Understanding And Acceptance On The Usage Of Kitchen Pal App: A Study Among Homemakers In Chennai

1.S.Habeeb Ur Rahaman

Research Scholar,

Sathyabama Institute of Science and Technology, skhabee@gmail.com

2.Dr.S.Janet Mary

Assistant Professor,

Madras Christian College, janetmary@mcc.edu.in

ABSTRACT:

House maintenance is one of the most important task of every homemaker. Maintaining of kitchen is the big job where they purchase groceries, store them remember them for usage and avoid wasting them. Most of the homemakers use individual racks and storage compartments to store the raw food items and use them when necessary. The stored groceries and other food items will have an expiry date within which they have to be use. Foods like dairy products, meats, pastries are stored in fridge. These food items need more attention on the expiry of usage. Homemakers will always use new techniques to store the food items and remember them easily. Sometimes the homemakers will forget about any one food item which they purchase in recent times and they will remember it after its expiry date. This situation will lead to the wastage of particular food product which they purchase. Some homemakers while purchasing the grocery and food items for a particular month, without the stock knowledge they purchase same products which are available in stock so the older product will stay as it is or go at the back which will again leads to forget of that product. In this way most of the homemakers are wasting the expired food products since they didn't use them on time. To avoid this wastage and maintain the kitchen stock an inventory app was developed by iCuisto Pte.Ltd. Kitchen Pal is the name of kitchen inventory app which is available in google play store and it supports both android and iPhone. This app will be helpful to keep record of the full stock of kitchen and remind the homemakers. In this research we are going to understanding and acceptance of kitchen Pal app among homemakers of Chennai. The research is conducted through qualitative research method. To find the understanding and acceptance focus group sampling tool will be used. The collected data will be analysed and views of homemakers will be represented.

Keywords: Kitchen Pal, Homemakers, Kitchen Inventory, food products

INTRODUCTION

Home kitchen maintenance needs more attention on the stock and usage of products at right time. Every kitchen has a storage racks for storing groceries. Homemaker who purchase their monthly grocery will categorize them in order and store them. The category of food product will vary on the place of storage and method of storage. They grocery which is used daily will be kept nearby whereas the products that are used are will be kept in a place with safety. Groceries like cereals, pulses, nuts… etc will be stored in normal storage cupboards. Foods which need cool temperature will be store in fridge. Today freezing food items are more because of fast cooking foods and ready to cook foods. The foods which are kept in fridge will have certain expiry time within which it has to be used. Meat and meat products have to be kept in deep freezing where extra care to be taken in the timely usage of the meat products. This reminders about the stored products is always necessary for the homemakers since they cook many different dishes every day. Storing of groceries and raw foods depend on the time and expiry but avoiding of food wastage is the major task of every homemaker. Kitchen Pal is the mobile app which has solution for the stock maintenance.

Kitchen Pal

Mobile applications are the most developed resources for all sorts of works that can be done in a smart way. As the smartphone users are increasing more and more the invention of innovative mobile application are also arriving to meet the user's needs. Kitchen Pal is the mobile application which is used for maintaining the kitchen stocks and getting the notification on expiry of food products.
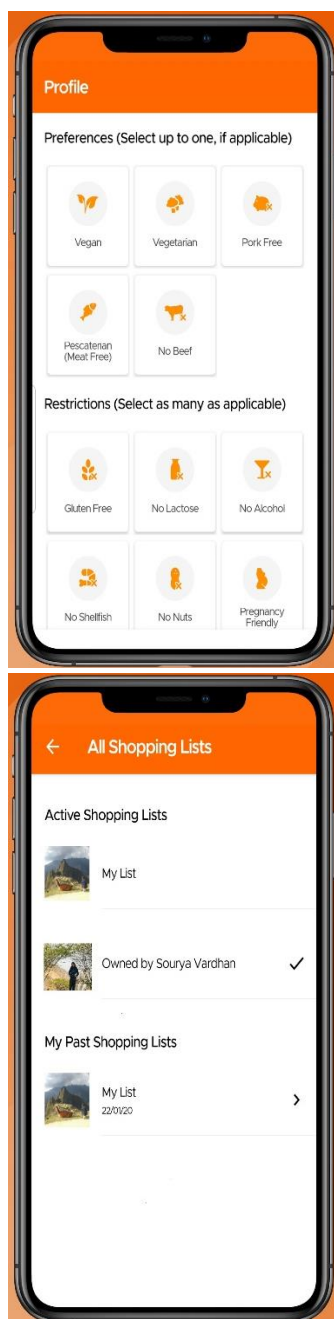
Profile of Users

