

# An Interactive Web-Based Wedding Planner with Comparative Analysis Decision Support System

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*Abstract:- Preparing for weddings is always tedious, especially when it does not involve hired help. Long checklists await soon-to-be brides and grooms before their auspicious wedding ceremony. Without experienced assistance, these brides and grooms face frustrating situations in hunting for suitable bridal products and services. This work presents an ideal one stop solution, called the Wedding Arch, for the brides and grooms to retrieve information on available bridal products and services in the shortest possible time. This web based wedding planner provides a platform for brides and grooms to acquire information on bridal products and services, as well as information of vendors registered with Wedding Arch and make wedding planning reservations online with the simple click of a mouse. Thus, the long and tedious task of information gathering has been shortened and made more convenient. Most importantly, Wedding Arch also functions as a web based comparative analysis decision support system that allows the brides and grooms to subscribe to a service that will assist them in the process of wedding planning and preparations. The system assists brides and grooms in making decisions based on their preferences and budget while taking in updated and current market pricings for their desired bridal products and services.*

*Key-Words:- Wedding Arch, Wedding planner, Decision support system (DSS), Budget planning and Web-based.*

## 1 Introduction

Bridal products and services industry looks set to be an income generating industry in Malaysia this century. Not only will the service be provided to soon-to-be brides and grooms, it is noted that there is a rising demand from customers renewing wedding vows. With the exquisite sceneries in the country, such as the wonderful beaches, Malaysia can be promoted to be one of the major wedding destinations. However, before the country is able to reach that status, it is crucial to gather all the information in an easy to find one-stop centre.

The Internet plays an important role in this service industry. Thus, it will be a wise choice to make the information centre easily available via cyberspace. In fact, a web based wedding planner can be easily acquired from the information superhighway. Unfortunately, these web based wedding planners are definitely not familiar with Malaysian cultures. In reality, most of the planners do not promote products and services that can be obtained in the country.

Usually, potential customers have to hunt from one bridal provider to another for the best possible price. A better way for these potential customers is to wait until the next bridal expo to search for the most suitable products and services. As such, the providers are losing out potential clients in the long run. These providers are limited to printed materials, recommendations and bridal fair to attract customers to their services.

Currently, only a handful of Malaysian web based planners are available. And from these limited planners, most of the websites provides only static information with very limited interactivity. In some cases, the information in the websites is not even updated. While there are better web based planners, most websites provide only a simple directory of the products and services without any direct communication with the providers. Furthermore, the information are scattered in many places. Likewise, if the websites are not updated frequently, the advertisements and directory posted may not reflect the current promotions and contact numbers of the providers.

Consider a scenario where a couple is trying to search for information to renew their wedding vows after a wonderful twenty-five-year marriage. The information they need includes advice on wedding photographs and dinner ceremony. Plus, they have a budget. The couple may want to search for additional services available if it does not exceed their budget.

In this scenario, it would be agreeable if the couple is able to utilize a decision support system (DSS) that can assist them in making decisions for their wedding renewal ceremony. A decision support system is a class of computer based information system or knowledge based system that supports decision making activities [12].

Since the emerging of DSS in 1970s, DSS have evolved dramatically over the pass three decades. J.P.Shim et al have discussed the evolution of DSS technologies and related issues including the growth of web-based Decision Support Systems in [7].

The new trends in DSS research are leaning towards Web-based Decision Support Systems (WDSS). The WDSS is a computerized system that delivers decision support information or decision support tools that help in managing and doing business analysis using a 'thin-client' web browser such as Internet Explorer or Firefox [15].

Following the explosion of World Wide Web (WWW), industries have seen the prospect of turning the web into an electronic marketplace [3]. WDSS has shown the potential to reduce technological barrier and ease the use of DSS through the web. For instance, WWW has boosted the healthcare arena through disseminating and promoting healthcare information across the web. Various WDSS have been developed and applied in healthcare practice, as discussed in [4].

This paper discusses the work on developing a Malaysian web based DSS wedding planner that will assist couples in making decisions for their wedding preparations and recommending services based on their preferences and budget. Besides, the web based wedding planner will also be an electronic commerce portal for providers and vendors to advertise their products and services to potential customers.

## 2 Related Work

A brief literature review has been done on the conventional practice of wedding planning and existing online wedding planner systems.

