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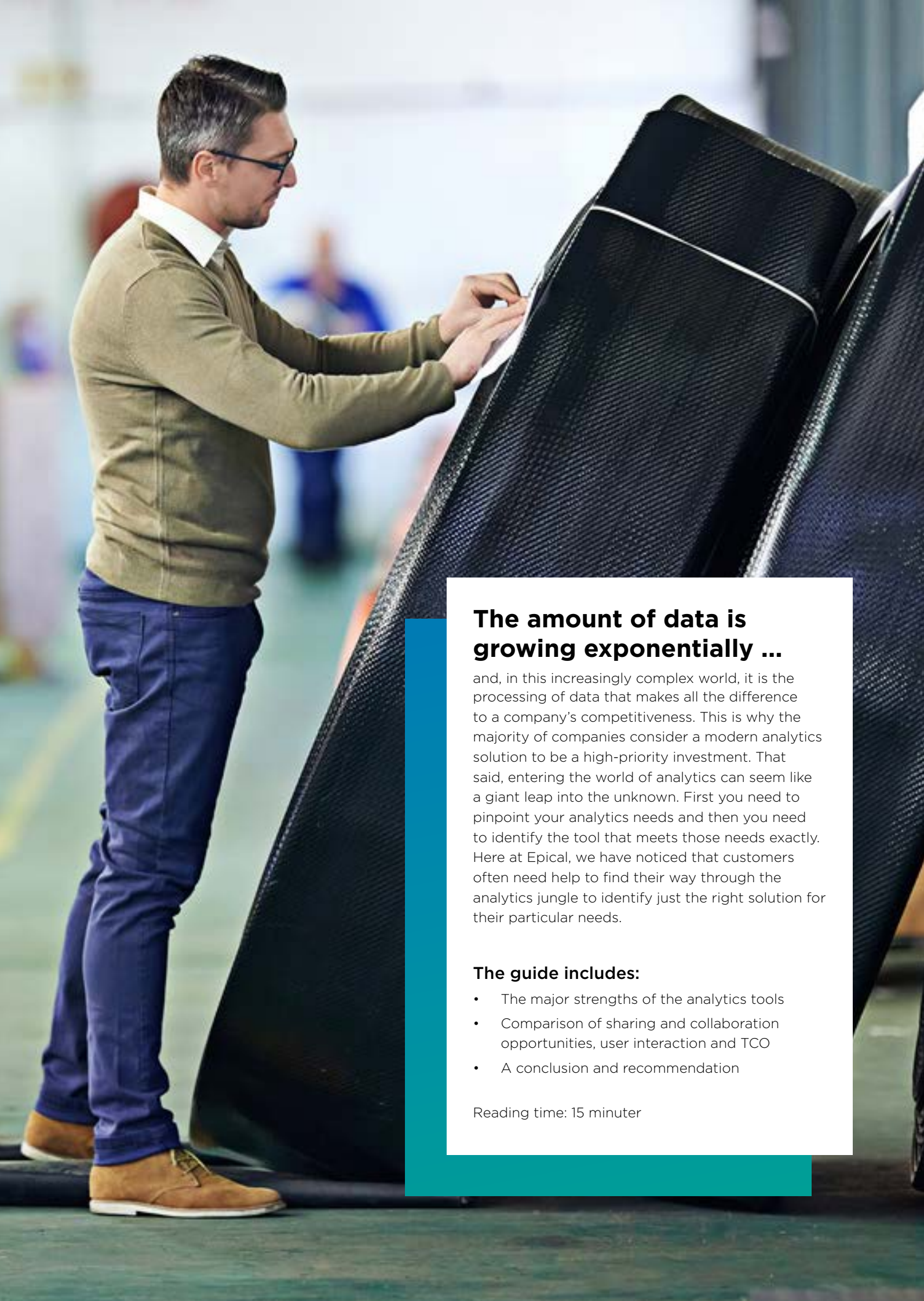
Platform comparison:

Power BI vs Qlik Sense



The amount of data is growing exponentially ...

and, in this increasingly complex world, it is the processing of data that makes all the difference to a company's competitiveness. This is why the majority of companies consider a modern analytics solution to be a high-priority investment. That said, entering the world of analytics can seem like a giant leap into the unknown. First you need to pinpoint your analytics needs and then you need to identify the tool that meets those needs exactly. Here at Epical, we have noticed that customers often need help to find their way through the analytics jungle to identify just the right solution for their particular needs.

