Faculty of Computing

SECD2613-09

SYSTEM ANALYSIS AND DESIGN

PROJECT PHASE 1 – PROJECT PROPOSAL

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1.0   Introduction

E-Hailing is a type of an electronic system that provide users such as workers, students, or even regular people to travel around the world easily. As simple as clicking a button towards the digital system, everything is possible from their houses and their workplaces miles away. Usually, mobile apps will facilitate this kind of system, which has transformed on how people get around not just globally but also locally. With platforms such as _Grab_, _KumPool_ and _MyCar_, users now have easier and convenient ways to book their rides using their smartphone devices. This situation not only changed how we travel but also bring in new challenges and opportunities to everyone involved.

The rise of e-Hailing is getting obvious from time to time, mainly due to the widespread uses of smartphones and the increasing demand for on-demand transportations. Companies like Grab have quickly become popular which offers a range of services including taxis and private cars.

While this system has its own benefits, this system also has its own challenges and difficulties. Regulations around e-Hailing are still ambiguous, leading to confusion and inconsistencies for both drivers and passengers. Safety is also a big concern, with the questions about how drivers are vetted and the standards of the vehicles they use. In addition, there will be issues of fairness in competition with traditional style services.

As the digital economy evolves and encouraging innovation, it is essential to understand the e-Hailing concept better and finding ways to address these challenges. The research of ours aims to do just that by looking into how e-Hailing is currently working, what kind of problems people are facing and coming up with practical estimations and solutions.

By studying the rules, safety measures, competition and what passengers and drivers' needs and wants, this research hopes to provide useful suggestions for policymakers, companies and others involved. We aim to create an environment where e-Hailing can thrive while maintaining everybody's satisfaction on the roads.

2.0   Background Study

E-Hailing which refers to using smartphone apps to book rides has become increasingly popular among residents. Companies like *Grab* and *MyCar* introduce a few convenient alternatives to traditional taxi services, allowing people to book rides with just a few taps on their smartphones easily.

The rise of e-Hailing contributed to several factors such as the widespread uses of smartphones among current generations and increasing the demand for flexible transportation options. These kind of apps offer various services such as taxis and private cars that cater to different preferences and budgets.

On the other hand, the growth of this system has raised concerns. Regulations governing the e-Hailing services are under development, leading to uncertainties for both drivers and passengers. Besides, safety issues may arise such as driver's background checks and vehicle standards. This is a prompt call for stricter regulations.

3.0   Problem Statement

The rapid growth of e-Hailing services has brought forth a series of pressing challenges. Firstly, the absence of clear regulatory guidelines creates uncertainty for both service providers and users, hindering the smooth functioning of the industry. Safety concerns, including driver authentication and standards of the vehicles, passenger welfare risks and necessitating robust regulatory oversight.

Moreover, the emergence of e-Hailing sparked debates in regards to its impact on traditional public transportation services. This has caused a major issue of fairness and competition. By addressing these challenges, we are able to foster a secure and equitably competitive e-Hailing environment as part of a crucial issue.

4.0   Proposed Solutions

Feasibility Study: E-Hailing Services

1. **Technical Feasibility:**
   - E-Hailing depends on mobile apps, which are widely accessible and user-friendly.
   - Technical infrastructure, such as internet connectivity and GPS systems are widely available and reliable.
   - Both drivers and passengers can easily access and use e-Hailing platforms on their smartphones.

2. **Operational Feasibility:**
   - E-Hailing services like Grab and MyCar have demonstrated operational success as it has served millions of users globally.
   - The process of booking rides through mobile apps is straightforward and efficient. Thus, only minimal training required to users.
   - Drivers can easily register and start providing services through e-Hailing platforms.

3. **Economic Feasibility:**
   - The popularity of e-Hailing services indicates strong demand from users.
   - E-Hailing platforms generate revenue through commissions on rides, which can sustain operational costs and support growth.
   - While there are regulatory challenges and safety concerns, the economic potential of e-Hailing justifies investment in addressing these issues to ensure long-term sustainability.

Overall, the technical, operational, and economic feasibility of e-Hailing services suggests a promising opportunity for further development and improvement, with the potential to address challenges and create a safer and more efficient transportation option for users.