The Kitchen Pal app can be install from google play store. After installation the app has to register by the user with the basic details of the user like E-mail Id and name. For the first time the app will show default provision of food item adding options. In the profile region the user can add he/her photo, DOB, height, Weight and exercise frequency. Other details such as for number of people you cook and what kind of food eaters are there in your family has to be added. You can also give restrictions to some of the foods like pork, beef, alcohol etc.. Measuring the food item in metric can be set and currency of the country can also be set in order to calculate the saving from wastage of food. Notification can be set various task such expiry of foods, alert for kitchen products not updated weekly, tips about the products in kitchen and alerting for shopping of recommended products.

Kitchen Menu

This menu provides the provision to add all grocery and food items to the different racks that we create. The food products can be added by scanning the bar code, Voice search and also

with custom product adding. The quantity of food items and expiry of the same can be set here.

Sharing the Grocery List with

Customizing User Profile

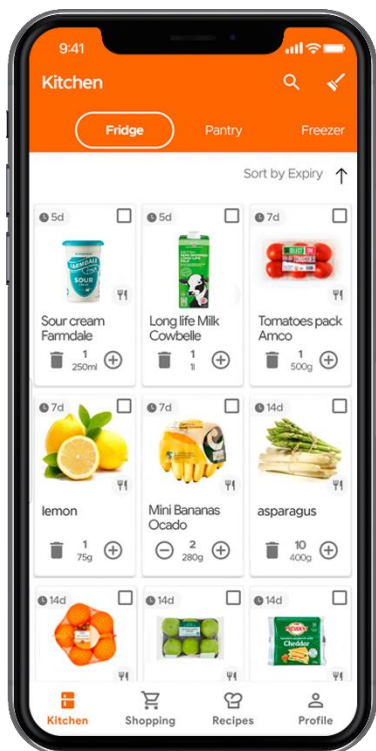Picture – I   Picture - II

This storage will be helpful to manage the amount of grocery and food available in home. While purchasing the food products and grocery this stock details will be helpful for the
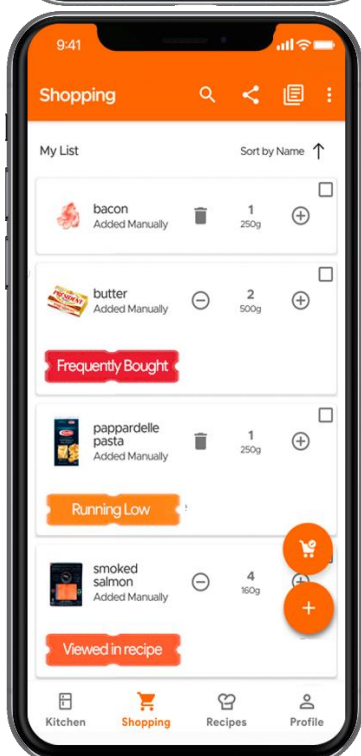
homemakers. The food items store the various racks has to be updated daily by the homemakers while cooking of foods. This will be useful to get the updated stock if kitchen. The raw food products like rotti atta, dairy foods can be added through custom mode and expiry can be fix to get notification. By adding the foods through custom adding mode and assigning expiry will save the wastage of foods.

Shopping Grocery and Food products

Adding the Grocery List / Food products

Picture – III   Picture - IV

Shopping Menu

This menu in the app will be useful for the homemakers to add the products to the racks and measure the quantity needed. All grocery, vegetables, meat and food products are available in this menu. Adding the food item is required for homemakers. Food products stored in the racks can be used for cooking based on the recipe which the homemakers are willing to cook.

Recipe Menu

There are many apps available for finding the recipe for cooking. Mostly all apps will give a video demonstration of food preparation and how the food will look after cooking. In this recipe menu homemakers can find the recipe that they are finding to cook. The menu will be helpful to say about the ingredients available for cooking the recipe selected by the homemaker and also about the grocery items needed further to cook the recipe. Since the homemaker have already assign the number of people for whom they are going to cook, the recipe menu will give the details of items used and balance out of the total stock. This will be very useful for the homemakers to know what are the products that are getting over are and how much they need to buy to refill the same.

