International Journal of Humanities, Social Sciences and Business (INJOSS) e-ISSN: 2962-6781
Vol. 5 No. 2 May 2026, page 236-255
https://injoqast.net/index.php/JOSSS

INTERIOR DESIGN OF A COMMUNITY KITCHEN USING A USER ACTIVITY ANALYSIS APPROACH: A CASE STUDY OF FOODCYCLE INDONESIA

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Abstract

A community kitchen is a collective space that serves not only for cooking activities but also as a venue for social collaboration and community empowerment. In the case of Foodcycle Indonesia, diverse activities and users with different backgrounds present challenges in designing spaces and furniture that are adaptable to user needs. This research employs a design thinking approach and qualitative methods to identify activity patterns and functional needs, as well as to develop spatial and furniture design strategies that support work efficiency and comfort. The study's findings formulate a flexible design concept based on ergonomics and anthropometry to create an inclusive workspace that enhances the quality and comfort of activities within the community kitchen.

Keywords: *Community Kitchen, Spatial and Furniture Design, Design Thinking, Empathy, Design Strategy.*

Abstract

A *community kitchen* is a collective space that functions not only as a place for cooking but also as a venue for social collaboration, user interaction, and a means of community empowerment. In the context of the *community kitchen* operated by *Foodcycle* Indonesia, the complexity of activities and the diversity of users' backgrounds present unique challenges in designing spaces and furniture to meet user needs. This research aims to design a spatial and furniture strategy capable of addressing the functional and user needs within *the community kitchen*. Through a *design thinking* approach and qualitative methods, this research focuses on identifying activity patterns, spatial issues, and the strategic role of space and furniture in supporting work efficiency and user comfort across various activities within *the community kitchen*. The solution-finding process was conducted in depth through the 'empathise' stage to fully understand user needs. The results of this research are formulated into a flexible spatial and furniture design strategy that adapts to changes in activities within *the community kitchen*, taking into account aspects of activity and needs, ergonomics, anthropometry,

and supporting long-term kitchen operations. It is hoped that the resulting design will create an inclusive workspace, improve work quality, and enhance the comfort of workflow within *the community kitchen*.
Keywords: *Community Kitchen,* Space and Furniture Design*, Design Thinking*, Empathy, Design Strategy.

INTRODUCTION

According to *the Global Hunger Index* (2024), the issue of food inequality in Indonesia remains quite significant, with Indonesia ranking 77th out of 127 countries with a score of 16.9, indicating that the level of hunger falls into the 'moderate' category. In response to this situation, the Indonesian government has prioritised food security as one of the main focuses of development. This is reflected in the National Medium-Term Development Plan (RPJMN) 2025–2029, which emphasises three key aspects: ensuring food availability through the strengthening of production centres and government food reserves; improving the quality of public consumption by promoting food diversification and fortification; and enhancing agricultural sector productivity through downstream processing and better governance. One of the flagship programmes launched is the Free Nutritious Meals initiative, aimed at fostering a healthy, intelligent, and productive generation of Indonesians towards the vision of Indonesia Emas 2045. Furthermore, the government is collaborating with the FAO to develop *the Convergence Action Blueprint* as a step towards transforming the national food system to make it more sustainable and resilient to the impacts of climate change.

Beyond these macro policies, the government, through the *National Food Agency* (NFA), is also promoting a movement to reduce *food waste* through cross-sectoral collaboration. Since 2022, the NFA has initiated the *Food Waste* Prevention Movement as part of the Food and Nutrition Vigilance programme, in partnership with a number of industry associations and food advocacy organisations (BPN, 2022). There are nine organisations collaborating with the government on this initiative, one of which is *Foodcycle* Indonesia. The involvement of *Foodcycle* Indonesia demonstrates that the government recognises the vital role of non-governmental organisations in supporting national food security. *Foodcycle* Indonesia's participation in this programme opens up significant opportunities for similar organisations to receive greater support and attention from the government. Through this collaboration, non-governmental organisations not only act as on-the-ground implementers in reducing *food waste* but also as strategic partners helping to achieve national food security. Government support can take the form of more favourable regulations, access to funding, and the provision of cross-sectoral cooperation networks that expand the reach of the *Food Waste* Reduction programme. Such collaboration demonstrates that food issues are no longer addressed solely at the macro-policy level, but also involve social actors working directly within the community.

Foodcycle Indonesia is a non-governmental organisation established in 2017, with a primary focus on reducing *food waste* and improving food security. Since its inception, *Foodcycle* Indonesia has been committed to breaking the cycle of hunger among the underprivileged by *redistributing* untouched food surpluses, *reprocessing* imperfect products and *recycling* food waste. Through this approach, *Foodcycle* Indonesia not only manages the preparation and distribution of ready-to-eat food, but also functions as *a food bank* that bridges the gap between food donors and beneficiaries.

