



BSD 1323 STORYTELLING AND DATA VISUALISATION

GROUP PROJECT

TITLE: DAILY SPENDING PATTERN

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1.0 Introduction

FINANCIAL FOOTPRINTS

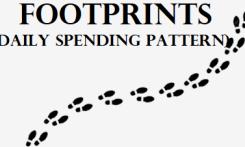
Introduction	Objective and	Biodata	venue	Payment Type	Category	Purchase Time	Duration	Change in Date	Conclusion	>
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"><p style="text-align: center;">FINANCIAL FOOTPRINTS (DAILY SPENDING PATTERN)</p><p>Group Member: ALMIRA DAMIA BINTI SYAHNIZAM TUAN NURSHAFIEKA WAHIDA BINTI TUAN NADIN THAM ZHI YUN ABDUL HAZIQ AZIM BIN ABDUL MALIK</p><p>According to a new survey of higher ed professionals, 74% of colleges are facing financial challenges. In this project, we will like to determine the factors which affect the daily spend pattern of UMP Students and the trend of spending and daily budget of UMP students.</p></div>										

Figure 1: Story Point “Introduction”

1.1 Motivation

Understanding student financial behavior and empowering them for financial success are two significant motivating factors for completing the project of analyzing and visualizing students spending patterns. By gaining an understanding of how students manage their finances, valuable insights can be generated. These insights can contribute to improving financial literacy and overall well being among students.

By identifying specific areas where students can make more informed choices through visualizing spending patterns, the project has the potential to empower students with essential financial knowledge. This can enhance their financial independence and set them towards achieving their personal goals. This project can make a positive difference in students' lives and serves as a powerful motivation to see it through to completion. Ultimately, this project can foster financial responsibility and equip the students with the skills needed to make informed decisions that will benefit them throughout their lives.

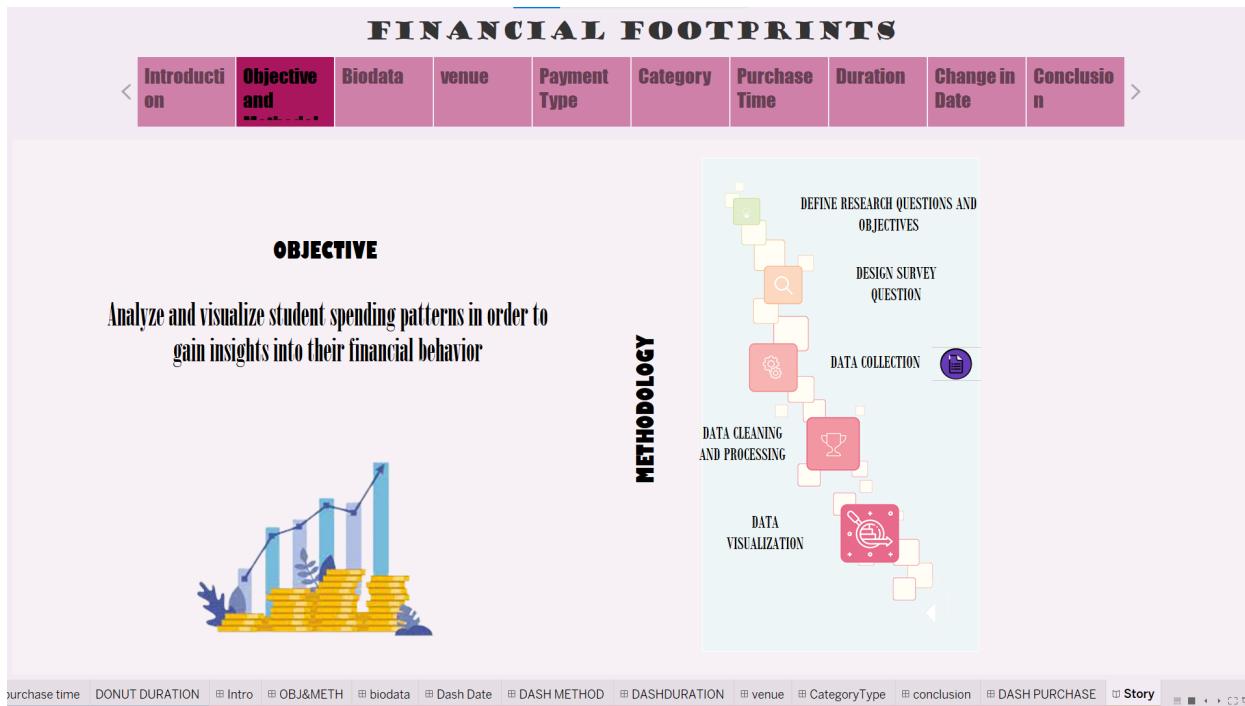


Figure 2: Story Point “Objective and Methodology”

1.2 Objective

Analyzing and visualizing student spending patterns can provide valuable insights into their financial behavior. By examining how students allocate their funds across a few categories such as entertainment, food, transport and necessities, it becomes possible to identify trends and patterns on their financial priorities and decision making processes.

Through data analysis and visualization, it is possible to identify the most common spending categories among students as well as the sum and average amounts allocated to each category. This information can help the student to understand where they allocate their money most of the time. Visualizing the data through charts, graphs and infographics can make the finding more accessible and easier to comprehend. Visual representation can highlight spending patterns and trends at glance. By visualizing the data, the students can gain a clearer understanding of spending habits and make informed decisions about budgeting, saving and financial planning.

1.3 Methodology

The methodology for this project consists of a few steps. First one is to define research questions and objectives. Start by formulating specific research questions that will guide this project. The questions focused on understanding student spending patterns and financial behavior. Next step is, design survey question. We designed the survey by using Google Form as it is more convenient and easier for us to commit everyday. In this survey, we keep questions clear and concise. Then, data collection. This step is very crucial as it will be used in the visualization process. There are few data types in this survey which are 1 date data type, 5 categorical data type, 1 sub category data type, 1 geographical data type and 3 numerical data type. Fourth step is data cleaning and processing. For this step, each group member will check and remove all the duplicates that can distort the analysis and lead to inaccurate insights. We also standardize the format and delete the errors that occur when data collection. Last step is data visualization. We use Tableau to visualize the data using different types of charts such as donut charts, boxplot and many more. After that, we proceed to create the dashboard and storyline.

2.0 Background Storyline

According to a new survey of higher ed professionals, 74% of university students are facing financial challenges in their uni-life. In this project, we will like to determine the factors which affect the daily spend pattern of UMP Students and the trend of spending and daily budget of UMP students.

2.1 Details Storyline

Storyline of this project is formed by 10 story points, which the first story is used as introduction, second story point is used to describe the objective and methodology of the project, the last story point is used to make an conclusion, and from the third to ninth story points are used to describe the factor which affect the spending pattern of UMP students. Among the factors described are gender, races, spending venue, payment type, category of purchases, spending time, duration of spending. The first storypoint (**Figure 1**) is used to display an attractive title and problem statement in this project, which is "Financial Footprints". With the attractive title, the attention of the audience can be attracted as well as the audience can understand the reasons why the project is having more ease. The second story (**Figure 2**) is used

to discuss the objective and methodology of the project. With the details of the objective shown, the audience can understand the purpose of the projects and understand the purpose of the project handle. Also, with the methodology discussed, the audience can understand how the project is conducted from process discussion, collecting data, until visualizing data. Next, the third story point (**Figure 3**) is used to discuss the biodata of each member in data sources. It may show the spending pattern of members by their gender and races. In data sources, the percentage of malay members is higher than the chinese member and without ignoring outliers, the highest daily spending of both male and female members is RM50. However, by ignoring the outlier, the total spendings of female members is higher than the male member. Next, in the forth story point (**Figure 4**), the place of the spendings recorded are displayed, it shows that majority of UMP students' spendings happen within the UMP area, and most of the spendings are focused on food, and continues with transport. Also, it showed that the majority of the students spendings in happened at Cafe Payung Putih, campus Gambang, Universiti Malaysia Pahang. Then, the fifth story point (**Figure 5**) is used to discuss which payment method which students UMP always used in spending. E-wallet is always used by UMP students during spending, but the majority of spendings paid by using e-wallet are lower than RM10. Also, however cash is less used by UMP students, but the highest spending of RM50 is paid by using cash. Next, the sixth story point (**Figure 6**) is used to determine which is the subcategory type of purchases of UMP students. It showed that UMP students are highly spending on dinner and lunch. Students always use cards or e-wallet to pay for dinner, use cash to pay for snacks, and use online banking to pay for lunch. Then, the seventh story point (**Figure 7**) discusses when the students are having the longest duration of spending. It shows that students spend most time in spendings during the evening, which is between 1700 until 2100 and spend least time in spendings during morning which is between 0500 until 0900. Also, it is showing that the highest spending happens in the evening as well. This story point is used to determine the relation between the duration of spending, and the spending. Next, the eighth story point (**Figure 8**) is showing the duration of the spendings. It shows that the male member are having short spending duration, and Tham Zhi Yun has the longest spending duration. Then, the ninth story point (**Figure 9**) is showing the change in date of both spendings and daily budget. It shows that the highest total spending happened on 27 May 2023 on lunch and games, whereas it also the highest daily record for Damia and Wahida, whereas for Haziq, highest recorded on 3 June 2023 on purchase shirt, and for Zhi Yun, highest recorded on 1 June 2023 on bus ticket. In the last story point (**Figure 10**), a conclusion is made.