Literature Review

Ashwini S. Shelake (2020) research on IoT Based Food Inventory Tracking System for Domestic and Commercial Kitchens describes on the usage of IoT in kitchen inventory management for house and hotels. An application designed for the grocery tracking is more useful for restaurants and hotels than small kitchens at home. The system is more helpful in monitoring the grocery stock and purchasing them when their level come low than the prescribed level. The system has the facility to check the consumed grocery and other raw food items in the kitchen. The grocery purchase list will also be provided by the application. This will be more helpful to the large kitchen management where the grocery will ordered automatically.

Billy Sentosa Wijaya (2020) research on Smart Fridge Systems for Food Inventory Indonesia Household finds a mobile application named FRIDGER. The application provides facilities create, join, view and delete the menu in FRIDGER. The user can then add, remove, edit, and delete products on the products page, and also update the food and beverage data in the FRIDGER. The user can find the items by searching in the app using the keywords. Search bar has been provided in the application which helps the user to find the products easily. The application is need of login credentials which can used through google also. The application provides facility to find the food products stock and notification is given to user based on the expiry provided by the user. Incase of multiple people who uses a common fridge they can share the application and separate the rack and food items among them. Through this notifications the user can stop the wastage of food items that are stored.

Chelsea E Mauch (2018) research on Mobile Apps to Support Healthy Family Food Provision: Systematic Assessment of Popular, Commercially Available Apps says about various mobile applications available for food recipe managements. Around 51 apps were selected from 2881 apps for analysis. There are 23 recipe management apps, 12 apps for planning meal, 10 apps for shopping, 4 apps for organising the family and 2 food choice apps. The apps usage behaviour on the respondents relates with meal planning, recipe finding and shopping of food items. Further these apps has an advantage of creating a behaviour change technique among the app users in the real world.

Hongbiao Yang,(2014) research on Using Smart Kitchen for grocery purchase prediction has created a system path for grocery inventory. The system proposed to identify the stored grocery and its quantity. The idea was developed in broader way to connect with the suppliers to know about the kitchen stock and supply them as per required. This will lead to automatic purchase of groceries to the house. A chip based technology is used along with sensors to identify the amount of grocery left. The system is proposed to maintain the required groceries at home and also to reduce the wastage by purchasing the excess products.

Jerry Lu (2021) research on Smart Kitchen Manager has created a website to manage the kitchen and usage of groceries. The user can set all the increments used in the kitchen and add them based in the recipe that was cooked for the day. Schedule can be prepared for the various recipe that has to prepare in future. Groceries can be stored and added to the inventory and expiry for the products can be assigned in ordered to avoid wastage. Notification will be given with various colours to identify the expiry of the food products. Shopping list can be easily prepared from the stock inventory available in the webpage. Recipe can be added by the user and recipe recommendation can also be seen in the page. The user can share the recipe with other users. Meal cooking can be planned by the user by scheduling the cooking through google calendar.

Karuppiah Pal Amutha, (2012) research on Smart Kitchen Cabinet for Aware Home has design a system using RFID and sensors find the storage in kitchen. The cabinet is designed with RFID and sensor to find the amount of grocery stored in the bottles. The cabinet fitted with RFID instrument to read the bottles and amount grocery stored. The system also provide notification on the amount of groceries stored. Groceries which are countable is measured with RFID reader with sensors. The other way of measurement is through weight of the product. Reducing of weight is used to identify the amount of product left.

Karin Schanes (2018) research on Food waste matters - A systematic review of household food waste practices and their policy implications says that homemakers are more concern about the households and they feel bad about the food wasted. This also make them to feel about their financial loss and environmental and social impact on the issue. There are several studies which speaks on food wastage and how to reduce food wastage. In many houses the homemakers have attitude towards saving the food. On the other hand most of them does not

have sufficient time to look after the stored food and recall them for usage. In fact, with today's complex work, family and leisure planning, the perceived lack of time for all stages of food-related household chores has led to a shortage of time for small stores and growing your own food. , etc., appear to be major obstacles to reducing food waste.

