AN APPLICATION OF MICROSOFT POWER AUTOMATE IN BUSINESS INTELLIGENCE

Veselina Naneva, Kremena Stefanova

Abstract. *The paper focuses on an application of Microsoft Power Automate in the field of Business Intelligence (BI) reporting. It presents various approaches to data integration that demonstrate the synergy between the BI products and the artificial intelligence (AI) and machine learning (ML) algorithms by this tool. Taking into account the emphasized automation, the proposed working flow will enable automated forecasting and data-driven decision-making.*

Key words: Predictive Automation, Microsoft Power Automate.

Introduction

Modern Business Intelligence environments require not only accurate data visualization but also timely delivery, automation, and proactive decision support. Many businesses use variety of software tools which need to be accurately used and respectively analysed. Sometimes web-based tools are manual oriented which hardly cover all the cases that can be required. In order to have the appropriate result of analyzation and decisions based on its which will fully satisfy the end user, companies rely on different tools for data preparation, analyzation and its visualization.

Taking into account the correctness of the business data and its rapidly growth, of utmost importance for certain data reporting is to cover enhancing visualization speed and quality of data-driven decision-making. Using basic tools make the process difficult so using more products in combination nowadays is a must. We are considering two common software solutions which will cover all the paper's aim, such as Microsoft Power BI and Microsoft Automate.

Microsoft Power BI is a widely used Business Intelligence and data analytics platform designed to transform raw data into meaningful insights through interactive visualizations and analytical reporting [1]. It supports data integration from multiple sources, advanced data modeling, and real-time dashboarding, enabling using key performance indicators (KPIs). By providing self-service analytics and sharing capabilities across the organization, Power BI provides the possibilities of informed decision-making and plays a central role in modern data-driven business environments.

Microsoft Power Automate is a cloud-based workflow automation service that enables organizations to design, execute, and manage automated processes across multiple applications and services with minimal manual intervention [2, 3, 4]. It allows users to create event-driven and scheduled workflows that connect data sources, business applications, and analytical platforms, supporting seamless integration, process automation, and operational efficiency. This paper presents an application of Power Automate in BI reporting through three real-world cases. Each case demonstrates a different level of automation, ranging from event-driven alerting, through scheduled reporting, to advanced composite BI workflows. The goal is to show how automation improves reporting efficiency, reduces manual effort, and supports near real-time business decisions.

Overview of the Proposed Application

The implemented solution integrates several Microsoft technologies to form a unified and automated Business Intelligence working flow. Power BI is used as the main data analytical and visualizational platform, providing data modelling, interactive visualization, and continuous KPI.

For report management and collaboration, SharePoint Online is employed as a centralized repository for storing, organizing, and distributing generated BI reports, ensuring secure access, version control, and improved collaboration among stakeholders [5]. In addition, email notification services are integrated to deliver automated alerts and reporting outputs, allowing timely communication of critical insights and KPI deviations to decision-makers.

Overall, the proposed architecture supports seamless data integration, automated report export, real-time KPI monitoring, and communication. This combination of technologies results in a scalable, flexible, and enterprise-ready BI automation framework that significantly reduces manual effort while enhancing the speed and quality of data-driven decision-making.

Power Automate Trigger Alerting

We are considering the Case 1, which focuses on event-driven automation based on Power BI data alerts. As a first stem a Power BI report has been configured with threshold-based KPI alerts. In the given example, easily can be seen that the rule for "% Unit Market Share Alert" is set to 10 % increasing alert. The business purpose of such rule is timely the company to be informed for amount difference.

When a predefined condition is met (for example, exceeding or dropping below a KPI value), Power Automate is triggered automatically when the ser-

vice takes the corresponding triggered rule. From the Power Automate portal we used *"Trigger a flow with a Power BI data-driven alert"* by the help of which we configure the rules and email content. Basic work process is illustrated in the Figure 2. Before each trigger event we can set the exact email list, mailing subject and the corresponding content including the accurate percentage.

