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BITARA – SIDECAR MOTORCYCLE FOR SERVICE-ORIENTED MOBILEPRENUER

Julaila Abdul Rahman*, Nur Nabilah Masron and Zumahiran Kamarudin

Department of Applied Arts and Design

Kulliyyah of Architecture and Environmental Design

International Islamic University Malaysia

ABSTRACT

This project aims to develop an innovative sidecar motorcycle for a mobile entrepreneur or mobilepreneur who runs a service-oriented business. There are three kinds of data collection methods: line-up study, a questionnaire survey and interviews. The line-up study has been done to identify 10 existing sidecar motorcycles with their various characteristics such as material, design features, and colour. The questionnaire survey was carried out among 100 mobile entrepreneurs in Kuala Lumpur to obtain the mobile render perception towards the design features. The questionnaire has four main sections: demographic, issues, design features and comments. The interview session was done with one representative from the industry to obtain the latest information on the sidecar motorcycle. The line-up study found that aluminum is one of the suitable material, which is used for sidecar motorcycle because of its practicality.

Various design feature ideas can be applied further for sidecar motorcycle in the local market. The survey outcomes showed that the existing sidecar in Malaysia does not have the wide space for business purposes such as storage system and other required design features. From the case study, it is found that refurbishment on the sidecar motorcycle has been made by the mobilepreneur, which is lacking in safety and other design features. As a finding, there is a need to propose a sidecar motorcycle with new design features that will not compromise the safety requirement and can fit various types of business. BITARA is a sidecar motorcycle for mobilepreneur. BITARA has a potential as the start-up kit in mobilepreneur in improving the existing mobilepreneur business in Malaysian's rural, sub-rural and city area.

Keywords: *mobile entrepreneur, sidecar motorcycle, innovation, design features*

* Corresponding author: julailarahman@iium.edu.my

RESEARCH INTRODUCTION

Mobilepreneur Programme has been introduced under the Ministry of Rural Development, under Budget 2016 and 2017 (Bernama, 2016). Under this program, RM 30 million were allocated and about 3000 young entrepreneurs received a motorcycle with box, which cost about RM10k (Nor Fazlina, 2017). Through this programme, entrepreneurs informed that their income increased to about 10%-30%. However, they also reported that the motorcycle box has a small space that contributed to the difficulty in bringing many tools and equipment. Therefore, one of the potential vehicles for the young entrepreneur is the sidecar motorcycle, where the size is adequate for the food and beverages (F&B) industry as well as for the service-oriented industry. Sidecar motorcycle design features need to be more user-friendly to reduce refurbishment costs while improving its design features like compartments. Sidecar motorcycle can be improved based on the needs according to the nature of business. Therefore, BITARA, a sidecar motorcycle for service oriented mobilepreneur is proposed (Figure 1)

METHODOLOGY

To achieve the research aim, three types of data collection were done: line-up study, a questionnaire survey, and interviews. First, a line-up study is done based on 10 potential existing sidecars to obtain product specifications such as the material used, dimensions and design features. Next, is the survey questionnaire, where a total of 100 mobilepreneurs in Jalan Tuanku Abdul Rahman and Jalan Masjid India, Kuala Lumpur were selected as respondents to get their perception mainly on design features.



Figure 1: BITARA – A Sidecar Motorcycle for Service-oriented Mobilepreneur.
(Source: Google Website, 2017)


Finally, an interview was carried out with a company named as Shaifulzairul Aziz Sdn. Bhd. to obtain more detailed data on actual needs and demands of sidecars from the entrepreneurs, as well as the latest information in the mobile entrepreneur business.

RESEARCH FINDINGS

LINE UP OF SIDECAR MOTORCYCLES

Based on Table 1, 10 products in the market were studied based on their characteristics such as colour, material, shape, dimension, storage capacity, tongue weight, empty weight, storage capacity, features, strengths, and weaknesses. Various types of storage systems were built according to the purpose of the sidecar motorcycle. For the practicality and hygiene, aluminum can be one of the suitable materials for the sidecar motorcycle in Malaysia in F&B and other kinds of industries.