Omkar Mulay (2020) research on IOT based food inventory tracking system for domestic and commercial kitchens finds that a wireless communication system is used to find the kitchen inventory remotely. The communication was made with cloud. The groceries are classified in to countable and uncountable products. The groceries that are countable are measured with the help of load cells whereas sensors are used to measure the uncountable groceries such as rice, pulses, salt etc. A website is designed to find the data of the grocery quantity and also a mobile application which is designed to monitor the quantity. The website will show statistics on monthly usage of grocery. This grocery inventory management is used on the smart homes with android mobiles. RFID technology will also be used in the grocery cupboards to monitor the items and measure them easily through connected cloud.

Pita Jarupunphol (2018) research on A Descriptive Design for a Smart Kitchen Management Application (SKM) has designed an application for kitchen inventory and smart management. The application is designed with scanner which will be useful for the users to add the products in kitchen. Both the grocery and food products from refrigerator can be added in the application. The application was tested with 180 android users and the result was positive with zero errors. The application has the provision to provide notification on the grocery products and foods that are stored in the fridge. Expiry of the food can be assigned by the users for each and every product. Some suggestions on the notification of grocery and scanner suitability for all products has to be improved.

Pushpanjali MK (2022) research on Design of Smart Kitchen Management System Using Internet of Things has proposed a system to manage the kitchen. The system was designed using web camera which is being fitted in the grocery rack. The grocery food products are monitored through the camera and image processing technology which is used to analysed the photo and provide notification to the users. Using the photo notification amount of grocery available is shown to the users. RFID tag, sensors are used in the rack for the counting the grocery products. Gas sensors are used to measure specific gas like LPG, alcohol, propane, hydrogen, carbon monoxide which can be notified to the users.

Salam J. Bash Al-Maliky (2014) research on Kitchen Food Waste Inventory for Residential Areas in Baghdad City says that food wastage is based on the family size. Majority of families in Baghdad are relaying on the household and food prepare form house. An average of 28% of food is wasted from the weekly food purchase of the family. The food wastage is also depend on the number of children in the family. When a family has only 2 members the

wastage is 18.33% whereas it increases by 29.34% and 22.87% with families of 4 and 17 respectively. The food wastage has no significant with the monthly income of the families.

Siti Hasziani Ahmad, (2021) research on Household Food Waste: Exploring the Modern Throw-away Culture in Raub, Pahang, Malaysia speaks on the awareness and understanding of food wastage. The study was analysed on various aspects such as environmental aspects and economic aspect of wasting food. The respondent of the study says many reasons for food wastage such as buying of more food items without noticing the inventory stock is the most prominent reason to buy food of same stock and wastage it. Some respondents says that they are more attracted to the offers provided by the shops on food items. Buy one get one free is the most attractive offer which leads to buy more food products and waste them. The study also says that environmental awareness on food wastage is needed for homemakers

Methodology

The research is conducted to find the understanding and acceptance of kitchen Pal application. Qualitative research method is used to analyse the kitchen pal app. The usage and menu provision by the application was analysed. The find the acceptance and understanding between homemakers focus group discussion is conducted. The focus group samples are selected based on the education qualification. The highest qualification was post graduate whereas the lowest qualification was higher secondary. There are two groups with six samples in each group. Group 'A' is consider to be the highest qualified group whereas the lowest qualified is   Group 'B'. Kitchen Pal app was installed to the homemakers mobile and a brief on the application, features and menus options was given to them. Then questions related to mobile application and it understanding and acceptance was raised with homemakers.

Findings

Kitchen Pal is the mobile application which is designed for kitchen inventory and finding recipes. There are many studies conducted on various technologies to especially using IoT many researcher have found systems and models to make the kitchen more simpler and easy to manage inventory but some of the very few can be used in the real time life because it needs the electrical circuits and special cabinets for storage. The recent research on inventory was done by Mr.Lalit Garg (2020) on the title "Kitchen Genie: An Intelligent Internet of Things System for Household Inventory Management". He and his team has invented an IoT based system with RFID tags and Sensors to manage the kitchen inventory. The system is design based on the previous researches which was done in the same platform. Comparing with these invention kitchen pal application is much better choice for the homemakers who is willing to make their kitchen a smart accessible one.

