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APPLICATION-BASED COMBINED ALCOHOL PURCHASING AND DRINKING RISK CALCULATION

MOD002695 – Research Methods

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Contents

1) Introduction and Aims

The hypothesis to be investigated in this research is that it is possible to create a mobile phone application which can both facilitate the purchase of alcoholic beverages, and provide to the same consumer a running total of the total alcohol they have consumed over time. The primary objective of the application will be to provide a self-monitoring tool for the user, and so to provide health benefits. However, there will be additional benefits. The first will be to the establishment where the application is used, for example, the ordering of drinks can be streamlined, customer loyalty programmes supported and (perhaps) excess consumption can be monitored. The second series of benefits will be to the user in terms of improving the ordering process and tracking expenditure.

Many applications exist which allow one to calculate approximate intoxication from alcohol consumption, for example, Drinkaware provides a free application to track and calculate both alcoholic and calorific intake from drinking (Drinkaware). However, these applications require the user to manually input data concerning their drinks. This requires the user to temporarily retreat from the social activity of drinking to research the alcoholic content of their drinks (either from within the application they are using or from another source), and add to the running total. This approach is not ideal, as many people will not appreciate the hassle of such a task, which is even more likely to be shirked as a drinking session continues, given the behavioural effects of alcohol to reduce inhibition and self-control.

The unique feature of the application to be developed as part of this project is the combination of convenience in order placement and enabling of an automatic self-monitoring facility. The user can approach the application as one which provides support to them in reflecting on their drinking habits with the added benefit of a convenient ordering protocol. Alternatively the main motivation of the user may be the ordering of beverages, but by providing additional insight, may present an avenue of improving health. As a benefit to the vendor of such beverages, the establishment can exactly monitor popularity of drinks, potentially links the app to their inventory system, and better serve customers in a swift and orderly fashion. In all cases, there is a potential for a public ally beneficial health outcome.

Some establishments, such as Starbucks, have also created applications which allow consumers to purchase beverages digitally, to be collected in-store. This application provides users with a menu of drinks and food items currently offered, as well as an index of nearby outlets which can provide them.

No application exists (to the knowledge of the author at time of writing), which combines these functions, allowing one to purchase drinks while tracking alcohol unit consumption from beverages purchased using the application itself. By allowing purchasing of drinks via the same application, the user is encouraged to continue seeing their accrued intake, which can help alert the consumer (or even the serving establishment) of their current risk-state.

2) Literature Review

The purpose of this research is to create a means of informing youth of the dangers of drinking in a way that will be easily received and understood. Research published by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) found that 1,825 American college students will die every year as a result of alcohol and alcohol-related injuries; in addition, 696,000 students of the same demographic in the same time frame will experience assault from a peer under the influence of alcohol, and 97,000 students will report sexual assault or date-rape as a result of alcohol.

In January of 2016, UK government guidelines for alcohol consumption were updated (Department of Health, 2016). Formerly, the recommended intake maximums were 21 units per week for men and 14 units per week for women, which has now been adjusted to 14 units per week for all sexes. This is in accordance with new data gathered since the 1995 review, which is now believed to have overstated the advantages of alcohol consumption.

Despite these guidelines, a 2015 England health survey (Brown and Neave, 2016) found that 31% of men and 16% of women would exceed these recommended limits in an average week, with this trend being more likely in higher-income housing. Furthermore, in a questionnaire on the most amount drunk on any day in the past week, 38% of men between 25-34 had exceeded 6/8 units, and 42% of women 16-24 had done the same.

These statistics demonstrate a senseless amount of potential damage caused by the inability to control one's own alcohol intake. It is for this reason I believe this application will be able to serve a critical role in reducing alcohol abuse, presenting an overall service to society. These data also highlight the fact that damage causes by excessive drinking is not only to the self, but to people, property, and reputation.

This information also tells us that alcohol consumption is an issue in younger demographics, especially those in higher income houses. Though it may seem callous to do so, this demographic represents an ideal market for the suggested application, as research from Ofcom, 2015 shows that 95% of 16-24 year olds own a mobile phone, increasing to 98% in 25-34 year olds. It is therefore possible to conclude that mobile devices present an ideal medium for the application, as they are widely used and kept on the person at virtually all times.

3) Methodological Approach

Discussing the methodology of research for this project is somewhat problematic. The aims for this application do not in of themselves seek to advance knowledge of computer science, but to combine existing technology and research to create a proof of concept. From that point, the application can function as a means of further research into the use of technology and consumption of alcohol in various demographics.

This project will employ the constructive research approach, as the final completed application is to be seen as an outcome, rather than part of a greater goal, as is often the case in action research. This research could also be described as qualitative, as it seeks to pool existing knowledge of application design and programming to create a single, elaborate outcome (Pasian, 2015).

As the individual uses of this application can be easily categorised, the application will be produced using the agile programming method. Basic functions such as the alcohol intake counter and alerts to the customer can be implemented first, followed by development of the vendor side, allowing vendors to add their offered drinks to a digital menu along with their unit values, before linking the two sides, allowing customers to peruse drinks and be informed of their alcoholic volume.

The key benefit of creating the application using this method is that it allows for expansion, should the initial steps by implemented ahead of schedule (as is reasonable when the designer, programmer and creator are all one person), it will allow for the possibility of more complex features to be included, beyond the scope of the initial outline, in many ways. For example, the application could be expanded to display other utilities, such as alerting the user of when they are likely to have exceeded the legal driving limit, how long it will take (approximately) for their blood alcohol level to reduce, and total money spent/calories consumed during the course of the night.

A key input into the application creation process will be the need to acquire adequate data regarding a) the effect of alcohol on individual metabolism and b) on the actual alcohol content of a vendor's drinks. These data will be approximated for the purposes of proof of concept and testing, but would require substantial research and verification in order to support in vivo deployment.