3.0 Details of Analysis

3.1 Analysis of Story Point — “Biodata”

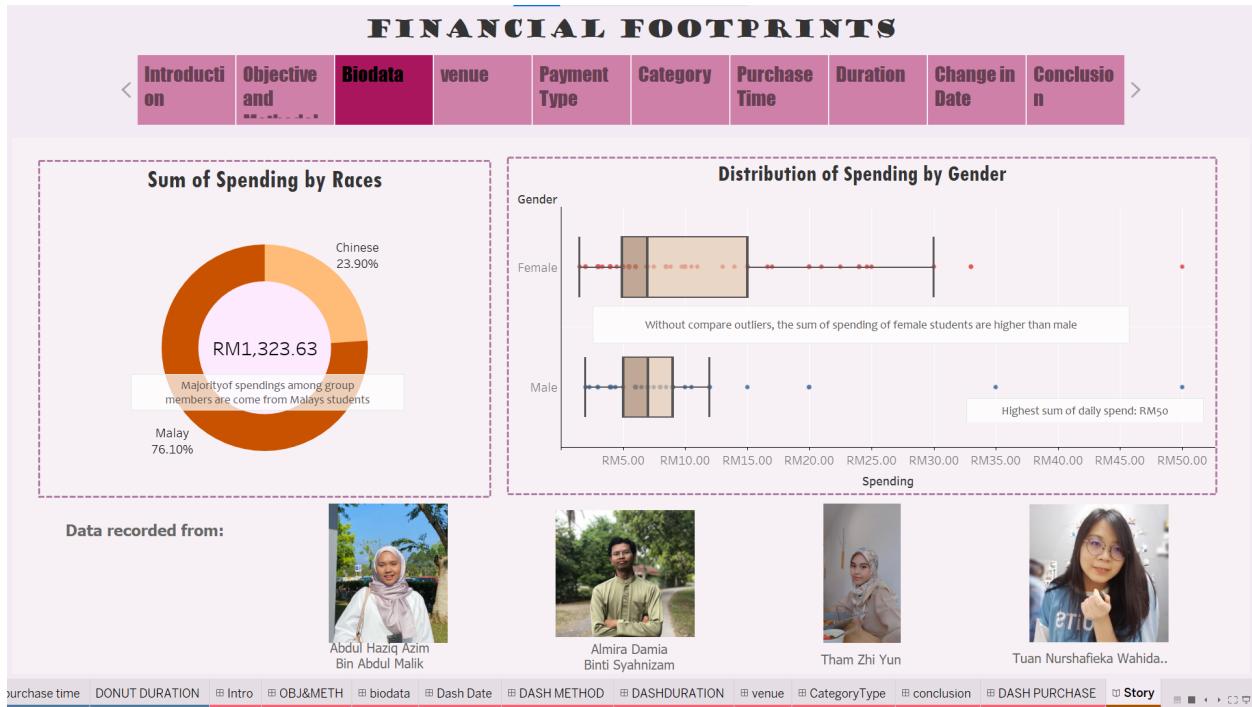
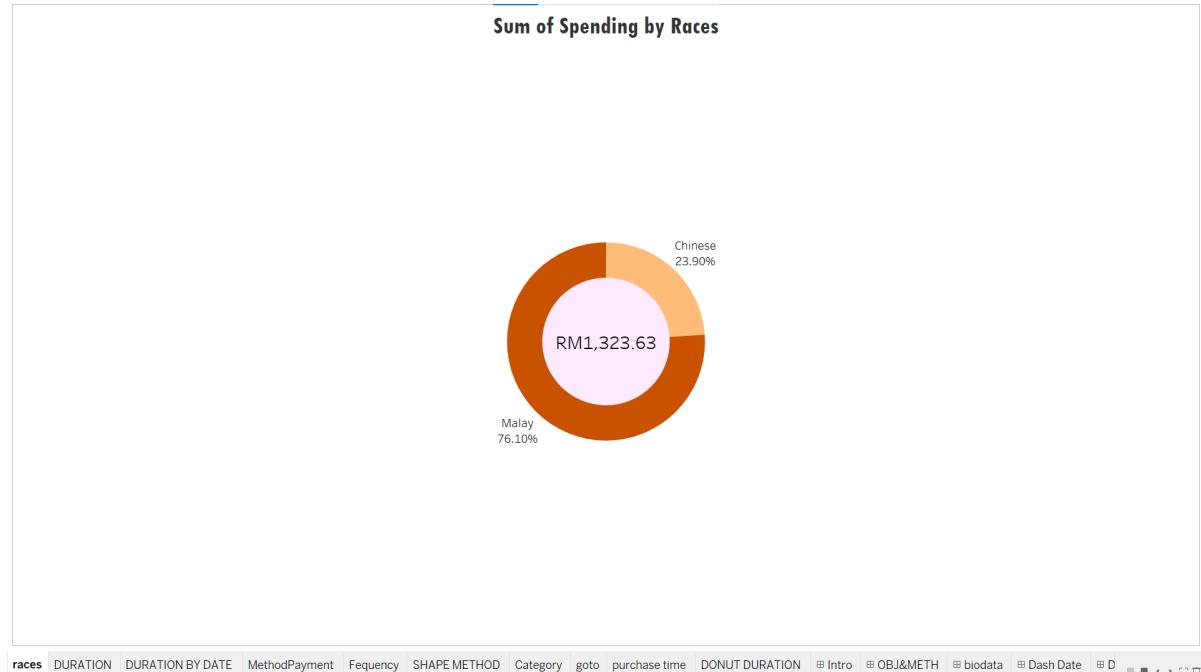
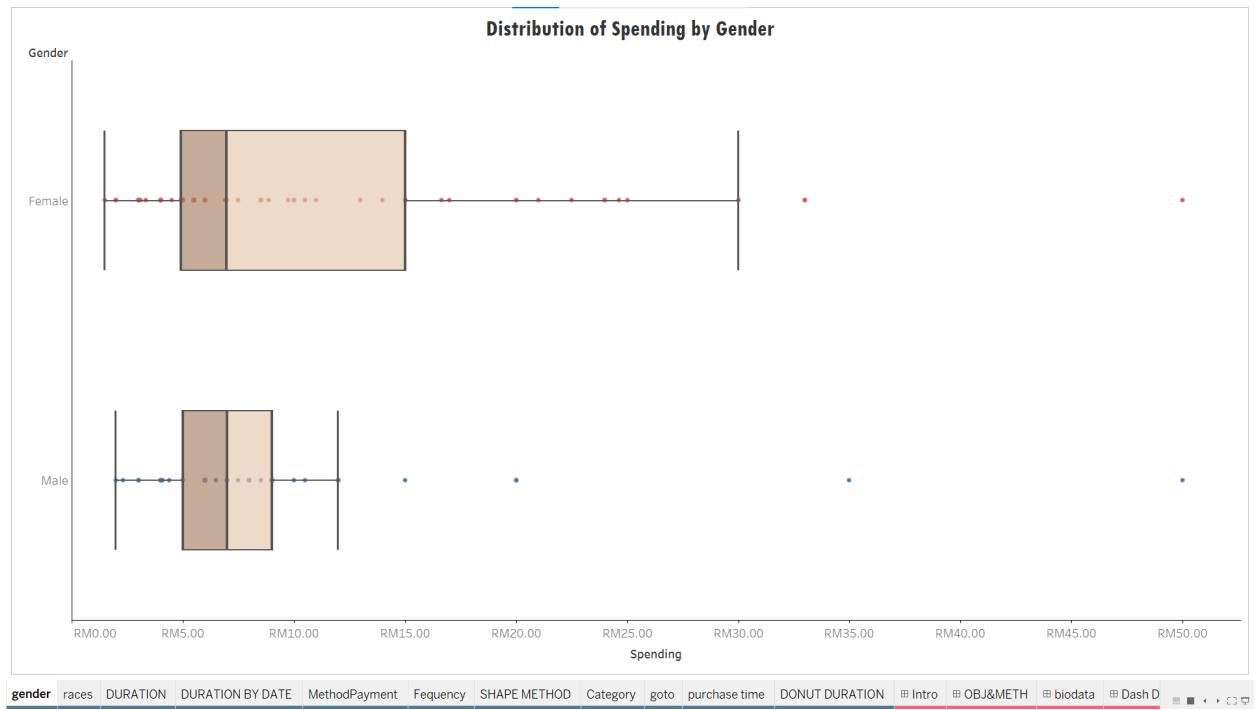


Figure 3: Story Point “Biodata”



Worksheet 1: Worksheet “races” in Biodata



Worksheet 2: Worksheet “gender” in Biodata

The storypoint above explains about from where or who the data is recorded from. It is collected daily from each of the team members for about 2 weeks. The contribution of percentage to the sum of spending is higher in malay races which is 76.10% as our team members consist of more malay students than chinese. The distribution of spending by gender without looking at the outliers is higher in female students compared to male. Based on the location of the median, the female students have a right-skewed distribution where most of the spending is concentrated below the average which is RM 6.95. However, the male student is a symmetric distribution as the data is only collected from one male student where we can say that Haziq manages his money well. Based on the IQR value, for female students the IQR value is RM 10.1 while for the male student the IQR value is RM 4.00. Thus, the male distribution is more consistent as the IQR value is smaller than females’ distribution.