Estimations made using *Cost-Benefit Analysis* (CBA):

Estimated Costs:

Training for drivers and support staff:	RM 20 000
Mobile Apps:	RM 10 000
Customer Support:	RM 5 000
Vehicle Maintenance:	RM 30 000

Expected Benefits:

Increased accessibility for users:	RM 2 000 per month
Reduction in traditional taxi service competition:	RM 25 000
Revenue generation through ride commissions:	RM 10 000

Assumptions:

Discount rate:	15%
Sensitivity factor (cost):	0.50
Sensitivity factor (benefit):	0.90
Annual increment (costs):	5%
Annual increment (benefit):	15%

Cost-Benefit Analysis (CBA) for our team's E-Hailing Project Proposal

CRITERIA (RM)	YEAR			
1. COSTS	YEAR 0	YEAR 1	YEAR 2	YEAR 3
A. Development				
Mobile Apps	5 000			
Training for drivers and support staff	10 000			
Total Development Cost	15 000			
B. Operational				
Customer Support		2 500	2 625	2 756
Vehicle Maintenance		15 000	15 750	16 538
Total Operational Cost (Annual)		17 500	18 375	19 294
Present Value (PV)		15 217	13 894	12 686
Accumulated Cost		30 217	44 112	56 797
2. BENEFITS				
Increased accessibility for users		21 600	24 840	28 566
Reduction in traditional taxi service competition		22 500	25 875	29 756
Revenue generation through ride commissions		9 000	10 350	11 903
Total Benefit (Annual)		53 100	61 065	70 225
Present Value (PV)		46 174	46 174	46 174
Accumulated Benefit		46 174	92 348	138 522
Gain/Loss		15 957	48 236	81 725
Profitability Index	5.448			

The estimated profitability index (PI) value for our e-Hailing project proposal is **5.448**.

Based on our estimation of data, we obtained a PI value higher than 1.00. Thus, we estimate this is as a good investment.

5.0   Objectives

We have decided to implement several objectives to the project. This is to ensure the project's aim and goal is clear to the team development and to the users. Our major goal is to improve the e-Hailing system to the users and to the administrators.

No.	Objectives
1	Understand how e-Hailing services like *Grab* and *MyCar* work and what problems people face when using them.
2	Find safety concerns related to e-Hailing, including how drivers are checked and the condition of the vehicles they use.
3	Investigate the current regulations around e-Hailing and highlight areas of inconsistency.
4	Explore the impact of e-Hailing on traditional taxi services and assess fairness and competition issues.
5	Develop a user-friendly interface for both drivers and passengers to ensure a seamless on boarding experience.
6	Implement a simple and intuitive booking interface for passengers, allowing for easy scheduling of rides through the app or website.
7	Integrate multiple payment options into the platform to provide passengers with convenience in paying for their rides.

6.0   Scope of the Project

Our e-Hailing project aims to create an easy-to-use platform for booking public transportation rides. Passengers can book rides through an app or website, and drivers can accept these requests. Passengers will be able to pay for rides using various methods like cards or cash, and they can track their driver's location conveniently. Drivers will have tools to manage their schedules and earnings to ensure a smooth experience for both parties.

For **passengers**, the platform will offer:

- Easy registration and profile creation.
- Simple booking and scheduling of rides.
- Multiple payment options for convenience.
- Ability to track the ride and provide feedback.

For **drivers**, the platform will provide:

- Straightforward registration and verification process.
- Tools to manage ride requests and schedules.
- Tracking of earnings and performance metrics.
- Safety features for peace of mind.

Admins will have:

- A dashboard to manage users and transactions.
- Monitoring of key performance indicators.
- Ensuring compliance with regulations and security measures.

Additional features may include:

- Integration with loyalty programs and partnerships.
- Customization options for branding and localization.

Overall, our project covers the development, testing, and deployment of the E-Hailing platform, with ongoing maintenance and support for continuous improvement.

7.0   Project Planning

The important phase is the project planning, where we planned and discuss the possible ways to achieve our goals. There are four parts in our project planning, including Human Resource, Work Breakdown Structure (WBS), PERT chart and Gantt chart.