4) Plan, Deliverables and Evaluation

The key aims of this project are not strictly the gathering of data, but the creation and demonstration of a tool. The key technical aspect will be the final implementation of both sides (customer and vendor) of the application, including personal features within each, and features which require communication between both user and vendor.

The final product should be an application in two parts, one existing on a phone, to be used by the customer, the other on a desktop or laptop computer, to be used by the vendor. Though it will not be possible to test this application in the field using a real establishment, it can be tested using a 'dummy' establishment to show a connection between both sides of the application, both in ordering drinks and having their unit values calculated on the user side.

As this application will not need highly advanced graphical capabilities, it should be simple enough to produce using a standard framework. Other data will need to be gathered, such as variables pertaining to calculating the blood-alcohol concentration of an average consumer using weight and sex. It may also be worthwhile to have the application pre-loaded with known units of common beverages, allowing for easier use by both the user and vendor sides of the consumer base.

In order to build the application, development platform Android Studio will be utilised (based on the IntelliJ platform), as it allows for both text editing services, which allow the design of the application, as well as a virtual machine on which it can be demonstrated. The Android Studio primarily uses Java as its language, which will therefore be a central part of this project. As for the required server, I am as of yet unfamiliar with using a localhost server system in an android device context, however XAMPP will be considered as a possibility, a service with which I am already experienced.

For the purposes of this project, server connection is intended to be facilitate through localhost, and so should not risk any loss of signal. However, in a realistic setting of wireless devices, loss of signal is a risk, for which a provision would have to be made, for maintaining continuation of data transfer through repeated connection attempts.

In addition to the features listed above, certain other aspects of drinking behaviour will have to be accounted for, including the concept of a 'round'. When ordering multiple drinks, users will have to be shown a 'tickbox' next to each drink, which can be selected to indicate whether this drink is to be consumed by the user, or by a comrade.

5) Time Management Plan

   To assist in the time management of this report, a Gantt chart was constructed in Excel using an online guide (Esposito, 2013).
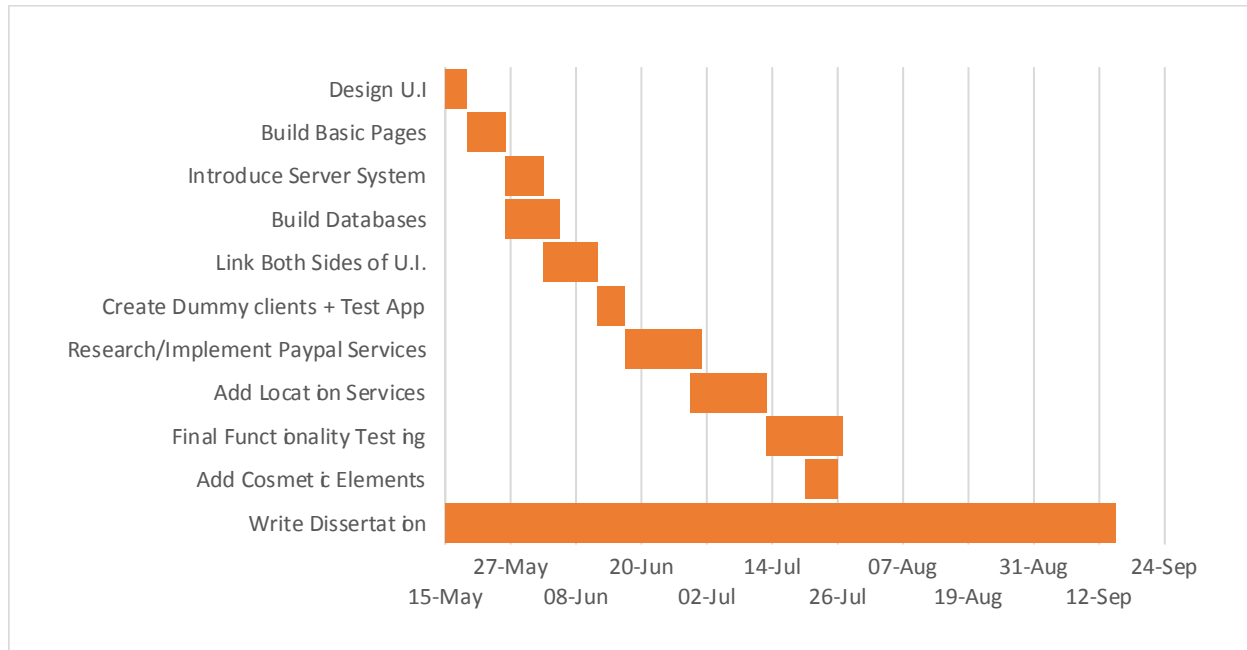
As can be seen, the timetable has allowed for a significant amount of time between the completion of the proof of concept application (26th July, 2017) and the assignment deadline (29th September, 2017). The reason for this is two-fold, first, to allow for full attention to be paid to the written section of the project, and second, as this is a learning experience, it is possible that certain factors of this project have been overlooked, therefore time should be allowed to correct the timetable and include such oversights.

6) Ethics

An in vivo application deployment would involve collecting personal data such as location and personal characteristics (weight and alcohol consumption). In primary testing these parameters will be simulated, but in any in vivo testing will require active consent to the collection of data and proper management of said data. Consideration would need to be given to data security and data management, including where appropriate anonymisation.

At this stage the application is considered as a tool for individual self-monitoring. However, any aggregated data would be undoubtedly useful to a) vendors b) advertisers and c) health monitoring authorities.

Please see appendices 1a-1d for the relevant ethics application paperwork.

7) References

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