Table 1: Line up analysis for existing waste bin
(Source: Google Website, 2017)

Name	Escapade	Motorcycle Side Car	Cellco	Rover	CT-500	CT-700	SRT 500	Escalade	excel	ZZ 2000LT for BMW
										
Material	Fibre glass	Stainless Steel	Fibre glass	Thermoplastic Olefin (TPO)	Aluminium	Aluminium with Diamond Plate trim	Aluminium	Fiberglass	Fibre glass	Fibre glass
Colour	Cobalt blue	Black	Sky blue	Black	Black	Black and chrome	Black and chrome	Black	Cobalt blue	Silver
Body Dimension	67" X 40 " X 20"	70" X 30" X 20" deep	50" X 25" X 19" deep	95" X 43.5" X 39.75"	4' X 28" X 18" deep	60" X 36 " X 28" deep	5' X 30 " X 20 " deep	64"X36" X 18"	43.25" X70.45"X 22"	51" X 38" X 30"
Tire dimension (Tire and wheels)	4.8"-12"	110cm-90cm	8"	8"	5.30"-12"	5.30"-12"	5.30"-12"	5.30"-12"	4.8"-12"	8"
Empty Weight	237 lbs	140kg	115 lbs.	188 lbs.	170 lbs	215 lbs	220 lbs	225 lbs	253 lbs.	200 lbs.
Tongue weight	14 lbs	-	15 lbs	17 lbs	17 lbs	17 lbs	16 lbs	16 lbs	14 lbs	14 lbs
Storage capacity	350 lbs	250 kg	350.0 lbs	300 lbs.	350 lbs.	700lbs	500lbs	350 lbs	350 lbs	200 lbs.
Shape	Rectangular	Rectangular	Rectangular	Rectangular	Box	Box	Aerodynamic "V" Nose	Rectangular	Rectangular	aerodynamic
Features (Standard/Optional)	1.Custom spoiler with brake light and lid-activated interior dome light, 2. Spoiler with L.E.D. brake light. 3. Air shock system with an independent trailing swing arm design 4. Integrated spare tire compartment and utility storage areas	1. Front and rear opening (front gate and tail gate) 2. Stop light Indicator light 3. 2 rear reflectors 4. Umbrella holder	1. T-Lok Handles. Made to open at the left or right side 2. RV Style Taillights and signal light 3. Side Marker 4. RV Red tail lights for better visibility 5. Amber signal lights	1.Accu-Lube Hubs 2.Spare Tire Compartment 3.Watertight (Gasketed) Interior 4.Gas Assist Struts (On Lid) 5.Removable Tongue (For Easy Storage) 6.Powder Coated 7.Tubular Steel Frame 8.Beverage/Storage Compartment	1.Welded aluminium construction 2.Lockable Top lid 3.Aluminum Cooler Rack 4.Carpeting included 5.Heavy Duty Lock and Latch 6.LED Lights	1.Aluminum Cooler 2.Rack available wiring harness factory tested 3.Stainless steel latch with lock and 2 keys lid has self-assisted strut 4.Box is trimmed in diamond plate 5.Welded aluminium construction 6.Has Indoor/outdoor Carpet	1.L.E.D. Lights 10 year warranty 2.4 flat male wiring 3.wiring harness factory tested 4.Has Indoor/outdoor carpet	1.Carpeted interior 2.Rear lock and key entry with 2 keys 3.Front door lock and key entry with 2 keys 4.Goldwing type Lights 5.Chrome coupler 6.Interior Light 7.Smooth spoiler 8.Front door for easy access while traveling 9.Chrome Safety Chains	1.Custom spoiler with brake light and lid-activated interior dome light, 2. Spoiler with L.E.D. brake light. 3. Air shock system with an independent trailing swing arm design 4. Integrated spare tire compartment and utility storage areas	1.Factory matched colors 2.Aerodynamic styling 3.Chrome wheels standard 4.Carpeted interior 5.Zero bounce suspension 6.Interior light 7.Chrome tongue & coupler
Strength	1. Sleek and modern design 2.Advance engineering and system	1. Can transport heavy materials and goods 2. Standard maintenance 3. Free stainless steel construction 4. Available with new or old motorcycle model	1.Can custom made 2.Easy pulling trailers 3. Waterproof 4.Durable under normal driving conditions	1. Ideal for large motorcycles, trikes, and automobiles. 2.High class look with cheaper price 3.Excellent Impact 4. Strength and durability	1.Weather friendly 2. The box is constructed of welded aluminium. 3. The sides are powder coated black, aluminium.	1.Spacious 2. Durable for extreme activity	1.Sleek design 2.Good warranty 3.Durable 4. Spacious	1.Focus more on safety 2.Good colour treatment 3.Modern design	Improved the Independent Suspension by elongating the swing arm, changing the shock angle and adding a new Anti-Roll Suspension System.	
Weakness	Expensive	1. No lid 2. No absorber in the inside	Expensive because of the material	At least for 1000 CC bike	No spare tire	Only for big bike, trikes and automobile.	Design is too rigid	1.Heavy	Expensive	1. Heavy 2. Small capacity 3. expensive