The application provides various facilities like adding of groceries and food products and fixing of expiry for the food products etc. The user can add the quantity they need and they

can make the inventory according to their purchase. The most prominent feature of this application is that the user can create the provision menu for adding the grocery. By default the app provide a grocery menu and fridge menu in which products can be added. To addition the user can add a new rack by their own name or category in which they want to assign. Products can be added through custom adding option or through scanning the bar code.
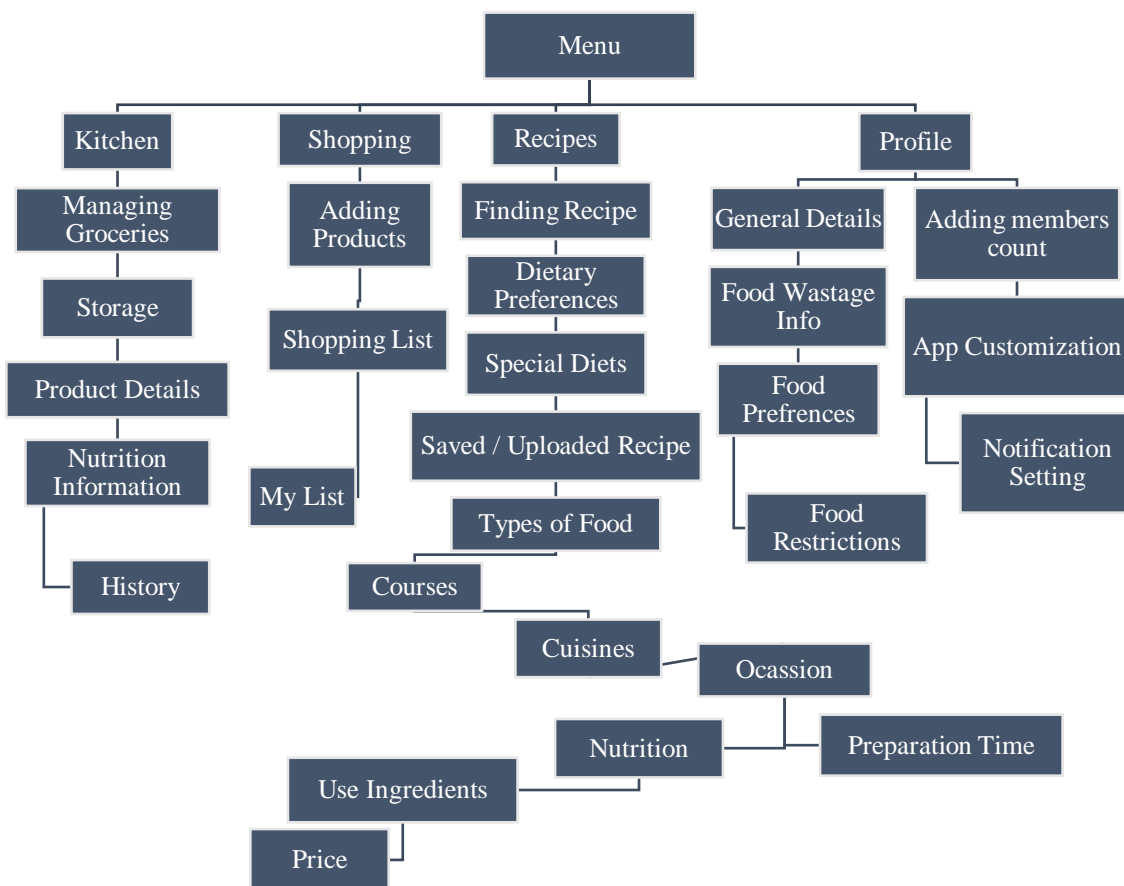
Advantages of Kitchen Pal

- The application provide customization option to add or delete storage
- The app provide provision to add the grocery and the products for fridge separately.
- Apart from the regular products customize food products can also be added by the user
- The inventory details can be access from anywhere so that no need to carry a handwritten list while going for grocery purchase.
- Food recipe menu helps to find the recipe which the user want to cook in addition the available ingredients at home will also be shown so that the user can buy only the required items
- The amount of food wastage can be monitor and it can be reduce
- If the food wasted due to expire, based on the quantity and price assigned by the user the statistics of wastage will be shown.
- Through the wastage statistics the user can see the amount wasted and also the quantity of food
- The app provide facility to add the number of people for whom the homemaker is planning to prepare
- The kitchen inventory can be shared with other members of the home
- Cooking recipe can be shared with others and through that they can also cook the same recipe with required ingredients
- Monthly grocery expenses and list of grocery to be purchased for the upcoming month can be identified through this app
- Restriction can be assign to some of the food which the family does not take as part of the regular food habit. Ex. Alcohol

Disadvantage of Kitchen Pal

- The user has to add all the food products in the app
- Since the app does not have any contact with the products the user has to update them every time
- All time cooking has to be updated by the user to know the quantity used and available balance
- Scanning of products is available free for certain limit to extent the scanning the user has to pay the service charge to receive the service for all products.

