and utilisation of managers in petroleum marketing companies in Nigeria. *Communicate: Journal of Library and Information Science*, 13(2), 1 – 20.

Popoola, S. O. (2006). Influence of information availability and utilisation on decision- making of managers in large-scale manufacturing industries in Nigeria. *South African Journal of Libraries and Information Science*, 72(1), 45 - 55. https://doi.org/10.7553/72-1-1375.

Popoola, S.O. (2003). Environmental scanning for strategic advantage of managers in oil companies in Nigeria. *Nigerian Libraries*, 37(1), 42 – 56.

Popoola, S.O. (2000). Scanning the business environment for competitive advantage: A study of corporate banking managers in Nigeria. *Libri*, 50(3), 210-216. https://doi.org/10.1515/LIBR.2000.210

Preble, J.F., Rau, P.A., & Reichel, A. (1988). The environmental scanning practices of U.S. multinationals in the late 1980s. *Management International Review*, 28(4), 4 - 14. https://doi.org/10.2307/40227901.

Preble, J.F. (1978). Corporate use of environmental scanning. *University of Michigan Business Review*, 30(5), 12 - 17.

Qiu, T. (2008). Scanning for competitive intelligence: a managerial perspective. *European Journal of Marketing*, 42(7/8), 814 - 825. https://doi.org/10.1108/03090560810877178.

Raymond, L., Pierre-Andre, J., & Ramangalaby, C. (2001). Technological scanning by small Canadian manufacturers. *Journal of Small Business Management*, 39(2), 123 - 138. https://doi.org/10.1111/1540-627X.00012.

Revilla, E., Prieto, I.M., & Prado, B.R. (2010). Knowledge strategy: its relationship to environmental dynamism and complexity in product development. *Knowledge and Process Management*, 17(1), 36 - 47. https://doi.org/10.1002/kpm.339

Robinson, C.V. (2015). *An exploratory of external environmental scanning and the strategy process.* [Unpublished doctoral dissertation]. Heritt-Watt University, Edinburgh. http://hdl.handle.net/10399/3030

Sawyer, O.O., Ebrahimi, B.P., & Thibodeaux, M.S. (2000). Executive environmental scanning, information source utilisation, and firm performance: the case of

Nigeria. *Journal of Applied Management Studies*, 9(1), 95 – 115. https://doi.org/10.1080/713674356.

Stubbart, C. (1982). Are environmental scanning units effective? *Long Range Planning*, 15(3), 139 – 145. https://doi.org/10.1016/0024-6301(82)90035-8.

Taylor, R.S. (1986). *Value-added processes in information systems*. Abex.

Teo, T.S.H. & Choo, W.Y. (2001). Assessing the impact of using the Internet for competitive intelligence. *Information and Management*, 39(1), 67 - 83. https://doi.org/10.1016/S0378-7206(01)00080-5.

Thomas, P.S. (1980). Environmental scanning: the state of the art. *Long Range Planning*, 13(1), 20 – 28. https://doi.org/10.1016/0024-6301(80)90051-5.

Zhang, X., Majid, S., & Foo, S. (2010). Environmental scanning: an application of information literacy skills at the workplace. *Journal of Information Science*, 36(6), 710 - 732. https://doi.org/10.1177/0165551510385644.