PRODUCT MAPPING



Figure 2: Product Mapping
(Source: Google Website, 2017)

The direction of design was translated into a product mapping to guide designers to achieve the final design. According to Figure 2, four concepts of sidecar were analysed, which are fancy, sturdy, practical, and delicate. The axis for the map are: [sturdy – delicate], and [fancy – practical]. The proposed BITARA design is towards the practical and delicate group.

INTERVIEW

According to Hj Shamsul, a director of Shaifulzairul Aziz Sdn. Bhd (Figure 4), sidecar for business purposes was in high demand as self-employment is now trending in Malaysia. His company offers a coach building service for transportation such as bus, food truck, camper, mobile library, and sidecar. Self-employment is one of the ways to increase social and country economic value. Thus, he encouraged youth to participate in the business. His company receives an average of 1- 3 sidecar building request every month. All sidecar designs are custom-made upon request of the client. The selling price started at RM 14,000 together with a motorcycle. The price does not include inspection cost, insurance, and business license.



Figure 4: Director of Shaifulzairul Sdn. Bhd.

SURVEY RESULT

The questionnaire was divided into 4 sections. Section A comprises the seller's demographic profile. Section B highlights issues and problems. Section C includes product features, and Section D contains comments and recommendations. Some questions were in multiple-choice whereas some questions asked on users' perception using 5-Likert Scale (1-strongly agree to 5-strongly disagree). The questionnaire survey was conducted among 100 respondents at Jalan Tuanku Abdul Rahman and Jalan Masjid India, Kuala Lumpur. All respondents are the mobilepreneur of food and beverages (F&B) and service-oriented business.

Section A; demographic

60% male and 40% female respondents participated in the survey; age of 36-55 (57%), aged 20-35 (43%). Their working period; 11-15 hours per day (60%), 5-10 hours per day (40%). Their income; RM 2,000 and above (53%), RM 1,700 – RM 2,000 (20%) and RM1,300 – RM 1, 600 (27%). The income varies according to the location.

Section B; issues and problem

47% of respondents agreed that the existing sidecar is wide enough to accommodate equipment and tools for business purposes, while 53% said the opposite. 70% of them disagree to have slotting storage systems as they need a larger space to keep their goods, while 30% said the opposite.

Section C; product features

The respondents preferred storage (29%), umbrella holder (17%), front and rear gate (16%), cooking area (12%), selling platform (12%) as in the sidecar. (refer to Figure 3)

Section D; comments and recommendation

60% of the respondents knew about the mobilepreneurship, 27% of them never heard about the mobilepreneurship and 13% were uncertain about it. 93% of respondents agreed that the mobilepreneurship will improve their business income, while 7% did not agree because the income is an unpredictable matter. 94% of the respondents will promote the mobilepreneur concept to others while 6% did not have any interest in this concept.

