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CS 395

SUMMER INTERNSHIP PROJECT REPORT

**“Creating a Brand-New C-Level Dashboard for Delivery Hero Brands
and Updating Conversion Rates According to Right Definitions”**

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DELIVERY HERO TECH HUB TURKEY

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ABSTRACT

I have done my two months online internship at Delivery Hero Tech Hub Turkey as a Product Analyst Intern. Since Yemeksepeti was sold to the global company Delivery Hero in 2015, all Yemeksepeti workers were shifted to Delivery Hero and a new Tech Hub was founded with Yemeksepeti engineers. Our team consisted of six people including two interns and all team members were working on different global projects.

When I started the internship, the team was working on creating a brand-new dashboard that shows all data of Delivery Hero in a compact and reasonable way, and at the end all C-Levels will check this report on a daily basis. In this context, our project was about calculating the micro conversion rates of Delivery Hero brands with respect to countries. To calculate these, we used several methods and tools which I described in a detailed way in the following sections. The most used tool was BigQuery since we were coding using SQL.

The project was so helpful in fully understanding what we have learned at the beginning of the internship, and it gave us a chance to experience real-life usage of the tools we have learned. At the end of my internship, I and my project mate represented our findings with a slideshow and a dashboard using Data Studio, that was a big experience for me to make a representation to my team. My recommendation to future CS395 Project students is to start searching for their internship at the beginning of the second semester of the third year to be relaxed and to be on time.

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1. Introduction

In the last two months, I had an internship in a Berlin-based e-commerce company called Delivery Hero in the position of product analyst. My internship was at the Turkey branch of a big global ecosystem, which we called “Delivery Hero Tech Hub Turkey” in a more formal way. I worked in a team of six including one other intern in a hybrid working system. This umbrella company has the Turkish brand Yemeksepeti, and worldwide known FoodPanda under it, so that we mostly focused on these two brands.

As a product analyst, our goal is to analyze all the data that comes from these brands’ apps and websites and try to have reasonable inferences. Analyzing and interpreting data is so important for these companies to make more reasonable plans for future to reduce the waste of money and energy; furthermore, data helps us to understand customer needs and behavior.

In this context, I have multiple projects, but their common goal was to pull data of Yemeksepeti and analyze that using Google Analytics and BigQuery. Then we needed to show what we had in the end with dashboards and reports by using Data Studio, PowerPoint or Excel because it is so crucial that every other team has to understand what the data interprets to take their own action. Therefore, in this report, I am going to give a background story of the internship company, more detailed information about my projects and team, the methodology and tools I used, and a general overview of product analytics.

2. Company Information

2.1 About Delivery Hero

Company	Delivery Hero Tech Hub Turkey
Adress	Yemeksepeti Park, Esentepe Mah. Dede Korkut Sok. No: 28/1, 34394 Şişli – İstanbul
Contact	Ege Benson 05494303661
Webpage	https://tech.deliveryhero.com/ (www.deliveryhero.com .)
Linkedin	https://www.linkedin.com/company/delivery-hero-tech-hub/mycompany/

Delivery Hero is a German multinational online food delivery service based in Berlin, Germany. The company operates internationally in over 50 countries in Europe, Asia, Latin America and the Middle East and partners with over 500,000 restaurants. Delivery Hero is increasingly evolving beyond grocery delivery and is a major player in the burgeoning fast commerce category delivering small orders within an hour.

In the third quarter of 2021, Delivery Hero fulfilled 791 million orders. This is a 52% growth over the previous year.

Delivery Hero is headquartered in Germany with offices around the world, but as a "gig economy company" (similar to Meituan, Uber and Airbnb), most of its deliveries are shipped via its smartphone application by workers using motorized motorcycles, bicycles and cars. . Generally, contrary to recent Canadian and Australian legal precedent, Delivery Hero does not classify these couriers as employees. This policy has led to ongoing lawsuits and labor disputes and may be related to the closure of Delivery Hero's operations in several countries.

In April 2015, Delivery Hero acquired South Korean delivery service Baedalrong, one of the main competitors of its own YoGiYo service. A month later, Delivery Hero acquired Turkish competitor Yemeksepeti for €530 million. In October 2015, Delivery Hero also acquired Munich-based food delivery service Foodora from Rocket Internet.