3.2 Analysis of Story Point — “Venue”

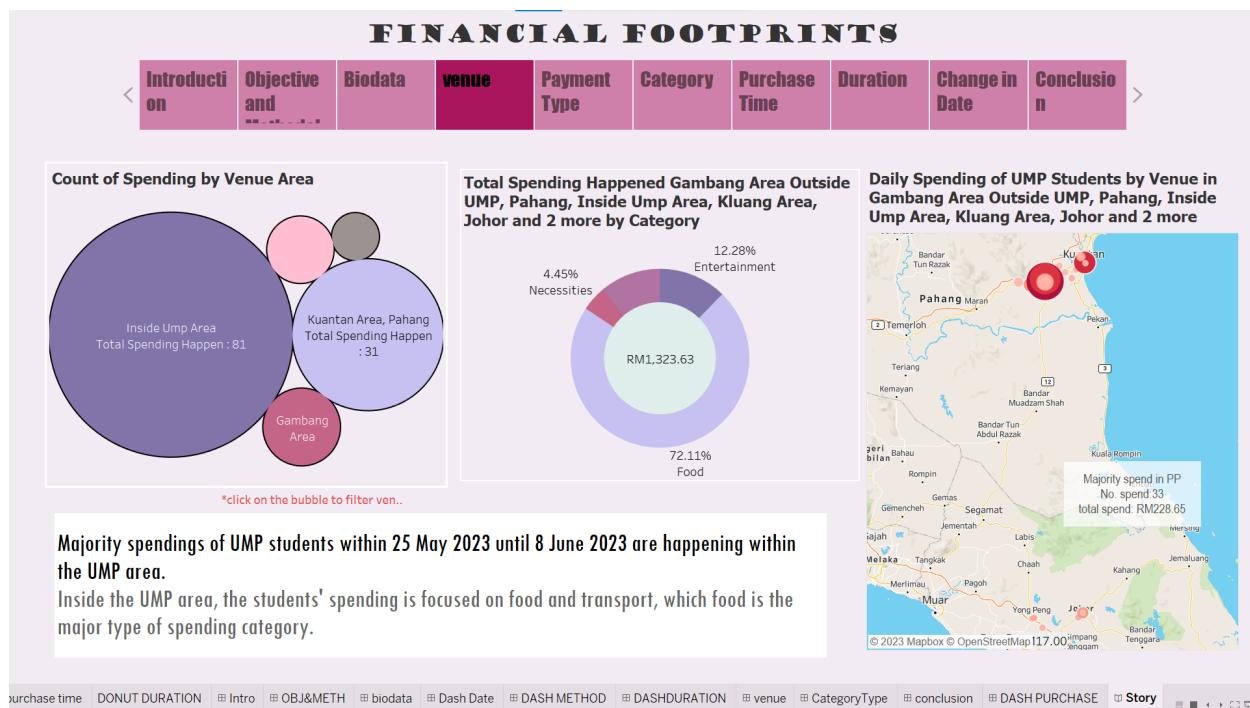
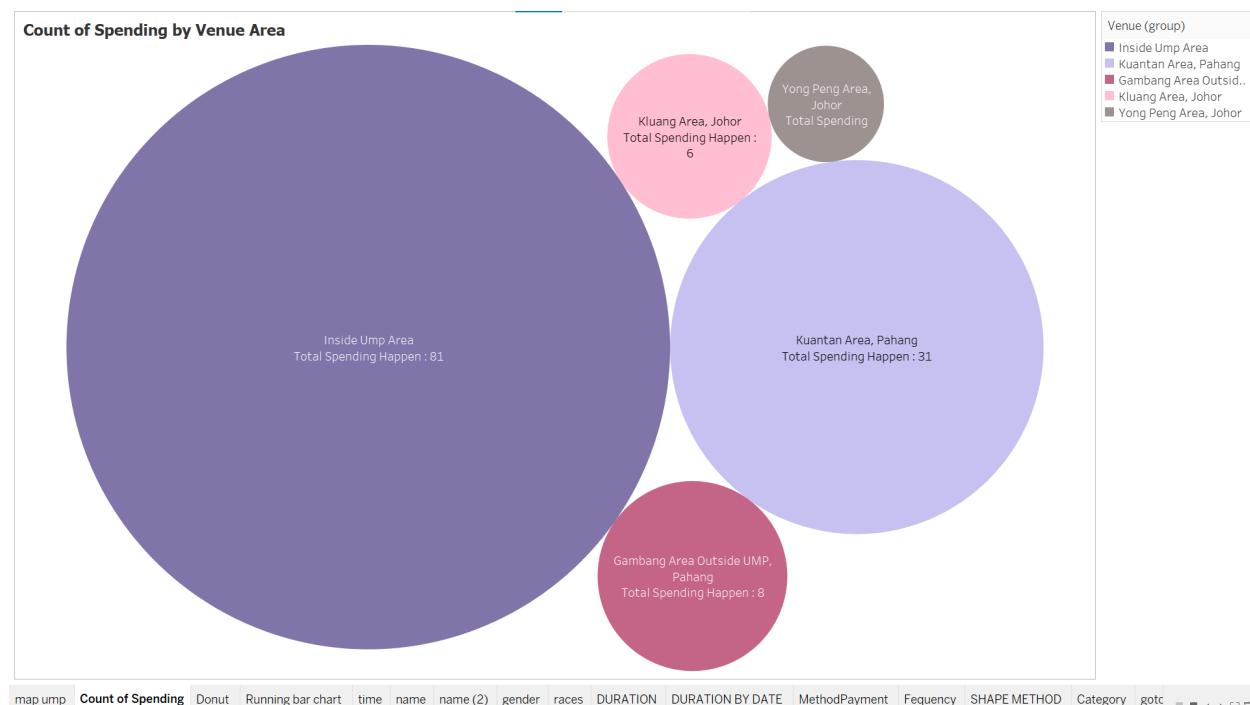


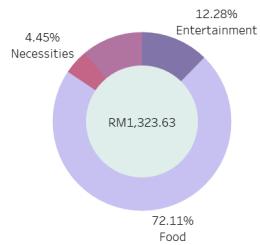
Figure 4: Story Point “Venue”



Worksheet 3: Worksheet “Count of Spending” in Venue

Total Spending Happened Gambang Area Outside UMP, Pahang, Inside Ump Area, Kluang Area, Johor and 2 more by Category

Category
Entertainment
Food
Necessities
Transport



map ump Count of Spending Donut Running bar chart time name name (2) gender races DURATION DURATION BY DATE MethodPayment Frequency SHAPE METHOD Category gotc

Worksheet 4: Worksheet “Donut” in Venue



map ump Count of Spending Donut Running bar chart time name name (2) gender races DURATION DURATION BY DATE MethodPayment Frequency SHAPE METHOD Category gotc

Worksheet 5: Worksheet “map ump” in Venue

The storyline venue is used to determine which is the venue which spending of UMP students happens most frequently. The filter action is used, the user can click on the “Count of Spending” to filter the data in both worksheets “donut” and “map ump”. Majority of UMP students’ spendings is happening within the UMP area with a record of 81 times, and within the UMP area, the most frequent spending happened in cafe Payung Putih with a record 33 times and total spending RM228.65. Among the total spendings within the UMP area which is RM 522.83, students UMP are majority in food and continue with transport. It shown that students UMP are always focus on study in university, which cause them always stay in campus gambang UMP and less hanging out for spending outside UMP campus especially weekdays. As the spendings of UMP students are focused on spendings for food, to decrease spending, students may set a budget for every lunch and dinner spent within the UMP area. Hence, to help students to decrease their monthly spendings, students make requests to MPP to deal with sellers at Cafe Payung Putih to increase the variety of food sold, especially options of low-priced food. With the lower price of food sold in cafe Payung Putih, the total monthly spending of UMP students may be decreased and hence it may help the students in saving cost especially students who are B40 and M40. Also, the second highest recorded is happening in the Kuantan area, Pahang with a record 31 times and within Kuantan area, the most frequent spending happened in East Coast Mall (ECM) with a record of 11 times and total spendings of RM182.36. With a total spendings happening in Kuantan Area of RM570.06, majority spending is also food, then followed by entertainment, necessities and transport. This is because students always go for entertainment in the Kuantan area especially in ECM during weekends to reduce stress on studying and doing assignments. It may also be due to the reason that one time entertainment is more expensive than one time spent on food. Hence, tp saving cost, students may reduce the frequency of having entertainment on Kuantan.

3.3 Analysis of Story Point — “Payment Type”

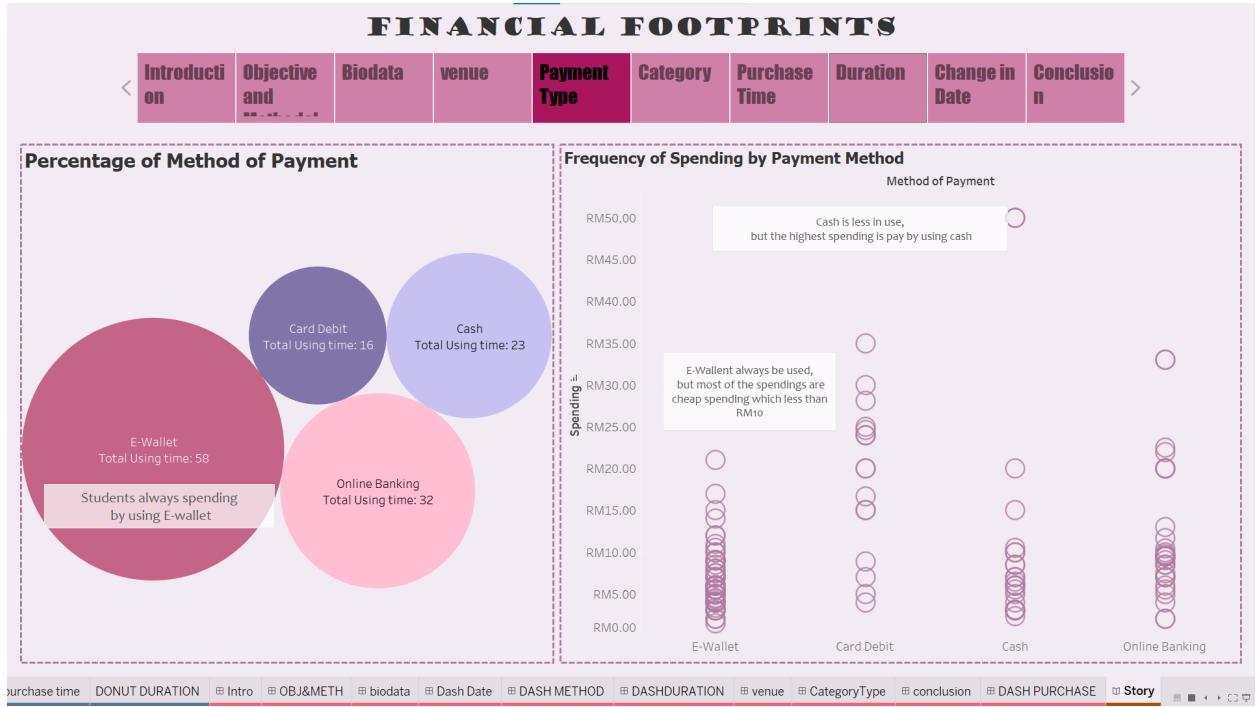
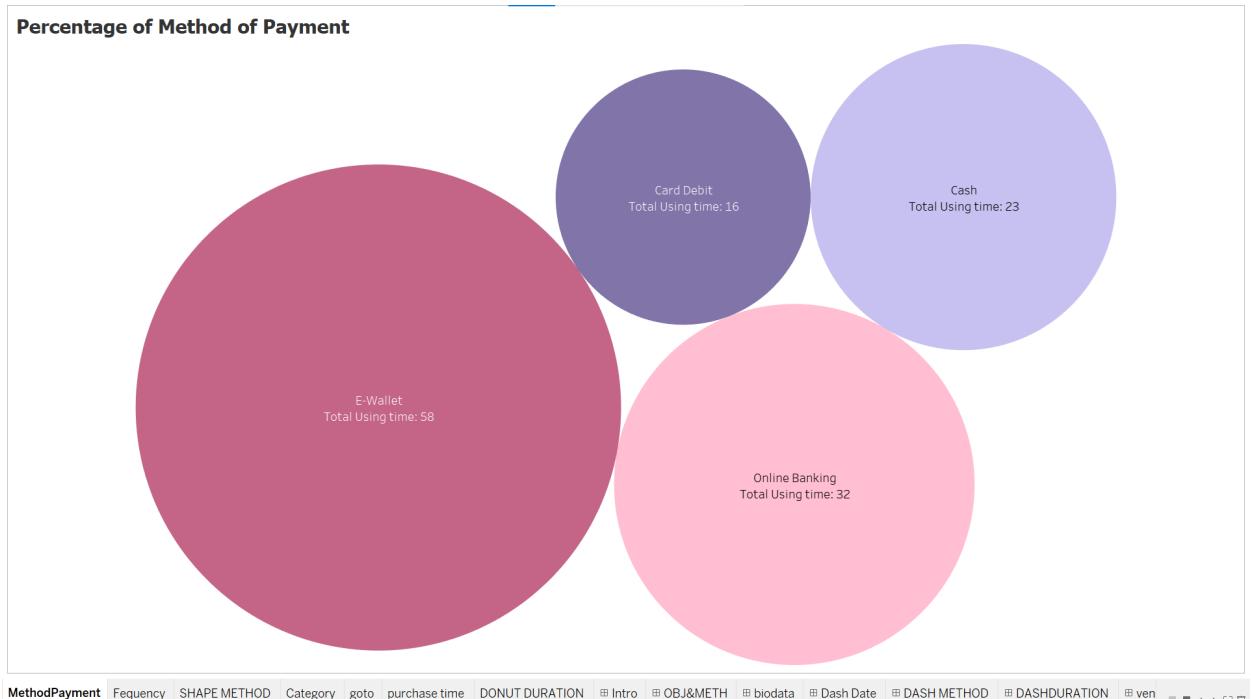