7.1   Human Resource

A human resource is important to organize our project team efficiently. This may increase our productivity to develop and design a new e-Hailing system to the users.
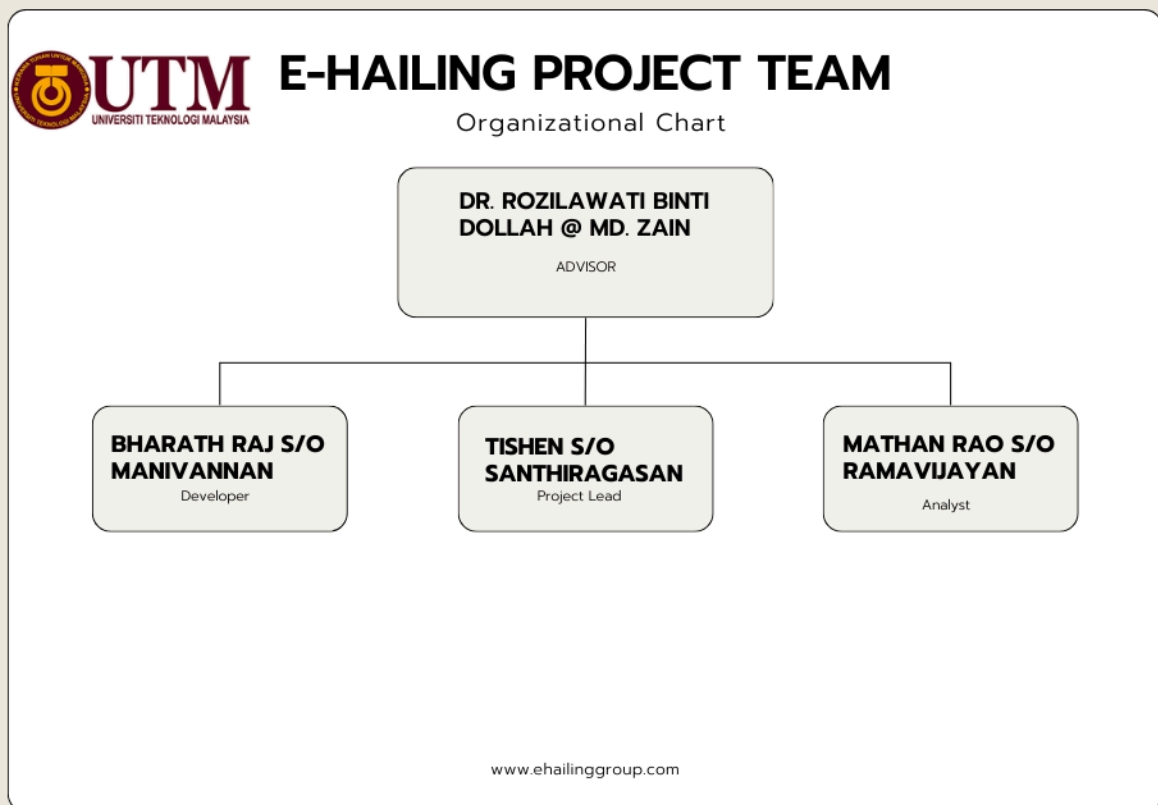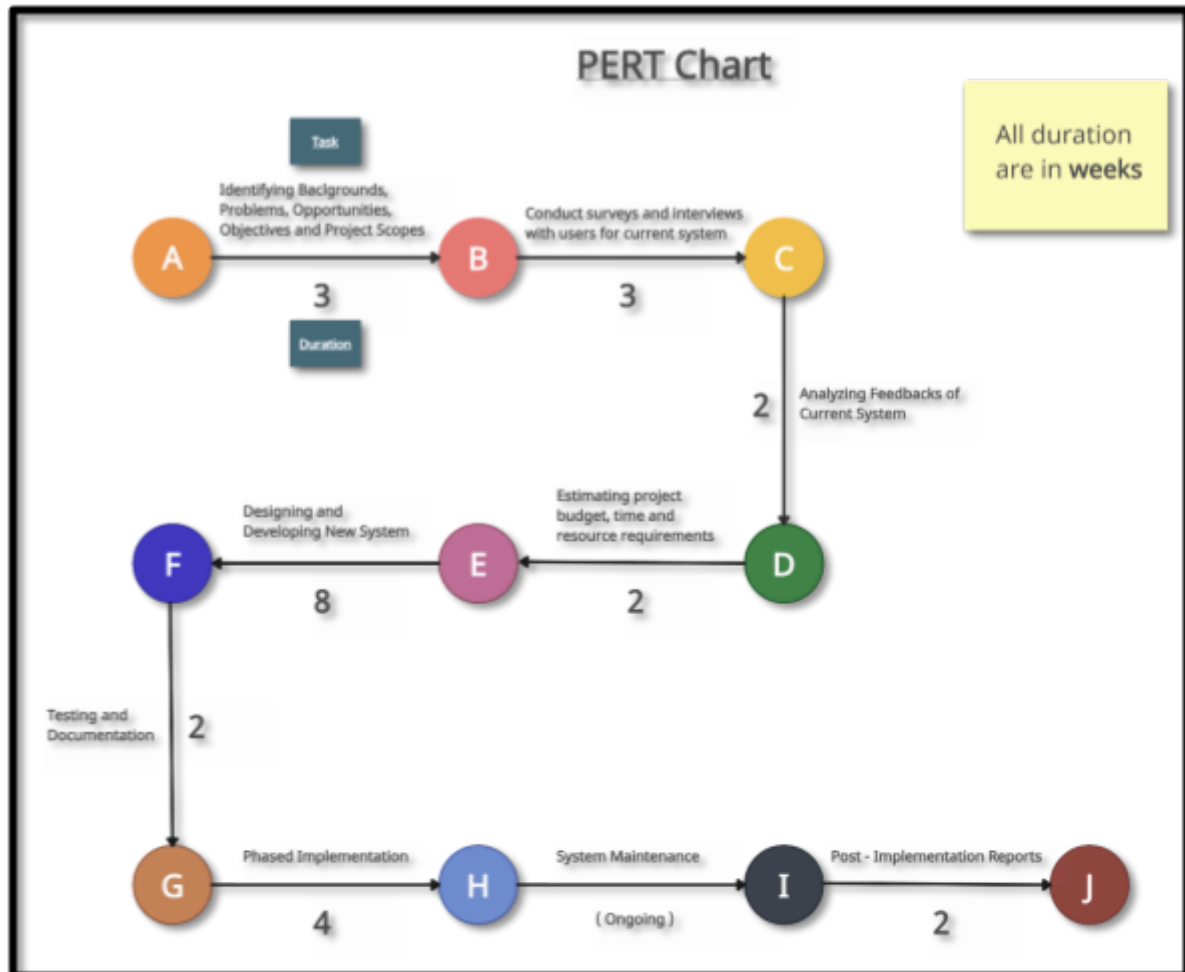
7.2   Work Breakdown Structure (WBS)