The guide includes:

- The major strengths of the analytics tools
- Comparison of sharing and collaboration opportunities, user interaction and TCO
- A conclusion and recommendation

Reading time: 15 minuter

PLATFORM COMPARISON

Power BI vs Qlik Sense

We have chosen to compare the two dominant self-service tools on the Swedish market; Power BI and Qlik Sense. Both of these tools have long been considered leaders in their field by analytical institutions such as Gartner.

From a global perspective, Tableau also enjoys a leading market position; however, Tableau does not have much of a foothold in Sweden, something that may lead to issues in terms of skills provision and support for the tool. Microsoft and Qlik on the other hand have their own resources, as well as well-established partner networks that understand customer needs and requirements. This is why we have chosen to solely concentrate on Microsoft and Qlik in this platform analysis. We will begin by looking at the general strengths of the tools before making more detailed comparisons. The tools will be compared based on the following criteria: total cost of ownership (TCO), sharing and collaboration opportunities, and user interaction.

We have chosen to make a qualitative assessment with a subjective outcome that cannot be summarized. This is in order to avoid any oversimplification that, in a worst-case scenario, may lead the reader to rely solely on the overall score. The value of the various assessment criteria will vary from one organization to the next, meaning that we are unable to make an overall judgement on your behalf; however, what we would like to do is contribute the basis for making an informed decision. Our analysis shows that both products represent a good choice for most organizations; it is simply a matter of choosing the tool that best meets your own criteria. What are your own most important criteria and which tool most closely matches your needs?

Power BI

Qlik Sense

The main strengths of Qlik Sense

1. The Associative Model (QIX)

Qlik uses a unique associative model that allows tables, graphs and diagrams to be interconnected, offering extreme data compression and meaning that each click updates all of the related information in the app. All data follows as you click your way to insights. Although this may sound obvious for an analytical tool, in reality it is not always the case. There are still analytical tools on the market that rely on Structured Query Language (SQL). This means that someone needs to connect data sources to the SQL server and make an assumption on what the user wishes to know and which analyses they want to be able to perform. If a user wants to analyze a specific query, they often need to build complex SQL queries, something that may well require expert assistance and takes a great deal of time. A firm basis in the organization may then be lacking as agile, rapid analyses become more difficult to implement. Self Service BI-tools such as Qlik and Power BI eases quick analyses based on business needs due to their inherent simplicity. Self Service BI-tools such as Qlik and Power BI eases quick analyses based on business needs due to their inherent simplicity. The Qlik associative engine uses all implicit data relationships directly, which significantly eases the modelling effort required in advance. with no need to clean and model data in advance. Power BI uses an internal modelling capability with drag-and-drop functionality, that quickly results in a powerful analysis model for the end-user to query. The Qlik associative engine achieves an analysismodel somewhat faster than Power BI. This is especially evident for timebased measures, eg Year-Over-Year, that in Qliks case is achieved without need of advanced coding. However, in both Qliks and Power BIs case, advanced functionality requires additional manual coding. The idea behind the model is to make data readily available for immediate study, based on calculations and aggregations completed at speed while you are clicking through to an insight.

2. Central control in parallel with self-service

Qlik Sense has a function called the hub, a central library through which apps are made available. This is controlled centrally, with users having access to different apps depending on their role-specific requirements. Qlik Sense offers a combination that is unusual on the market in that it facilitates user self-service while allowing IT to maintain complete centralized control of content and resources, with the ability to set rules and maintain security while the centrally controlled hub ensures that data quality is not compromised. Developers can then customize apps and visualizations based on their own business needs and then allow users to build their own visualizations.
In addition to this, access is also provided to all server logs in a Qlik Sense app for monitoring, meaning that administrators can have full oversight of users and remain aware of any warning signals of suspicious behavior.

The idea behind the model is that data should be at the users fingertips for immediate exploration.

3. Product development

Qlik listens to its customers' requirements and needs and develops the platform accordingly. Qlik Sense for Elastic is a version of Qlik Sense based on modern container technology, making it ideally suited to cloud services. Containers such as Docker and Kubernetes offer fully scalable environments and avoid the need for updates and maintenance of Windows servers.

The Qlik Cognitive Engine

is an interesting innovation. It analyzes all data in an app and then suggests visualizations and deviations that may be of interest to the user. Artificial Intelligence allows the Cognitive Engine to learn user behavior and prioritize those visualizations and patterns that are used by the most users. When a user identifies their favorite visualization, this can be easily added to their own dashboard. The ultimate in convenience!