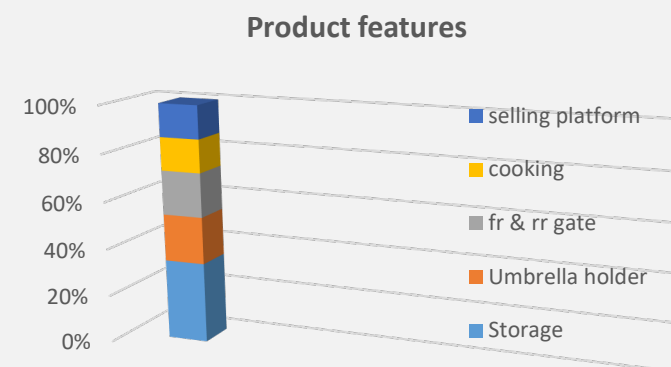


Figure 3: % for Product Features

OBSERVATION: SIDECAR MOTORCYCLE

During the survey questionnaire, an observation was also carried out at Jalan Tuanku Abdul Rahman and Jalan Masjid India, which started at 10.00 am as it is the normal starting hour of business. Most of the mobilepreneur were selling foods and beverages (F&B) as well as doing delivery service. The utility sidecar is used to transport goods to the selling site while selling sidecar is used to sell foods or drinks. Safety features such as capacity plates and speed limit are different by types of sidecar. Design features for utility sidecar are simpler than the selling sidecar (Figure 5). However, both must follow the rules restricted by Majlis Pemandaran Kuala Lumpur. Most of the sidecar, especially for the selling purposes, have been refurbished according to the needs of the business. However, sidecars were lacking in safety and design features. With the right design features, the sidecar can be improved in terms of its space as well as its safety requirement.

