Implementation of a Web based System and Mobile Platform for Encouragement of Local People to Engage in Proper Workout Practices Such that Ensuring their Health and Physical Wellbeing Stays on Good Standards

M.G.G.K.H. Siriwardana[1], U.W.P.S. Sandeepa[2], A.R.W.M.M.L.O. Amarakoon[3], R.B. Weerasinghe[4], D.I. De Silva[5] and R.R.P. De Zoysa[6]

[1]Faculty of Computing, Sri Lanka Institute of Information Technology, New Kandy RD, Malabe, SRI LANKA
[2]Faculty of Computing, Sri Lanka Institute of Information Technology, New Kandy RD, Malabe, SRI LANKA
[3]Faculty of Computing, Sri Lanka Institute of Information Technology, New Kandy RD, Malabe, SRI LANKA
[4]Faculty of Computing, Sri Lanka Institute of Information Technology, New Kandy RD, Malabe, SRI LANKA
[5]Faculty of Computing, Sri Lanka Institute of Information Technology, New Kandy RD, Malabe, SRI LANKA
[6]Faculty of Computing, Sri Lanka Institute of Information Technology, New Kandy RD, Malabe, SRI LANKA

[1]Corresponding Author: siridana@gmail.com

ABSTRACT

Improperly maintained unhealthy livelihood of a person will have a direct impact on his or her life and as well as safety. When it comes to good health and wellbeing, there is nothing which comes above that. Careless and unreliable guidelines on workout postures, not knowing about compulsory nutrients for body and the poor knowledge on supplements are the major reasons behind most of the people being the bearers of fatty, lethargic bodies surrounded with diseases. It is better to know the thing in the correct way and practice it, rather than engaging in it without knowing the consequences and benefits. A system will be proposed to collaborate with the well experienced trainers, coaches and physicians in nationwide to provide proper health guidelines to have good food, better postures on workouts and ultimately a healthy body with no worries about deadly diseases. Likewise, a web application which brings up the blog posts on the tips and informative guidelines on a healthy life which is mutually collaborated with a mobile application to track the users on following those guidelines properly would be the ideal solution for a country to enhance their health standards in a progressive way.

Keywords-- Workouts, Gym, Fitness, Physical, Healthy, Meal, Exercises, Trainers, Mobile, Web application, Technology, System

I. INTRODUCTION

Everyone likes to lead a life with a good health. But, due to the different reasons sometimes they miss that chance. Those circumstances may be unhealthy junk foods, ignorance and poor knowledge on basic exercising practices etc. [1] There hasn't been a proper way of providing the people with this great knowledge on leading the best life with what they already have. To overcome this problem, many kinds of educative sessions, seminars are conducted on island wide. Usually the majority of people don't like to engage in these sessions cause they are bored or not having a dedicative time slot in their busy schedules. As we know the young generation has some kind of motivation, but the older generation is still hesitating to get along with these kind of introductory sessions. [2] No matter you are young or old, the health is the priority we should all have to put our concern on. For a good deal of money these kind of mentoring sessions can be bought up and practiced. Also we can hire people to guide us and monitor us throughout our workouts and exercising sessions. That may be easy for very small group of people. But, the truth is that the majority of people can't afford that. Of cause that there is a restriction when it comes to the huge expenses which we have to bear on making this effort a practicable one. If the government can assist the resource persons on heading up with this kind of effort, this thing can be made possible. [3] There are several organizations which have been acclaimed internationally on aiding these kinds of projects to enhance the sustainability of global health sector who would give their help to put this plan in to action.

Other than verbal and ordinary media, the digital platforms have a great impact on the life style of people. There may be a generation gap. The technology might break up that barrier and unite them all. In the previous times, the people hadn't much concern on their health, because the non-communicable and communicable diseases weren't much abundant. [4] The reason was there weren't many artificial foods and as well as busy life schedules obsessed with work. The ancestors had the proper exercises naturally. [5] A meeting or a knowledge session wouldn't allow us the chance to get this message to a large crowd all at once. The resource persons might not be accommodated to engage in such massive sessions. Also when it comes to

check who are following up them, the effort will be huge. Here, the question comes, if there is a system to enhance the healthy life style of people, there should be proper way to manage it also. The commercial benefits can be obtained through allowing the advertising like stuff on protein supplements and extra nutrient food additives. That will eventually ensure the proper maintenance of the system with the funds paid by the advertisers on their advertisements.