Foodcycle has developed various strategic programmes that focus not only on the distribution of ready-to-eat food, but also encompass education, empowerment, and the strengthening of collaborative networks. *Foodcycle* Indonesia not only contributes to reducing food waste *volumes*, but also creates a fairer and more sustainable food distribution system. The tangible impact of its contributions can be seen in the data presented in *the Foodcycle* Indonesia *Annual Report* for 2024, where *Foodcycle* Indonesia successfully distributed 161,680 kg of food to the community, recycled approximately 76,765 kg of organic waste, and provided direct benefits to 63,431 beneficiaries. Furthermore, the value of donations successfully channelled reached Rp11.47 billion, and these efforts helped prevent approximately 596,112 kg of CO_2 emissions from potentially polluting the environment. These achievements not only reflect the effectiveness of the programmes implemented but also demonstrate Foodcycle Indonesia's significant role as a driving force in fostering collective awareness regarding sustainable food management. Through collaboration with 149 *frontline* organisations, *Foodcycle* Indonesia has strengthened an inclusive food security ecosystem, ensuring its role is no longer limited to the provision of food aid alone, but also as a catalyst for social change towards a food system that is fair, environmentally conscious, and sustainable.

In a social organisation that specifically addresses food-related issues, such as *Foodcycle* Indonesia, the kitchen serves as the heart of every initiative they undertake. *A community kitchen*—specifically designed for social organisations—is not merely a place for cooking, but a collaborative space that brings individuals together. *Community kitchens* do not merely focus on providing adequate food, but on how we work together and how people socialise within them (Gründl, 2016). This concept of social space is also highlighted in journal studies stating that *community kitchens* function as a form of *collective care* that builds social bonds across various urban contexts (Abram et al., 2025). The activities carried out in *a community kitchen* are far more complex than those in a typical kitchen. At any given time, the kitchen can accommodate a variety of activities and individuals, ranging from food sorting, mass cooking, food preparation, volunteer coordination, to educational activities involving the local community (Iacovou, 2012). Naturally, during these activities, individuals from diverse backgrounds come together to collaborate within a fast-paced and intensive working system (Harrison, 2026).

In the case of *Foodcycle* Indonesia, the complexity of *community kitchen* activities is evident in the workflow from the moment food donations are received until they are ready for redistribution. This process begins with the reception of donated foodstuffs, which takes place in the *loading* and *warehouse* areas. Here, food from various sources—such as restaurants, *supermarkets*, or individuals—is inspected, sorted, and temporarily stored based on its suitability and type. After the sorting stage, food items that are still suitable are directed to the kitchen area to be processed into ready-to-eat meals. In the kitchen area, activities take place intensively, involving many individuals and a variety of work stages, ranging from ingredient management, large-scale cooking, to the packaging of food ready for redistribution to beneficiary communities. Once the packaging process is complete, the prepared food is moved back to the *loading* area to be distributed by the *Foodcycle* Indonesia distribution team.

This interconnected workflow between areas demands high efficiency in the movement of people, as well as coordination among users working simultaneously. Effective collaboration and coordination are key to achieving operational efficiency, where good collaboration can reduce inefficiencies and streamline the overall workflow (Al Mandita & Aprilia, 2024). In this context, the complexity of activities and social dynamics occurring within the *community kitchen* operated by *Foodcycle* Indonesia presents both opportunities and challenges regarding the design of the space and furniture elements—which serve as the primary medium for these activities, particularly within the kitchen area.

The existing conditions on the ground indicate that these dynamics have not yet been matched by adequate spatial and furniture design; the existing furniture elements available remain basic and functional—such as workbenches, storage shelves, dishwashing stations, and standard cooking equipment—arranged conventionally without specific design considerations for patterns of collective activity. A layout that has not been comprehensively planned often results in limited freedom of movement, a lack of flexibility for users, and suboptimal activity flow, particularly when the space is being used simultaneously by many people with diverse needs. Space design that is unresponsive to users' activity patterns can hinder collaboration and work efficiency, whereas spaces designed to be open and flexible actually support adaptive movement and better coordination among users in dynamic work situations (Dzulfikar et al., 2025).

Furthermore, furniture does not merely serve general functions such as storage, workspaces, or cooking facilities, but also acts as a catalyst enabling collaboration, efficiency, and social interaction to occur regularly amidst the diversity of users. However, to date, attention to furniture design in *community kitchens* remains relatively limited and tends to be generic, failing to fully address the characteristics of collective activities, participatory needs, or the emotional aspects that emerge within these social spaces. This creates a gap between the intended function of the space as an inclusive and adaptive collaborative workspace, and the existing conditions, which

often fail to optimally support dynamic working patterns, the flow of activities, and user comfort.