Figure 5: Story Point “Payment Type”



Worksheet 6: Worksheet “MethodPayment” in Payment Type



Worksheet 7: Worksheet “Frequency” in Payment Type

The story point payment type is divided into two graphs which is a bubble chart and side to side circle view and it is used to represent the total time payment and frequency of spending which is broken down to four types which are E-Wallet, Card Debit, Cash and Online Banking. We can see that the majority of purchases are completed using E-Wallet. This totals up to 58 times. This shows that we are most inclined to use E-Wallet as it is more convenient to use as it is available on the phone. A lot of applications enable this usage such as MAE, TNG eWallet, Boost and so much more as it only requires us to have an Internet connection. You can see a lot of purchases under RM15 are made using E-Wallet in the side to side circle view. The highest purchase being made by QR is RM21.00 while the lowest is at RM1.50. A lot of stalls have also allowed E-Wallet purchase more easily as they already show the QR code at the cashier counter. Next to it, we have Online Banking or online transfer as it is used 32 times. It is most likely used for an online purchase at online stores such as Shopee and Lazada. The highest purchase for Online Banking is RM33.00 while the lowest at RM2.00. Next, we have cash which has only been used 23 times. Cash is more inconvenient to use as it requires cashing out at the ATM. Many will experience difficulty such as having no correct amount or a huge amount compared to purchase as it will trouble the seller to give balance . The highest purchase for Cash is RM50.00

while the lowest at RM2.30. Lastly, we have Card Debit as the lowest number of times used which is 16 times. Card Debit is usually more used at physical stores at malls. This is usually used when there are in-store purchases as they have the machine to use cards compared to QR. The highest purchase for Card Debit is RM35.00 while the lowest at RM4.00. Hence, to save cost, students may explore the promotions, cash-rebate or e-voucher provided in e-wallet, as students always purchase by using e-wallet.

3.4 Analysis of Story Point — “Category”

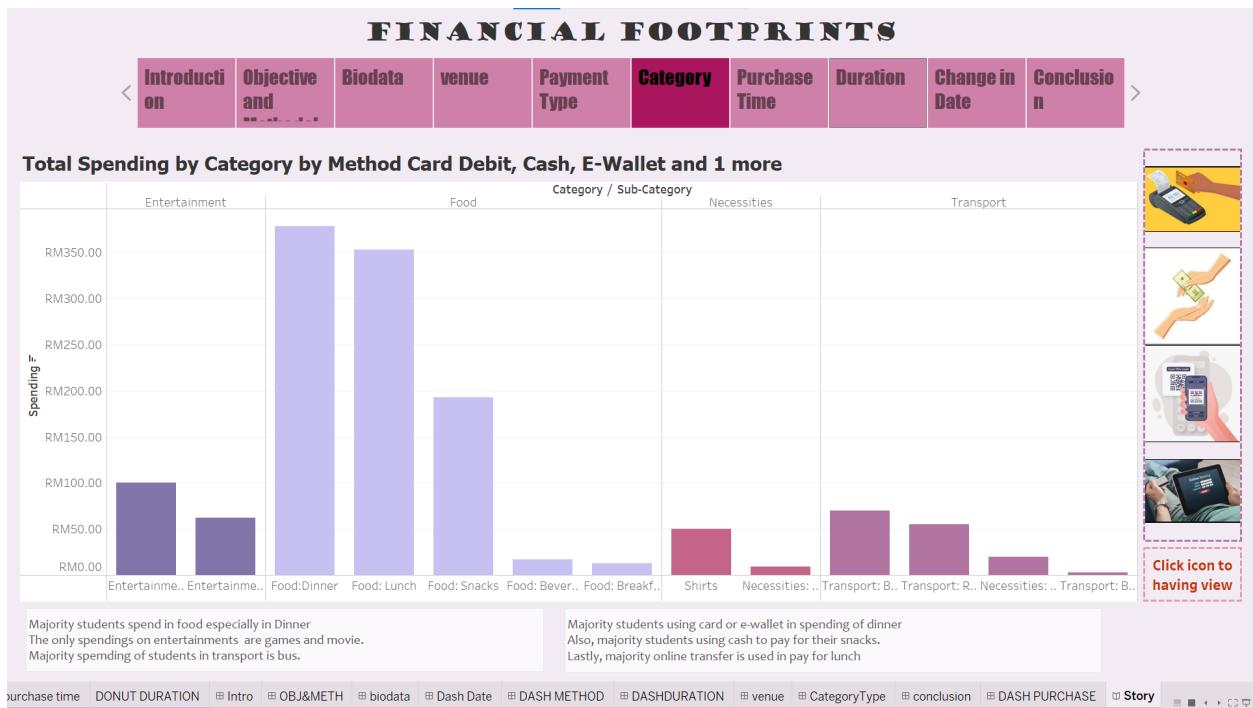
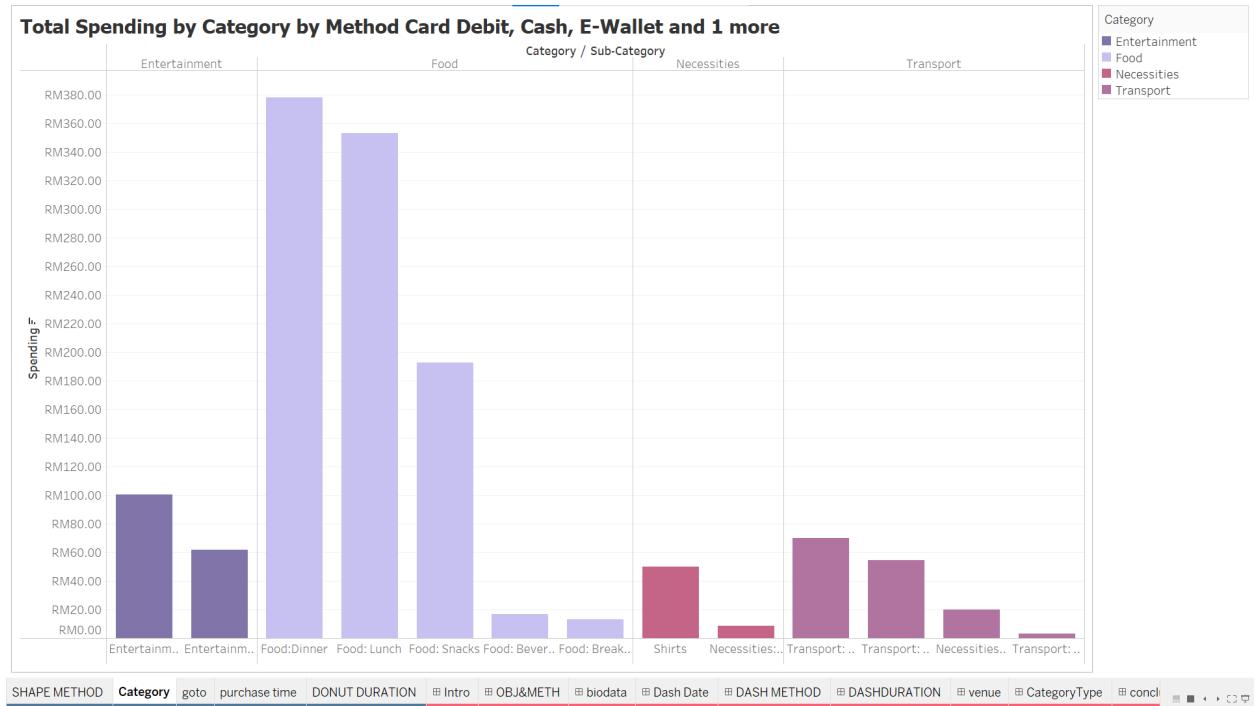


Figure 6: Story Point “Category”



Worksheet 8: Worksheet “Category” in Category

The story point Category shows a side by side bar chart which is divided into four columns of Category which is Entertainment, Food, Necessities and Transport while each bar chart shows the subcategory for the respective columns. Users can navigate and choose which type of payment category used up to liking by clicking the four icons on the right. For all types of payment methods, it can be seen that in all categories, the highest is on Food:Dinner which totals up to RM 378.54 . As it can be seen most of our purchase went to food as it has the top 3 most spending which is on dinner, lunch and snacks. The lowest spending in all types of payment methods is under transport which is beam which only amounts to RM3.00. The highest for the entertainment category belongs to movies which amount to RM100.50, for necessities is shirts which is RM50.00 and for transport is bus which is RM70.00. For card debit, the highest spending belongs to Food:Dinner which is RM104.65 while the lowest spending is on Necessities:Skincare which is RM8.85. In addition, for cash, the highest spending belongs to Food:Snacks which is RM80.80 while the lowest is Transport:Bus which amounts to RM4.00. For E-Wallet, the highest spending belongs to Food:Dinner which totals up to RM196.39 while the lowest is Transport:Beam which is RM3.00. Lastly, the highest spending for online banking is for Food:Lunch which amounts to RM 119.40 meanwhile the lowest for online banking is

Transport: Rental car which is RM18.75. Therefore, from all the interpretation, we can see that most of our money went to food rather than other stuff. Hence, to reduce spendings, students may be more careful during each spendings, especially on food.

