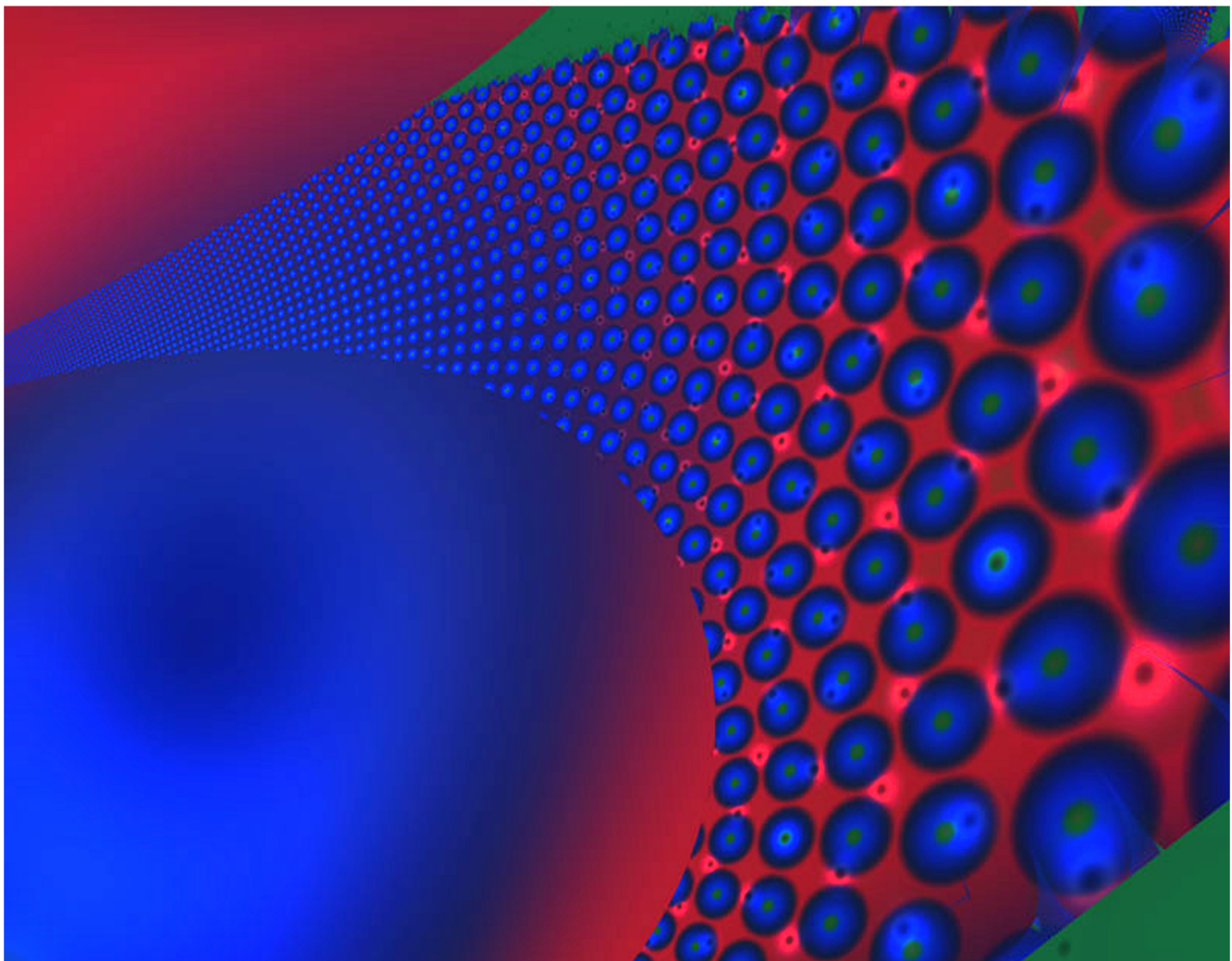


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Database Marketing Strategies in the Industry: Case of Kenyan Organizations

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Abstract:

Problem Statement: *There are several organizations in both the private and public sector that collect information about their customers but do not proactively leverage on it. In most cases, the collected information would lie unused or underutilized for long periods and yet these same organizations do struggle business-wise. A major point is that they could actually utilize the information to create new avenues to the benefit of the organizations.* **Methodology:** *The methodology adopted for this research was to survey several private sector organizations. A sample of thirty-two (32) organizations out fifty (50) accepted to take part in the Database Marketing Survey. This survey consisted of organizations in the private sector ranging from airline industry, information and communication technology industry, retail and services and healthcare industries. We were interested to access information on what types of customer information they typically collected, stored and/or interpreted and how the organization's databases were generally designed. Further, we needed to determine the frequencies of inaccuracies in the data collected, the liabilities/implications of incorrect data, the applied techniques (systems) to maintain data integrity and the maintenance systems and of the databases, which database formats were most successful, which procedures of data gathering were most reliable and subtly, which off-the-shelf programs were better for design of a customer database for the organizations.* **Results:** *Our preliminary analysis indicated these organizations routinely collected and stored customer information for various purposes. It was noticed that though most organizations collected data, it was mostly inaccurate, duplicate, inconsistent and non-standard. In this regard, it was extremely difficult to really harness or*

leverage on it. Due to this state of affairs, the organizations could not easily relate to the fact that the core data errors could be a pointer to lost revenue, lost opportunities or money wasted pursuing false assumptions or inaccurate accounts. **Conclusions:** The type of database design used by the private sector industries in Kenya is largely dependent on the “Off-the-Shelf” programs. The design of a customer database for an organization was largely related to the type of “off-the-Shelf” with a correlation coefficient of 0.738. Most organizations collected and stored data that can be described to be personal information from the customers and this information was predominantly used for the purposes of business growth, that is, sales at 73.91% and marketing at 56.62% though not strategically.

Keywords: Database Marketing, Data Gathering and Cleaning, Database Maintenance, Data Types

1. INTRODUCTION

1.1 DEFINITIONS

There are several definitions of Database Marketing such that even if practitioners try to reach a consensus; definition and practice are likely to vary widely. Two notable definitions are:

“Database marketing, simply put, involves the collection of information about past, current and potential customers to build a database to improve the marketing effort. The information includes: demographic profiles; consumer likes and dislikes; taste; purchase behavior and lifestyle (Shani & Chalasani 1992):

“Database marketing is the application of statistical analysis and modeling techniques to computerized individual level data sets. It is used to support the development of cost-effective marketing programs that communicate directly with identified customers and prospects, and to track and evaluate the results of specific promotional efforts. Database marketing implies planned communication with individually targeted customers and prospects over an extended period of time to promote repeat purchases of related goods and services. (Roberts, 1997)

From the definitions by Shani & Chalasani (1992) and Roberts (1997), it implies that the information collected of the customers for any organization does require the use of database technology to store, access, analyze and leverage. While definitions are tailored towards certain goals and purposes, none succinctly captures the essence of the practice while providing utility for research purposes like the way De Tiene & Thompson (1996), who put it in the following definition:

“Database marketing is the process of systematically collecting, in electronic or optical form, data about the past, current and/or potential customers, maintaining the integrity of the data by continually monitoring customer purchases and/or by inquiring about changing status and using the data to formulate marketing strategy and foster personalized relationships with customers.”

1.2 BACKGROUND

The use of a customer database as a source of marketing information, as a means for customer communication and a driver of marketing strategy, has been becoming important for every organization in this era of ubiquitous Information and Communication Technology (DeTiene & Thompson, 1996). With stiff competition and business market changes acceleration in the business environment, coupled by the

decline in the cost of technology (communication, storage, among others), more industries and companies are adopting database marketing, although few have been able to identify and actualize the factors necessary for a database marketing success (Seller & Gray, 1999). The type of information usually stored in customer databases, whether professionally designed or not, leads to some sort of database technology or model of interest to the external world. The technology or model adopted can determine whether the information stored will enable the organizations have a business advantage or not.

Furthermore, Royal (1995) states that “despite the boom in database development, few organizations are using their (massive) data collections of customer facts and figures to harness the power of database marketing systems to achieve a competitive advantage in their marketplaces”. This view is further amplified by Rosenfield (1998) who uses the term “the myth of database marketing”, when talking about the gap between the promise and its practice. Even though database marketing in many companies is not living to its potential, its allure remains high (Seller & Gray, 1999). Much of this allure is related to the significant competitive advantage available to companies or organizations that can put database marketing into practice correctly. This can be in form of targeted marketing, campaign management, prospecting, predictive marketing, loyalty programs or a combination of any two or more forms.