In the conventional practice of wedding planning, soon-to-be brides and grooms have to face some common hassles, including registration of their marriage, taking wedding photographs, sourcing a location for the occasion, planning the dinner ceremony, finalising guest lists, planning seat placements and so on. Without expert guidance and recommendations, these soon-to-be brides and grooms face the unpleasant experience of hunting for suitable bridal products and services, either from the internet or from visiting one bridal service provider to another simply to complete the check list. They usually have to come up with a wedding plan from the available information based on trial and error. Most of the time, this cumbersome task often leads to frustration and failure.

Alternatively, a better way for these soon-to-be brides and grooms to find the most suitable products and services is from the bridal expo. From the point of view of the wedding service providers, they are losing out potential clients in the long run if they have to wait only for the expo event to promote their products. Setting up booths and advertising at bridal fair are limited to printed materials, recommendations and word of mouth marketing strategies to attract customers to their services.

Another method of marketing wedding products and services is through the internet. Currently, there are many web based planners available on the internet such as WedNet, Wedding Planning Software, Bliss, WeddingChannel.com and Easyweddings.

Compared to the traditional DSS, the WDSS brought in two changes in the architecture and consistency domains. The underlying architecture for WDSS has moved from main frames to client-server systems, to Web and network technology-based distributed systems. Consequently, large amounts of data and related decision support tools from multidisciplinary sources, which may be located in a distributed computing environment, have the possibility to be integrated together to support decision-making [16].

Multidisciplinary areas of data and decision support tools can be found on computers that are distributed over the network using the Web and network technology.

From the Business to Consumer (B2C)'s perspective, the arrival of electronic commerce (E-Commerce) opened new prospects for marketing strategies, and new issues to address in the design of E-Commerce systems. Buyers are able to benefit from convenient access to information and commerce while sellers benefit from selling to consumers anytime and anywhere with low bricks-and-mortar and intermediary costs [17]. However, E-Commerce web sites should provide more functionalities than a conventional document-based web search as mentioned in [18]. These web sites should include decision support functionalities, beside the usual function as an information driven portal, to assist users in reducing selections before purchasing from the Web. Moreover, the studied outcome has shown that an individual has bounded rationality when making decisions due to his/her limited knowledge and computational capacity [19]. As a result, it is important to provide decision support assistance for end users to determine the target product accurately and efficiently.

For example WeddingChannel.com is an online wedding planner with the DSS functionality. It embeds the DSS function under the budget calculator module. With this module, users are only required to fill in their expected budget amount and the number of expected guest. The amount of guests is to be keyed in as the amount in total and the amount in different sexual category [9]. After that, the system will assist the users to calculate and distribute the budget amount into the Fashion, Ceremony, Reception, Food & Drink, Invitations & Stationery, Flowers & Decorations, Music, Photo & Video, Wedding Rings, Transportation & Lodging, Gifts, Other Common Expenses and Tax/Tips/Etc categories. After the budget planning, users are allowed to remove any unnecessary allocation from the related category and redo the budget planning. However, WeddingChannel.com has poor organization of information. Furthermore, the DSS algorithm implemented by WeddingChannel.com is mainly based on fix weightage (for each main category) and equal weightage (in each sub categories) when it is distributing the budget amount. Users are not allowed to allocate higher weightage for their preference categories when performing the budget planning.

Another WDSS from the same business domain is the Easyweddings, which is an Australian online wedding planner [2]. Easyweddings embeds the DSS function under the wedding budget calculator

module. However, Easyweddings only required users to provide total budget and total number of guests information when performing budget planning. Similar to WeddingChannel.com, the total budget for Easyweddings will be distributed based on pre-fix weightage into the Fashion & Beauty, Reception, Ceremony, Wedding Rings, Photo and Video, Decorations, Flowers, Entertainment, Stationery, Gifts, Wedding Cake, Transport and Accommodation and Miscellaneous Items categories. After planning, users are allowed to remove any unnecessary allocations from the related categories and redo the budget planning. Unlike WeddingChannel.com, Easyweddings has better organization of information. However, users are still not allowed to allocate higher weightages for their preference categories when performing the budget planning.