3.5 Analysis of Story Point — “Purchase Time”

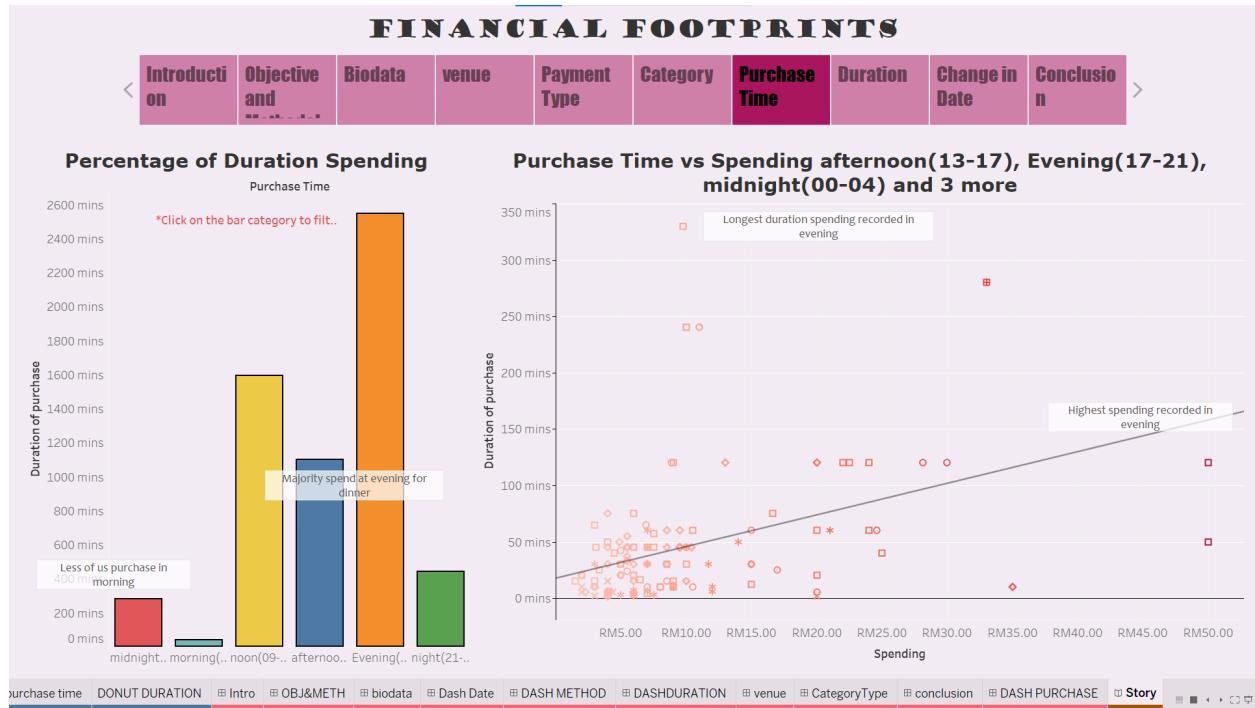
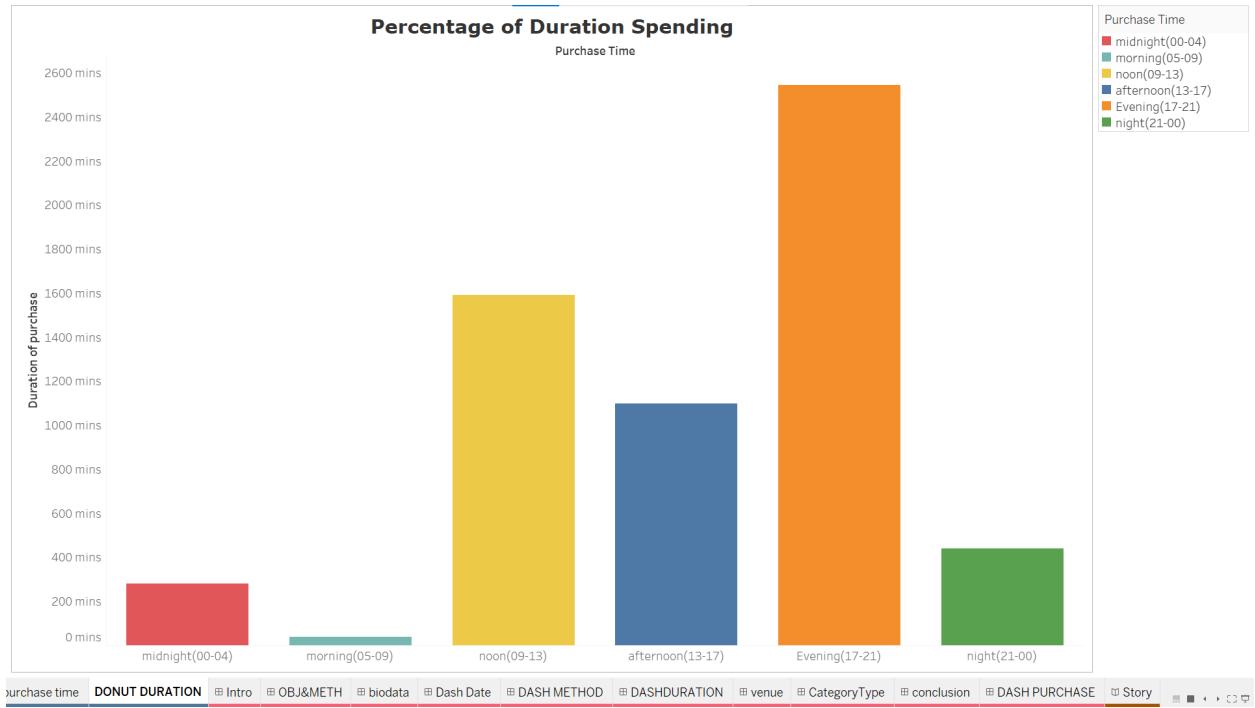
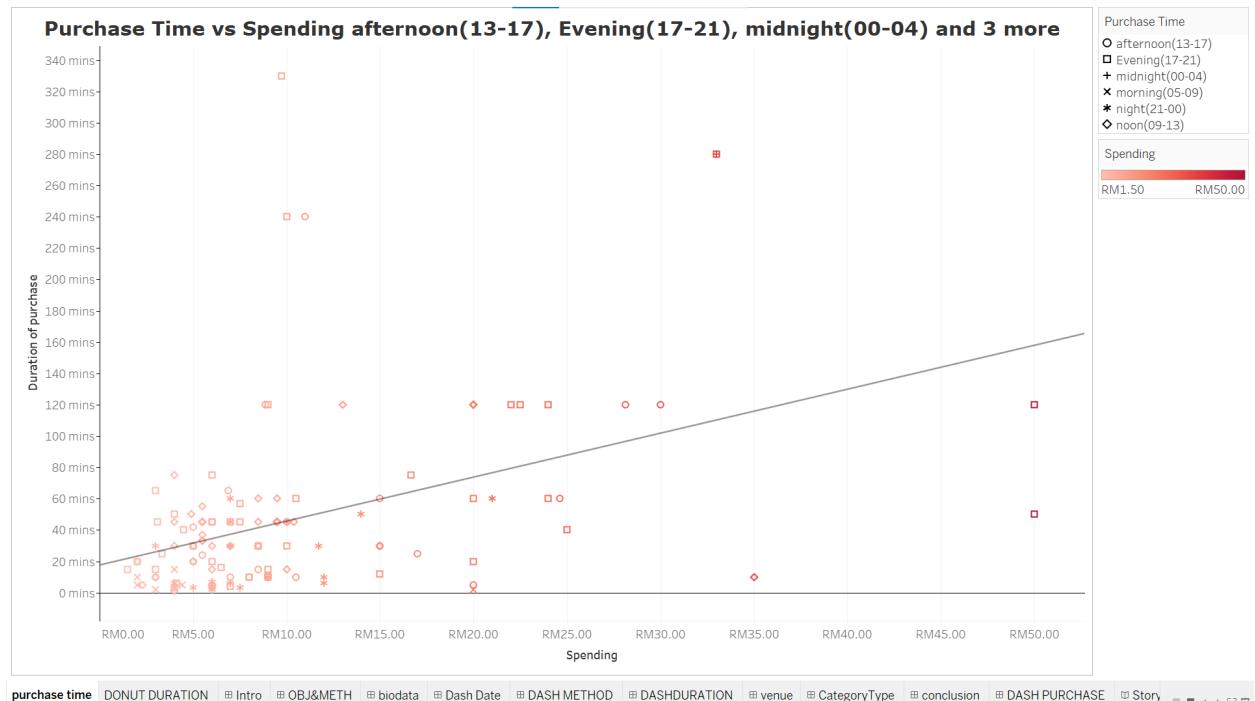


Figure 7: Story Point “Purchase Time”



Worksheet 9: Worksheet “DONUT DURATION” in Purchase Time



Worksheet 9: Worksheet “purchase time” in Purchase Time

The purchase time storypoint is a combination of two visualizations where when clicking on one of the categories on the bar chart it will filter the scatter plot according to its category. The scatter plot is shown to see the relationship of purchase time and spending using the linear trend line. For all of the categories it provides a weak positive strength of linear regression ($r=0.4312$) between the purchase time , but the model is significant since the p-value is less than $\alpha=0.05$. 18.60% ($R^2=0.185981$) of the variation in y (duration of purchase) can be explained by x (spending). The highest purchase time is in the evening, when filtering the scatter plot to evening it can be found that it has the highest duration of purchase which is 330 minutes and the highest amount of spending which is RM50.00. This is due to the fact that, evenings are the time that our class usually ends and we buy food for dinner on our way back to the hostel. Sometimes, evenings are the time for students to relax and take a break from studying where we would rent a car and go out with friends to take our mind away from the books. The least duration of purchase is during the morning as some of us do not really wake up early in the morning to take breakfast if we do so the time taken to eat is not long as we might not have the appetite to eat early in the morning. Another reason is that, as the four of us are staying inside the UMP hostel, the cafeteria is not open early in the morning before we go to class. There is only one purchase that happened at midnight where the duration is 330 minutes, this is because one of the members brought a bus ticket from UMP to Johor. The duration is long as it also records the time of journey. Therefore, it is recorded that students like to spend most of their money in the evening compared to other purchase time.