2.2 Organizational Chart

Delivery Hero has many departments: tech, marketing, business intelligence, customer care, finance, finance systems, legal, people operations, global management, product, operations, sales and strategy and investor relations. I will explain each departments' responsibility shortly.

Technology department is working on building different ranges of tools and technical solutions which cover full customer experience that starts from online search experience and ends with a real-time delivery to your house.

Marketing department is working on performance marketing, customer-relationship management and branding in order to get in touch with customers in an engaging way.

Business Intelligence (BI department) is working on deep-dive data analysis to make data-driven decision in order to support all operations of Delivery Hero's global brands.

Customer Care department is working on understanding the concerns and wishes of customers, in short, this department is the link between the restaurant and the customer.

Finance is working on planning, organizing, and controlling all financial circumstances to ensure the profitability of Delivery Hero.

Finance Systems department is working on SAP solutions since Delivery Hero is using state-of-the-art tools such as BW/4HANA, S/4HANA, and many more SAP technologies.

Legal department is working on legal issues which may come into business and also gives legal advice for the best representation of the company.

People Operations department is working on creating programs to find, engage, retain and grow the employees of the firm.

Global Management department is working on implementing key initiatives in their local markets or internationally.

Product department is working on strategies, data analytics, product design and agile software development methods to increase the quality of product.

Operations department is working on designing and controlling the process in the production of the services. They are responsible of maintaining an efficient business operation.

Sales department is working on establishing relationships with potential new restaurants and educating the market on the company's business methods.

Lastly, *Strategy and Investor Relations* department is working on creating strong connection with shareholders and ensuring they understand the firm's vision.

3. Project Background

3.1 Department information

Since I have done my internship as a Product Analyst Intern, I worked in Product Analytics team which is in short PM. In PM, we were six people including the manager:

- Emre Gerçek (Head of Team) – emre.gercek@deliveryhero.com
- Cem Güney (Technical Product Analyst) – cem.guney@deliveryhero.com

- Can Akşit (Analytics Junior Specialist) – can.aksit@deliveryhero.com
- Eylül Yurtseven (Analytics Junior Specialist) – eylul.yurtseven@deliveryhero.com
- Furkan Şahinoğlu (Intern) – furkan.sahinoglu@deliveryhero.com

Since Delivery Hero is a big global company, they had started to create branches at each country that they grew in. Because of the fact that they bought Yemeksepeti in 2015, this migration also happened in the last spring and Yemeksepeti migrated their all data warehouse and types of equipment. Therefore, it created the need of doing many projects to fulfill the lack. As I told you before, our team was consisted of 4 people excluding interns and this group represents the Turkey branch of Product Analyst team. Our responsibility is not limited with Turkey but also it needed to look at all global firms' needs such as Foodora or Foodpanda, therefore the members had daily/weekly global meetings to catch up with other Product Analyst Teams.

3.2 Status of the project and/or the problem at the beginning

In the first weeks, we worked separately with Furkan because Emre wanted to make individual meetings to get to know us better. So that we could find a chance to introduce ourselves each of the team members by having meetings on our own. After this phase, Emre gave us several team projects with Furkan to become more familiar with Delivery Hero's data. Since, all of the projects were global based there were lots of details to be considered to understand the storing and analyzing data. Each of team members had different roles in different projects, in this way they could have a chance to have an idea about several projects by telling each other in weekly meetings. Since, there were some sensitive information I cannot tell the details of projects, but they were mostly about developing the app and web applications of these services in an efficient way such as updating the tracking system or analyzing some specific data that requested from marketing or business

intelligence teams.

In short, there were several projects running simultaneously and held by each team member and those were discussed weekly to keep in touch with every project globally. The project we worked was about creating a brand-new C-Level company dashboard to check all Delivery Hero brands' data in daily basis. They started this project just before our internship started so that we could see most of the progress and involved in it.

