

## ISTAMBALAY: A MOBILE VENDING CART, PORTABLE SHELTER FOR THE HOMELESS

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**Abstract:** This study helps alleviate the homelessness problem through the union of design and social entrepreneurship projects. The proposed design exploratory project combines a vending cart and a portable home for the homeless for the Philippines. Additionally, by using local materials and manpower, the resulting project becomes both portable and affordable for the beneficiaries. This exploratory design project is a social entrepreneurship project in collaboration with the School of Architecture and Fine Arts and the School of Business and Economics of the University of San Carlos (Cebu, Philippines).

**Keywords:** Portable shelter, Vending Carts, Social entrepreneurship project, Homelessness

### 1. Introduction

It is estimated that around 44% of the urban population lives in slums [1], [2]. Studies have shown that there are around 3.1 million homeless people in Manila, more than any city in the world [3], [4]. This resulted in a quarter of the population in Manila living below the national poverty line [5], [6]. Research now suggests that the extreme situation of homelessness may be more due to the result of the convergence of many factors that drive this phenomenon, including the local housing market dynamics, poor government housing policy, local economic restructuring, the labor market, and personal disabilities [7]. Furthermore, the reasons for homelessness are: the constant migration from rural to urban life, lacking skills to support themselves and their families, psychological illness, substance abuse, incompetent governments support and

the failing global economy [7]. It is, therefore, a moral duty for human beings to implement programs to resolve the present problem of homelessness.

### *1.1. Homelessness: A national problem*

While a majority of homeless people occur in the developing countries, homelessness remains a problem throughout the entire world. Almost everywhere there are people in constant search of shelter, food and water. Homelessness was initially believed to be a cultural problem but it has now been shown as a global phenomenon. Although this problem exists everywhere, it is more severe in the developing countries like the Philippines [8]. Combined with the overall lack of donations coming to shelters, this has made it harder for shelters to operate and stay open. Over the past few years, many shelters have been forced to close due to poor support from the government. Regrettably, many people in the Philippines do not understand how large this problem has grown into. Initially, research in this area of knowledge is very much lacking. In the Philippines, the problem of homelessness is more apparent in urban areas because of the large percentage of visible homeless people [8]. In contrast, Philippine rural communities have a few public locations for the homeless to reside. The Philippine Government policies designed to improve homelessness have been insufficient to stop the forces that produce this severe poverty, and this trend is likely to continue for many decades unless as architects and designers we can try to provide a way to solve this.

### *1.2. Street vending in Asia*

Informal street vending (*Fig. 1*) has been on the rise since the Asian financial crisis of 1998 [8]. Many who lost their jobs in the formal sector resort to street vending as an option to make a living. Street vending, in spite of having no legal status to conduct their activity, are constantly harassed by authorities [9]. Street vending is considered an illegal activity and street vendors are treated as criminals [10], however, they are ignored by the Local Government Units (LGU's) [11]. Yet they are popular because they provide the urban population with much-needed services that neither the government nor the larger retailing outlets can provide [9].



*Fig. 1. Informal Street vendors in the Philippines*

### 1.3. Design project and collaboration

In this design study, the School of Architecture, Fine Arts, and Design (SAFAD) collaborated with the School of Business and Economics of the University of San Carlos-Philippines help alleviate the problem of homelessness in the city of Cebu. The authors sense that it is the moral duty for designers to implement design and technology to resolve the rising homelessness in the city [12]. The main objective of this paper is to, therefore, design an affordable vending cart with a mobile home for the vagrants and homeless of the city. The project hopes to contribute to the improvement of social entrepreneurship by empowering the homeless through design. With the assistance of the School of Business and Economics, the beneficiaries of the project will also receive training on Social Entrepreneurship. The training will help the homeless on how to establish a sustainable business model on the type of merchandise that they are interested in. Studies have shown that Social Entrepreneurship is now becoming increasingly popular among researchers because of its contribution and prominence in society [13], [14]. Social Entrepreneurship projects have been successfully completed in countries like Hungary to help alleviate homelessness [15]. Many entrepreneurs seek to create ventures that not only yield a profit but also add value to society. Therefore, this project will help alleviate the number of homeless in the Philippines and encourage entrepreneurship.

## 2. Design description

Various studies have investigated with portable homeless shelters for many decades. Research into deployable and retractable structures [16] has the potential to be adaptive as well as a sustainable portable shelter for the homeless. However, these structures can be complicated and expensive to maintain. The proposed design combines a portable home as well as a vending cart and therefore encourages social entrepreneurship.

### 2.1. Exploratory design concepts

Before the start of the conceptual design, the authors organized field surveys and interviews with various groups, especially with the homeless and small personal businesses that are already established along the sidewalks of Cebu City. From the field analysis, the authors have gathered important data that helped shape the design. First, the product should be lightweight and portable for easy transportation and storage. Second, the design should be modular and can easily be grouped together. Third, having a sleeping compartment with protection from the insects is very essential as well as various storage and locking compartments. The first design concept is shown in here in *Fig. 2*.