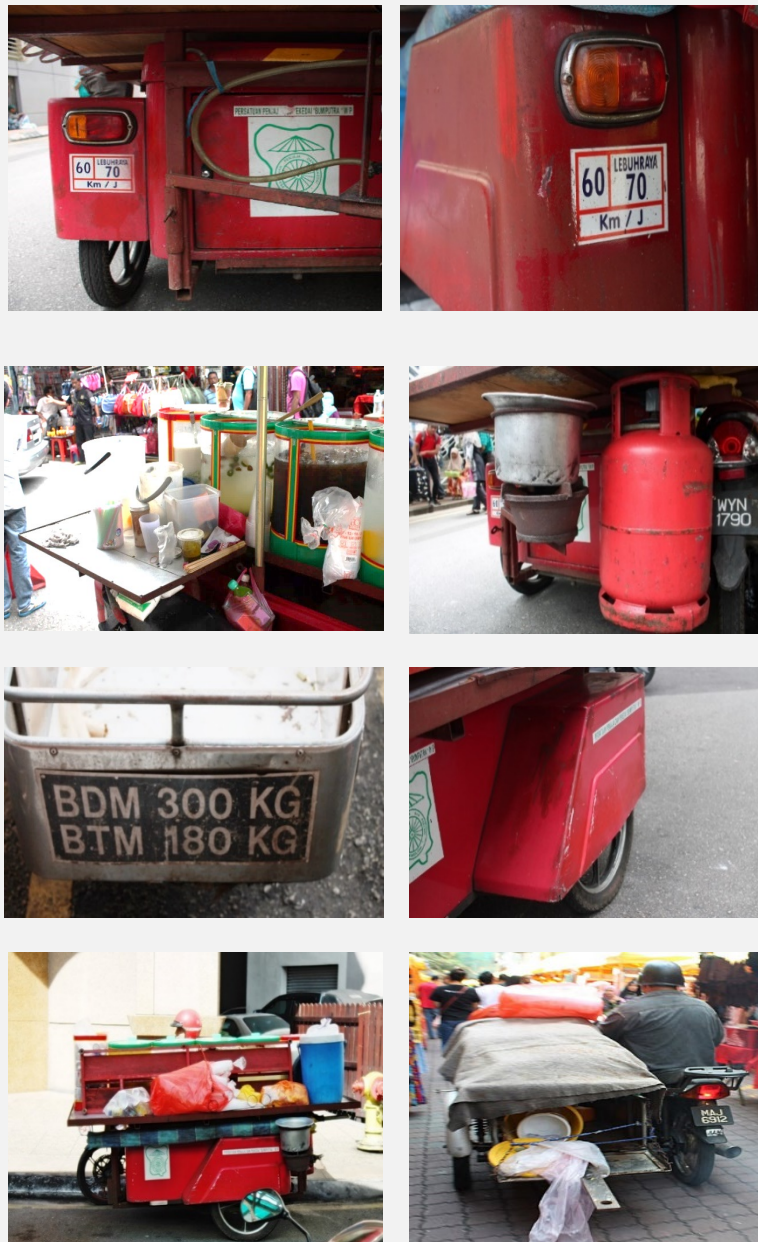


Figure 5: Design features for utility sidecar

FINDINGS: LINE UP, SURVEY, INTERVIEW

As a finding, sidecar motorcycle for mobilepreneur can be improved in two areas; design and safety features. The sidecar motorcycle can be refurbished according to the type of business; F&B and non-F&B. With the proper design and safety features, it will help the mobilepreneur to gain more space and a systematic storage area. A portable slotting storage system can also be introduced so that they can have more options for their business activities. Good safety features also need to be installed into the sidecar motorcycle to ensure the safety of the goods, for example using the sensor system at the sidecar to give information about the safety of the goods in the sidecar. Furthermore, with the improvement of the design features, the sidecar will have a clean image. Most of the respondents agreed that the mobilepreneur will help them in gaining more business income. As self-employment become one of the ways to increase the economy, it is a need to help the mobilepreneur by improving their transportation so that they can succeed in their business.

DESIGN DEVELOPMENT; SKETCHES AND DRAWINGS

In the BITARA design development, many stages were conducted to obtain the final design proposal; thumbnail, idea development, design proposals, and model making. The idea development or sketches for BITARA are as in Figure 6 and the design concept of BITARA is as in Figure 7.

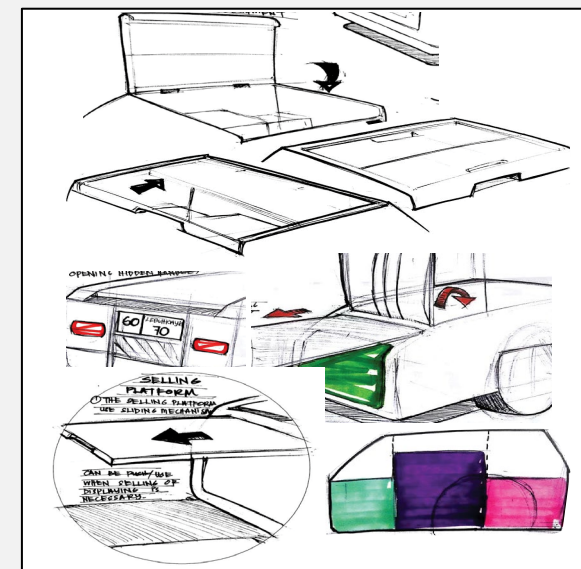


Figure 6: Sketches for BITARA

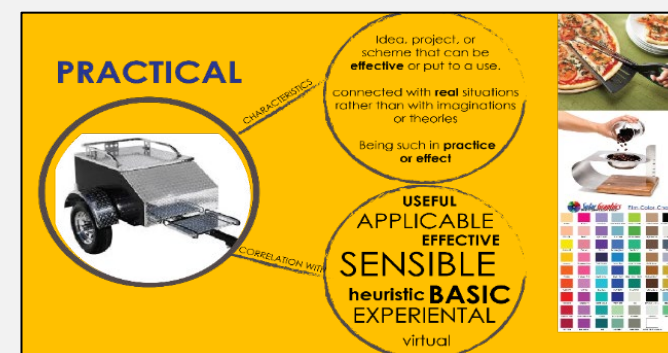


Figure 7: Design Concept for BITARA
(Source: Google Website, 2017)



Figure 8: Manual for Product Usage

COMMERCIAL POTENTIALS

BITARA is a flexible and sleek sidecar motorcycle, that is needed in mobilepreneur business (Figure 8). BITARA will give benefits for a start-up business for the young entrepreneur as well as to the current mobile entrepreneur. It can also be classified as a social enterprise product, where it will benefit both community and the country. BITARA will help in increasing the level of employability among the unemployed, fresh graduates and the low-income group. The cost of this product is reasonable (i.e. RM 1700-2500) for a young entrepreneur or self-employed business. It comes with several colour line-ups such as blue and red. As an improvement to the typical sidecar found in the local market, BITARA introduce modern design for better user experience. It also comes with flexible open storage to give more space and systematic storage. The proposed material is aluminum, where the CW/BDM is light for easy handling. It also has dual top openings and a front gate. A magnetic shutter at the top opening is designed for a better enclosure. In future, BITARA can be developed further in many potential design variations to fit various types of business (Figure.9).