3.3 Motivation and/or problem definition

Since Delivery Hero is a big global company which includes different brands and countries, they needed a general dashboard that report real-time data for each brand and country. The report they used was outdated and it needs to be updated with new definitions and calculations, therefore the company asked help for our product analyst team to come up with a new dashboard. Our team has started the project just before my arrival and they gave us part of the project as a task with my teammate Furkan.

Our task was to pull data from Yemeksepeti's web and app, from that data we needed to calculate the micro conversion rates. There are many different micro conversion definitions so that we checked Delivery Hero's perspective of these calculations and came up with two different approaches which I will describe in the following sections. At the end, we found all the conversions between pages in app and web, so that we made some reasonable inferences and arguments. At the end, we discussed our findings with our team and checked if the rates we found are matching with the real-time data.

3.4 Related literature

For my part of the project, I was required to learn BigQuery and most of other Google Analytics tools such as Data Studio, Google Analytics and Google Task Manager. Therefore, in the beginning

of the internship I started the Google Analytics Academy courses and completed all courses related to this area. In this educative video series, there were also quizzes to complete and this gave me the opportunity to study what I learned, at the end of this education process I had certificates from Google Academy.

Also, I continued my learning process with “Data Analyst Learning Path” in “Google Cloud Skills Boost”, in this series I mostly learned about BigQuery and refresh my knowledge about SQL. Moreover, I used the book called “Google BigQuery the definitive guide: Data warehousing, analytics, and machine learning at scale” written by Tigani and Lakshmanan (2020) to check some details.

All the other tools I used was company’s internal tools so that I cannot explain them in detail since they did not give the permission, but we had a site which includes all the definitions of the data they used, and it is kind of a guide of how to store data. From that guide, I learned how to calculate specific rates and how can I relate those rates with each other. But throughout the whole process, I mostly used Google’s documentation about its tools and whenever I have a specific problem, I used stackoverflow.com to check if the other people also struggled in the same problem and how to deal with it.

4. Internship Project

4.1 Project objective

Re-creating a C-level dashboard is a project which aims to provide company employees and executives to have an idea about the progression of brands with respect to several dimensions in a daily basis. This project is a need since the old dashboard that used in the company was outdated

and shows controversial data and in tech business data is the most important source to rely on.

In this project, we used previously collected and also real-time data, so collecting data and defining new variables are not in this scope of the project. We mostly manipulate the data, pull what we need and show them in dashboard to see the results. The important thing is in all sections we used different filters like brands, countries and date to investigate the data with respect to these constraints.

4.2 My responsibilities

I worked with my other intern friend in this project, and our product analytics team's dashboard has different sections, and each section has related rates or graphs to have a context in each page. We merged the data coming from web and app to look at several constraints and dimensions to have a meaning from the data such as number of orders, sessions, users, new users, and total revenue.

Moreover, we calculated some rates and shares such as conversion rate, average order value, bounce rate, user type share (returning or new visitor), vertical order share (Yemeksepeti, market, mahalle) and platform order share (mobile/desktop/tablet).

Last but not least, also we separated the data as web and app to show different kind of specific important events, for instance the amount of “add cart” clicked, transactions, revenues or cart abandonment rates which shows the rate of users who adds stuff in their cart but not completed the order.

4.3 Methodology / tools

I used Google Analytics, Google Tag Manager, BigQuery and Data Studio. When I need to filter data or just want to have a look at some rates, I used Google Analytics but since writing in

SQL on BigQuery is much faster and more effective most of the time I preferred BigQuery. In BigQuery, we created our own “sandbox” as a draft folder, and we worked simultaneously with my teammate Furkan. Also, if we need to check some specific pages or triggered events, we used Google Tag Manager to see it quickly.

4.4 Expected outcome and deliverables

Outcome of this project is an updated and more focus C-level dashboard that can be check by all company employees in daily basis to check data from reliable source.

4.5 Details

4.5.1 Preparation for Project

In the beginning of the internship, we have started the Google Analytics Academy education videos to get to know the tools we would use for our internship project. We learned how to use Google Academy, Google Tag Manager, BigQuery and Data Studio. Before starting to the big project, we worked on little demo projects to get ready to the next one. Those projects gave us a chance to be familiar with the data since there were many different definitions and tracking methods.