3.6 Analysis of Story Point — “Duration”

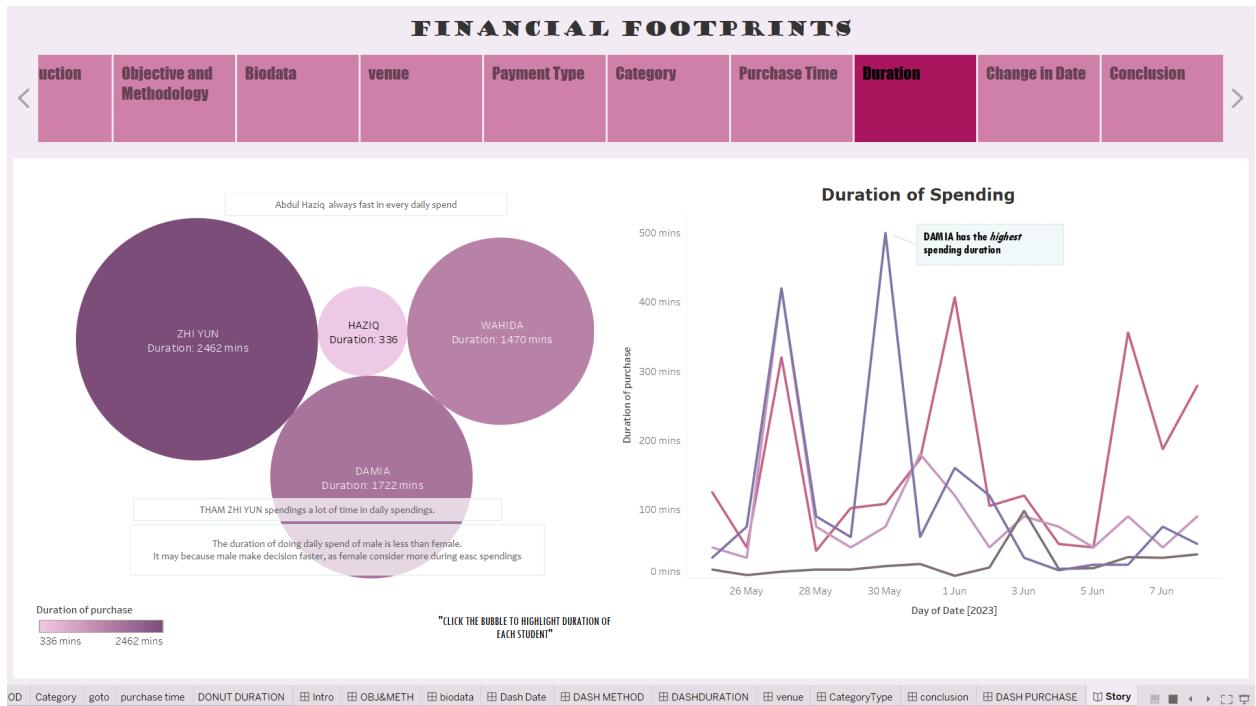
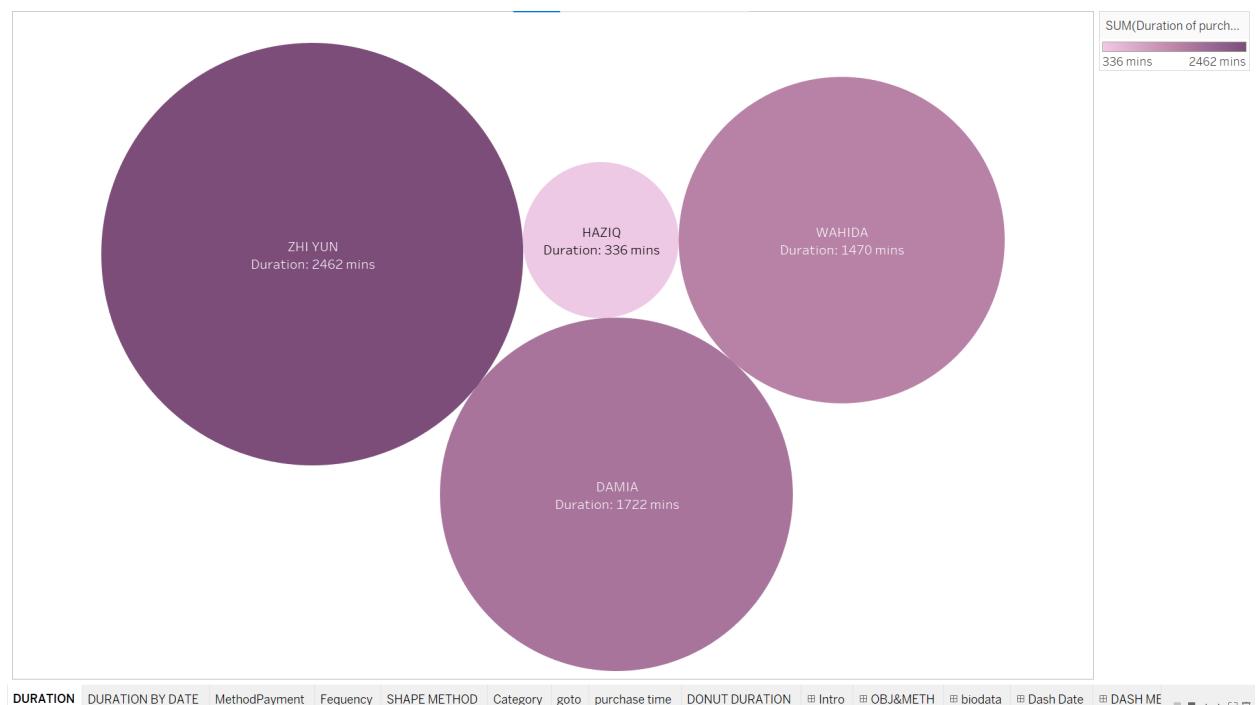
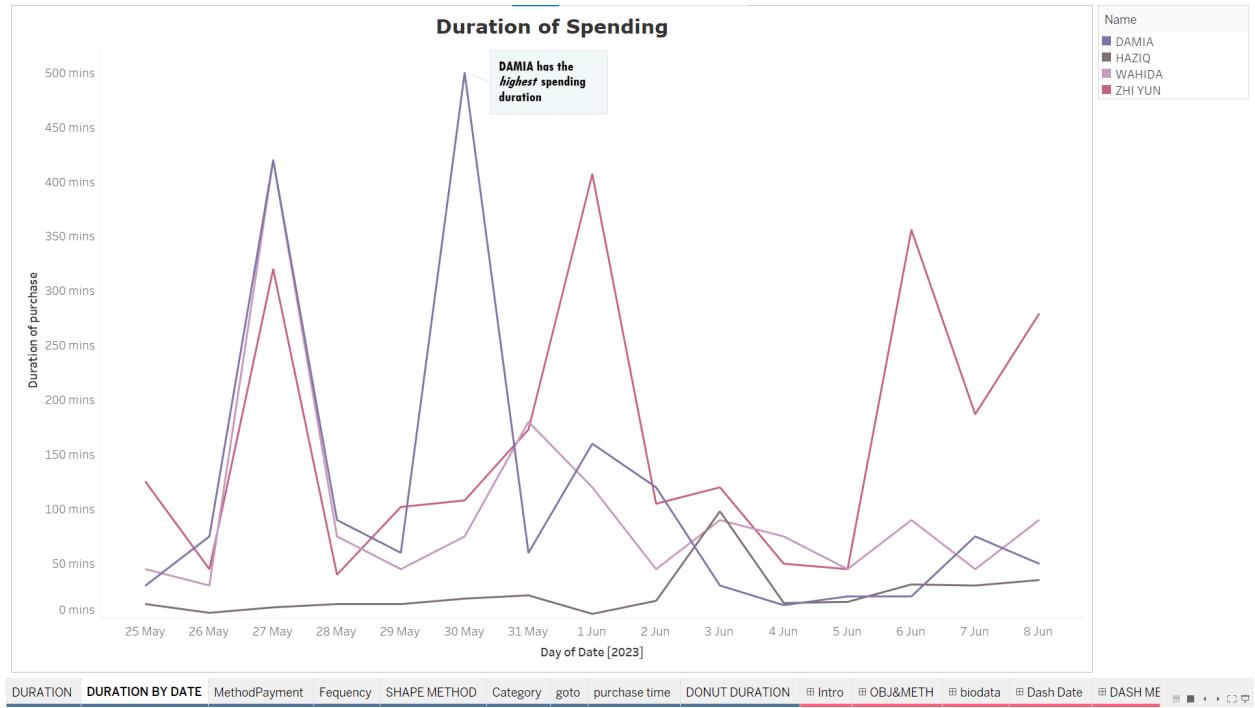


Figure 8: Story Point “Duration”



Worksheet 10: Worksheet “DURATION” in Duration



Worksheet 11: Worksheet “DURATION BY DATE” in Duration

For duration , we combined two types of visualization which is bubble chart for sum of duration purchase and duration of purchase by date using a line chart. The sum of duration for Haziq is the least which is only 336 mins and the highest is Tham Zhi Yun which is 2462 min. This can conclude that the sum of duration for purchasing is also affected by gender. Male tend to make a quick decision to buy something compared to females. Haziq who represents male gender shows that they have a more decisive and straightforward decision making style when it comes to purchases. They may prioritize efficiency and speed in their decision making process, leading to quicker transactions and shorter spending durations . Rather than that, females may have different priorities or preferences when it comes to spending money. They may spend more time exploring different options or trying first before committing to purchase. Plus, females also compare the price over the store or cafe before purchasing it. It will affect the duration of spending for each individual. Not only in the walk-in store, the online platform such as Shopee makes it easy to compare prices, however it still increases the time in spending .Next, Damia recorded the highest duration of purchase which is on 30 May. On that date, Damia has a game that is held by her university faculty which is called FUN-DAY. She went bowling. After that, she hangs out with her friends watching a movie and has dinner at the restaurant. All these

activities make her the highest duration in spending for the entire two weeks compared to the other three members. For each activity, she takes every single thing as consideration before making a decision or purchasing something such as which game she wants to join, what movie she wants to watch, how much budget that she wants to spend on that day. This consideration takes time that can charge a lot of duration during spending. Hence, duration of spending can be influenced by many factors such as various individuals and situations that are beyond gender.