WedNet is a web based portal whereby it provides in-depth wedding information [10]. Besides that, WedNet also has a vendor module which allows vendors to advertise their products or services and upload their company web links. However, WedNet has several limitations such as 1) the website provides only static information with very limited interactivity, 2) poor organization of information and 3) WedNet only works as an informative portal and it does not have a DSS or a budget planning system to help in the calculating and planning of expenditure for these soon-to-be brides and grooms. Wedding Planning Software is also a web portal that allows users and vendors to search and advertise their products or services respectively [5]. The features and functionalities provided by the Wedding Planning Software are about the same as those in WedNet. Wedding Planning Software has similar limitations as WedNet whereby it provides static information with very limited interactivity and it does not have a DSS or a budget planning system. However, the organization and presentation of the information in the Wedding Planning Software is less complex compared to WedNet.

Bliss, on the other hand, has more functions compared to WedNet and Wedding Planning Software [1]. Besides the features that WedNet and Wedding Planning Software provide, Bliss does endow extra features such as monthly newsletter emails and daily wedding tips. These functions are meant for users who have signed up with Bliss. There are also forums that enable users to post comments and feedbacks related to vendors' products, services and et cetera. Similarly, Bliss has the same limitation as WedNet and Wedding

Planning Software – it does not have a DSS or a budget planning system.

Most of the websites which have been identified that provide DSS use a pre-fix weightage, equal weightage or implementation of both mechanisms that are implemented by WeddingChannel.com and Easyweddings. Most of these websites have similar limitations, 1) crowded with static information, 2) poor in organizing their information and 3) have very limited interactivity. As a result, a wedding planner named Wedding Arch has been designed with the intention to address the limitations as mentioned above.

### 3 Planner Design

Wedding Arch is a web based system emphasizing on the products and services that can easily be obtained in Malaysia. The system can be utilized by both potential customers and vendors or providers of the bridal products and services. Administrators of the system will be maintaining the web based application in terms of updating the information and keeping track of both members and the vendors.

#### 3.1 Non-Member Module

Users will have to register as members to fully utilize the web based system. Non members are only able to partially use the application. The basic function of the non member module is the registration, search and viewing functions. The search and viewing function includes the process of searching and viewing of advertisements from the various registered vendors.

#### 3.2 Member Module

As for the member modules, extra functions are provided besides the basic non-member functions. This works as an incentive by providing an edge for the customer oriented factor in electronic commerce. The extras include the budget planner, which will be discussed further in the paper, and promotions for the members. The promotions that are offered are part of the product bundling strategies which ideally combines products and services from various vendors into a single package and handled by the system administrators. Bundling is a very popular sales-promotion tool, in which a critical issue is to decide what products should be sold together in order to improve sales [14]. Bundling of the products and services from different

vendors can hardly be found as most vendors preferred to work independently. The strategy opted by the web based application can be quite a catch for potential customers.

Besides that, members are allowed to communicate directly with the administrators and registered vendors. The system is committed to pass on messages as the way of communication from the members to the vendors, vice versa and from the members to the administrators, also vice versa. Thus, members can opt to use the messaging services provided by the web based application to interact with the desired vendors or contact the vendors by their own means of communication channel.

Before any members are allowed to use the budget planning system, also called the DSS system, they are required to login to the wedding planner. Fig. 1 shows the user interface of the system whereby users are required to login to the system before they are able to fully utilize the web based application.



Fig. 1: The User Interface

The first part of the budget planning is the interaction between the user and the system. The user is required to answer a few questions to obtain the requirements for the wedding preparations. The user will need to provide his/her total budget for the ceremony based on the four major requirements in a wedding; the wedding photographs, food and beverages, honeymoon and wedding cake. The requirements can be changed dynamically by the system administrator. Additional requirements can be added where it is deemed suitable according to the current demands of the bridal industry.

Fig. 2: The Budget Planning System

The interaction between the user and the system is shown in Fig. 2. Before providing the budget, the user can check the price listing chart for each category in a separate pop up window to minimize the chances of receiving the under-budget error message. Example of the pop up window for the price listing report is shown in Fig. 3.



Fig. 3: Price Listing Report

The second set of questions for the user is based on his/her answer from step one, as shown in Fig. 2. The next step is for the user to provide the ranking for each category that are important in the user's wedding ceremony, shown in Fig. 4. The decision making results will be based on the answers given during the questionnaire. The planner stores the information provided for future referencing from the users.

Fig. 4: User Interaction for the System

Besides the functional design, the wedding planner also takes into account of poor Human Computer Interaction (HCI) that usually causes human errors in the context of embedded systems [6]. HCI is very important to the user interface design as it encourages the operator (user) to perform correctly, as well as, to protect the system from common operator errors. Hence, a system that delivers simple and natural dialog, speaks the user's language, minimizes the user's memory load, with consistent features, as well as clearly marked exits, shortcuts, precise and constructive error messages, error prevention, help file and documentation and promotes feedback has been prepared [11].