4.5.2 Analyzing and Manipulating Data

After completing the phase of learning the tools and methods we started to work with data. First, we looked at the events we want to use by checking inspector tool and Google Tag Manager triggers. Secondly, we decide on which how to filter and partition the data to have a smaller dataset which would be much efficient on BigQuery as you can see in Appendix 1. Then, we merged the data we want to use to have a combination of web and app data. After having the right and filtered data we tried to find the dimensions we wanted to use to calculate the needed rates such as conversion rates. Since in our part of the project the main goal was calculating the

missing conversion rates for the dashboard we focused on those relations.

4.5.3 Specific Metrics and Definitions

Delivery Hero has its own definitions for different rates and metrics that's why we checked our website to have the right information, then we calculated those rates with different kind of approaches. First of all, in e-commerce business our goal is to reach the "happy path". The happy path is the default user journey that a customer would experience if they proceeded to convert without any deviation during the process. Delivery Hero has lots of brands and in each brand, we want that all customers follow a specific order of web or app pages to complete their order which we call as the happy path, since this path is the shortest. The desired path of our system can be seen in the Figure 1 below:



Figure 1: Happy Path

To analyze if the customer goes through these pages in order or not, we needed to check the triggered events in each page and calculate their micro-conversion rates. Micro-conversion rates are indicators of how users move in the flow. Our flow in products is as follows:

Home > List > Menu > Checkout > Transaction

MCVR 1: Home > List

MCVR 2 : List > Menu

MCVR 3 : Menu > Checkout

MCVR 4: Checkout > Transaction

Most of the time micro-conversions, MCVR in short, are represented with funnels to have a better understanding. Our “e-commerce conversion funnel” can be seen in Figure 2 below:

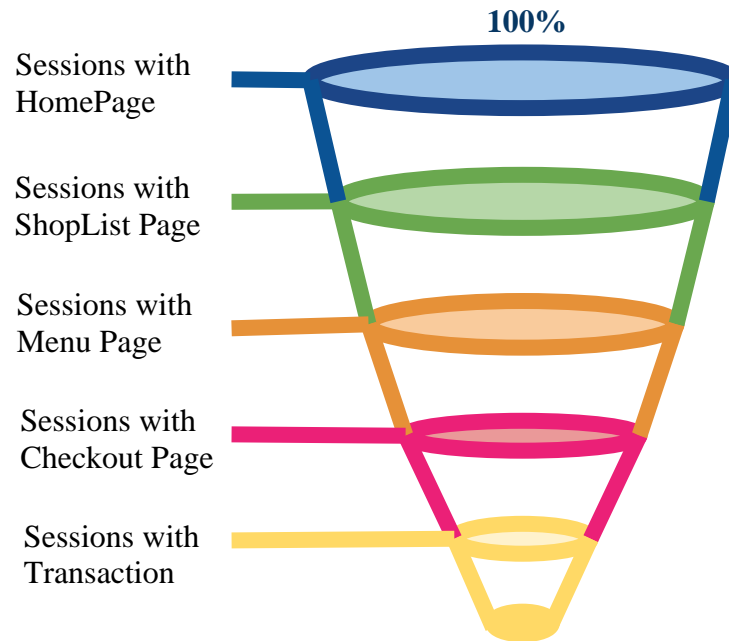


Figure 2: E-commerce Conversion Funnel

We tried to calculate the conversion rates of Yemeksepeti by looking at “Restoran”, “Mahalle” and “Market” sections as you can see the code detailed in Appendix 2. For example, in the application of Yemeksepeti there are several different pages which we can go through such as homepage, restaurant listing, restaurant details listing, checkout and transaction. Our tracking system was keeping all of these pages’ data to understand the customer behavior and store their events, the main events we used for tracking the pages were:

- Home: home_screen.loaded
- List: shop_list.loaded
- Menu: shop_details.loaded

- Checkout: checkout.loaded
- Transaction: transaction

To check conversion rates, we look at where customer prefers to go through after a specific page, and at that time the loaded event is triggered. For example, we checked if the customer leaves after tapping on homepage or go through restaurant listing, detail page and checkout. If the customer goes through all pages and completed the order in a successful way, we say that this is a 1 which represent successful when calculating the conversion rate. When checking this conversion rate, we made analyses by looking at two different perspectives or two different approaches that what we call as “flow” and “fallouts”. In flow, we tried to check if the customer completes the order in the specific way, we want which is starting from homepage and goes to transaction page without skipping any page (s/he must see all pages in the flow). On the other hand, in fallout we do not care about a strict flow of pages, rather than that we want to see the customer tap on page not in sequential order by in the true timeline. It may sound complicated so that I will show this with the example below:

- First example: (events are in the order as “happy path”)

Home > X-Event > List > Z-Event > Menu > Checkout > L-Page > Transaction

Here the mCVR3 will be formulated and calculated as follows:

Approach 1: mCVR3 (%) = (# of ‘Menu and # of Checkout’, session) / (# of Menu, session)
= 1 = 100%

Approach 2: mCVR3 (%) = (# of ‘Menu and # of Checkout’ [where shop_details.loaded happens before checkout.loaded], session) / (# of Menu, session) = 1 = 100%

- Second Example: (events aren't in the order as "happy path")

Checkout > Home > X-Event > Menu > Z-Event > List > L-Page > Transaction

Here the mCVR3 will be formulated and calculated as follows:

Approach 1 : mCVR3 (%) = (# of 'Menu and # of Checkout' , session) / (# of Menu, session)
= 1 = 100%

Approach 2 : mCVR3 (%) = (# of 'Menu and # of Checkout' [where shop_details.loaded happens before checkout.loaded], session) / (# of Menu, session) = 0 = 0%

Basically, in our first approach we only checked if the specific events happened before the next event, but it does not need to be in exact order so that we call it "fallouts". On the other hand, in our second approach, we looked for a specific order of events so that we call it "flow". Since in our second approach the order of events is important, we checked their hit_number which gives us the time they triggered. The detailed codes of these two approaches can be found in Appendix 3 and Appendix 4, because of the sensitivity whole code could not be displayed in this report.

4.5.4 Creating Dashboard

After coding in Big Query and printed out the data we need, the next part was connecting this set of data to Data Studio. Big Query was the place where we do all the work with data, but we needed to show the rates in graphs and tables, so we needed another tool. In Data Studio we pull the data we wanted to show and arranged them by looking at each metric's relation with each other to have a meaningful context in each page of report. I cannot show dashboard here since it has lots of confidential data but after completing the report, we presented it to team, and they presented the final report to global teams after my internship over.

4.6 Results

At the end of my internship, the project had completed, me and my other intern friend completed a missing task in our team's ultimate task which is calculating micro-conversion rates of Delivery Hero with respect to countries and brands. They used our MCR rates in their dashboard and then presented it to the CEO, but unfortunately, I could not see the presentation because my internship was over.

They used our MCR rate calculations in Delivery Hero's formal C-Level Dashboard and this report is so important since this is the most reliable sheet checked by everyone on daily basis to keep track of the firm's data and rates. Also, we connect our dashboard to Google Analytics to check the progress of our report. Then we saw that report we recreated was really using by people in daily basis to have a look at data. So that we can say that we reached our goal, but of course there should be upgrades in report at following months since needs can be change in the future.

5. Internship Experience

4.5.5 Learning

I learned important Google tools such as Google Analytics, Google Tag Manager, Data Studio and focused on BigQuery. I learned that BigQuery is really efficient compared to Google Analytics when analyzing big data, also my previous SQL knowledge helped me a lot in this process. Moreover, I learned how to define and manage variables in Avo and track those variables by using Google Tag Manager. Also, I learned how to define variables and tags, and create triggers to track those variables. I completed Google Academy lessons to get familiar with these tools, then our Technical Product Analyst (Cem Güney) gave us two weeks workshop about these Google tools to have a better understanding of them by seeing real-life examples. Also, we used inspector and several Chrome

extensions such as “dataslayer” to track real-time data in websites, which was a great practice to learn how was data stored in Yemeksepeti or in FoodPanda.