It is important to note that there are innumerable types of databases and possible applications based on the form for individual organization business purposes. The adoption and implementation of databases has not been without much difficulty (DeTiene & Thompson, 1996). There have been many database implementation failures which Kohli and Gupta (1993, p.23) suggest reasons as: pursuing database marketing without exhaustively considering data needs; not fully utilizing the customer data; overlooking future data needs; organization of the data poorly or failure to integrate all necessary functional areas into the development and use of the database. The reasons mentioned do not suggest that the database marketing concept is flawed, but rather that organizations lack critical understanding of how databases should be designed, maintained and applied so as to help build the customer relationships that lead to successful products and services (DeTiene & Thompson, 1996). Even if companies carefully design databases and determine how to maintain it, they are not likely to benefit much if they are unclear about its use i.e., lack of defined purpose (Berry & Maclean, 1989; Kohli & Gupta, 1993).

Why has the customer database become so prominent in marketing society today? For one reason, it supports the continuing trend toward a narrower segmentation in the business opportunities that the customers provide due to competition. Another reason is that the quality movement has made companies keenly aware of the need to please customers – and to please customers, the company must first know them (Kohli & Gupta, 1993). The purpose of the research was address the following three main problem categories: (a) what types of customer information is typically collected, stored and/or interpreted and how the organization’s databases are generally designed, (b) what are frequencies of inaccuracies in the data collected, the liabilities/implications of incorrect data, applied techniques (systems) to maintain data integrity and the maintenance systems, (c) which database formats are most successful, which procedures of data gathering are most reliable and probably(remove) which off-the-shelf programs are better for design of a customer database for an organization.

2. LITERATURE REVIEW

2.1 DATA COLLECTION AND CLEANING

The three primary activities of collecting, maintaining and using the data in the definition by DeTiene & Thompson (1996), though basic, constitute the necessary and sufficient components to comprise database marketing approach. The data collection involves the activities like data cleaning - a process used to determine inaccurate, incomplete, or unreasonable data and then improving the quality through correction of detected errors and omissions which may include format checks, completeness checks, reasonableness checks, limit checks, review of the data to identify outliers (Chapman, 2005), data verification - a process that involves checking the accuracy of all, or a sample of, computerized records against the original sources, data validation - which involves checking the reasonableness of all, or a sample of, data entered into the electronic database and data security - which involves ensuring only authorized staff have access to electronic databases and other documents containing sensitive client information (PPM, 2010)).

There are several examples of procedures for data collection and handling to ensure the resulting electronic database is accurate according to PPM (2010) namely:

- (i) Checking the accuracy of the computerized records against the original source;
- (ii) Conducting random calls to participants or other sources to verify the accuracy of the information collected;
- (iii) Evaluating data collection efforts by using trained staff to randomly observe interviews and other data collection methods;
- (iv) Limiting access to client information to authorized personnel who are trained in data security and validity; and
- (v) Performing logical checks of the data (although data may be correctly transcribed from the original forms, it may not be accurate because of misprints, typographical errors and other mistakes).

The data cleaning processes usually results in flagging, documenting and subsequent checking and correction of suspect records while validation checks may also involve checking for compliance against applicable standards, rules, and conventions (Chapman, 2005). Despite its name, data cleaning actually does three things: it ensures data is accurate (cleaning), contains no duplicate data (matching) and also supplements the data (enrichment) (Howard, 2011). The usual view of errors and uncertainties is that they are bad, but a good understanding of errors and error propagation can lead to active quality control and managed improvement in the overall data quality (Chapman, 2005). The need for data cleaning is centered on improving the quality of data to make them "fit for use" by users through reducing errors in the data and improving their documentation and presentation. For companies who do not (or cannot) capture a sufficient amount of data, Jackson and Wang (1997) suggest data enhancement. Data enhancement is the overlay of information (normally from external sources) to each distinct database record for the purpose of better describing and understanding every individual (Seller & Gray, 1999). Data enhancement allows organizations to overcome the pitfalls of having insufficiently rich data. Lewington et al. (1996) define data richness as "a database containing sufficient segmentation data elements to identify customer clusters of adequate size and behavioral variation to justify the economic exploitation through available direct response media."

Further, with more sophistication in software and development towards customer analytics, there are solutions to provide (i) data cleansing which identifies outliers, missing, or poor quality data to ensure data integrity (ii) data transformation which compiles metadata (derived information in relation to the data), (iii) data appending that enhances a customer's profile with key information (demographic/lifestyle)

not available in the raw data and (iv) data exploration that couples descriptive statistics with a method of interacting with data to uncover patterns and issues for further investigation (ClickSquared, 2012). There are several reasons why data cleaning and matching are important to your business i.e., saving you money, making you money, compliance with standards, enabling a variety of IT processes (such as data migration, loading data into a data warehouse or data archival), support for a variety of business processes and makes it possible to accurately report on and analyze information (Howard, 2011).