Furthermore, in its current state, the *Foodcycle* Indonesia *community kitchen* space has not yet demonstrated any branding through its interior elements. This situation risks creating the perception among the public and volunteers that the space serves merely as an operational area, lacking a clear visual identity. In fact, volunteer activities at *Foodcycle* Indonesia form part of a social business system that involves participation fees; therefore, the space should be capable of attracting visitors' attention by highlighting the character and identity *of the community kitchen*.

In this regard, the design context of the space and furniture within the *community kitchen* cannot focus on just one aspect when formulating a design strategy; an approach is required that considers various interrelated aspects, such as ergonomic principles to ensure user comfort and safety, shapes and proportions that support flexibility of use, the selection of materials suited to operational needs, an efficient layout to support workflow and interaction, and the use of colour and other visual elements capable of creating an inclusive and collaborative spatial atmosphere whilst shaping the image of *Foodcycle* Indonesia. This multidimensional approach is crucial so that the space and furniture do not merely serve as objects supporting activities, but truly act as catalysts that enhance the function of the space, improve work efficiency, and build a spatial experience for all its users.

Previous studies have examined kitchen design aspects from various perspectives; for instance, a study by IJCEE (2023) highlighted the importance of an ergonomic ' ' approach in kitchen design, particularly in relation to work efficiency and user comfort. This research produced dimensional standards based on anthropometric data of Indonesian women, but its focus remains limited to the context of domestic kitchens with individual users. Meanwhile, research by the Journal of Architecture (2024) explored the transformation of the 'pawon' concept into communal kitchens, finding that flexible zoning and collaborative furniture can enhance social interaction. However, this study has not yet explored in depth how furniture elements can be designed as a medium that specifically responds to the dynamics of collective activities. An empathy-based approach is also highlighted in Prozima's research (2023), which emphasises the importance of adapting communal kitchen design to user needs through *design thinking* methods. Nevertheless, aspects of social collaboration and the role of furniture in fostering awareness and participation have not yet been the primary focus.

Based on these previous studies, it can be identified that kitchen design research to date has tended to focus on aspects of ergonomics, work efficiency, or general spatial flexibility, and few have specifically addressed strategies in the design of space and furniture as a conduit for collaboration, participation, and experience within the context of participatory *community kitchens* such as *Foodcycle* Indonesia. It is this situation that constitutes *the research gap* this study aims to bridge, where

Foodcycle Indonesia presents a more complex challenge because the kitchen space functions not only as a place for food preparation but also as a social space.

Furthermore, the urgency of this research is heightened when linked to the phenomenon *of food waste,* which continues to rise and has become a key priority in efforts to achieve the *Sustainable Development Goals* (SDGs) and national food security policies. In this context, *Foodcycle* Indonesia acts as a strategic partner to the government in creating a sustainable and inclusive food system. However, this vital role is not yet fully supported by an optimal kitchen space design in terms of layout and furniture, which holds great potential to be the primary driver of collaboration, work efficiency, social interaction, and a sustainable user experience.

Based on this context, this study aims to formulate a design strategy for the space and furniture of an empathy-based *community kitchen* through a case study of *Foodcycle* Indonesia.

RESEARCH METHOD

This study employs a qualitative case study method to gain an in-depth understanding of the characteristics and needs of users in *the Foodcycle* Indonesia *community kitchen*, using a *design thinking* approach that is empathetic, iterative, and user-centred. The research process comprises the following stages*: empathise* (participatory and systematic observation , *semi-structured* interviews, and questionnaires to explore ergonomic aspects and user experience), *define* (data analysis, gap identification, and *comparative studies* with Nourish Hub and Philabundance *Community Kitchen*), *ideate* (iterative exploration and development of design concepts), *prototype* (design visualisation through 3D modelling evaluated jointly with relevant stakeholders), and *test* (participatory testing to obtain *feedback* and validate the design). The research population comprised volunteers and managers directly involved in kitchen operations, with *purposive sampling* used to identify relevant informants. The research focused on designing functional, ergonomic and flexible spatial and furniture strategies capable of supporting work efficiency, physical and emotional comfort, as well as social values and sustainability within the *community kitchen* environment.

RESULTS AND DISCUSSION

Results of the Space and Furniture Design

At this stage, the design process moves into the *prototyping* phase of *the design thinking methodology*. The design of the space and furniture focuses on optimising collaborative, participatory and functional activities within the *Foodcycle* Indonesia *community kitchen* area. The design was developed based on the outcomes of the *define* stage (comparison table) and *the ideate stage* (design concepts).

