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DATABASE MANAGEMENT SYSTEMS

*The issue of Tourism
Information Management
in Municipalities*



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PREAMBLE

The Department of Economic Development, Tourism and Environmental Affairs is mandated to plan, develop, promote and implement tourism within the province. This mandate is transmitted down to Local Governance, hence, the tourism interventions developed and facilitated by the department to provide guidance and assistance to District and Local Municipal officials in order to carry out their functions efficiently and effectively.

District and Local Municipalities currently face a number of challenges which hinder the growth and development of tourism within their areas. Some of which includes the issue of inadequate tourism information and the lack of a well-maintained database management system which includes the tourism supply and demand side within each municipal boundary. Municipalities across the province are facing an enormous challenge pertaining to the management, gathering, capturing and storing of tourism information. There is inconsistency and errors in the current systems used to collect and store tourism data within municipalities; consequently, this poses a problem on the Department with regards to the implementation and facilitation of tourism programmes for both the private and public sector stakeholders in need of government interventions.

Data management has become an integral part of planning and research .It forms the basis of decision making in any institution and the Tourism Sector isn't exempted from that. The Department has identified the need for an intervention that will encourage the development and enhancement of a centralised database management system. Hence, the purpose of this document is to provide insight, guidance and support in the development and maintenance of database systems within the District and local municipalities.

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1. INTRODUCTION

Information is an important element of any system or industry to exist and prosper. The Tourism industry as a matter of fact requires large amount of information on different areas. The role of information in tourism is as important for everyone. The important information covers image of destinations, products, competitor's offering, prices, quality and services, promotional and selling activities, channel and experience of tour operators.

1.1. INFORMATION MANAGEMENT¹

Information Management is an area where:

- The collected information is to be systematically processed.
- The processed information can be printed as information products.
- One has to study how to collect information from various sources.

Information/Data Collection: A manager should know the difference between data and information.

- Data is unanalysed number and facts.
- Information is that data which has been organized in a proper way.

¹https://www.researchgate.net/publication/316510926_The_Role_and_Importance_of_Tourism_Information_System_in_Urban_Tourism_Planning

- Information gathering or collection of data related to tourism involves lot of interaction with various agencies. It must be noted that information supplying systems are necessary to support managerial functions of planning, organizing, leading and monitoring.

1.1.1. INFORMATION GENERATION

The tourism organizations are also required to manage the marketing information since the image problem in tourism has been questioning their existence. Hence, information generation shall be seen as an integral part of modern marketing management.

The task of choosing the right target markets is also simplified as the destinations, attractions and facilities can be rightly matched. With the use of technology, organizations develop product databases, containing destination data. The CD Roms prepared by various Tourism Departments is the best example in this regard covering all the details like accommodation, food, weather, facilities and attractions.

1.1.2. INFORMATION HANDLING

Once the data is collected, it has to be organized and analysed properly so to get any piece of information easily. The various access points to the information and its storage and retrieval can be done

using computer with speed and accuracy.

2. DATABASE MANAGEMENT

Database Management is a collection of information that is organized so that it can be easily accessed, managed and updated. Computer databases typically contain aggregations of data records or files, containing specific information.

2.1. WHAT IS THE DATABASE USED FOR.

A database is a system for storing and taking care of data (any kind of information). A database engine can sort, change or serve the information on the database. The information itself can be stored in many different ways; before; digital computers, card files, printed books and other methods were used.

2.2. DATABASE MANAGEMENT SYSTEM²

Database Management System – The world of data is constantly changing and evolving every second. This in turn has created a completely new dimension of growth and challenges for organisations around the globe. By accurately recording data, updating and tracking them on an efficient and regular basis, organisations can address their challenges on one hand and make use of

the immense potential offered by this sector on the other hand.

By collecting minute and updated data, organisations are using the said information to achieve their goals in a systematic way; on one hand and empower their industry in a strategic manner on the other hand. One of the proven ways in which municipalities can manage the relationships between the various database elements is through the use of database management systems, which is today an integral part of functioning of organisations around the world.