2.2 MODELS OF MARKETING DATABASES

The implementation of marketing databases has not been without difficulty. Like many other breakthrough technologies, database marketing often lures organizations to anticipate tremendous returns, only to produce no measurable bottom-line impact (DeTiene & Thompson, 1996). In today's world, marketing databases have become an integral asset to business, largely due to the evolution of relationship marketing and the realization that in order to be competitive, companies need to build a relationship with their customers which is based on more than just price offered (Schoenbachler, Gordon, Foley & Spellman, 1997). This is informed by the concept that knowledge about your customers, their habits and dislikes will go a long way in improving the way you do your business and how you interact with them. In addition to the advantages of declining costs of hardware and improving storage and processing capabilities, technology is providing new ways to organizations to interact with consumers.

These technological developments make it more economical for businesses to organize different categories customers. With new computing and telecommunications technology, organizations can deal with their customers as individual and can create an environment in which people want to hear messages that targeted (Cross & Smith, 1994). Fletcher, Wheeler & Wright (1991) present a simple framework which suggests that direct marketing usage, (enhanced by computer technology), has gone through three phases: sales-oriented phase (is the use of direct marketing as a channel of distribution for example mail order), image building phase (image building, uses direct marketing as a medium to send targeted life-style messages to consumers where an organization develops and maintains a profile of its customers and uses it to motivate purchase) and integrated system phase (integrated system development, uses direct marketing as both a medium for communicating with customers and a channel of distribution).

Jackson & Wang (1997) on the other hand believe the majority of database marketing applications fall into one of three points of entry. The three points of entry run along a continuum of marketing applications and technology which are historical data management where organizations track data gathered from marketing campaigns, marketing intelligence which is more sophisticated and allows for capturing of more data and finally integrated business resources which provides an information resources for the entire organization (Jackson and Wang, 1997)

2.3 DATABASE MAINTENANCE TECHNIQUES

Companies that establish customer databases quickly learn it is not a one-time task since customers rarely remain stable; they change addresses, income levels, needs, preferences and behaviors (DeTiene & Thompson, 1996). The essential feature of database technology is that it provides an internal representation model of the external world of interest for the organizations. This is very vital indeed because business in much of the world today depends on it, for example in finance, transport, tourism, education, healthcare, retail etc. The essential point is that database technology is a core technology with

links to: information management / processing, data analysis / statistics, data visualization and presentation that allows for cooperative and collaborative work in the businesses. The consequences of neglecting database maintenance are not merely the misplacement of customers who move to unknown address or even change their names, but the also the potential for misidentifying customers when using specifically targeted marketing approaches. Although database marketing experts emphasize the need for the careful maintenance of marketing databases, very few concrete observations have emerged regarding how this can be done.

Incorrect data are not the only problem for database maintenance. Another issue is that organizations tend to amass data continually without discriminating between what is useful and what is extraneous. This quickly leads to unnecessary data that wastes a lot of storage space and compounding the issue of analysis. Therefore it is important to carefully consider every form of information and decide whether it is worth keeping it in the database. Database marketers need a mechanism to measure the value of the customers in the database to remove those unlikely to be on benefit to the organization. Determine the appropriate amount of information can become a difficult logistics problem (Daft & Huber, 1987). While firms are more cognizant of the technical barriers than organizations barriers, often they still lack critical understanding of how database should be designed, maintained and applied to help build customer relationships (DeTiene & Thompson, 1996).

When implementing database marketing, technical barriers have been in the database design, data selection and maintenance, data analysis and application; and the build or buy decision (Seller & Gray, 1999). Kohli & Gupta (1993) propose a broad methodology which establishes corporate objectives, identifies data needs, builds storage and access mechanism and establishes mechanism for continuous data collection and storage. On the other hand, Jackson & Wang (1997) give a four step process in database design as (i) determination of current status of technology and applications within the organization; (ii) examine of where the company wishes to be with its data-driven marketing applications; (iii) assessment of the gap between where the company is and where it wants to be; and (iv) forming plans to move the company toward its desired database-related goals. Stevenson (1988) considers three distinct successive steps namely: (i) the needs analysis - where companies define their marketing applications; (ii) the data dictionary - where companies determine the specific data points to be captured and the sites where it can be collected and (iii) the systems - where companies examine how they will handle the data.