The Qlik Associative Big Data Index

has been developed to process extreme quantities of data. Instead of continuously extracting data form large databases, Qlik has developed a simple method for applying their associative model directly to data sources. In this way, it is possible to access the data one wishes to analyze even in big data, while still maintaining performance.

4. User-friendliness

With their user-friendliness, Qlik's products have long been the business user's best friend. With Qlik, data analysis becomes a simple task. Anyone can create visualizations and explore data. With Qlik Sense, interactive and personal dashboards can be easily created. Drag and drop allows visualizations to be simply created using data retrieved either from the central library or local data sources uploaded to Qlik. By summarizing and explaining large amounts of complex data, analyses can be quickly performed to obtain real meaning and insights. The idea behind the model is that data should be at the users fingertips for immediate exploration.

The main strengths of Power BI

1. A solid cloud solution

Microsoft offers a solid cloud solution backed by all of Microsoft's services, which is easy to integrate with other data sources and systems. Not only that, but Microsoft Azure is an established, well-known platform in the market and is among the highest rated on the Gartner Magic Quadrant for cloud providers. As a part of Azure, Power BI fits seamlessly with the rest of the Office 365 suite. Rights management and data sharing are therefore achieved smoothly. By having Power BI in the cloud, it is easy to set up test and development initiatives without accruing large initial costs, which in itself facilitates innovation. You also have all the data in the right place for the next initiative. You don't need to move data to apply machine learning or run statistical analyses on your data, which makes the steps in these advanced analyses shorter. Power BI in the cloud uses all modern HTML5 coding technologies, making it compatible with all platforms. The cloud is an enabler for both the IT department and the rest of the organization. It allows the experienced user to perform advanced analytics in a simple manner, while at the same time delivering self-service to business users in their day-to-day work.

2. License fee

One of the main reasons that companies choose Power BI is its low license fees. Microsoft has pressed prices on the analytics market, which in turn has forced many competitors to reduce their own license fees. Power BI has the cheapest licensing models on the market and also offers the cheapest subscriptions to virtual servers if the platform is to be cloud-based. That said, it should be mentioned that implementation and consultancy hours are often the largest cost items in an analytics project. When discussing the total cost of an analytics tool, one must consider the implementation costs and support in addition to the license fees.

Users can benefit from advanced analytical technologies without expert guidance.

3. Easy start-up and administration

Power BI is often the choice of IT departments, as they are generally familiar with Excel and SQL. It is not a leap for anyone familiar with the basics of Excel or SQL to begin using Power BI. Upgrading to Power Query 2012 and 2013 has also made the tool easier to understand for those who have never worked with it before. Power BI is also the popular choice with Microsoft--heavy IT departments, as it can be included in their Enterprise Agreement. There are also other benefits that IT departments appreciate in that Power BI can be easily integrated with other Microsoft products and their security structure, and that it is easy to set up and get started with in the cloud.

4. Product vision

Power BI comes with a great deal of innovative functionality, some of the latest of which is presented here. Microsoft has a clear vision of catering to all the BI-needs that an enterprise has. Microsofts BI-vision has three prioritized areas.

A unified platform for both self-service and enterprise BI

Regardless if it is paginated reports, dashboards or free-form advanced analytics, it should be accessible from within the enterprise BI-portal and secure and seamlessly work when moving between them.

Agile, self-service big data prep with Azure

Microsofts cloud platform Azure is an extremely powerful tool box for all types of data preperation. When simpler data preperation within Power BI is not enough, there is a plethora of alternatives close at hand, eg tools that suits Data Scientist.

Add AI behind the curtains

By utilizing the computational power in Azure, Microsoft leverage the impact of AI by quickly providing suggestions and new insights to end-users, without the person explicitly asking for it.