### 2.2. Schematic diagrams

For easy recognition among the locals, the authors decided to name the design *Istambalay*, a local dialect combining the words *Istambay* (homeless) and *Balay* (House). The module includes storage and locking doors that can be opened and closed

(Fig. 3a). The top deck can further be opened to reveal additional spaces for products and merchandises (Fig. 3e). The addition of casters on the bottom of the module makes the module for easy transportation. Thus, the module is specially configured to save space and easy transportation. A compartment from the bottom can be opened to reveal the sleeping area (Fig. 3g,h,i) with mosquito netting and can also be used as storage for the day. It is well known that most parts of the city are contaminated with various harmful insects, especially at night time.



Fig. 2. Rendered image of the first concept of the vending cart + mobile home

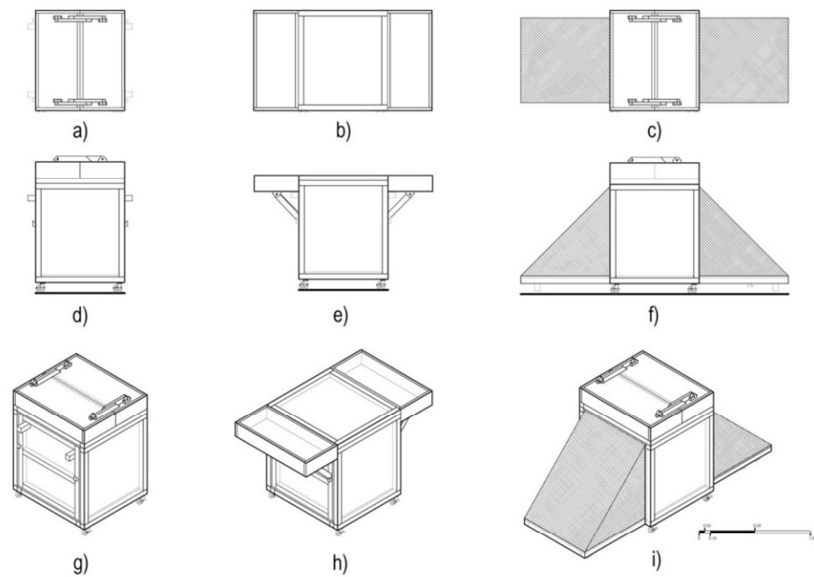


Fig. 3. Schematic diagrams of the vending card and mobile home: a) Top view; b) Top view with the top deck opened; c) Top view with the opened sleeping pod with mosquito netting; d) Side view; e) Side view with opened deck; f) Side view with the opened sleeping pod; g) Isometric view; h) Isometric with opened deck and i) Isometric with the opened sleeping pod

2.3. Materials and estimate

The proposed *Istambalay* must be flexible enough on the use of construction materials and allow easy replacements. The materials must be easily available locally instead of taken from the outside. The designers believe that the materials must be readily available for easy production and must draw on local resources and industries [17]. In the Philippines, the use of Marine plywood and Lumber is easily accessible and cheap, therefore it is the basic building material used in the project. The use of the mosquito net is very common in the Philippines; therefore it was being used in this project as a shelter from the insects and other elements. Other basic materials, like nails, insulation, Velcro, casters and barrel bolt are easily purchased from the local hardware store in the country. In addition to using available local materials, the designers of the project also attempted to keep the cost down, between ₱6,000 to ₱7,000 (€100-€110). The summary of the materials and cost of construction is shown in *Table I*.

Table I  
Summary of materials and cost

Materials	Description	Quantity	Unit	Price per unit (€)	Total (€)
Marine plywood	3/4"X4'X8'	2	Sheets	17.57	35.13
Lumber	2"X2"X8'	8	Length	1.92	15.33
Lumber	1"X2"X8'	2	Length	0.96	1.92
Lumber	1"X6"X8'	2	Length	3.83	7.67
Insulation	5mm Foam	6	Meters	0.29	1.72
Wire nail	4"	3	Kilo	1.36	4.07
Wire Nail	2"	2	Kilo	1.20	2.40
Wooden dowel	1/2" DIA X 2'	1	Length	0.48	0.48
Mosquito net	Fine mesh	6	Meters	0.40	2.40
Velcro	1"	24	Meters	0.19	4.60
Casters	3" @ 150 kg capacity	4	Sets	5.59	22.36
Barrel Bolt	3"	4	Sets	1.20	4.79
Total cost €					102.87

3. Product outcome

Following the designs and plans are shown in *Fig. 2*, the designers were able to create the vending cart with the use of local materials. The final product is shown in *Fig. 4* and will soon be presented to the public for apparent review following the specifications and accompanying drawings. Presently, the next phase of the product is to get suggestions and recommendations from the beneficiaries in order to maximize the use of the vending cart. With the available data, the product might go into further renovation until the final product will be met satisfactorily by the beneficiaries. The researchers believe that by including the community in the design process, it will avoid rejection by the beneficiaries and thus create a successful product that is accepted by the community [17]. The School of

Business and Economics will then provide free training in starting a small business for the beneficiaries. With the product and the skills on hand, the authors are optimistic that the beneficiaries will improve their social status and allow help themselves improve their current economic condition.