Data governance is the practice of overseeing the people, systems and processes that produce the data which is vital for the organization (Quinn, 2011). An organization should define which data elements are critical for the execution of the processes and aid in making day to day decisions. With the two i.e., data governance and strategy, then we can have the strategy being managed by performance management while data governance manages the data (Quinn, 2011).

2.4 DATABASE DESIGNS

A good database design starts with a list of the data that you want to include in your database and what you want to be able to do with the database information later on. This usually requires some form of expertise in design as well as the manipulation of the information therein. This can all be written in your own language, without any Structure Query Language (SQL). In this stage you must try not to think in tables or columns, but just think: "What do I need to know?" Don't take this too lightly, because if you find out later that you forgot something, usually you need to start all over. Adding things to your database

is mostly a lot of work and therefore the start is usually very vital. Even if organizations carefully design a database and clearly determine how to maintain it, they are not likely to benefit much as they are unclear about how to use it. In fact Berry & Mclean (1989) cite the common reason for failure as lack of defined purpose for the marketing database.

3. RESEARCH METHODOLOGY

The research set out to understand the dynamics of the data collected, data collection methods, accuracy of data and the kind of databases used by private sector organizations in Kenya. There was a compelling case for using exploratory method since this supports the research objective set out at the beginning (Yin, 2003). This was because we thought of finding out what was happening, seek new insights into the database marketing applications, ask questions and assess the different organizations in a new light. The data collected consisted of questionnaires filled by individuals within the organizations responsible for information on personnel or customers whether they were IT department officers or human resource officers. This was done in interest of getting triangulating information sources. Triangulation provides a unique opportunity to identify inconsistent and contradictory evidences which researchers should analyse and interpret very carefully (Mathison, 1988).

The data consisted of respondents from 32 individuals in 32 organizations out of the total 50 organizations we randomly sampled so as to be representative of the various categories on industries that fall under the private sector in Kenya. The questionnaires were structured self-administered with four major parts namely (i) Your Business/Organizations and Information Types, (ii) Information/Data Collection, (iii) Information/Data Storage and Maintenance and (iv) Information/Data Protection and Storage. Since the information we were looking for could be viewed as sensitive in some organizations, we had to ensure that the respondents are assured of confidentiality of the information collected and that we were to use it strictly for academic research purposes and could not be shared with a third party without prior permission.

We had already carried a pilot data collection which greatly helped us reduce the number of unanticipated problems like the cases where some possibly technical questionnaires were to be answered by Human Resources personnel. In this case we allowed the respondents consult the IT personnel on the pertinent issues – this was therefore an opportunity to redesign parts of study to overcome difficulties that the pilot study revealed. It gave us a chance to try out a number of alternative measures and then select those that produce the clearest results for the main study. In some cases, we had actually to sit with the respondents as they filled the questionnaires to explain some terminology that seemed slightly difficult to comprehend, though it was minimal.

Most of the questions were of quantitative type with some few parts where we expected the respondents to give us their opinions. The quantitative approach enable us to generate of data in quantitative form which could be subjected to rigorous quantitative analysis in a formal and rigid fashion. Although many of the respondents were from all over the country, the majority of them were from Nairobi City which is the regional business and commercial hub, with a high concentration of organizations including the multinationals. The next larger percent of the organizations were from Mombasa City which the coastal business hub located at Indian Ocean. The rest of the respondents were from other small town or cities like Eldoret, Kisumu and Kakemega as long they had a structure in place for managing client information.

4. RESULTS AND DISCUSSIONS

The questionnaires were posted or hand-delivered to the companies and were later collected by the researchers with a total of 32 questionnaires being collected and the result is summarized in sections 4.1, 4.2, 4.3, 4.4 and 4.5 according to the variables of our research interest.

4.1 TYPES OF CUSTOMER INFORMATION BY THE ORGANIZATIONS

All the companies surveyed collected and stored data that could be categorized to be personal information as summarized and as shown in Table 1 besides the procedures/sources of the information collected is given in Table 2. From the research outcome, the preferred sources of customer information gathered were in-person at 65.6%, job application at 71.9%, E-mail at 75.0% and by Telephone at 65.6%.