Microsoft Quick Insights facilitates augmented data discovery. Users can benefit from advanced analytical technologies without expert guidance. Advanced analytics can be simply performed using the drag-and-drop function without the need for an in-depth understanding of algorithms or statistical theory. Using machine learning and natural language processing, data is processed and presented to the user, who can then perform an analysis themselves and reach quick decisions. The user asks Power BI a question and the tool answers by building its own suitable visualization. By integrating Power BI with Microsoft Flow and then with Microsoft Dynamics 365, it is possible to follow the entire process from insight to action. You can automate a flow so that results contained in a Power BI report trigger events in Dynamics; for example, updating a customer card or initiating an order placement. Power BI Embedded is intended for independent software suppliers and developers, as they can embed attractive, interactive reports into applications without needing to create their own visualizations from scratch. Their customers

A function that has been greatly appreciated by the market!

can then reach decisions without the need to create analytical solutions from the ground up and they receive access to company data and insights within the application. One common use for this feature is in B2B portals where companies share data with suppliers or customers; a function that has been greatly appreciated by the market! Microsoft works continuously on innovative functionality and listens to its customers in order to develop products based on their requirements and preferences. Finally, Microsoft really has its ear to the ground with regard to product development.
By launching a platform on which users can vote for ideas, they have democratized product development to ensure that they implement those initiatives that customers are really looking for. New functionality is released to Power BI each Friday based on the ideas with the most votes.

“Advanced analytics can be simply performed using drag-and-drop without the need for an in-depth understanding...”

Data sources and transformation

Both tools offer broad support for various data sources and it is seldom a problem to upload data to the tool from multiple sources. Power BI has a self-service tool for data transformation called Power Query. Users can transform their data through menu choices. Power Query has similar functionality to Excel, something that is generally appreciated by users. Qlik Sense launched their own equivalent of Power Query in 2017, called Qlik Sense Data Manager. Power Query has comparatively stronger support for codeless data transformation; however, data sometimes needs to be transformed in a manner that is beyond the capabilities of the predefined tools, making it necessary to write your own changes. Here, Power Query users need to use the relatively unknown transformation language M without intelliSense. In Qlik Sense, on the other hand, the user can write in the same Qlik Script used for metrics, making it somewhat more familiar to users. Power BI Premium includes a new function that allows incremental data upload; however, this requires specifically formatted data and you can only upload and erase data, not update existing data. Here, Qlik has a certain advantage as it allows full incremental data upload in various formats.

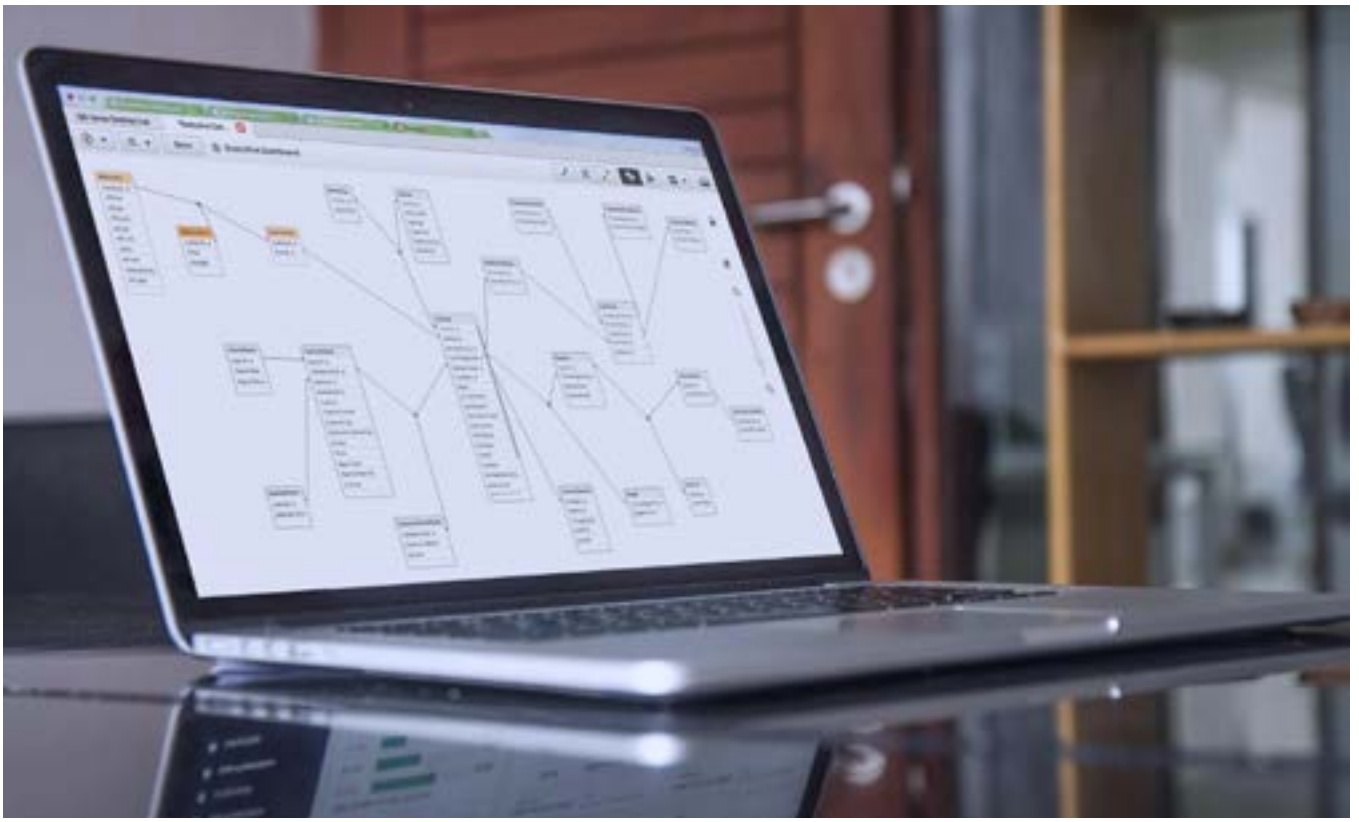
Analysis of data sources and transformation