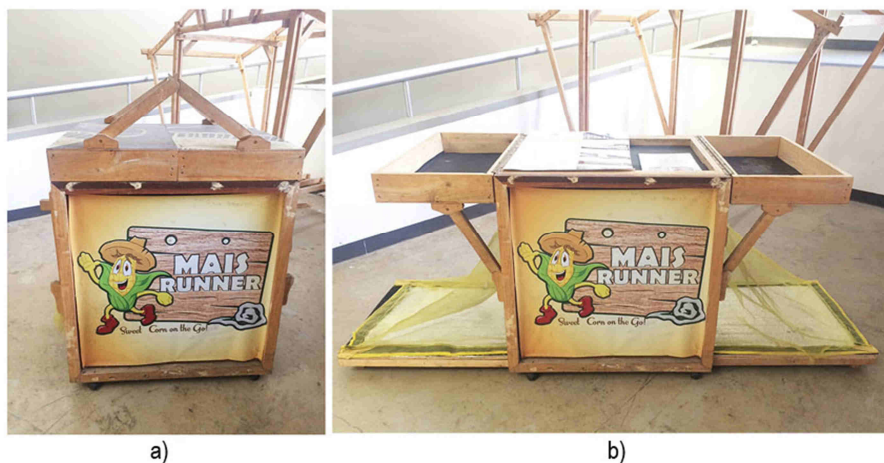


Fig. 4. The final product output of the *Istambalay* vending cart + mobile home project

### 3. Conclusion

Problems of homelessness, especially in rapidly developing Asian countries are well documented. In the Philippines, a large homeless population is concentrated near the main city centers, which are generally vacated by working people at night. The needs of the homeless are desperate at night when they need to sleep, the weather is cold and safety is an issue. Once an individual has been homeless for any period of time it is difficult to get off the streets and back into the regular job to earn sufficient income for housing, especially where rents are high in most parts of the major cities. The *Istambalay* collaboration project will hopefully alleviate the problems of homelessness in the Philippines. Furthermore, the personalized modular shelter units proposed in this study can be a desirable and economical emergency shelter when natural disasters occur.

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### References

- [1] *Un-Habitat*, State of the Worlds Cities 2008/9: Harmonious Cities', Routledge, 2012.
- [2] Montgomery M. R. The urban transformation of the developing world, *Science*, Vol. 319, No. 5864, 2008, pp. 761–764.
- [3] Abbarno G. J. M. Homelessness, *Encyclopedia of Global Bioethics*, 2014, pp. 1–10.
- [4] Sumner A. Where do the world's poor live? A new update, *Institute of Development Studies*, Working Paper 393, 2012, pp. 1–27.
- [5] Chen S., Ravallion M. An update to the World Bank's estimates of consumption poverty in the developing world, Washington DC, *World Bank*, 2012.
- [6] World development indicators 2012, *World Bank*, 2012.
- [7] Milburn N. G., Rotheram-Borus M. J., Rice, E., Mallet, S., Rosenthal, D. Cross national variations in behavioral profiles among homeless youth, *American Journal of Community Psychology*, Vol. 37, No. 1-2, 2006, pp. 21–27.
- [8] Bhowmik S. K. Street vendors in Asia: a review, *Economic and Political Weekly*, Vol. 40, No. 22/23, 2005, pp. 2256–2264.
- [9] Bhowmik S. *Street vendors in the global urban economy*, Taylor & Francis, 2012.
- [10] Bromley R. Street vending and public policy: a global review, *International Journal of Sociology and Social Policy*, Vol. 20, No. ½, 2000, pp. 1–28.
- [11] Kennett P., Mizuuchi T. Homelessness, housing insecurity and social exclusion in China, Hong Kong, and Japan, *City, Culture and Society*, Vol. 1, No. 3, 2010, pp. 111–118.
- [12] Abbarno G. J. M. Homelessness, in *Encyclopedia of Global Bioethics* (2014): 1-10, doi:10.1007/978-3-319-05544-2\_225-1.
- [13] Rey-Martí A., Ribeiro-Soriano D., Sánchez-García J. L. Giving back to society: Job creation through social entrepreneurship, *Journal of Business Research*, Vol. 69, No. 6, 2016, pp. 2067–2072.
- [14] Brown T. Why social innovators need design thinking, *Stanford Social Innovation Review*, 2011.
- [15] Büki P., Vecsei M., Kohányi K. Host village' program: Societal reintegration of homeless families in rural environments (Initial Experience in the Village of Tarnabod, 2004–2006), *European Journal of Mental Health*, Vol. 1, No. 1-2, 2006, pp. 125–150.
- [16] Friedman N., Farkas G., Ibrahimbegovic A. Deployable/retractable structures towards sustainable development, *Pollack Periodica*, Vol. 6, No. 2, 2011, pp. 85–97.
- [17] Ravina D., Shih R. R. A shelter for the victims of the Typhoon Haiyan in the Philippines: The design and methodology of construction, *Pollack Periodica*, Vol. 12, No. 2, 2017, pp. 129–139.