This *prototype* is realised in the form of *a 3D modelling layout* to visualise the spatial design comprehensively. Through the 3D model, the furniture layout, activity

flow, and zoning (*sorting, packing,* and *cooking*) can be clearly seen. The process of creating this *prototype* was not implemented directly on-site, but was used as a medium for exploring and evaluating the resulting design, to ensure that the design meets the needs and characteristics of the users. The following are the results *of the prototype,* which have been adapted to the concepts from the *define* and *ideate* stages:

1. Design 1

Figure 1. *Prototype* Result for Design 1
Source: Personal Analysis

In Design 1, the primary focus remains on the functional aspects of the space, such as circulation arrangements, meeting activity requirements, and the placement of work furniture to ensure efficient and user-friendly workflow. Aesthetic elements have not been extensively explored in Design 1, as the priority of this design concept is to ensure the space functions optimally in line with the users' needs.

2. Design 2

Figure 2. Design Prototype 2
Source: Personal Analysis

In Design *Prototype* 2, the design begins to incorporate aesthetic concepts in the selection of materials and colours to reinforce the space's identity whilst creating a warmer and more inviting atmosphere for users. The colours used are inspired by the *Foodcycle* Indonesia logo, thereby creating a visual impression consistent

with the character of *Foodcycle* Indonesia. Furthermore, the combination of wooden materials on *the cabinets* and teal colour accents makes the space appear more vibrant without compromising its functionality. *Stainless* steel is retained in areas requiring high hygiene standards, whilst the wooden elements and colour scheme provide an aesthetic touch— —that was not previously applied in the first design *prototype*. Through this approach, Design 2 seeks to balance function and aesthetics so that the community kitchen feels structured and comfortable, whilst possessing a strong visual identity.

Evaluation Results and User Feedback

The evaluation process was conducted through design presentation sessions, open discussions, and explanations of each spatial element and piece of furniture present in both *prototypes*. Users were asked to provide feedback regarding functionality, workflow comfort, safety, material suitability, and the feasibility of implementing the design in practice. In addition, users were also asked to assess whether this design accommodated the operational needs of the *Foodcycle* Indonesia kitchen, including ingredient preparation, food processing, storage, and the organisation of volunteers.

Figure 3. Prototype Evaluation Session with *Foodcycle* Indonesia
Source: Personal Documentation

This evaluation process took place on 25 October 2025 at the *Foodcycle* Hub, Jl. Kebon Nanas II No. 15B, RT 01/RW 02, Grogol Utara, Kebayoran Lama Sub-district, South Jakarta City, and was conducted after the volunteer session had concluded. During this activity, the researcher met and held an evaluative discussion with Vada, *the Food Coordinator,* and Mr Frandry, *the Partnership & Development Manager*. Both parties were given a comprehensive explanation regarding the concept, workflow, material selection, furniture arrangement, and the implementation of hygiene and sanitation measures for each *prototype*. Subsequently, they provided feedback, suggestions, and critical notes which served as important considerations for the subsequent design development process. The following are the results of the design evaluation:

Design evaluation of *prototype* 1

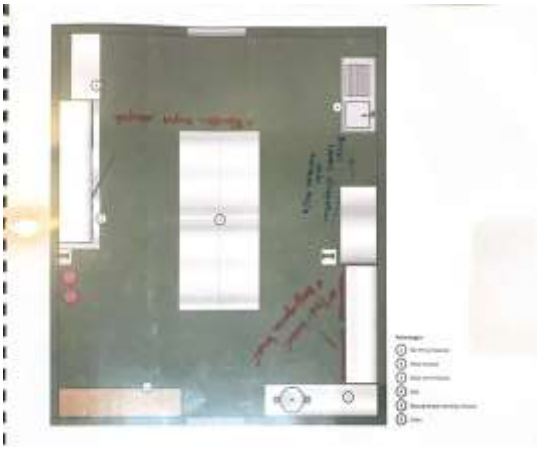


Figure 4. Results of the Evaluation of *Prototype* 1
Source: Personal Documentation

Table 1. Results of the Design Evaluation of *Prototype* 1

Results of the Design Evaluation of Prototype 1		
No.	**Informant**	**Input/Evaluation**
1.	Vada, *Food Coordinator*	Shelves for ingredients should use closed storage. The equipment storage racks need to be enlarged as the current size is insufficient. A waste bin is needed near the sorting table to make the disposal of unsuitable ingredients more efficient.
2.	Frandy, *Partnership & Development Manager*	Food storage cupboards should be positioned closer to the sink area An alternative for food storage racks is to increase the number or dimensions of the cupboards.

Source: Personal Analysis

Evaluation of *prototype* design 2

Figure 5. Results of the Design Evaluation of *Prototype* 2
Source: Personal Documentation

Table 2. Results of *Prototype* 2 Design Evaluation

Results of *Prototype* 2 Design Evaluation

No.	Informant	Feedback/Evaluation
1.	Vada, *Food Coordinator*	**The island counter should not be fixed in place** but **modular/detachable**, as in Design 1. The container storage boxes **are better placed next to the island**, rather than combined with the equipment storage. I prefer the equipment storage design in prototype 2 as **it is larger and features a combination of closed and open sections**.
2.	Frandy, *Partnership & Development Manager*	Add **a dish rack/drainer** for utensils after washing, as the existing setup lacks this facility.