Power BI has a certain advantage in that it focuses on self-service in its interface. That said, it is easier to change input data to the model in Qlik than in Power BI, as the Qlik script is easier than the M transformation language used in Power BI.

Data Models

In terms of data relationships, Qlik and Microsoft have historically chosen different approaches; Qlik's associative model (QIX) versus Power BI's somewhat more traditional database model. However, Power BI moved towards a more up-to-date approach in July 2018 by introducing many-to-many relationships. Previously, Power BI's model was built on one-to-many relationships structured in a manner usually referred to as the star schema. This required a tad more creativity when processing many-to-many relationships. A relationship was previously defined between two tables. The requirement for unique values has now been dispensed with and there is no need to add a new table to create relationships. There are however some limitations to Power BI's version of many-to-many relationships. Some multidimensional connection sources do not work with many-to-many relationships. When these are connected to DirectQuery, it is not possible to connect to another DirectQuery source or combine it with imported data. When data is uploaded, Qlik Sense creates its own data model, which is updated with applicable data as and when the user removes or adds tables. Qlik has a robust data model that functions very well without any user interaction. Although Qlik's data model allows users to process many-to-many relationships in a simple manner, it does require a certain amount of hands-on intervention from the developer to facilitate this.

One positive innovation released by Power BI is that DirectQuery models are now able to process large amounts of data. This is achieved by applying in-memory aggregation to some of the data. Often used queries are then addressed to these aggregated caches to provide answers within seconds instead of going directly to the large data source, which is often immense and difficult to implement.



Qlik has a robust data model that functions very well without any user interaction

Analysis of data models

Based on simplicity, usability and robustness, we can state that Qlik Sense has the advantage over Power BI in terms of data modelling, since in principle it is possible to resolve any data modelling challenge that one might come across; anything from many-to-many relationships to complex incremental data source uploads.

The data models created in one app can even be reused in others, simplifying work with data models. Having said that, we have not encountered any problem areas in which we were unable to model the solution in a manner that works with Power BI. Power BI is also gaining on Qlik with its new updates and introduction of many-to-many relationships.

Metrics

Metrics are a central concept for all analytical tools. Without them there is simply nothing to quantify and visualize. Metrics in Power BI are written in the Data Analysis Expressions (DAX) formula language. One of the advantages of this is that it initially works much like Excel's formula language; however, as expressions become more advanced they become less like one another. Qlik uses its own scripting language for both data modelling and calculations. Qlik Sense helps the user formulate their metrics by providing instructions on what input it expects and helps to finish certain expressions automatically. This functionality does not exist in Power BI, which makes coding unnecessarily difficult. Nor does the user need to consider how data is linked in Qlik Sense, as all links are unambiguous thanks to the associative model on which the entire product is based.

Analysis of metrics:

While metrics admittedly require a greater general understanding in Power BI than in Qlik Sense, DAX is similar to Excel's formula language – something that is generally much appreciated by users who are used to working in Excel. If one looks at the formula language itself, the advantage rests with Qlik Sense, which is greatly simplified thanks to its associative model. Qlik Sense also has a guide to assist users by providing instructions and, to a certain extent, automatically building/suggesting calculations.