Working Flow chart of Kitchen Pal Application

Flow chart 1

Group A

The focus group study was conducted to find the understanding and acceptance of kitchen pal application among homemakers of Chennai. In group 'A' the homemaker's maximum education was post graduate and all of them have the habit of using various mobile applications for their regular home making purpose. All the home makers of the group have a different style of maintaining the kitchen. They have their own style of maintaining the inventory and buying the stocks. They are concern about the food which they keep in the fridge and forget to reuse within time. So they waste the food more often. Kitchen Pal application was explain to the group and homemakers started the discussion on the application. Questions related to the usage and understanding of the application was raised among the group. Homemakers are eager to know about the application. They accept the new technology which will make their work easy. They understand the usage of mobile

application and how to handle it. Virtual Kitchen is the new innovation for homemakers. The main feature of the app that attracted the homemakers is the notification setting for food. Homemakers are very happy to hear such a great feature which will save their food wastage and money. Recipe ideas and finding recipe is appreciated by homemakers since the feature says about how much quantity of food is required for preparing the recipe. They also feel that the inventory list will be helpful for them to access from anywhere through application while they go for shopping. All the members of the group accepted to use the application but there are few concerns from some members that they may forget to update the app data often. Therefore group 'A' homemakers looking for innovative ideas to make the kitchen smart and easy accessible.

Group 'B'

Homemakers of this group are from higher secondary school level where they have less attachments with mobile applications. Though all homemakers are using smartphones they are limited to few applications. They use mobile application for social media, shopping and for children education purpose. As like the previous group the homemakers of this group also have their own style of kitchen inventory and storage of food items in the kitchen. The inventory also changes based on groceries purchased for number of days. Homemakers of this group says that they often recall the items which they use regularly and buy them whenever they go to shop. The inventory is maintain by making of list before going to shop. Kitchen Pal application is explained among the group and the application was given. A detail brief was given to the homemakers about the application. The suggestions of homemakers are, they will not be able to upload the products every time. They said they feel like doing too many works to maintain the kitchen inventory. They are happy about reducing of food wastage since most of them forget the food which they store in the fridge. Most of them like the recipe idea, where it says about what are the ingredients required. When we speak on the notification features of app homemakers says that they are less respondent to the notification of the phone and sometimes their family members will tell them about the notification which is shown by the phone. The application is understandable to the group whereas not all the members of them group are interested to use the application. There are other concerns like they are not more technology friendly users to use these types of applications. Therefore very few homemakers of this category will use this type of applications make their kitchen smart.

CONCLUSION:

The innovation of various technologies are making human day today life more easy and smart. Homemakers have many new innovations in the present technology development which has lead them to do their work in smarter and easier way. Mobile applications are more required to the work fast and smart. Kitchen Pal is the innovative mobile application which has much better features to maintain smart and virtual kitchen. There are many researches

which speaks on the idea of smart kitchen management. Each every reach has a new idea of using technology and science to make the work easier. The computer oriented and chip based researches are little tough to setup and maintain as you need to check for the devices that are being installed in the kitchen rack. Not all the homemakers are not that much tech savvy to work with technology based devices. Mobile applications can be used for inventory management since they are easier to access and learn. Kitchen Pal application has a good acceptance among homemakers and they have to get practice to use the application regularly. When these types of smart applications are used regularly they can make their work easier and smarter. Further the study can be conducted with the usage experience of homemakers by making them to use the app for a month of time. While the features of them app attract them more they also need the same the interest to use the app daily. The regular usage of the app will be helpful to know about the worth of usage and time spend on the app for updating and also weather the app respond to them correctly. Thus new innovation are always available handy through smartphone it our own interest to adapt to it.

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