For every journey towards the final touching of our project, we have defined detailed steps in identifying project studies, backgrounds, problems, objectives, scopes, thorough analysis, estimations, developing and designing the system and implement the system to the targeted users. A periodical maintenance is crucial to ensure the system's efficacy and up-to-date.

No.	Tasks	Duration (weeks)	Predecessor
1	Identifying Backgrounds, Problems, Opportunities, Objectives and Project Scopes	3	
2	Conduct surveys and interviews with users for current system	3	1
3	Analyzing Feedbacks of Current System	2	2
4	Estimating project budget, time and resource requirements	2	3
5	Developing and Designing new system	8	4
6	Testing and Documentation	2	5
7	Phased Implementation	4	6
8	System Maintenance	Ongoing	7
9	Post-Implementation Reports	2	7,8
		± 26 weeks	

We estimated a minimal total of 26 weeks required to complete our proposed project. The rest weeks are only for maintenance periods.

7.3   PERT Chart

Our PERT diagram is a basic conversion of our Work Breakdown Structure (WBS) to identify a detailed flow of our project processes more collectively. This is to help us keeping the project at the right track within a certain period easily.

PERT Chart

All duration are in **weeks**

Task

Duration

Identifying Backgrounds, Problems, Opportunities, Objectives and Project Scopes
A → B   3