Data filtering

Data filtering is a basic function for detecting relationships and understanding the message in your data. Simple filtering is what makes a tool seem user-friendly. This may seem like a fairly straightforward area; however, it is one of the greatest differences between Power BI and Qlik Sense.

One of the greatest differences is that Qlik Sense allows filtering of entire apps, meaning that the filter from the first page follows as you click your way towards insight. Power BI on the other hand employs page-specific filters, although these can be synched via a special panel. You can also create filters via the sidebar that can be added to entire reports or visualizations. This facilitates customization although it also means that it is not quite as intuitive as Qlik Sense. Qlik Sense allows an unlimited number of filters to be selected in a visualization in an extremely rigorous manner.

As the number of filters increase in Power BI, the app performance will be impacted. In practical terms, this limits the ability to use a large amount of filters in Power BI. Filter selection in a visualization is also possible in Power BI, even if this is not achieved in quite such a logical and consistent manner. Qlik has also now launched alternate states in Qlik Sense, a feature that was already available in QlikView and allows users to perform a comparative analysis between sets of multiple data items.

This functionality also exists in Power BI. In comparison, the Qlik functionality is more intuitive. With alternate states, it is possible to reflect certain selections in only one specific part of the app, with the results then visualized in the same diagram as other selections. This provides an additional filtering dimension to the product. Free search in an analytical model is a powerful tool for obtaining your analyses and answers on exactly the aspects that are of interest. Qlik Sense employs a solution called Global Smart Search while Power BI utilizes searchable slicers and a freestanding app called Q&A (Questions and Answers). Global Smart Search (Qlik Sense) allows you to freely search to produce a combination of filters that the user can then choose to apply to the entire app. Power BI Q&A allows the user to ask questions of the data model that Q&A will then attempt to answer by automatically generating various visualizations, and then there are also searchable slicers. Although this is hardly the same thing, it is the closest that Power BI comes.

Simple filtering is what makes a tool seem user-friendly.

Analysis of data filtering

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Licensing models and TCO

The cost of a tool is of course one of the most crucial criteria when choosing system support. License fees for analytical applications have decreased steadily over the past five years, while the service plans employed by many suppliers today make it easier to maintain a reliable overview of costs.

Qlik and Microsoft have chosen different approaches to license fees, with Microsoft preferring a service license in which the user subscribes to their Power BI service at a low fixed fee. Although there is a free version of Power BI, this lacks all collaborative functions and is therefore seldom a viable option for professional purposes, rather it is only suitable for individual experiments. Power BI Premium is also available for major installations. Premium becomes relevant when a company either has over 500 employees or large amounts of data for which they want dedicated performance. Premium is also a requirement if you wish to embed Power BI reports in another program or locked website.

Qlik offers two licensing options: Professional and Analyzer. Professional is intended for those requiring access to the full functionality of a Qlik Sense installation. This license allows the user to create, edit and publish apps and visualizations. Analyzer is a cheaper alternative that limits a user's ability to create and edit their data. This license model is intended for those who only need to work in the predefined visualizations. From experience, analytical tools are primarily used for standardized analysis of existing dashboards and visualizations. Even if the option of performing advanced analytics is available, users are largely interested in simple, ad hoc analyses. Qlik Sense requires no addition license for embedding analyses in websites and portals. With regard to test environments, there is no extra cost in Power BI, as we recommend that you set up one workspace for testing and one for production. Once an application is validated in the test workspace, it is published in the production workspace. A company can have unlimited workspaces in Power BI. Qlik sells test licenses at approximately half the price of its production license. Rather than placing too much emphasis on license fees, we recommend that buyers attempt to calculate the total cost of ownership (TCO). One watershed here is that Power BI is a service that

License fees for analytical applications have been decreasing steadily over the past five years

does not require that the purchaser has their own server environment, while some form of separate server environment is a requirement for Qlik Sense Enterprise. We would however like to emphasize that the real cost driver for application platforms is consultancy and staff to develop analytical models, reports and apps.
Our experience in the field is that our Qlik Sense projects tend to demand fewer consultancy hours that those on Power BI. One issue that may have an impact on TCO is whether or not a data warehouse is required for advanced analytics. Without a data warehouse, one will not get as far with Power BI as with Qlik.

However, if you want to make data available to other platforms, then having a data warehouse is always preferable. Whether or not you choose to employ a data warehouse naturally has an impact on the total number of consultancy hours and therefore costs. One issue that we have noticed in speaking to customers is that it can be difficult to understand what is included in the free, Pro and Premium licenses respectively. When choosing a license, it is therefore important to establish the exact preconditions for choosing the right license.