Source: Personal Analysis

Based on the evaluation results, *prototype* 1 is considered to still require improvements, particularly in terms of storage capacity and the layout of the sorting area. Several aspects, such as the need for larger storage racks, the use of closed cupboards for foodstuffs, and the availability of waste bins in the sorting area, are key points that need to be addressed.

Meanwhile, *Prototype* 2 is assessed as better meeting the operational needs *of Foodcycle* Indonesia, although it still requires adjustments in the form of modularity for the *island* table, the placement of container boxes, and the addition of draining racks for washed equipment. In general, both informants—Vada as *Food Coordinator* and Frandy as *Partnership & Development Manager*—stated that Prototype 2 was preferred, not only because its dimensions better suited the needs of community kitchen activities, but also because its appearance was considered more visually appealing and gave the impression of a more organised space. Feedback from both served as the basis for refinements leading to the final design, particularly in ensuring workflow efficiency, the completeness of hygiene facilities, and user comfort during the large-scale food processing process.

Final Design Outcome

Figure 6. Final Design Mood Board for *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

1. Circulation and workflow concept

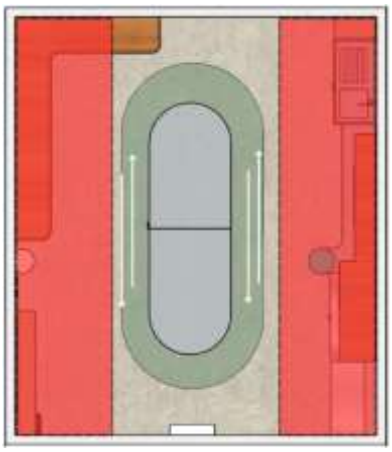


Figure 7. Final Design *Layout of the Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

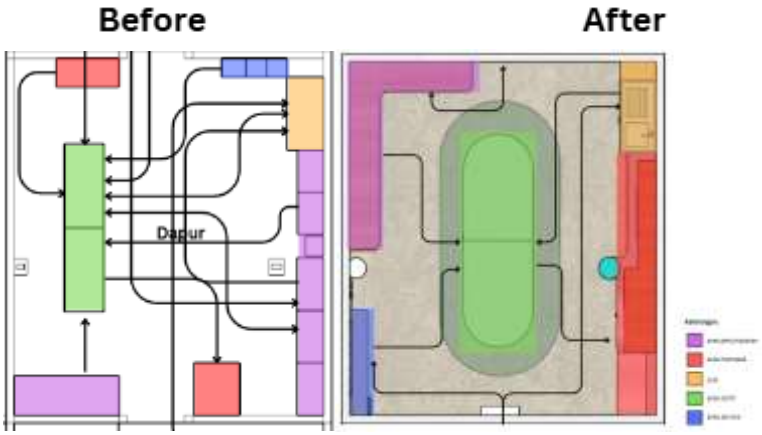


Figure 8. Circulation Flow of the Final Design for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

2. Concept of facilities and kitchen requirements

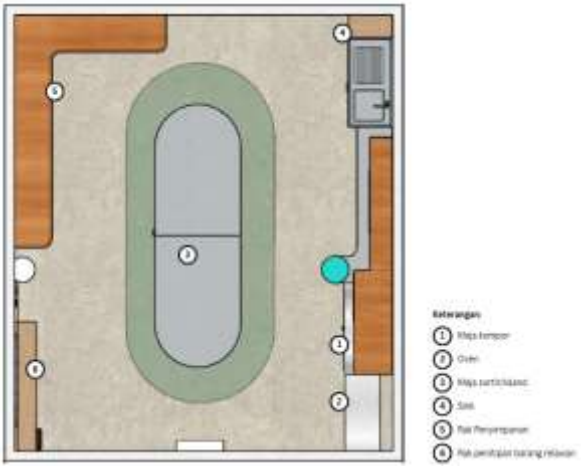


Figure 9. Final Design Facilities and Space Requirements for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

Table 3. Facilities and Space Requirements for the Final Design of *the Foodcycle* Indonesia *Community Kitchen*

No.	Activity Requirements	Kitchen Facilities and Requirements
1.	Cooking	Hob, oven
2.	Cleaning of ingredients and kitchen utensils	Sink
3.	Food packaging	Sorting table/*island*
4.	Food sorting	Sorting *table/island* and storage
5.	Storage	Storage racks for equipment and ingredients