Conduct surveys and interviews with users for current system
B → C   3

Analyzing Feedbacks of Current System
C → D   2

Estimating project budget, time and resource requirements
D → E   2

Designing and Developing New System
E → F   8

Testing and Documentation
F → G   2

Phased Implementation
G → H   4

System Maintenance (Ongoing)
H → I

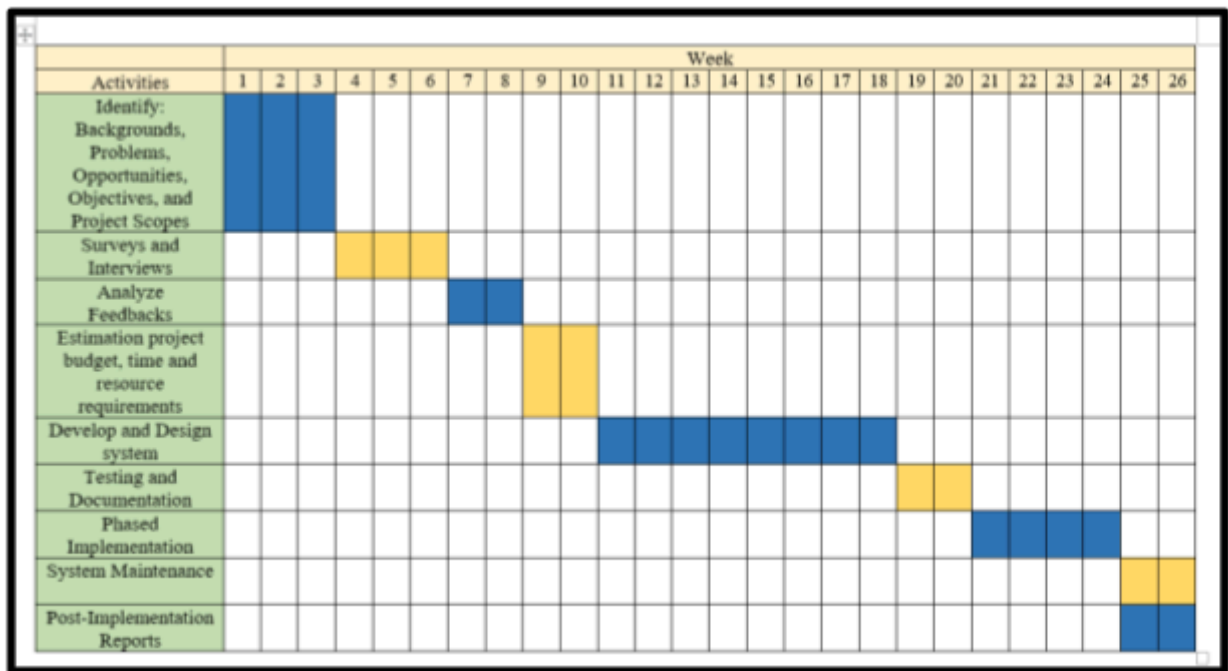Post - Implementation Reports
I → J   2

7.4   Gantt Chart

A modified version of our PERT diagram. Gantt chart allows us to see any overlapping activities and/or activities with completed predecessors to make sure we can achieve an optimal time spend on the project.
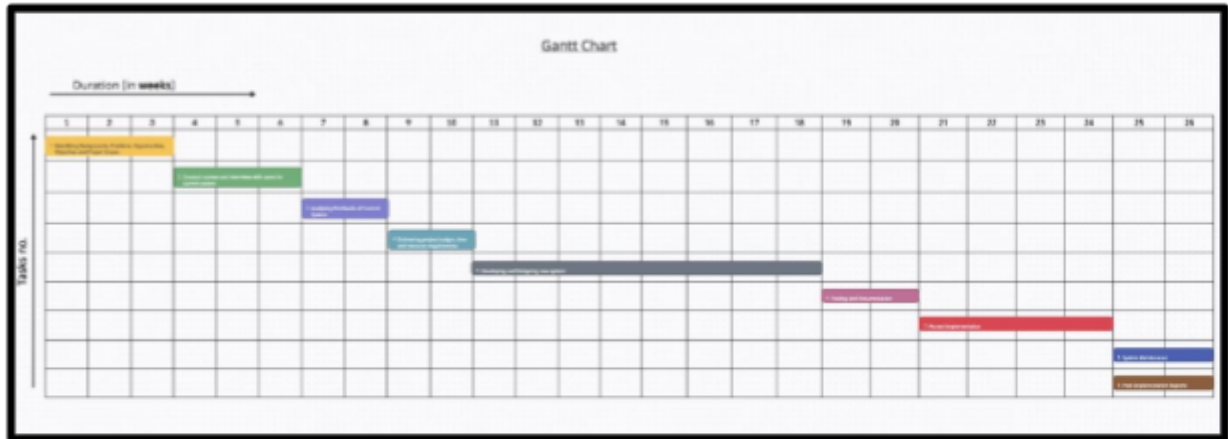
OR

Another modified version of Gantt chart

8.0   Benefit and Overall Summary of Proposed System

E-Hailing is a system that we proposed in order to increase the efficiency of users such as students, workers or citizens to travel across the country or globally more easily. We decided to propose this system since we have observed and noticed several flaws to the traditional style transportation systems as well as with the current e-Hailing system. A plenty of challenges may include time constraints, safety risks, privacy risks, general fairness and competitive issues from modernized and traditional styles, as well as travel schedules. An improvement should increase the productivity of proposed users so that they are able to travel easier and faster than usual. In addition to providing benefits to the users, this system aims to benefit the administrators and the public transportation networks management. E-Hailing should speed up the process of our travels.

Several defined detailed steps that we have proposed are some of our initiatives to fully develop, design and implement an improved system. Due to this, an estimation of feasibility studies allow us to see the potential of our project proposal whether it is worth a change of system. Once the reviews are positive, we are able to proceed with the detailed steps to carry out specific tasks to accomplish our proposed system design. A proper schedule is a must to make sure everybody in the development team is able to fulfill the tasks accordingly within a certain period. Hence, a complete new implemented system will completely replace the old system via the phased implementation for a medium risk of system complications.

Overall, we aim to improve the lives of people for easier travelling to their own destinations for our project proposal. We are hoping that the new system will spark excitement among current generations as well as providing user-friendly interfaces to allow older generations to utilize e-Hailing system as well.