Furthermore, I learned that GTM Uploader is a very great tool to upload data automatically to Android, iOS, and Web containers in a most efficient way, because without it we needed to upload all data by hand and that would take so much time. All these tools are just the part of the whole process but beyond that I learned how to deal with data by learning the most important variables and most important rates to use in analysis. In our project, we mostly focused on micro-conversion and breakdown of our store that gives us an opportunity to understand the nature of making analyses. In our project, we mostly focused on micro-conversion and breakdown of our store that gives us an opportunity to understand the nature of making analyses. By looking at rates we made lots of reasonable comments and present them at the week of our internship with a dashboard and slideshow, so it also develops our presentation skills in tech area.

Previously I had no idea about this field of data science, so those two months of experience gives me a new perspective on it. Since product analytics is an area where you can use your own analytical and creative skills to analyze and develop products in a better way, I like this area so much. Although that is not my ultimate goal to become a product analyst, I will keep this option in my mind for my near future career.

4.5.6 Relation to undergraduate education

My project and internship were mostly based on BigQuery and SQL, so I was super proud that I had that knowledge from the CS306 Database course, it was so helpful. Also, in some parts of our internship, we discussed regression models, and I learned them both in MATH306 Statistics course and ENS208 Introduction to Industrial Engineering Course. Last but not least, all my data science and programming-related courses were so helpful

since I gained so many skills such as problem-solving, analytical thinking, and coding appropriately thanks to my professors.

But maybe I can add that, in data science courses, it would be a good practice to give us Google Academy videos as a homework or some advice, because those videos are so simple and educative to get familiar with Google tools in the field of data analyzing.

4.5.7 Difficulties

In my internship, the hardest part is got to know each other in the online environment, but in the very first week I scheduled individual meetings with each team member so that I found a chance to get familiar easily. The second hard part is having lots of new tools and technologies, to encounter this my manager Emre gave me some advice such that completing Google Academy education videos and those videos gave me so much confidence. Third thing was being alone at home actually, because in physical working environment you have your colleagues by your side, and you can ask them simultaneously. Hopefully, the other intern came to our team after a week, and we started to work with him by doing many video calls. Also, whenever we needed help all the other members sent us video meetings which felt like we are chatting physically.

4.5.8 A typical day

My internship was online but in short, we have an opening and closing meetings on Mondays and Fridays to discuss what we are going to do and what we have done to catch up all the topics. Each day, we had different meetings depends on the need.

6. Conclusions

When I look at my previous two months what I see is full of experience in a friendly working environment. I was so lucky that my internship was better than I expected, because I was little bit scared of now being enough but overall, I did a good job. In summary, I get to know mostly all of the Google tools such as Google Analytics, Google Tag Manager, Data Studio and most importantly BigQuery. By using BigQuery I developed my skills in SQL which comes from my database course (CS306) and found a chance to see the usage of that language in real life. I completed Google Academy lessons to get familiar with these tools and had several Google certificates. But beyond that I experienced a great company culture which includes many friendly colleagues and teammates. It was all a great opportunity for me to see this side of data science in a helpful team like this, and I enjoyed a lot at working in this area.

7. Recommendations

I started to search for my internship at break between semesters. Although I started so early application procedures were so long that most of them lasted until June to be finalized. So that my first recommendation would be for future Project 302 students is to start to search for their internships early to see all internship options.

The second most important thing is to not get stressed about not finding any internship, because most of my applied internships responded in the last second although their applications were started too early.

The third recommendation is trying to experience interview or test as much as you can in order to get used to introduce yourself in formal way without getting stressed. Every company has its own style

and culture so that you need to prepare yourself to any option. What I mean is some companies want to see you in formal clothes even if you are in online interviews but some of them just want to see you in your casual clothes to have a more relaxed environment. So, it is not a rule that every interview would be in strict language, the only most important rule is you should know how to introduce yourself. It is better to search company's mission and visions by looking at their webpage to get to know a bit to the firm before the interview in case they ask specific questions. I do not have specific advice for the work environment because every firm has its own nature and culture, so that you once you experience it you can act in that way easily.