Source: Personal Analysis

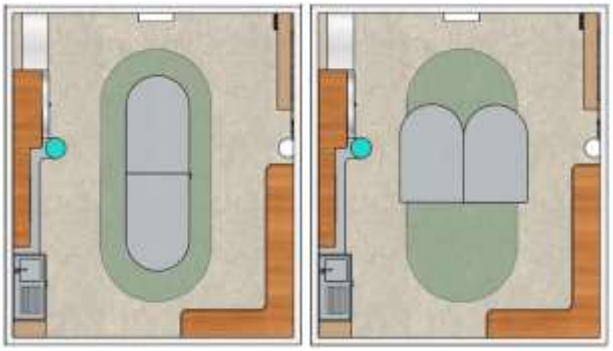


Figure 10. Flexible Furniture: Final Design of the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

3. Hygiene and sanitation concept

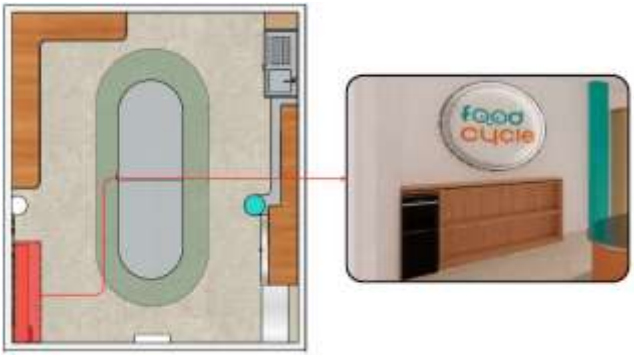


Figure 11. Hygiene and Sanitation Concepts: Final Design of the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

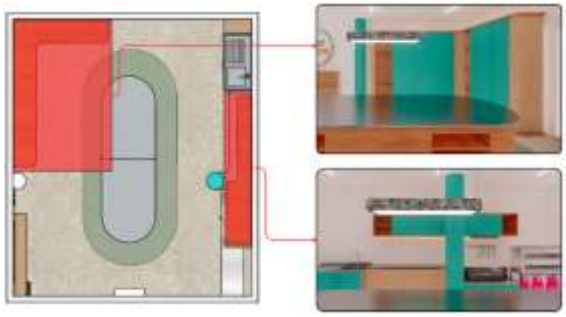


Figure 12. Hygiene and Sanitation Concepts for the Final Design of the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

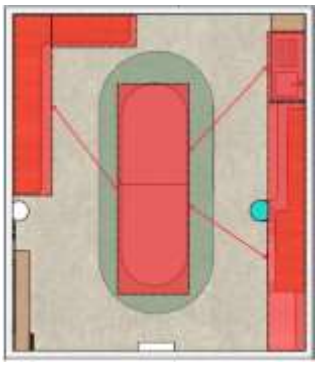
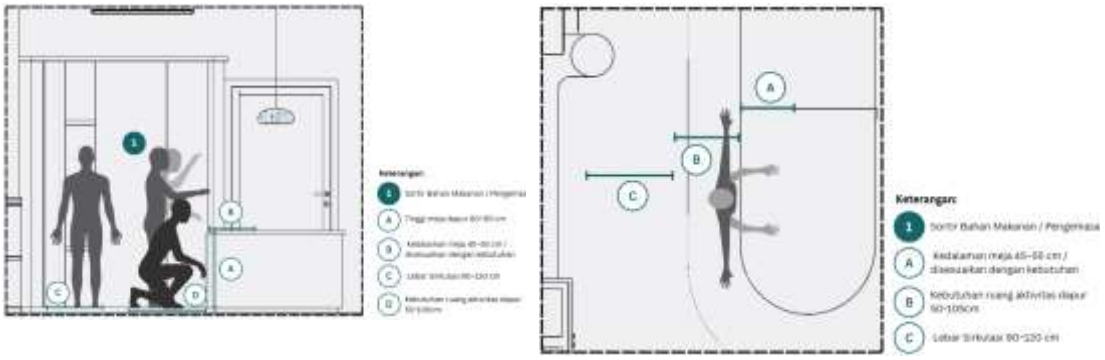


Figure 13. Hygiene and Sanitation Concepts for the Final Design of the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

Figure 14. Hygiene and Sanitation Concepts: Final Design of the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

4. Anthropometric Ergonomics Concept



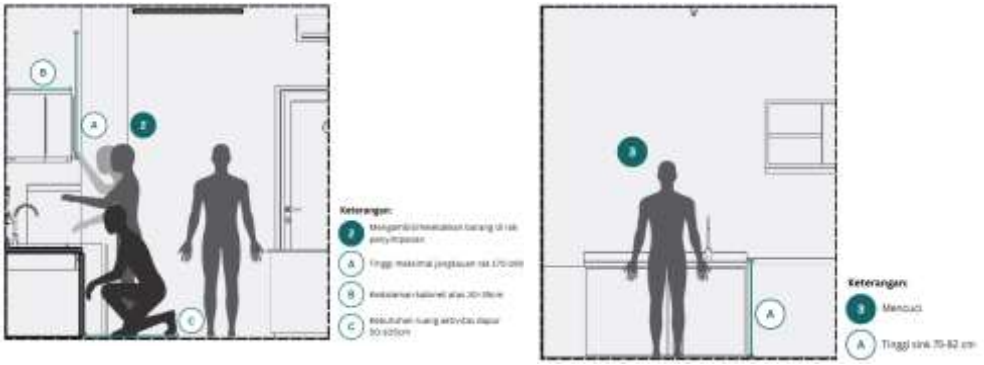


Figure 15. Anthropometric Ergonomics Concept for the Final Design of the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