2.3. THE IMPORTANCE OF DATABASE MANAGEMENT SYSTEMS

Database management systems are therefore crucial and important links in the creation as well as management of data. They are needed for effective running and management of data. It also helps organisations to transfer the said data through the entire systems. Some of the reasons why data management systems are important include the following:

- Data management system is needed for data access within the municipality

Modern database management systems are dependent on a programming language that is called structured query language. This language is then used to access, update and delete data that are present within its tables. The database systems also contain programs that

² <https://www.educba.com/database-management-system/>

include Microsoft's SQL server and the open source MySQL queries that enable outside programs to access its data through SQL queries. For example, a web page can display information or data that includes product data and description, photographs and prices. This information is easily available to the user easily, when the web server software is connected to the relational database management system.

- It is needed to maintain strong relationships between data

One of the most important functions of relational database management systems programs is that it allows different data tables to relate to one another.

- This system allows newer and better updates

A useful and productive database management system allows municipalities to not just enter newer information but also update the current information and also delete information that they do not require.

- It can help the user to search data in a better manner

The relational database management system can also allow tourism information officers to maintain and build their data over successive years. The various tables in the relational database management system allow municipalities to search through their entire system for particular information. The municipal officials can easily find any information that they need, using particular criteria. This can also be

made available for tourists who can search for any feature that they want including price, location and type. By storing information in a predictable and sequential format, it enables users to find the information they need with a lot of ease.

3. DATABASE MAINTENANCE

Database Maintenance is a term used to describe a set of tasks that are all run with the intention to improve the database. There are routines meant to help performance, free up disk space, check for data errors, check for hardware faults, update internal statistics, and many other obscure (but important) things.

3.1. IMPORTANCE OF DATABASE MAINTENANCE

Database maintenance is an activity designed to keep a database running smoothly. A number of different systems can be used to build and maintain databases, with one popular example being MYSQL. The maintenance of databases is generally performed by people who are comfortable and familiar with the database system and the specifics of the particular database, although some maintenance tasks can be performed by people who do not have experience. Backing up data is an important aspect of maintaining a database.

Databases are used to maintain a library of information in a well-organized,

accessible format. They usually are not static, however, because changes are constantly being made as material is added, removed, and moved around. People may also change parameters within the database, decide to use different indexing systems, and so forth. Over time, this can cause the database to start to malfunction. Database maintenance is used to keep the database clean and well organized so that it will not lose functionality.

One important aspect of maintaining a database is simply backing up the data so that, if anything happens, there will be another copy available. Some database systems actually do this automatically, sending a backup to another location every day, every week, or within any other set period of time. Backups are usually not enough, however.

Database maintenance includes checking for signs of corruption in the database, looking for problem areas, rebuilding indexes, removing duplicate records, and checking for any abnormalities in the database that might signal a problem. The goal is to keep the database operating smoothly for users, so that ideally they never need to think about maintenance issues. A database that is not maintained can become sluggish, and people may start to experience problems when trying to access records.

Many servers have extensive databases that are used to serve up content to users on an internal network or on the Internet. An important part of server maintenance involves confirming that

databases are working properly. This also includes checks for security flaws and other issues that could threaten the integrity of the database, ranging from viruses to records which are entered improperly.

3.2. MAINTAINING YOUR DATABASE

A clean and up-to-date database is very important. It's important to know who to approach and how, it's also important to know that your data is accurate. This is also important for a good deliverability and a good sender reputation.

Maintenance tips³:

- Keep all data in one central file or program. This prevents you from searching for it and having to update multiple files. With the REST API it's also possible to download the data that Copernica gathers to your own server.
- Provide insight into your data by using clear descriptive names, tabs and definitions of data. Selections enable you to view one database in multiple ways, for example by target group, completed campaigns or relation types.
- Keep your database complete by adding new information directly. Make all employees add data directly instead of saving it elsewhere. You can add all

³<https://www.copernica.com/en/documentation/database-maintenance>

contacts of the organization in one file for example, to make sure everyone has access to everything.