Table 1: Types of Customer Information collected in % by Responses

Type of Customer Information	% Response
Name	96.9
Gender	84.4
Home address	78.1
Mobile Number	96.9
Age of person	65.6
Ethnicity	9.4
Income of customer	40.6
ID/Passport	93.8
Education level of customer	68.8
Home telephone number	68.8
Email address	78.1
Weight of customer	9.4
NHIF/NSSF Numbers	65.6
Province/County	46.9

This can be attributed to the fact that the customer information being collected relates an individual/customer and the four methods are applicable to an individual being able to provide the information needed.

Table 2: Procedures and Source for Gathering Customer Information

Methodology	% Usage
In person	65.6
Oral	25.0
Job application	71.9
Correspondence mail	43.8
E-mail	75.0
Job Interviews	50.0
Telephone	65.6
Facsimile/Faxes	31.3

Methodology	% Usage
Internet systems	56.3
Computer network/Intranet	37.5
Secondary sources	25.0
Help Desk	34.4

4.2 TYPE OF DATABASES

The organizations surveyed used a number of databases, for instance, some used a mix of databases while others used a single type of database. MS Excel at 58.1% was the preferred followed by Microsoft Access at 32.3%. Other databases used included MySQL at 29%, Oracle at 29% and PostgreSQL at 16%. None of the organizations was using XML files. It was noted that the choice of database software is largely determined by the amount of data and the target audience. Considering the type of databases software used by the companies, it can be deduced that the type of database design preference is relational database (logically structuring data) design with a component of database management (DBM).

This could partly be due to the ability of relational databases to eliminate of duplicity of any data (single storage location of information) and hence good support for maintaining database integrity. Further, other advantages included the easier manipulation of data, capable of visualization of data and one could easily integrate the data with analysis since your data set for analysis is created using queries stored in the database. In this scenario a customized database could reveal new areas for investigation by presenting large quantities of data in an intuitive form.

4.3 CORRECTNESS OF THE DATA COLLECTED

The integrity of the database is begged on the institutionalization of the approaches to ensure that data captured is checked for any errors before it is keyed into a database. Various techniques adopted by the private sector industry in ensuring accuracy and integrity of the data/information as given in Table 3. Inconsistent data value check was the most popular method at 58.6%. This technique was the most popular because of its relative easy in using it and considering that 93.8% of the companies indicated that they carried out in-house maintenance of the databases. Considering the various techniques used in ensuring that data accuracy in achieved and given that the maintenance of the data is by large done within the organization, it can be deduced that data integrity is fairly maintained by the companies surveyed.

This is also supported by the application of data update approval policy with 93.8% of the companies surveyed indicating that approval way sought before carrying-out any modification to the data with 87.1% of the company surveyed had returning a positive compliance to information policy framework in place. Information policy framework is an important component in database management as it spells out the general principles and guidelines on how to handle databases. Of all the organizations surveyed, only 67.9% had an information policy framework in place.

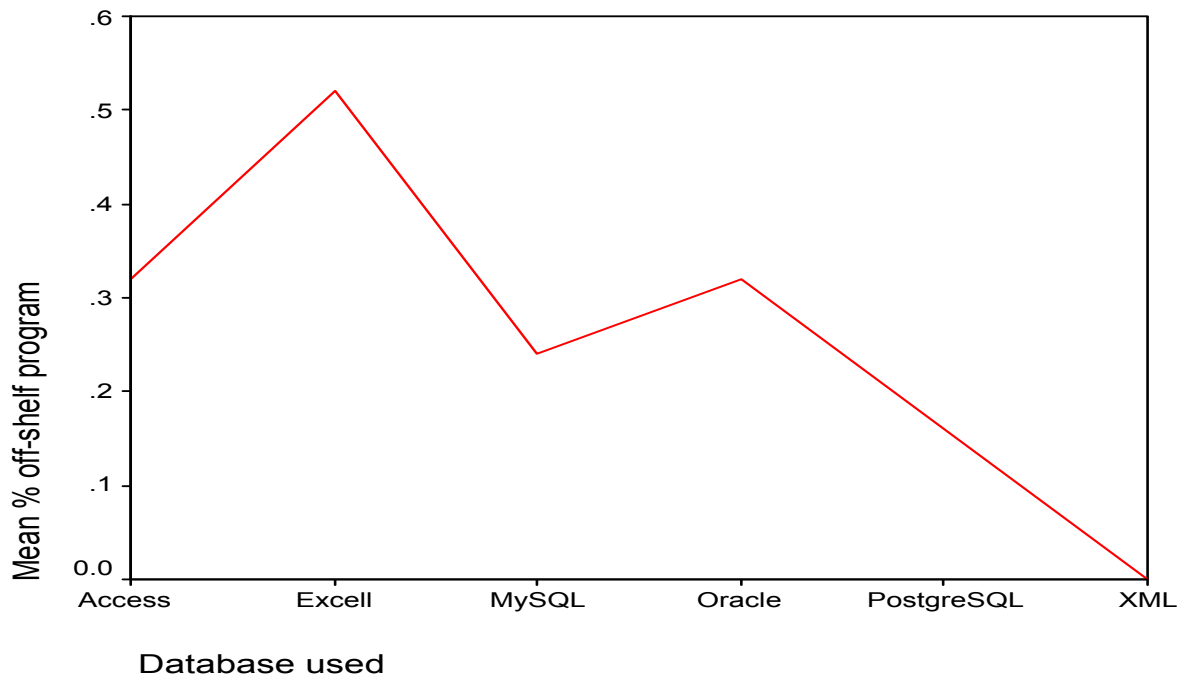
Table 3: Methods/Techniques for Data Validation