### 3.3 Vendor Module

Members aside, the vendor module includes the registration, login, posting and updating advertisements. Similar to the member module, vendors will have to register with the system before they are allowed to post or update any advertisements.

Vendors play a prominent role in the system as well. The web-based system caters as an electronic portal for bridal vendors and providers alike to trade their respective expertise. The wedding planner provides a platform for these vendors to offer their products and services to users and potential customers. The

providers will be able to place advertisements to attract prospective clients and at the same time sell their products and services. Besides advertisements, registered vendors can acquire price listing information of their respective competitors to create a healthy competition amongst the providers. This information can be obtained in the form of a chart according to the category of the individual vendor.

### 3.4 Administrator Module

The administrator module allows system administrator to maintain and update the information for the web based application. Maintenance of the application includes keeping track of the membership – both vendors and users – for the system, sustaining the validity of the posted advertisements by the vendors and inserting additional categories according to the demands of the bridal industry. On top of that, the administrator module provides the functionality of updating the content of the system. This feature ensures that the web-based system is constantly up-to-date with the current changes and trends in the trade.

## 4 Planner's Algorithm

The planner's decision support system combines both rule based technique and the deduction technique. The system acquires user preferences and budget from the questionnaires.

In this case, the algorithm is analyzed based on the multiple criteria decision analysis where the objectives are arranged into criteria and the consequences measured after all possible alternatives are identified [20]. From this, two variables are needed to perform the web based decision analysis algorithm. The variables required are the algorithm objectives and its consequences.

While the objectives and consequences are taken into consideration, these are to be translated into value and weights. The consequences are measured according to the budget versus the actual costs of each criterion. Actual costs for each criterion are pricings submitted by the vendors for their advertisements in the web based wedding planner. The budget is the consequences where it considers the value, while the preferences on the requirements serve as the weights of the algorithm.

Looking back into the Planner's Design, both the value and weights are extracted from the users.

When users provide their budget, the figure is translated into the algorithm value. The algorithm is able to cater for multiple objectives, also known as criteria. These criteria are gathered from the user interaction with the system, along with user preferences for each criterion. From this, the user preferences are translated into weights for the algorithm.

Using the weights of the algorithm, an aggregate is calculated. Then only the final evaluations are considered to meet the requirements of the user, where it is displayed in ascending manner of the actual costs. Final evaluations in this algorithm are to eliminate alternatives that are out of bounds from the consequences given by the users.

The calculations for the algorithm are generated dynamically using the actual costs allocated by the vendors from their respective advertisements. The system algorithm is designed to accommodate the addition of requirements that can be added based on the market demands. Thus, making the web based system flexible and less rigid to meet user requirement.

Firstly, a list of the vendors for each category of photography, food and beverages, honeymoon and wedding cakes is prepared. As the system design was meant to be, the categories for the vendors can be changed dynamically by the system administrator where it is considered appropriate according to the demands of the industry.

Price ranges for each category are acquired based on the preferences and budget provided. The information gathered are then combined and calculated to produce the total cost. Any of the products or services where the cost is greater than the budget is eliminated. So does any package combinations where the cost is greater than the budget, retaining only those that meet the budget of the user.

After the searching and calculations process is completed, the system continues to display prices based on user preferences according to the categories. The computation process for the user preferences is done via the normal distribution graph generated from the mean value and standard deviation value of every category. The distribution graph provides the ranges of the different preference levels, as shown in Fig. 5. The selected calculation algorithm affirms the characteristics of a decision support system where it is to support a variety of

decision processes and styles and at the same time balance the effectiveness of the system with efficiency [8]. The computation presents users with more choices, especially in terms of the package customization features.