My last and most important recommendation is starting to write this project report while you are making your internship because I waited until the end of my internship to complete all my projects but on the last day, they canceled out my mail domain and related accounts so that I lost the ability to reach my internship documents (I downloaded some of them hopefully). Therefore, please write your project reports simultaneously with your internship to avoid the situations like mine.

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9. Appendices

Appendix 1 – Partitioning and Filtering Datasets

```
WHERE TRUE
  AND partition_date > '2022-08-12'
  AND events.global_entity_id = 'Yemeksepeti'
  AND (event_action IN ( 'home_screen.loaded', 'shop_list.loaded',
    'shop_details.loaded', 'checkout.loaded', 'transaction') OR (event_action IS NULL ))
```

Appendix 2 – MCVR Calculation with respect to Sections of Brands

```
SELECT
  partition_date,
  'Restaurants' AS Vertical,
  ROUND(SAFE_DIVIDE(all_home_screen_loaded_restaurant_shop_list_loaded, all_home_screen_loaded) *100 ,2) AS MCVR1,
  ROUND(SAFE_DIVIDE(restaurant_shop_list_loaded_restaurant_shop_details_loaded, restaurant_shop_list_loaded) *100 ,2) AS MCVR2,
  ROUND(SAFE_DIVIDE(restaurant_shop_details_loaded_restaurant_checkout_loaded, restaurant_shop_details_loaded) *100 ,2) AS MCVR3,
  ROUND(SAFE_DIVIDE(restaurant_checkout_loaded_restaurant_transaction, restaurant_checkout_loaded) *100 ,2) AS MCVR4
FROM mcvr_calculation
GROUP BY 1,2,3,4,5,6

UNION ALL

SELECT
  partition_date,
  'Dmarts' AS Vertical,
  NULL AS MCVR1,
  ROUND(SAFE_DIVIDE(all_home_screen_loaded_dmart_shop_details_loaded, all_home_screen_loaded) *100 ,2) AS MCVR2,
  ROUND(SAFE_DIVIDE(dmart_shop_details_loaded_dmart_checkout_loaded, dmart_shop_details_loaded) *100 ,2) AS MCVR3,
  ROUND(SAFE_DIVIDE(restaurant_checkout_loaded_dmart_transaction, dmart_checkout_loaded) *100 ,2) AS MCVR4
FROM MCVR_Calculation
GROUP BY 1,2,3,4,5,6

UNION ALL

SELECT
  partition_date,
  'Shops' AS Vertical,
  ROUND(SAFE_DIVIDE(all_home_screen_loaded_shop_shop_list_loaded, all_home_screen_loaded) *100 ,2) AS MCVR1,
  ROUND(SAFE_DIVIDE(shop_shop_list_loaded_shop_shop_details_loaded, shop_shop_list_loaded) *100 ,2) AS MCVR2,
  ROUND(SAFE_DIVIDE(shop_shop_details_loaded_shop_checkout_loaded, shop_shop_details_loaded) *100 ,2) AS MCVR3,
  ROUND(SAFE_DIVIDE(shop_checkout_loaded_shop_transaction, shop_checkout_loaded) *100 ,2) AS MCVR4
FROM MCVR_Calculation
GROUP BY 1,2,3,4,5,6
```