- Keep your database up-to-date. Handle unsubscribes bounces and mutations when they occur. It's most effective to clean your database after each mailing. Permanent errors are bad for your reputation and corrupt your database and may cause you to be blocked by clients' spam filters. It also makes your results less accurate.
- Allow profilers access to their data with an edit form or a URL. This way they can contribute their own data and help you keep your database up-to-date.
- Check your permissions for sending email to a profile to prevent spam markings. Create an opt-in to make sure your profiles want to receive your mail.
- Use your database to keep relations. Out of sight, out of mind.

If your data is well-organized and insightful your marketing team will have more opportunities in approaching your target market. Good data allows for personalizing for target groups and much more.

4. THE DIFFERENCE BETWEEN A DATABASE AND A SPREADSHEET

The comparison of database vs spreadsheet plays a huge part in the

daily operations of many organisations. Understanding the key differences between them is vital if you want to make the best use of either or both of them. Spreadsheets and databases involve different technologies, but they share some characteristics. Databases generally involve a higher level of technical processing.⁴

4.1. FUNDAMENTALS

Both spreadsheets and databases are used to store and manage sets of data. The basic content in a spreadsheet or a database is a set of data values. Where spreadsheets and databases vary is in how they store and manipulate the data. A spreadsheet stores data values in cells, with multiple cells represented in a system of rows and columns. Cells can refer to other cells, and the spreadsheet can include cells that carry out processing on other cell values.

A database typically stores data values in tables. Each table has a name and one or more columns and rows. A row in a table is called a record. A single record includes a value for each column in a table. Databases can enforce relationships between records in different tables.

4.2. TECHNOLOGIES

Spreadsheets and databases generally use different technologies. The most widely used spreadsheet program is Excel, which is part of Microsoft Office.

⁴ <https://blog.sheetgo.com/data-science/database-vs-spreadsheet/>

Other spreadsheet programs form part of OpenOffice and Google Suite.

Database technologies include Microsoft Access, Oracle, MySQL and SQL Server, among many others. Some databases are run on servers and accessed over networks, including the Internet. In most cases, a database will have a software application built on top of it, providing user access to the data. Databases are built and managed by software programmers and Web developers. Database applications can be written in many programming languages, including Java, PHP, ASP and others.

4.3. VOLUME OF DATA

Spreadsheets are designed to analyse data and sort list items, not for long-term storage of raw data. A spreadsheet should be used for 'crunching' numbers and storage of single list items. Spreadsheet programs provide the means for keeping inventory, statistical data modelling, and computing data.

To store large amounts of raw data, it is best to use a database. This is especially true in circumstances where two or more users share the information. Databases require little or no duplication of data between information tables, and changes made to the data do not corrupt the programming (like at the cell level of a spreadsheet where calculations are running). Furthermore, the two most important benefits gained by using a database are the capacity to increase data integrity and the ease of reporting and sharing data.

4.4. PROCESSING

Both spreadsheets and databases offer a range of processing functions. Using these you can manipulate, sort and filter data. Databases offer a greater range of complexity in terms of data manipulation, but this must be expressed in programming or SQL code. However, for basic data processing, spreadsheets provide users with a range of automated functions, which are accessible to people who do not have much technical experience. Some data management needs are only possible using databases, but where this is not the case; a spreadsheet may provide a more usable option.

4.5. DATA ACCESSING AND PRESENTING

Access to a spreadsheet is sometimes limited to one person at a time. With database management systems, however, several people can access the same data set. Such systems manage the editing of data so that two people cannot alter the same data values at the same time. This preserves data integrity, which is harder to manage when using spreadsheets.

