|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | External Consultants |
| Cost  Cost to add new users  Yearly Costs | Pro plan = $10/user/month  10\*12\*55 (users) = **$6,600 / year**  The Premium plan starts at $4,995 a month per dedicated cloud compute and storage resource. | $70/ developer / month  $15/ viewer / month  100 viewer minimum  (70\*12\*5(developers) + (15\*12\*100(users)) = **$22,200/year +** server/set up costs | 5 developers, 50 users  + staging server  **$32,901 / per year** |  |
| Developer Interaction Experience  Programming languages available | GUI + embedded formulas  Some other language bindings, but mostly using Power BI specific syntax | GUI + embedded formulas  Some other language bindings, but mostly using Tableau specific syntax | code for development/ IDE  R, python, stan, c++, html, etc. |  |
| Data Cleaning Capabilities  What data is accepted (data ingestion) | Largely dependent on ~clean/ rectangular data being imported | Largely dependent on ~clean/ rectangular data being imported | Accepts data from many different sources | Could lack visibility |
| Reusable, Reproducible, Auditable analysis pipeline   * Connections to version control |  |  |  |  |
| Dashboards   * Integrates with single sign-in * Easily auditable (calculated cells vs function) * Easy branding * Can ingest/ gather data from user input * Development Time * Exportable results * Accessible in different mediums (phone, tablet, browser) | Within the MS ecosystem, allowing for movement from excel to Power BI | Purpose of the application | Few different packages provide solutions:  Rmarkdown/ parameterized reports, Shiny, flexdashboard, Distill, and many other integrate with RStudio Connect |  |
| Add-ons from Base | Some need to be paid for | Add-ons cost per user/ month | Open source development, CRAN |  |
| Analytics Capabilities | Can import some analytics results in to visualize later | Can import some analytics results in to visualize later | * Spatial analytics capabilities (i.e. drive time, using shapefiles) * Simulation tools/ MCMC, Optimization/ solvers * Text mining/ text cleaning * Process miner * Forecasting, Modelling * Network Analysis |  |
| Other Capabilities   * Supports building APIs * Can send emails/ scheduled? Rule based? * Testing for data quality as part of process | Can be easily integrated into the rest of the MS Office ecosystem | Has a data governance add-on | Supports integration into MS ecosystem. |  |
| Community of Practitioners | Power BI specific | Tableau specific | Transferability of skillset/ hiring potential  Likely finding advanced users that can bring stronger analytic insights |  |

**Dewitt feedback >>**

My only comments would be that you need to give Power BI/ Tableau a fairer shake, because they can do a lot, even if they aren’t the preferred solution.

The big points for me are vendor lock in, transferability of skillset/hiring potential, speed to development/insight, scalability. With R you avoid vendor lock in, the skillset is easier to pick up in the labor market (plus bonus of likely finding advanced users that can bring stronger analytic insights), scalability is there, and speed to insight is pretty quick.

Speed to interactive dashboard is slower with R. But that’s not what you want to deliver; you want to deliver actionable insights in which R is likely the same if not faster.

One question I would ask is who is writing reports now and do you see their roles changing? What kind of products are they creating today? If you find that report writing constitutes excel files of just data, then Power BI isn’t going to change that ask (that’s my experience at two companies), so why pay for Power BI—just skip to R and generate the excel files there. Plus it doesn’t have to be an all or nothing solution (at least in the short run). Some “reports” in Excel might be ok for now (with pivot tables etc) and then start to weave in the more advanced stuff with R. You could even write results to a database and let the others design reports in excel in the short run.

Slide 1:

* Power BI/Tableau can support Adhoc reporting
* In general tableau/power bi can do everything you have under deployment (automatic reporting to some extent, dashboards, parameterized reporting, etc). Some of that is handled natively in those applications and both have extensions for R and Python, so anything else could be done through them.

Slide 2:

* Power BI/Tableau can support complex data munging/ingestion, the problem is that they are locked in a proprietary format that can’t be read back into a database which is a different issue. More of a vendor “Lock-In” issue.
* Power BI supports embedded R (but running memory heavy tasks is not advised within app, same for shiny) and each script is run separately, so you lose efficiency of scale which is bad, but it can be done. But it isn’t version controlled.
* Tableau support embed R and Python (same caveats with above)

<https://blog.rstudio.com/2021/03/11/bi-and-ds2-strengths-challenges/>