5. Material and Form Concept

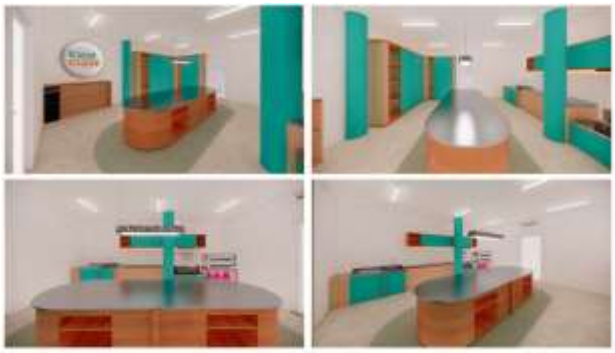


Figure 16. Perspective of the Final Design for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

Figure 17. Final Design Material Concept for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

Figure 18. Final Design Form Concept for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

6. Interior *Branding* Concept

Figure 19. Final Interior Branding Design Concept for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

Figure 20. Interior Branding Concept: Final Design of the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

Figure 21. Final Interior Branding Design Concept for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

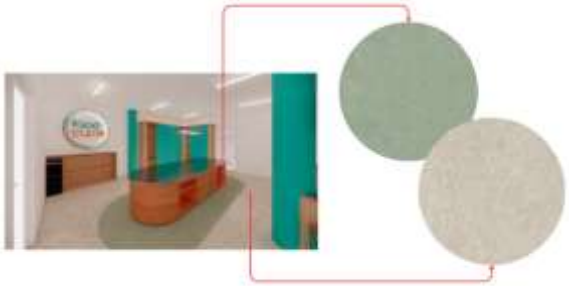


Figure 22. Final Interior Branding Design Concept for the *Foodcycle* Indonesia *Community Kitchen*
Source: Personal Analysis

Table 4. Implementation of Interior Branding

Application of Interior *Branding*		
No.	Interior *Branding* Aspect	Expected Experience
1.	*Clear Vision*	The application of the *'clear vision'* principle has resulted in a space with a visual identity that is instantly recognisable and immediately understandable to users. Placing the logo as the focal point of the space helps to create a strong first impression and clarifies the character of *the community kitchen* as part of *Foodcycle* Indonesia's social business system.
2.	*Unique Story*	The application of *the 'unique story'* aspect results in a space that not only functions operationally but is also capable of conveying *Foodcycle* Indonesia's values and vision narratively. The use of recycled materials and ' ' design elements inspired by the organisation's identity fosters an emotional connection between users and the space, whilst reinforcing the significance of the activities taking place within it.
3.	*Energy*	The *'energy'* aspect, implemented through dynamic floor patterns, modular furniture, lighting, and the use of colour, creates an active atmosphere that responds to the rhythm of the volunteers' work. This fosters a collective work ethic, interaction between users, and the smooth running of simultaneous food processing and packaging activities.

Source: Personal Analysis

Final Design Outcome Indicators

Table 5. Final Design Outcome Indicators

Final Design Outcome Indicators			
No.	Considerations from the Results of the *Empathise* Phase	Design Decisions	Manifestation in the Final Design
1.	The complexity of kitchen activities taking place simultaneously	Clear and interconnected work zoning	Division of areas for receiving, sorting, processing, and packaging
2.	A large number of volunteers with different backgrounds and work rhythms	Linear/galley circulation layout to support parallel work	Clear main circulation routes that do not overlap
3.	Intense collaborative activity between individuals	Provision of shared work furniture tailored to requirements (dimensions, facilities, and form)	Communal work tables in processing and preparation areas
4.	Dynamic and changing space requirements	Design of modular and flexible furniture	Tables and shelving that are easy to move or adjust

5.	Workplace pressure resulting from large-scale production processes	Application of ergonomic principles to furniture dimensions and work areas	Workbench height, spacing between furniture, and ergonomic work areas
6.	Physical space constraints in the existing conditions	Optimisation of layout and efficient use of space	Furniture arrangement that is not excessive and suits the needs of the activity
7.	Lack of spatial identity in the existing conditions	Strengthening interior branding through visual elements	Application of *Foodcycle* Indonesia's colours, logo and graphic elements
8.	*The community kitchen* as a social space, not just a workspace	Creating an inclusive and collaborative atmosphere	Selection of colours, lighting, and supporting visual elements