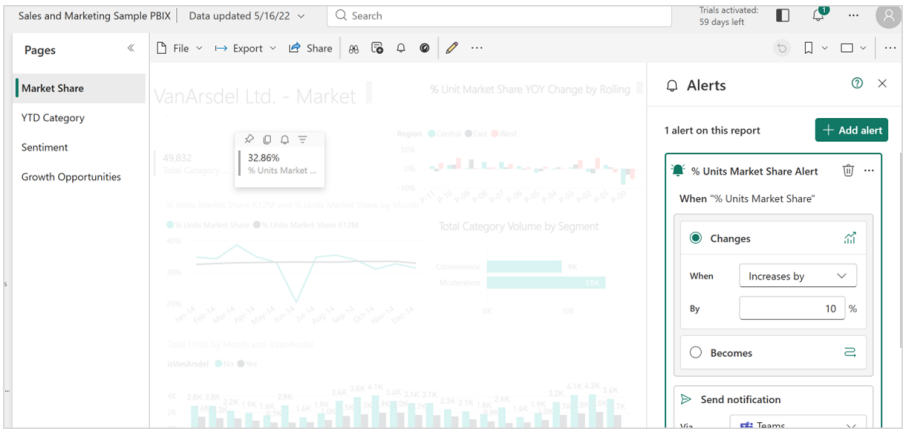

Figure 1. Power BI Service report configuration rule

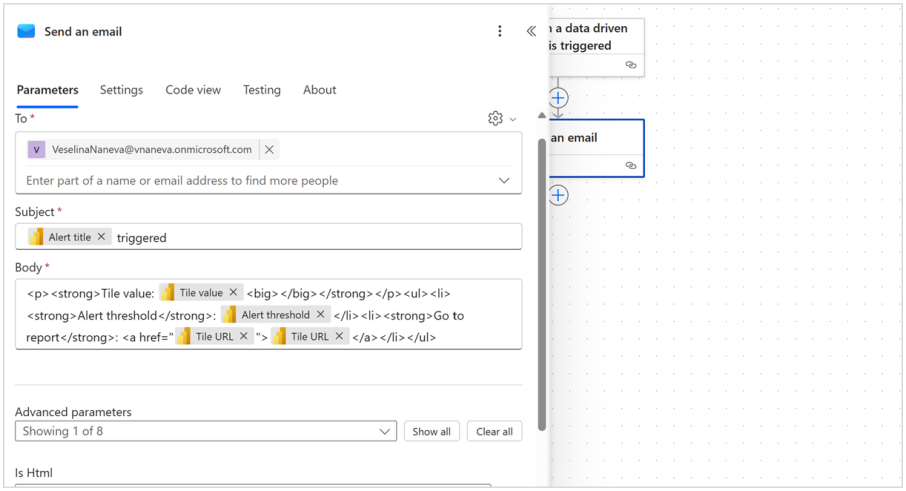

Figure 2. Email triggered alert content

Through automatic alerting without user participation, the system reduces dependency on human supervision and minimizes the risk of delayed responses caused by overlooked anomalies or threshold breaches. Automated notifications ensure that relevant stakeholders are informed instantly when predefined KPI conditions are met, enabling informed decision-making at the right moment.

Scheduled Power BI Storing Automation

Case 2 demonstrates time-based automation for SharePoint report storing achieved through the use of scheduled cloud flows in Microsoft Power Automate.

Unlike event-driven automation, where workflows are triggered by specific data conditions or alerts, this approach relies on predefined temporal schedules to initiate reporting processes.

As it is illustrated in the figures, configuration starts with Scheduled Cloud Flow in Power Automate, which serves as the central mechanism for orchestrating all automated activities. This type of flow allows the reporting process to be initiated automatically based on time conditions, without relying on data events or user-triggered actions. Next, the execution frequency of the flow is configured according to business requirements. The scheduling options support flexible execution patterns, such as hourly runs for operational monitoring or weekly execution on specific days for management and strategic reporting. In the example, given in this paper, the execution is going to be every Monday. Once the flow is triggered, it performs an automated export of Power BI reports into different formats. The export process can be customized to include specific report pages, predefined filters, or bookmarks, allowing the generated reports to be tailored for different audiences while maintaining formatting consistency. After the report is generated, the workflow automatically saves the output files to SharePoint Online as a storing method.