Microsoft offers a cheaper license model than Qlik but their service may require more consultancy hours for implementation

Analysis of license models and TCO

Given that implementation is a major cost driver, our recommendation is that you do not look solely at the cost of licenses. Microsoft offers a cheaper license model than Qlik but their service may require more consultancy hours for implementation. This is because a Power BI implementation often unleashes a chain of various data initiatives such as new integrations or database environments, although this will obviously vary from one project to the next depending entirely on the needs of the customer.

License fees for analytical applications have been decreasing steadily over the past five years Microsoft offers a cheaper license model than Qlik but their service may require more consultancy hours for implementation Information sharing within the organization One crucial factor for an efficient analytical tool is that it should help users to disseminate their message and the discoveries they have made in their data. This is usually achieved by taking a screenshot or copying graphs into a presentation. We consider this to be the most basic level of data sharing and both tools fully support this. Both tools are capable of generating a PowerPoint presentation based on current selections in a report.

What is more interesting is sharing bookmarks when a user wishes to share something of interest that they have filtered out in a report. Historically, this has been one of Qlik's advantages; however, it is not possible for users to share bookmarks they have created themselves with other users within the organization in Qlik Sense, as these are completely private.

The developer can publish bookmarks on first publication but it is not possible to add new bookmarks without taking down the app and breaking all connections to users. In Power BI on the other hand, users in a working group can update and share bookmarks with one another. Although it is not possible to link directly to bookmarks, colleagues can themselves choose a bookmark you have created. In this regard, Power BI must be considered to have the advantage. Qlik's concept is that you should create a story that you then share with your colleagues. A story is roughly the same as a PowerPoint presentation built into the tool, in which graphs and comments can be inserted and then shared with your team.

This does however require a certain amount of hands-on work on the part of the creator and is not as convenient as a bookmark. Power BI is intended as a collaborative tool in which users can easily share reports and apps with colleagues. That said, paginated reports and mailshots are sometimes desirable. This is not the intended function of Power BI, which will refer users to Microsoft Reporting Services, which is included in SQL Server Enterprise. The equivalent Qlik product is nPrinting. While this is admittedly fully integrated with Qlik Sense and facilitates the recycling of reports, it does require a separate license.

Analysis of information sharing within the organization

Qlik Sense lacks the basic ability to share bookmarks with colleagues, while Power BI does offer this opportunity. Both products allow simple sharing of entire apps; however, Qlik's focus is above all on users creating and sharing stories with one another. Both tools make it easy to share apps both within and outside the organization, especially as Power BI leans in the direction of Azure Active Directory for rights management. In this area we give Power BI a small advantage, mainly due to the fact that its sharing method is completely in line with other Office 365 services. Learning speed for users When selecting a self-service tool, it is important that it is intuitive and easy to learn. By far the most common interaction users will have is the choice of filters in a report. Filters are intended to help users understand the information contained in reports and offer fresh insights, meaning that the filter function is also crucial to this evaluation criterion. In our opinion, Qlik Sense is more formal that Power BI and users are seldom surprised by what happens when they click on something. Here, we give the advantage to Qlik Sense.