Source: Personal Analysis

CONCLUSION

Based on the results of research into the design of spaces and furniture in *the Foodcycle* Indonesia *community kitchen*, it can be concluded that the empathy-based approach applied through the *'empathise'* stage of the *design thinking* approach plays a crucial role in formulating design strategies that are responsive to user needs and collective activities. The results of this research not only produced a final design but also yielded outputs in the form of strategic and technical design guidelines that can serve as a reference for the development of *community kitchens* with similar activity characteristics. The following are the conclusions of this research:

Table 6. Conclusions on Space and Furniture Design Strategies

Community Kitchen Design Strategy				
No.	Design Aspect	Empathy-Based Stages Principle	Technical Guidelines	Objectives
1.	Activity Zoning	The workflow follows the actual sequence of the volunteers' activities	Zones are arranged in a linear or semi-circular layout: storage → sorting → washing → cooking → packing → distribution	Avoiding overlapping activities and movement conflicts
2.	User Circulation	Volunteers work simultaneously and move actively	Main circulation width min. 120–150 cm, working circulation between units min. 90–120 cm	Comfortable movement for multiple users at the same time
3.	Sorting Area (Central Table)	The area most frequently used by many volunteers	Sorting table dimensions: min. 90–100 cm (height), width 90–120 cm, length to fit the space (approx. 240–300 cm)	Supports standing, collaborative and fast work
4.	Distance from Sorting Table to Sink	Sorting and washing activities occur sequentially	Ideal distance ≤150 cm between the sorting table and the sink	Reduces volunteers' time and workload

5.	Sink Area	Repetitive and intensive activities	Sink height 85–90 cm, minimum work area width 60 cm per person, waterproof *backsplash*	Improving comfort and hygiene at work
6.	Cooking Area	Workplace safety and efficiency	Safe distance between hob and worktop: min. 120 cm; between hot appliances: min. 60 cm	Reducing the risk of accidents and mutual disruption
7.	Modular Furniture	Activities vary depending on the number of volunteers	Furniture that is easy to move, of moderate weight, with a *knock-down* system or concealed castors	Adaptable and flexible space
8.	Storage Area	Volunteers need quick access	Storage shelves max. 180 cm high, depth 40–60 cm	Easily accessible without aids
9.	Floor Material	High-traffic area, prone to spills	Non-slip vinyl *flooring*, thickness 2–3 mm, seamless joints	Safe, economical, easy to clean
10.	Application of Main Room Layout/Furniture	The space must feel lively and dynamic	Curved patterns, colour contrasts along the main circulation routes	Establishing a rhythm of work and visual orientation
11.	Task Lighting	Activities require precision	*Cool–neutral* lighting (4000–5000K), illuminance level ± 300–500 lux	Supports focus and visual comfort
12.	Interior Branding - Clear Vision	The identity must be immediately recognisable	The logo is positioned in the entrance area at a viewing height of ± 140–160 cm	Creating a strong first impression
13.	Interior Branding - Unique Story	Social values must be evident	Recycled materials in furniture/decorative elements	Building emotional connection with users
14.	Interior Branding - Energy	Volunteers work at a fast pace	Bright colours & contrasts in active areas	Boosting morale & interaction
15.	User Capacity	The space is used by many people	1 person per work area, min. 1.5–2 m^2 per person	Avoiding overcrowding

Source: Personal Analysis

The novelty of this research lies in the approach to designing the space and furniture of *a community kitchen,* which places empathy as the primary foundation for design decision-making. Unlike previous studies, which generally focused on kitchen ergonomics or spatial flexibility in general, this study integrates the *'empathise'* stage of the *design thinking* approach as the basis for formulating design strategies that respond to the needs of collective activities, social dynamics, and the emotional experiences of users.

From a design perspective, innovation is realised through the design of furniture and spatial layout that are not only functional but also serve as a medium for collaboration and a shaper of spatial experience. *The community kitchen* is positioned not merely as a food production space, but as a social space that fosters interaction, a

sense of belonging, and volunteer engagement within the operational framework of a social organisation.

Furthermore, this research presents innovation in the form of strategic and technical outputs in the shape of an empathy-based *community kitchen* design guide. This guide formulates principles regarding zoning, workflow, spatial dimensions and furniture, material selection, and interior branding strategies in an applied and measurable manner, enabling replication in *community kitchens* with similar activity profiles.

Thus, the novelty of this research lies not only in the subject of study but also in how design is utilised as a tool for social intervention capable of bridging operational needs, collaboration, and sustainability values within the context of social organisations such as *Foodcycle* Indonesia.

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