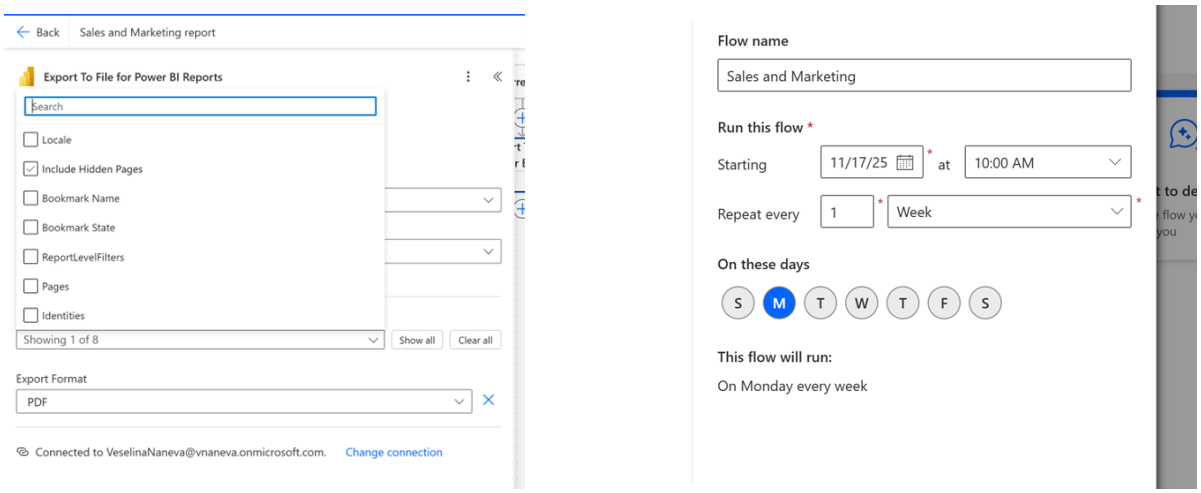

Figure 3. Scheduled SharePoint storing

Composite BI Automation and KPI Comparison

The last presented case is the main focus of this paper, because it illustrates a combination of the previously mentioned ones and represents an advanced composite BI automation scenario. The aim of it is to satisfy the client requirements for report state comparison. In some cases, the already available possibility of the Power BI service to apply scheduled refresh is not fully applicable because it shows the already updated information. In case of

necessity the difference in time-based KPIs to be compared, the application of the Power Automate will be the appropriate choice.

As a starting point, we would like to considered developing two equal Power BI reports. They both are using same datasets and are published in Power BI Service with same scheduled refresh applied. For the first one, so called Power BI report 1, we set a Scheduled Power BI Storing Automation event for saving report into SharePoint as a .pbix file and as dataset simultaneously. For the second one, called Power BI report 2, the process is the same, but it is stored automatically a week later. The third main step is to create a blank Power BI dashboard with composite Power BI model that combines datasets but with measure with the deviation of the two KPIs from the already prepared ones in the previous two steps. Then by the help of triggering the automated alerts based on KPI comparison results, the end user will receive via email the difference between the values. The composite BI automation enables integrated analysis across multiple data sources, providing a unified and consistent view of organizational performance. Furthermore, the solution establishes a solid foundation for predictive analytics, enhancing data-driven strategic decision-making.

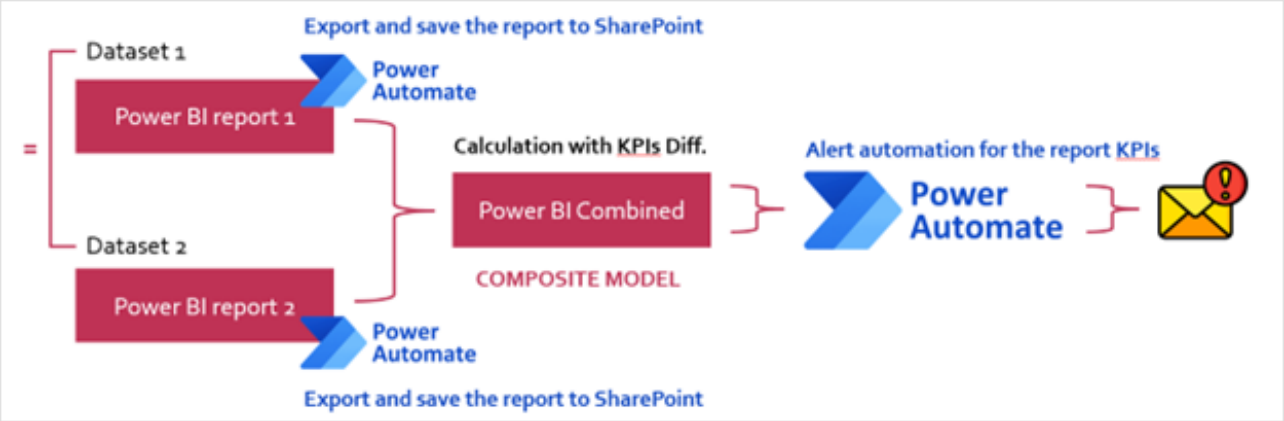

Figure 4. Composite model alerting for difference in reports through time

Conclusion

The real quality of BI reporting requires automation at each stage of the analytical process. The presented cases confirm that the more automation is applied, the better the overall performance and responsiveness of the BI solution become. Automated alerting enables timely decision-making, while scheduled and composite reporting improves data availability and consistency. By minimizing manual effort, organizations can achieve higher levels of real-time data analysis and more informed business decisions.

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