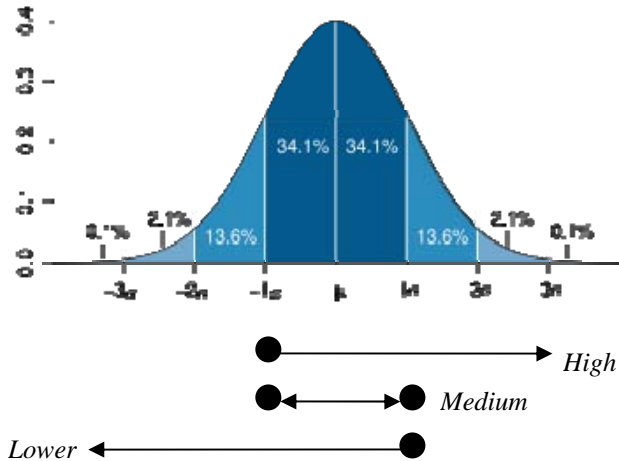


Fig. 5: Ranges of Different Preference Levels [13]

The system will also suggest combination packages for the users based on his/her budget. There is a possibility that the system returns more than one combination packages. In this scenario, the system will pick the first three packages and display them. The overall algorithm is shown in Fig. 6.

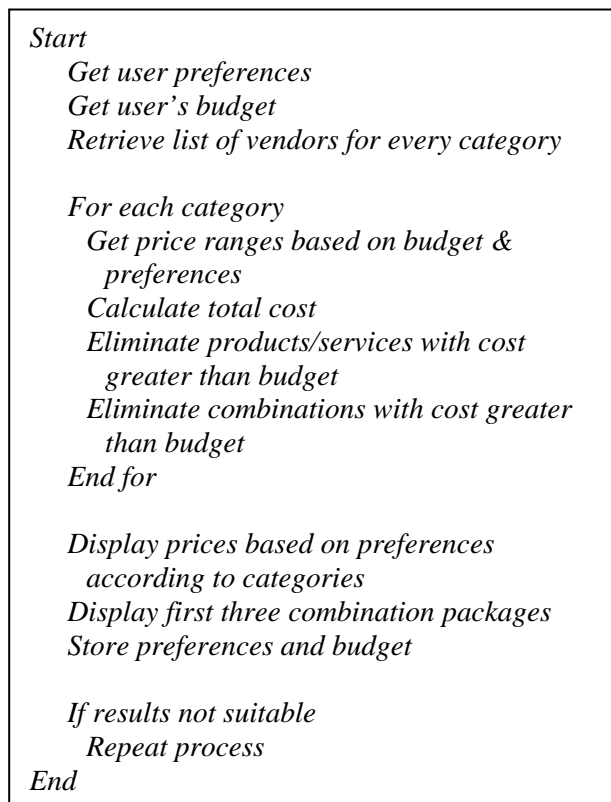


Fig. 6: The Algorithm for the Planner

Based on the algorithm, the minimum expenses for the chosen preferences and budget is calculated. From there, the system will suggest the amount of expenditure for every requirement that has been selected from the previous questionnaires.

The minimum expenses is the package that produces the least amount of the actual costs based on the pricing submitted by the vendors.

The suggested expenses for each requirement or criteria is divided with the overall minimum cost for the computed packages and multiplied by the user's budget. The calculation for the suggestion of expenditure is shown in Fig. 7.

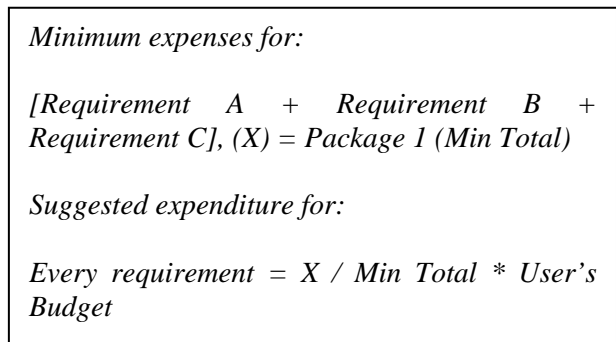


Fig. 7: Algorithm for Suggested Expenditure

As compared to all the literatures in section 2, the proposed algorithm is able to allow users to meet the constraints of their budget. Moreover, the minimum suggested expenditure for each criterion, which is generated by the system, is able to alleviate the pain of users in distributing their budgets especially to the unknown prices that are posted by each vendor at each criterion.

## 5 Preliminary Results

Several experiments were conducted to try out the functionalities and effectiveness of the web based wedding planner. The tests were conducted on the functionality of the budget planning system. The input for the user preferences was photography and food and beverages. The budget for the test was \$15,000. The photography category was ranked the most important while the food and beverages was ranked average and must be able to accommodate 200 guests.