Analysis of user learning speed

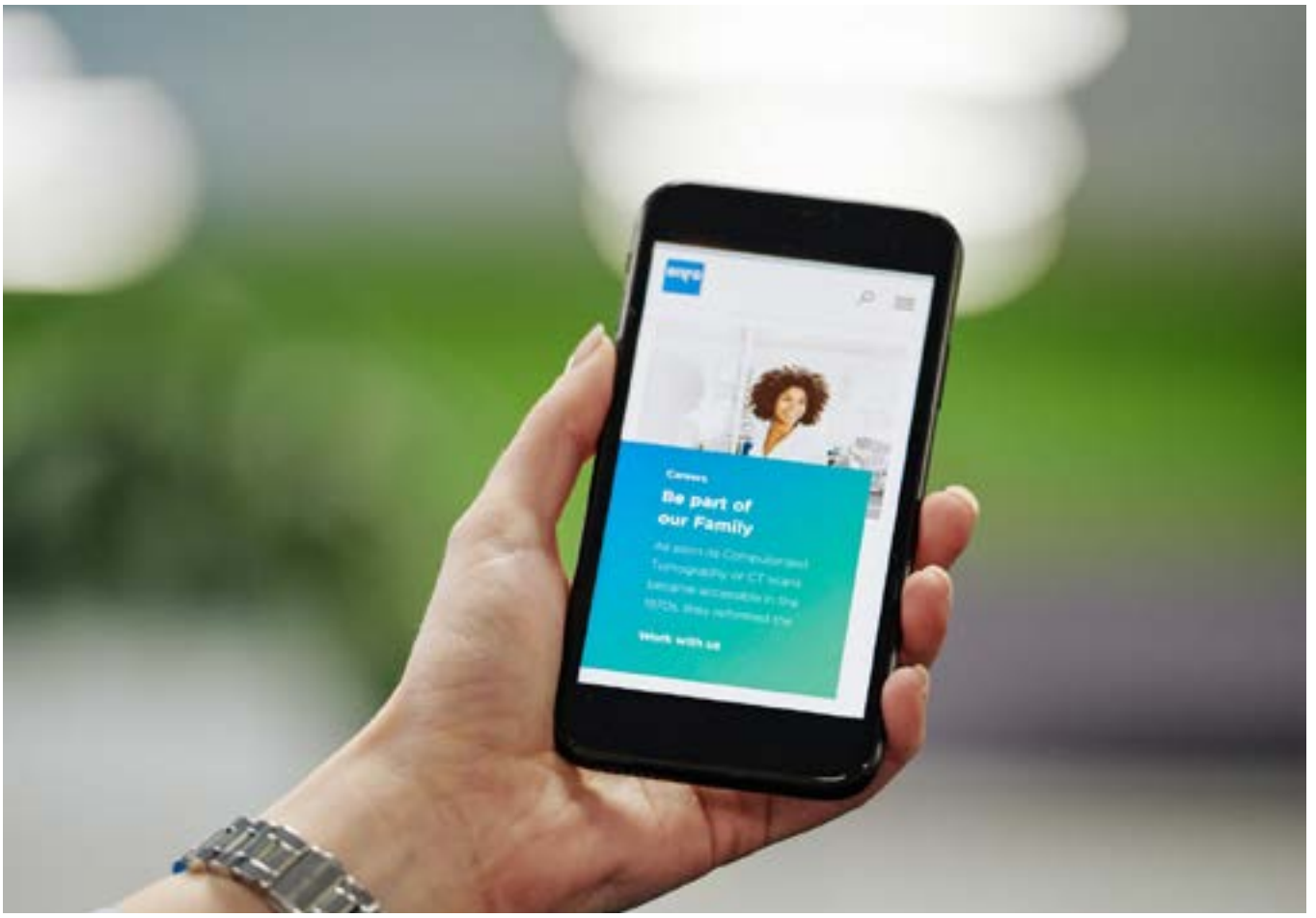
Although Qlik is more intuitive than Power BI, both products are very easy to handle for the user. In both tools it is easy to learn to make basic developments The intention is that users should be able to understand the information presented in reports and obtain fresh insights.

Mobility

PAs in so many areas, here the companies have chosen different paths. Qlik Sense automatically rescales its visual objects in the browser to fit a cellphone screen, while Power BI requires the user to install a Power BI application on their cellphone. Power BI gives the report developer the ability to decide how the various reports should appear on a cellphone, as well as which visualizations should even be visible. while Qlik Sense displays all objects but performs automatic size corrections. There are advantages to allowing the app developer to actively choose what visualizations are displayed on cellphones with their app consumer's context in mind. At the same time, one might argue that this provides unnecessary extra work for the report developer. From this perspective, we give the advantage to Qlik Sense. Both the Power BI and Qlik Sense phone apps make data available offline. This helps to facilitate offline analytics anywhere, anytime.

Mobility analysis

Although both Power BI and Qlik offer solid mobile solutions that permit offline use, Power BI's phone app demands a certain amount of administration and manual operation that Qlik avoids. This may however be viewed as an advantage by the organization given that they can control which reports are displayed on cellphones.



Learning speed for users

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Conclusions

In conclusion, both products are capable, competent and more than well-suited as decision-support tools for the majority of businesses. It is a matter of formulating your analytical needs so as to be able to evaluate which tool suits your own specific organization. We hope that this guide has helped to shed a little more light on the issue; however, we are well aware that it is no easy matter to calculate TCO nor to understand your development needs with exactitude without having a deeper understanding of the tool in question. We here at Epical will be more than happy to offer guidance on these issues so that you can obtain the tool that best suits your needs.

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