3.7 Analysis of Story Point —“Change in Date”

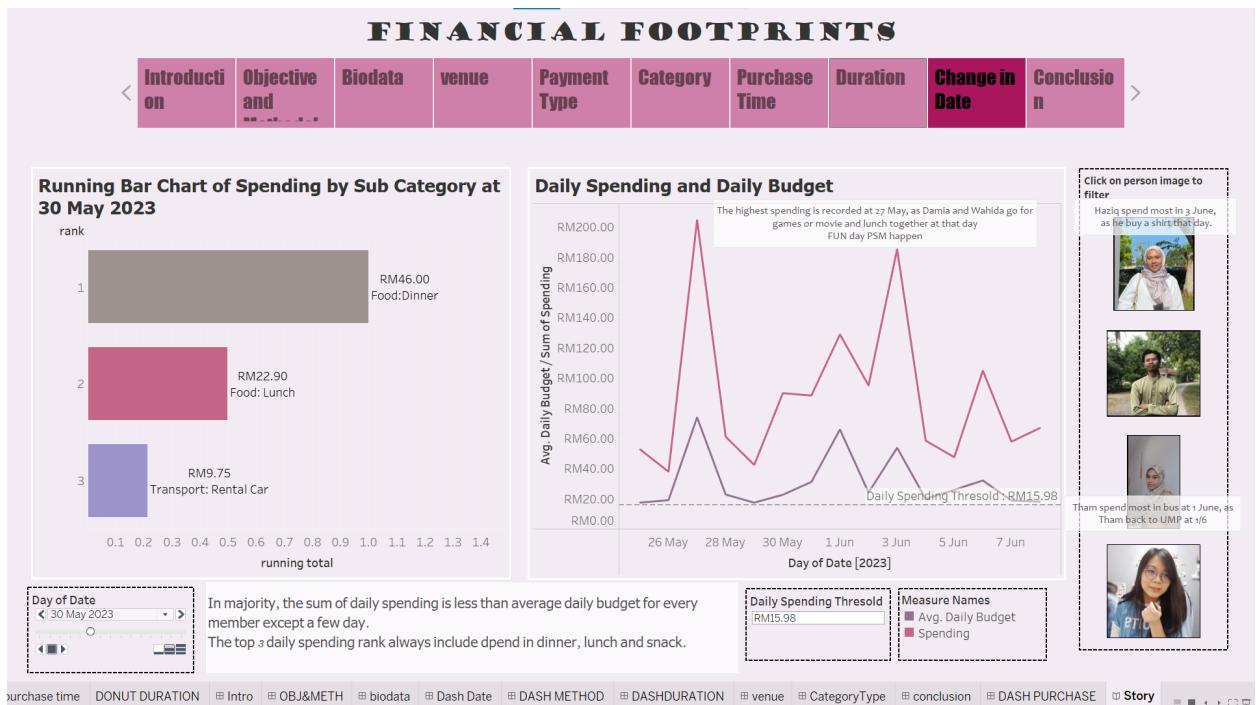
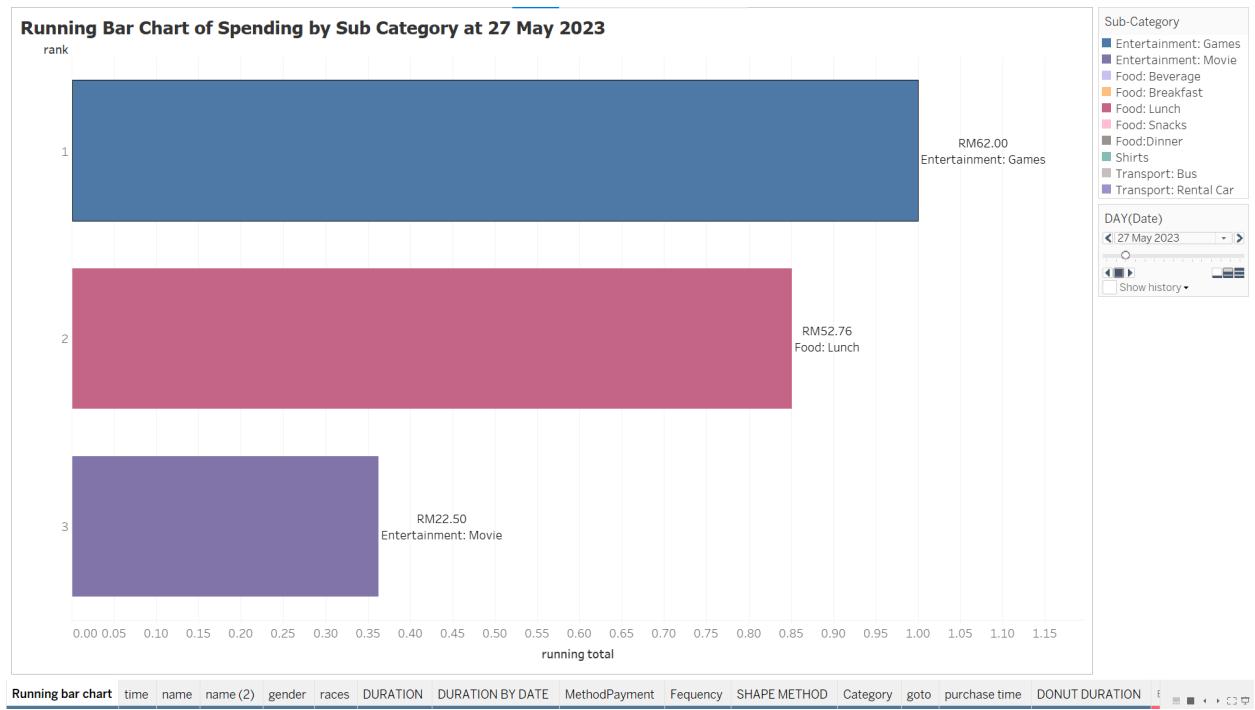
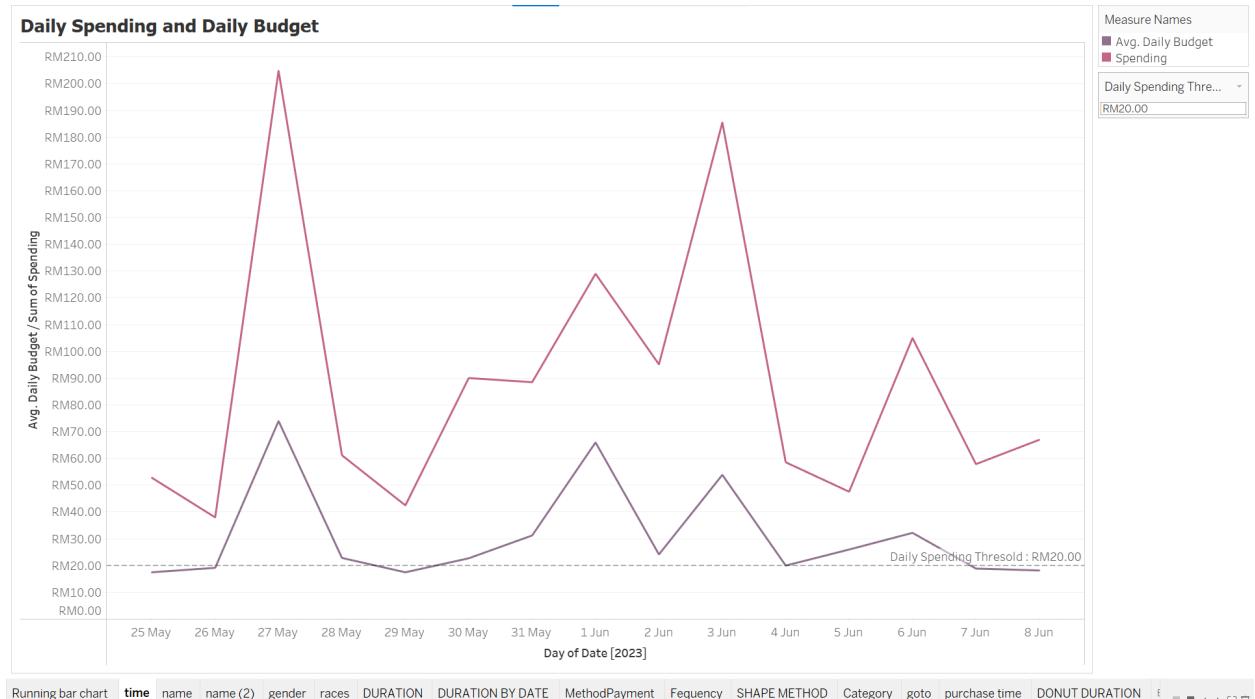


Figure 9: Story Point “Change in Date”



Worksheet 12: Worksheet “Running bar chart” in Change in Date



Worksheet 13: Worksheet “time” in Change in Date

The storyline Change in Date is used to determine when the UMP students have high spending records. The filter action is used, the user can click on the person image to filter the data in both worksheets “Running bar chart” and “time”. Among date recording data, the highest total spending is recorded on 27 May 2023 whereas the lowest total spending is recorded on 26 May 2023. Also, the highest total daily budget is also recorded on 27 May 2023 whereas the lowest total daily budget is recorded on both 25 May 2023 and 29 May 2023. This is because FUN-DAY PSM happens on 27 May 2023 from 11.00 a.m. at Playground 6, Kuantan and there is a cost charged for the students who join the FUN-DAYS PSM, which is RM 20 for those who join boiling games and RM 7 for those who join badminton games. Also, the majority of them are having lunch with their friends or with their PA after the events, so the spending on food is increasing too. As 2 out of 4 members are going to the events, hence the spending on games and lunch is higher compared to the other dates and causing the total spendings to become the highest record. Whereas the lowest spending record happened on 26 May 2023, it is due to the reason that Majlis Aspirasi Kegemilangan Staf & Pelajar dan Sambutan Hari Raya Aidilfitri PSM happened on that day from 10.00 a.m. until 12.30p.m. at Astaka and this is an free-of-charge activity for the PSM students. As all the data sources are students from faculty PSM and all 4 of them joined the event, hence the total spendings happened on that day is the lowest. Also, as the lunches are provided for all PSM students who attend the event, the spending on lunch is 0 on that day, and hence, it causes the total spending to be lower than the other day. Hence, it shows that, to decrease the daily spending, students may be active in joining the events held which are free-of-charge, and reduce frequency to go for charged events. Also, one of the members, Haziq has the highest spending on 3 June 2023, as he spends on a shirt and on a movie on the same day. Whereas, another member, Zhi Yun has the highest spending on 1 June 2023, as she is spending on bus ticket to back to UMP from Johor, and spending on dinner and lunch on that day. It is showing that the spending on weekends is always higher than the weekdays, as the students alway have a variety of entertainment or relaxing activities to reduce stress faced in academics. For example, joining club activities, shopping, playing games, watching movies or going back to my hometown. To reduce spending, students may make good decisions on spending on less cost relaxing activities, so stress can be reduced at the same time cost can be saved.