Appendix 3 – MCVR Calculation by looking at “fallouts”

```
mcvr_calculation AS(
SELECT
partition_date,
-- Restaurant Calculations
COUNT(CASE WHEN all_home_screen_loaded > 0 THEN ga_session_id END) AS all_home_screen_loaded,
COUNT(CASE WHEN restaurant_shop_list_loaded > 0 THEN ga_session_id END) AS restaurant_shop_list_loaded,
COUNT(CASE WHEN restaurant_shop_details_loaded > 0 THEN ga_session_id END) AS restaurant_shop_details_loaded,
COUNT(CASE WHEN restaurant_checkout_loaded > 0 THEN ga_session_id END) AS restaurant_checkout_loaded,
COUNT(CASE WHEN restaurant_transaction > 0 THEN ga_session_id END) AS restaurant_transaction,
COUNT(CASE WHEN all_home_screen_loaded > 0 AND restaurant_shop_list_loaded > 0 THEN ga_session_id END) AS all_home_screen_loaded_restaurant_shop_list_loaded,
COUNT(CASE WHEN restaurant_shop_list_loaded > 0 AND restaurant_shop_details_loaded > 0 THEN ga_session_id END) AS restaurant_shop_list_loaded_restaurant_shop_details_loaded,
COUNT(CASE WHEN restaurant_shop_details_loaded > 0 AND restaurant_checkout_loaded > 0 THEN ga_session_id END) AS restaurant_shop_details_loaded_restaurant_checkout_loaded,
COUNT(CASE WHEN restaurant_checkout_loaded > 0 AND restaurant_transaction > 0 THEN ga_session_id END) AS restaurant_checkout_loaded_restaurant_transaction,
-- Dmart Calculations
COUNT(CASE WHEN dmart_shop_details_loaded > 0 THEN ga_session_id END) AS dmart_shop_details_loaded,
COUNT(CASE WHEN dmart_checkout_loaded > 0 THEN ga_session_id END) AS dmart_checkout_loaded,
COUNT(CASE WHEN dmart_transaction > 0 THEN ga_session_id END) AS dmart_transaction,
COUNT(CASE WHEN all_home_screen_loaded > 0 AND dmart_shop_details_loaded > 0 THEN ga_session_id END) AS all_home_screen_loaded_dmart_shop_details_loaded,
COUNT(CASE WHEN dmart_shop_details_loaded > 0 AND dmart_checkout_loaded > 0 THEN ga_session_id END) AS dmart_shop_details_loaded_dmart_checkout_loaded,
COUNT(CASE WHEN dmart_checkout_loaded > 0 AND dmart_transaction > 0 THEN ga_session_id END) AS dmart_checkout_loaded_dmart_transaction,
-- Shop Calculations
COUNT(CASE WHEN shop_shop_list_loaded > 0 THEN ga_session_id END) AS shop_shop_list_loaded,
COUNT(CASE WHEN shop_shop_details_loaded > 0 THEN ga_session_id END) AS shop_shop_details_loaded,
COUNT(CASE WHEN shop_checkout_loaded > 0 THEN ga_session_id END) AS shop_checkout_loaded,
COUNT(CASE WHEN shop_transaction > 0 THEN ga_session_id END) AS shop_transaction,
COUNT(CASE WHEN all_home_screen_loaded > 0 AND shop_shop_list_loaded > 0 THEN ga_session_id END) AS all_home_screen_loaded_shop_shop_list_loaded,
COUNT(CASE WHEN shop_shop_list_loaded > 0 AND shop_shop_details_loaded > 0 THEN ga_session_id END) AS shop_shop_list_loaded_shop_shop_details_loaded,
COUNT(CASE WHEN shop_shop_details_loaded > 0 AND shop_checkout_loaded > 0 THEN ga_session_id END) AS shop_shop_details_loaded_shop_checkout_loaded,
COUNT(CASE WHEN shop_checkout_loaded > 0 AND shop_transaction > 0 THEN ga_session_id END) AS shop_checkout_loaded_shop_transaction,
FROM eventbases
GROUP BY partition_date
)
```

Appendix 4 - MCVR Calculation by looking at “flows” using Restaurant section as an example

```
max_min_restaurant AS (
SELECT
partition_date,
session_id,
event_action,
vertical_events,
MIN(hit_number) AS min_hitnumber,
MAX(hit_number) AS max_hitnumber,
(MAX(hit_number)) - (LAG(MIN(hit_number)) , 1, 0) OVER (PARTITION BY session_id ORDER BY 1, CASE
WHEN event_action IS NULL THEN 1
WHEN event_action = 'home_screen.loaded' THEN 2
WHEN event_action = 'shop_list.loaded' THEN 3
WHEN event_action = 'shop_details.loaded' THEN 4
WHEN event_action = 'checkout.loaded' THEN 5
ELSE 6
END ASC )) AS min_max_diff
FROM flag_restaurant
WHERE TRUE
AND vertical_events IS NOT NULL
GROUP BY partition_date,session_id,event_action,vertical_events),
```