Output and presentation vary in spreadsheets and databases. With a spreadsheet, you can generate charts and graphs using automated software tools. With a database, such output options are normally a matter for the application providing access to the data. Databases generally require a higher level of technological expertise.

4.6. CONCLUSION DATABASE VS SPREADSHEET

Both systems have their advantages and disadvantages. Spreadsheets have made a huge step forward due to the presence of Google Sheets. With this tool, multiple people can access the same data set as well. Database vs spreadsheet, the choice is up to you, which one would you use?

5. IMPORTANCE OF AN EFFECTIVE TOURISM DATABASE IN MUNICIPALITIES

A municipality that has a well-functioning, constantly updated and well maintained database usually stands in a better competitive position. All municipalities (both locals and Districts) should have a database that includes all tourism product offerings and tourism services found or operating within each municipal boundary. This database will assist municipalities to be able to monitor their market positioning and also be able to generate tourism statistics that may be required to measure evaluate their current status quo in the industry.

Having an updated database will also assist municipalities when developing or reviewing their marketing strategy or their tourism sector strategy. An effective database will also assist municipalities in dissemination of important information to local tourism stakeholders (for example; if the municipality wants to host a big tourism

event, the database can be used to send out bulk communications to all the relevant or required participants for that event).

6. TYPES OF DATABASES FOR TOURISM IN MUNICIPALITIES

Municipalities have the option to create a list of databases that may include but not limited to:

- A database for local Tourism Businesses
- A database for local Tourists Guides
- A database for domestic visitors
- A database for international tourist visits

These databases can assist in generating stats such as the number of domestic or international visits received at a local municipal level to avoid the constant use of incomplete or unjustified statistical information that may only be available from a provincial level to as far down as at a district municipal level. The databases can also assist in determining the number of tourism products/services offered versus the demand in each municipal area in order to address the challenges such as the lack of accommodation type that may be a need within that particular area.



6.1. TYPE OF INFORMATION THAT NEEDS TO BE STORED IN THE MUNICIPAL DATABASES FOR TOURSIM

The graph below illustrates the type of information that should be included in each municipal database.

TOURISM BUSINESS DATABASE	TOURIST GUIDES DATABASE	TOURIST DATABASE	ATTRACTIONS/ TOURISM SERVICES
<ul style="list-style-type: none"> • Business name • Category • Sub – category • District Municipality • Local Municipality • City/ Town • Contact Person • Physical Address • Postal Address • Telephone number • Cell number • Fax number • E-mail address • Website • CTO name • CTO certificate expiry date • Status (Active/ not active) • EDTEA Registration Certificate (Yes/No) • EDTEA Certificate Expiry date. • Grading Status and Level • Occupancy 	<ul style="list-style-type: none"> • Registration Number • Province of registration • Surname • Name • Name on badge • Cell number • Tel number • Fax number • E-mail address • Date of Birth • ID number • Postal Address • Physical Address • Business Address • Nationality • Country of Nation • Passport number • Work permit • Permanent Residence address • Previously registered as a Tourist Guides • Previous Tourist Guides number • Province of Residence • Gender • Race • Employment Status • Driver's license • Public Driving Permit • Public Driving Permit number • National Qualification Framework • Category • Tourist Guides Type • Site/ Region of competency • Tourist Guides Status • Language • Training module/s (Name, Date, Duration & Institution) • Employment details (Name, Nature of experience, Date from, Date to, contact person) • Qualification/s (Name, Institution, Year obtained) • Specialities • Comments • District/Sub-District • City/Town • Expiry Date • THETA Certificate • First Aid Expiry Date 	<ul style="list-style-type: none"> • Country of origin • Province/State • Reasons for Visit • Length of stay • Type of accommodation • Mode of transport • Activities • Spend 	<p>Attractions may include but not limited to:</p> <ul style="list-style-type: none"> • Beaches • Game reserves/Parks • Zoos • Botanical Gardens • Theme parks • Mountains • Deserts • Forests • Resorts • Museums • Statues and Monuments • Art • Buildings and Structures (i.e. Libraries, Bridges, Castles etc.). <p>Tourism related services may include:</p> <ul style="list-style-type: none"> • Fashion • Food • Music • Performance/Entertainment • Events (Type of Events) • Tours (i.e. Tourism Routes)

7. THE OUTPUT: TOURISM STATISTICS

Tourism statistics can be defined as the collection of data about every aspect of tourism, analysing the data so collected and coming out with an interpretation of what the data is saying with the view of making some predictions based on findings from the analysis.