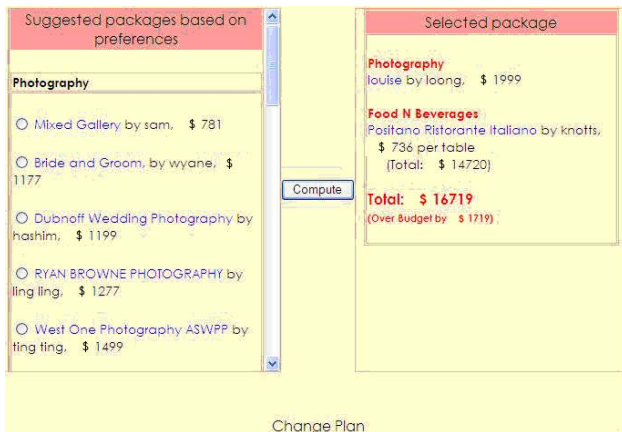


Fig. 8: Results According to Preferences

Fig. 8 shows the results of the algorithm based on the user preferences while Fig. 9 depicts the results of combination packages based on the users' budget.



Fig. 9: Results of Combination Packages According to Budget

The results according to the user preferences are listed based on advertisements that fall on the chosen preference level from the normal distribution graph. All advertisements in the selected preference level will be displayed, as long as they are within the users' budget.

The suggested packages based on the budget displays the first three combinations that have the lowest value in terms of cost. It will also automatically calculate the total rate for each package with the various combinations of advertisements from the different categories.

Furthermore, the web-based decision support system provides a platform for the users to communicate directly with the various vendors. These messaging services are easily available via the detailed advertisement pages.

Fig. 10 demonstrates the results of the suggested expenditure algorithm. The system provides suggestions on the amount of money the users should spend on each category based on the chosen requirements and their budget.

Suggested expenditure	
Category	Budget
Photography	\$952.36
Food N Beverages 200 Guest(s) :: 20 Table(s)	\$14,047.64
<b>Total :</b>	<b>\$15,000.00</b>

Fig. 10: Results for Suggested Expenditure

## 6 Conclusion and Future Work

Wedding Arch, as a web-based wedding planner, is built to reduce the time consuming processes of planning and preparing for wedding occasions. The existence of Wedding Arch is meant to assist users in making decisions while planning their weddings or any wedding related occasions. Besides end users, this wedding planner is put together with the vendors in mind for them to strategies their marketing plan.

The web-based wedding planner not only serves as a solution for providing information on bridal products and services, it also functions as an electronic commerce portal for vendors to trade and advertise their products and expertise. The web-based decision support system sustains an analysis tool for users and vendors alike by providing price analyzing services to assist in the decision making processes. For the vendors, it gives a competitive edge when planning their marketing strategies.

On the other hand, the analysis tools enhance the budget planning processes for users. Members of Wedding Arch are able to tap into the products or services bundling practices to obtain better offers that suits their tastes and budget. The bundling strategy promotes products and services by various bridal vendors from different trade backgrounds.

The messaging service includes an added advantage to the system for greater interactivity between users, vendors and administrators. The services allow two-



way communication for all the parties involved, from requesting information to making reservation for the vendors' services.

This web-based wedding planner can be further enhanced to incorporate credit card payments to increase efficiency for both users and vendors. The effectiveness of electronic commerce will be fully utilized with online payment functionalities. With online payment in mind, there should also be consideration to further explore on the security issues to reduce frauds over the usage on the system. Besides better algorithm, the future works on these two subjects will boost the reputation of the system in terms of marketing strategies and responsibilities towards the stakeholders of Wedding Arch.

Other enhancements for the web-based wedding planner also include more development on the provided functionalities and checklists. These functions come in the form of currency converter, planning calendar, reminders, seating arrangements and so on.

Putting in place the currency converter will increase the support for the global community. This will boost the market value of the system and provide a platform for local vendors to venture in to the global market. The planning calendar should have automated algorithm for scheduling appointments when any reservations are done online to any registered vendors via Wedding Arch. As for the reminders, it should include alarms to remind users of their appointments or any left out things-to-do from their checklists prior to their wedding occasions, whether in the form of emails or messages straight to the users' mobile phones.

Another step towards the future is to make Wedding Arch not only a web-based wedding planner, but also in making Wedding Arch a mobile compliant web-based comparative analysis decision support system. The mobile technology will be able to adapt the current system to provide decision support service to mobile users. The system will apply disaster recovery plan and load balancing technique to achieve higher availability to be accessed by larger number of users.

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