CONCLUSION

BITARA is a potential solution for mobilepreneur in a service-oriented business, especially for the young entrepreneur as encouragement to do grow well in their business. By having innovative sidecar motorcycle, the mobilepreneur can run their business in various location such as in villages, suburban as well as in the urban areas. With the establishment of ICT tools and applications in smartphones, the mobilepreneur can be easily reached by their customers. This will allow more business opportunities to the mobilepreneur and give a better benefit for their customers. BITARA can be further developed with various design features to meet the nature of business. Potential stakeholders, among others are MARA, GIAT MARA, TEKUN and TERAJU.

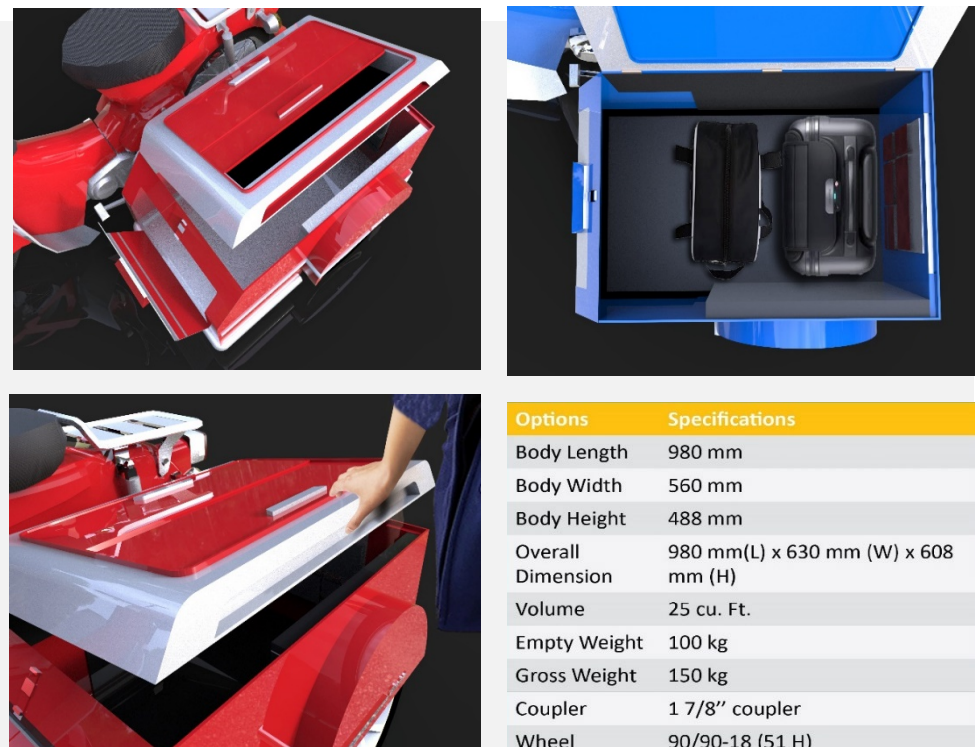


Figure 9: Design Variations

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REFERENCES

- Bernama. Peruntukan RM30 juta kepada Usahawan bergerak pada 2017 (13 Nov 2016). Berita Bisnes, Astro Awani. Retrieved 16 Sept. 2019 from <http://www.astroawani.com/berita-bisnes/peruntukan-rm30-juta-kepada-usahawan-bergerak-pada-2017-122504>.
- Nor Fazlina Abdul Rahim. Usahawn Muda Luar bandar Dibela (18 Nov 2017). Berita Nasional, BH Online. Retrieved 16 Sept. 2019 from <https://www.bharian.com.my/berita/nasional/2017/11/352307/usahawan-muda-luar-bandar-dibela>