4.0 Concluding Remarks



Figure 10: Story Point “Conclusion”

To summarize our storyline, it is recorded that the majority of the spending among the team members happens inside the UMP area where most of the money is spent on food and also transport. This is because all of us are hostel residents at UMP and transport is required as we might want to go out to the city. Next, the highest contribution of the payment category is by using e-wallet. It is a new technology where people only need to scan the qr code of the shop and enter the amount required to pay by only using our mobile phones. We often use it to purchase our foods. Cash method is recorded the least as for some cashiers especially marts they do not have change for a big amount of money. The highest purchase time is during the evening where it is the time students look for dinner food and go out with friends as class is over by that time. The longest duration is 500 minutes, because one of the members went to the mall to go bowling and watch a movie with her friend. In majority most of the spending that occurs does not exceed each of their daily budgets which means that the team members know how to manage their money well. The most top 3 ranking of spending category is always food which includes dinner, lunch and snacks. This is because food is a requirement of everyone's life and we do not give

second thoughts about food as for students, sometimes when they find it difficult to study and learn when they are hungry.

The visualization provides meaningful insights that will help us allocate our budget for the near future spending. The objective of this project has been achieved where we want to see the financial behavior of students. By visualizing the money that has been spent , we can see what category we usually and rarely spend money on. Additionally, people can learn more about their own spending patterns and improve their ability to make wise choices that will help them reach their financial goals.

5.0 Reference

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 اونیورسیتی ملیسیا پاهانغ UNIVERSITI MALAYSIA PAHANG PUSAT SAINS MATEMATIK	SUBJECT: BSD1323 STORYTELLING AND DATA VISUALIZATION		MARKS: 90(30%)
	TOPIC: CHAPTER 3 to CHAPTER 8		
	GROUP PROJECT	DUE DATE: 23 May - 25 June 2023	
	GROUP PROJECT MEMBERS (ID, NAMES, SECTION) 1. SD22002, ALMIRA DAMIA BINTI SYAHNIZAM, 01G 2. SD22030, TUAN NURSHAFIEKA WAHIDA BINTI TUAN NADIN, 01G 3. SD22049, THAM ZHI YUN, 02G 4. SD22025, ABDUL HAZIQ AZIM BIN ABDUL MALIK, 01G		

GROUP PROJECT: MARKING SCHEME

CLO	Description	PLO mapping	Percentage	Marks
CLO2	Demonstrate the data visualization skill using an effective storytelling.	PLO2: Cognitive Skills and Functional work skills with focus on Numeracy skills C3: Application	10%	30

LEVEL OF ACHIEVEMENT				
1 Inadequate	2 Emerging	3 Developing	4 Good	5 Excellent

QUES.	ELEMENTS	MARKS	LEVEL OF ACHIEVEMENT
1&2	a. At least 2 weeks daily data from all members. b. At least 1 Date data type in the dimension shelf. c. At least 2 Categorical/qualitative data types in the dimension shelf. d. At least 1 Geographic data type in the dimension shelf. e. At least 3 Quantitative data types in the measure shelf.	5	
3	a. A catchy title and a clear storyline. b. At least 7 story points. c. Combination of text, image, worksheets, and dashboards. d. Combination of several types of visualization from each data field types. e. Interactive visualizations (include filters and animation).	5	
TOTAL (10)			

CLO	Description	PLO mapping	Percentage	Marks
CLO3	Display a powerful data visualization, report, dashboard or stories in solving various applications using appropriate software.	PLO3: Functional work skills with focus on Practical, and Digital skills P4: Mechanism	10%	30

CRITERIA	LEVEL OF ACHIEVEMENT						WEIGHTAGE	SCORE
	0	1 Inadequate	2 Emerging	3 Developing	4 Good	5 Excellent		
Theory/ Knowledge on data visualizatio n and dashboard	No theoretical knowledge on data visualization and dashboard observed.	Very little knowledge on data visualization and dashboard observed or some information is incorrect.	Some knowledge or information observed on data visualization and dashboard but missing all major points.	Some knowledge or information observed on data visualization and dashboard but still missing some minor points.	Good knowledge on data visualization and dashboard observed, missing some minor points.	Excellent knowledge on data visualization and dashboard observed; provides all necessary background principles.	1	
Techniques on Story & Data Validation	Failed to create a story.	Inappropriate techniques on story are demonstrated.	Partly correct techniques on story are demonstrated with partly valid data.	Correct techniques on story are demonstrate with partly valid data.	Good techniques on story are demonstrate with valid but not completely accurate data.	Competent techniques on story are demonstrated with valid and accurate data.	2	
Efficiency/ Assembly/ Tidiness	Failed to demonstrate the given task.	Not efficiently, effectively, and neatly demonstrated the given task.	Partly efficient, but not effectively and neatly demonstrated the given task.	Efficiently, but not effectively and neatly demonstrated the given task.	Efficiently and effectively but not neatly demonstrated the given task.	Efficiently, effectively, and neatly demonstrated the given task.	1	
The story points result	Failed to create any story point	Lack of story points / zero readability of the result. Poor originality.	Partly complete the story points.	Story points are presented but at low readability. Reader has to guess some of the missing information. Less originality.	Clear and neat presentation of story points. All required results are presented. Readability. Complete with labels, title, axes, etc.	Very clear and neat presentation of story points. All required results are presented. High readability. Very complete with labels, title, axes, etc.	1	
Results (interactive features)	No interactive data visualization and story points.	Lack of interactive data visualization and story points.	Very minimal interactive data visualization and story points are shown.	Barely interactive data visualization and story points are shown.	Clear interactive data visualization and story points are shown.	Highly interactive data visualization and story points are shown.	1	
						TOTAL	30	

CLO	Description	PLO mapping	Percentage	Marks
CLO4	Work collaboratively as part of a team to solve given problem through group discussion and presentation.	PLO4: Functional work skills with focus on Interpersonal skills A3: Valuing	5%	15

CRITERIA	LEVEL OF COMPETENCY					WEIGHTAGE	SCORE
	1 Very Weak	2 Weak	3 Fair	4 Good	5 Very Good		
Foster Good Relationship	No clear evidence of ability to foster good relationships and work together effectively with other group members towards goal achievement.	Able to foster relationship and work together with other group members towards goal achievement but with limited effect and require improvements.	Able to foster relationship and work together with other group members towards goal achievement with some effect(s) and require minor improvements.	Able to foster good relationship and work together with other group members towards goal achievement.	High ability to foster good relationship and work together effectively with other group members towards goal achievement.	1	
Alternate Roles	No clear evidence of ability to assume alternate roles as a group leader and group members demonstrated in practice.	Attempt to demonstrate in practice the ability to alternate roles as a group leader and group members but with limited effect and require improvements.	Able to demonstrate in practice the ability to assume alternate roles as a group leader and group members with some effect(s) and require minor improvements.	Able to demonstrate in practice the ability to assume alternate roles as a group leader and a group member to achieve the same goal.	Show clear evidence to assume alternate roles as a group leader and a group member demonstrated in practice.	1	
Respect and accept opinion	Not able to respect and accept opinion of others that leads to conflicts	Limited respect and acceptance of others' opinions in achievement group's objectives	Able to respect and accept opinion of others in achieving group's objectives	Able to well respect and accept opinion of others in achieving group's objectives	Able to very well respect and accept opinion of others in achieving group's objectives	1	
					TOTAL (15)		

***Note:** A self and peer review questions will be given to each of the student to assess their group member and their teamwork and the outcome will assist lecturer to assess the CLO4 rubric.

CLO	Description	PLO mapping	Percentage	Marks
CLO5	Demonstrate an active communication through group discussion and presentation.	PLO5: Functional work skills with focus on communication skills A3: Valuing	5%	15

CRITERIA	LEVEL OF COMPETENCY					WEIGHTAGE	SCORE
	1 Very Weak	2 Weak	3 Fair	4 Good	5 Very Good		
Clear delivery of ideas	Not able to deliver ideas clearly and require major improvements	Able to deliver ideas and require further improvements	Able to deliver ideas fairly clearly and require minor improvements	Able to deliver ideas clearly	Able to deliver ideas with great clarity	3/5	
Confident delivery of ideas	Not able to deliver ideas confidently	Able to deliver ideas with limited confidence and require further improvements.	Able to deliver ideas fairly confidently and require minor improvements	Able to deliver ideas confidently	Able to deliver ideas with great confidence	3/5	
Effective and articulate delivery of ideas	Not able to deliver ideas effectively	Able to deliver ideas with limited effect and require further improvements	Able to deliver ideas fairly effectively and require minor improvements	Able to deliver ideas effectively and articulately	Ability to deliver ideas with great effect and articulate	3/5	
Understand and respond to questions	Not able to understand and respond to a question	Able to understand and answer questions but not able to accurately answer the question	Able to understand and answer questions satisfactorily	Able to respond to questions well	Able to fully understand and respond to questions very well	3/5	
Adapt delivery to audience level	Not able to deliver appropriately to the audience level	Able to deliver ideas with limited appropriateness to the target audience and require further improvements.	Able to deliver ideas appropriately to the target audience satisfactorily	Able to deliver ideas appropriately to the target audience well	Able to fully deliver ideas appropriately very well	3/5	
					TOTAL (15)		