7.1. IMPORTANCE OF TOURISM STATISTICS⁵

As a monitoring instrument

One of the reasons why tourism statistics is important is that it serves as monitoring tool by which changes in the tourism industry can be tracked over a period of time. There are rapid changes in today's fast moving world, not excluding the world of tourism; there is the need therefore to track these changes. One of the ways of doing so is through tourism statistics.

Ascertain the effectiveness of tourism policy

Another important thing about tourism statistics is that it can be used to determine whether a policy is effective or not. In order for a country to make maximum gain from tourism, it has to develop certain policies and set goals. In order to check if the policies are working and whether the goals set are being achieved or not, there is the need for tourism statistics.

To design marketing strategies

⁵<https://www.virtualkollage.com/2018/05/the-importance-of-tourism-statistics.html>

Tourism is a multi-million global business now and there are several players competing for a share of the market. Tourism statistics can help them to design strategies to help them better market their products to the world as they gradually increase their share of the market.

Evaluation of management decisions

Tourism statistics also helps a management body to be able to ascertain whether a decision that was taken is achieving the results expected. From time to time, management needs to evaluate the success or otherwise of the decision so taken. For organisations in the tourism sector, tourism statistics can help to make that determination.

For national policy formulation

Tourism statistics can provide a lot of information to guide the formulation of national policies on tourism. For example, tourism statistics can determine the demographics on domestic tourism, number of tourists coming in or going out of a country. It can also profile visitors, especially foreign tourists, places they visit, kinds of accommodation they lodge in and their expenditure patterns. All these information can serve as a huge resource in the formulation of tourism programmes.

Create knowledge about the performance of the sector

Every year in many countries, the presentation of the annual budget contains information about every sector of the economy. The budget is most

likely to include information about the tourism sector. The Finance Minister needs tourism statistics to determine how the sector had performed the year before and what the plans are for the ensuing year.

8. IMPLEMENTATION: HOW AND WHO?

There are a number of ways in which municipalities can collect, store and update their information in their databases. Some of these may include but not limited to:

- The use of an electronic registration system where local tourism businesses and local tourist guides may record and update their information online and this information can be used to update the entire municipal database.
- The use of local community members and Community Tourism Organisations (CTO) for information collection/gathering and updating of information as and when required.
- The efficient use of the interns or students that are placed in municipalities for work experience under the Tourism Graduates Development Program (a program developed and facilitated by the KZN Department of Economic Development, Tourism and Environmental Affairs) to collect, store and constantly update information in the database. This will involve providing these graduates or students with the

necessary resources and guidance in order for them to be able to carry out this function successfully.

- The efficient use of the provincial tourism business and tourist guides registration database. Municipalities may formally request the provincial registrar of the Department of Economic Development, Tourism and Environmental Affairs to send information about all the legally registered tourism business and tourist guides within their municipal areas. This will ensure that municipalities are able to cross-check the information they may currently have with the information the provincial tourism department may have and update their information where necessary.

9. CONCLUSION

With so much information available, investing in a database management systems is of critical importance for municipalities across all sectors and groups. Today, virtually all organisations operate on database systems. These storehouses of organised information can help municipalities to store information of all kinds, which they cannot just sort but also make available at the click of a mouse as well. In short, database management systems can help municipalities to track every part of their area/sector in a fast, effective, efficient and successful way than ever before.