Method/technique	% usage
Multiple entry checks	27.6
Inconsistent data value checks	58.6
Use of defined ranges	37.9
Checking by experts	34.5
Checking illogical data values	48.3

4.4 OFF-THE-SHELF PROGRAMS USED

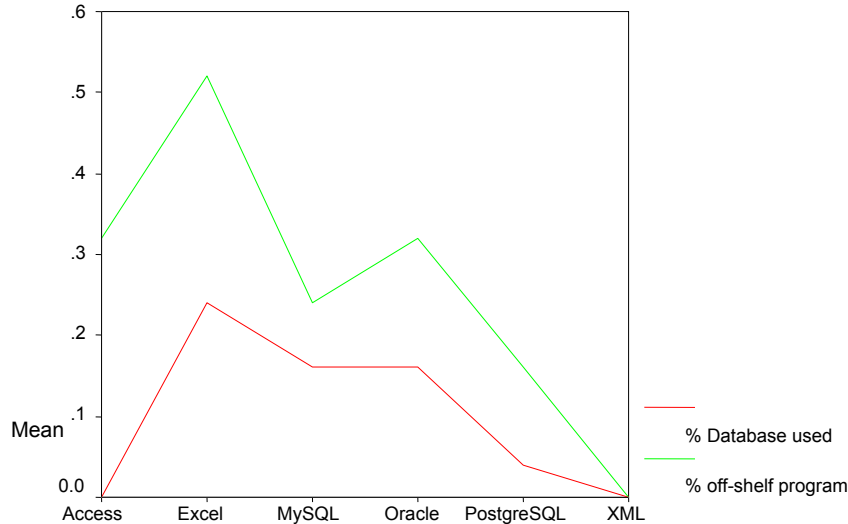
The off-the-shelf programs used by the companies to design their database were as shown in Figure 1. Microsoft Excel was the most preferred off-the-shelf program at 58.1 %. This could be as a result of the type of database designs preferred by the companies, that is, relational database design/model which presents the following advantages; flexibility in terms of handling huge file sizes, and the “built-in” functions supported by relational database programs like Microsoft Excel.

Figure 1: Off-the-shelf Programs used by Organizations



4.5 COMPARISON BETWEEN THE DATABASE DESIGN AND “OFF-THE-SHELF” PROGRAMS

Figure 2: Comparison of Database Design and Off-the-Shelf Programs



The graphical representation in Figure 2 gives a comparison between the database designs and the “Off-the-shelf” programs the private sector industries in Kenya. Using correlation analysis techniques, it is established that there is a close relationship between the “off-the-shelf programs” with the database used by a given company with a Pearson correlation coefficient of 0.995 as shown in Table 4. This implies that it is possible to predict the type of database adopted by a given company given the “Off-the-shelf” program available with the organization by using a predictor coefficient of 0.995.

Table 4: Pearson Correlations Analysis between Databases used and % Off-shelf Programs

	% Databases Used	% Off-Shelf Programs
% Databases Used	1	0.995
% Off-shelf Programs	0.995	1

5. CONCLUSIONS

The type of database design used by the private sector industries in Kenya is largely dependent on the “Off-the-Shelf” programs. The design of a customer database for an organization is largely related to the type of “off-the-Shelf” with a correlation coefficient of 0.738. Most organizations collected and stored data that can be described to be personal information from the customers and this information is predominantly used for the purposes of business growth, that is, sales at 73.91% and marketing at 56.62%. In-house development was the most preferred mode of database maintenance at 93.8 %; this was attributable to the fact that the programs used for the design of the databases contained “built-in” functionalities that provided the means of maintenance. The adoption of more stable, robust and reliable

database designs was low at 71.0% for Oracle, 83.9% for PostgreSQL, 71.0% for MySQL and 100% for XML Files.

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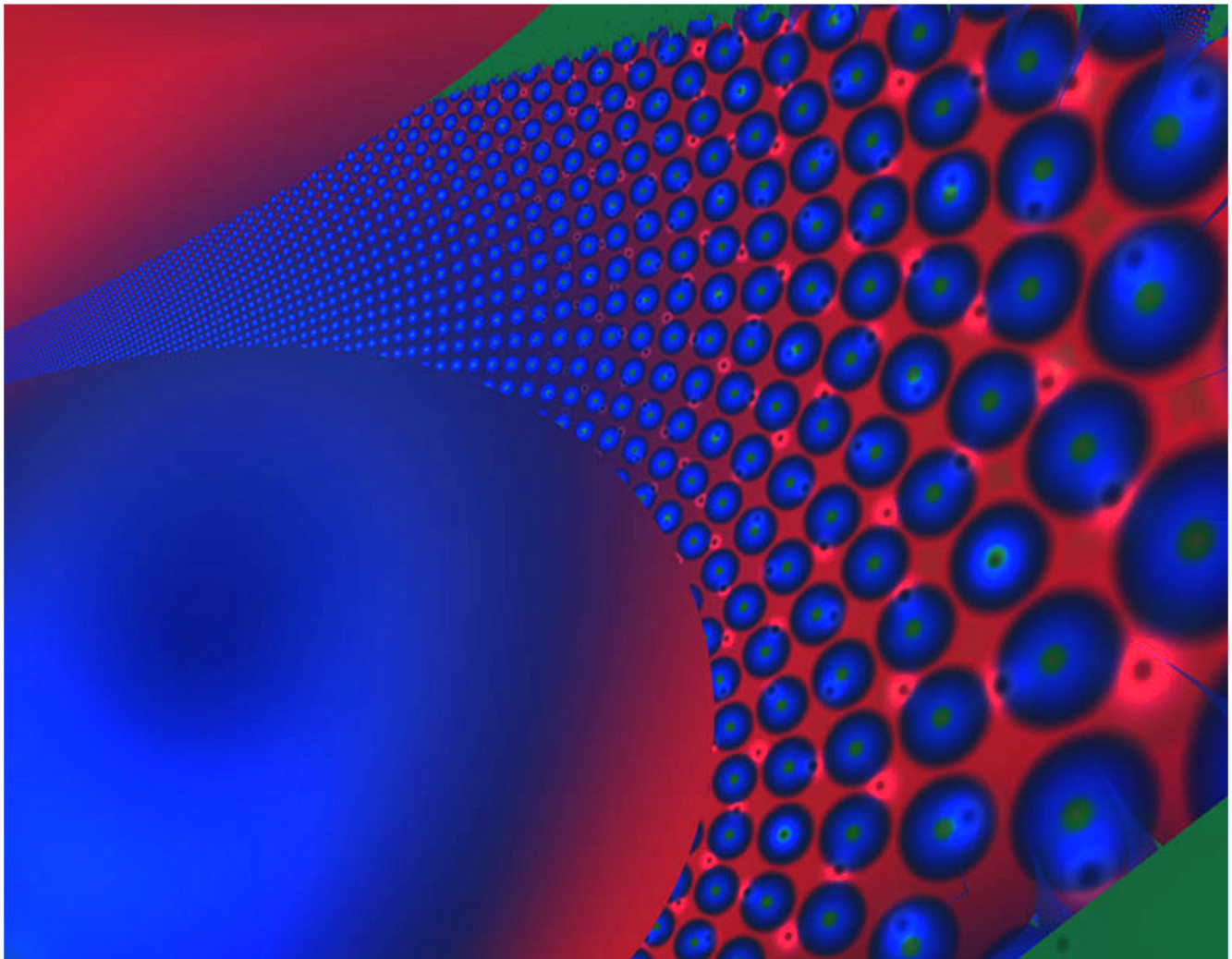
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