In this explanation on the proposed system, we are discussing about the technical literacy of the Sri Lankan people who are supposed to use this kind of system and the advancements that can be done on them to make them more attracted on the procedure, the pros and cons of this kind of system and as well as the ultimate goal that can be achieved through this fitness enhancement program on the basis of a mass implementation. [6] The emerging of this new system could be a difficult task on some of the communities cause, they sometimes don't rely on the new technologies. The main challenge will be that problem for the implementation of this process and it should be avoided gradually and systematically for the betterment of the community. In the upcoming sections of this publication, it will also be discussed about the modern technological trends, aspects and tools which can be used in advance to practically implement this web based system that comes with the android application. More than that, the possibilities of changing the mindset of the people on going for this new follow up will be explained in comprehensively.

II. RELATED WORK AND LITERATURE REVIEW

In the efforts of achieving the sustainable development goal, good health and wellbeing the country has taken several measures. Among the campaigns and discussions held, the stakeholder consultation taken place in 2019 by the government bodies to ensure the health and safety of Sri Lankans can be cited as a major moment. Here, with the guidance and support given by the World Health Organization, the responsible people from the government body have requested to ideate a strategic plans and procedures. Here the major challenges and gaps which have been identified against the health and safety development were limited coordination from national level between the different ministries, inadequate investments on the targets, existence of data gaps in monitoring the processes in national and subnational levels according to equity satisfiers, non-integration of the process into vision and mission of national ministries etc. So we can clearly understand that, without the possible and adequate support from the ministries of the government bodies, this whole process goes in vain. So, in order to get a moving on solution, we have avid these challenges.

The establishment of jogging tracks in suburban environments of the country to motivate the people engaging in physical exercises was also a good move carried out in collaboration with the government on these years. Here the people were allowed to do their work out routines in morning and afternoon sessions on those spaces allocated in their areas. The people who lack the enough space on their residing places were the ones who got the most of it's benefits.

Under the supervision of the government, the health ministry also moved up with a plan of establishing a gym for each village. Those gyms were supposed to be equipped with all the necessary equipment to assist anyone who is interested in doing exercises and work outs. [7] This was supposed to be happen in free of charge on every citizen of the country. Due to the collapses of the government, this idea went along with several reforms. Although this might seems to be wanting a lot of funds to start up, we must admit throughout the years, it is the best thing that could give a major impact on the expansion of health and physical wellbeing of Sri Lankans. Mostly, the citizens can be encouraged to use these proposed systems, when they are abundant with the facilities like local gyms, jogging tracks and many other places facilitated with the necessary resources in maintaining healthy life style.

The Health ministry has been carrying out several important propagandas on establishing the wellbeing of Sri Lankans in national and village levels. [8] But, the attraction of citizens towards those kinds of scenarios have been kept limited due to not supplying necessary fundamental resources to carry out those practices in practical nature. With the procedures which are going to be implemented herewith, the exceptions could occur in the livelihood of people, making them more in to these things.

III. METHODOLOGY

The web application system enclosed along with the necessary functionality to retain the physical wellbeing necessities of the targeted majority of Sri Lankans can be developed by using most prominent technologies available in the market. VUE JS library supported frontend structure is recognized as the ideal platform for the development purpose of the web application. The backend systems can be manipulated by Node JS and so that, the both backend and frontend could be consistent with each other. The database for the system is identified as the Firebase, which suits the functionalities expected from the system. When it comes to the mobile platform, the application which comes with fitness tracking functionalities is to be developed with react native, thus it could be accessible for IOS and android platforms all at once. The majority of the users will be android users, but being applicable with IOS will be an added advantage for the users when it comes to the

preferences. The database for mobile users will be developed with same database technology alongside optimized techniques to retain the excellent mobile user experience.

To make this system more interactive for the users, it is intended to develop personal assistant service on each user, if he or she wish to have such kind of support on the favourations. [9] Here, the questions raised by the users are redirected to the fitness trainers and coaches who are already registered in the system to offer their service. There is a significance difference between the two major types of users namely, coaches who are resource persons and the locals who seek assistance as the beneficiaries. The blog post service is offered for all locals who are keen on keeping up the healthy life style and any qualified resource personnel can contribute to them with their knowledge. The advertisements on nutritional supplements and exercising tools also being displayed in order to generate commercial funds for keeping up the system up and running. The system users can engage with those stores and make their purchases on special rates. Here when users request items available on the sale, the sellers are contacted via the web app and then they can carry out the purchase process in the way they need it.

The mobile users can make tracks of their exercising schedules and food habits through the app themselves. Here, the possible requirements are handled by the user himself. There is no any engagement of third party via the mobile platform. The details and schedules fed to the application are retained and processed within the application according to the wish of the users and then organized in a way in which they are convenient for the usage.

The backend processes of the web application are handled in a way that the question or the demand made by the user is answered in the most appropriate manner with a responsible form of feedback. The blog posts handling also follows up this process to avoid distribution of any misleading content among the users that may reduce the engagement of users with the web application. In the mobile platform, the full commitment goes up with the customization procedure along with tracking enabled feature.
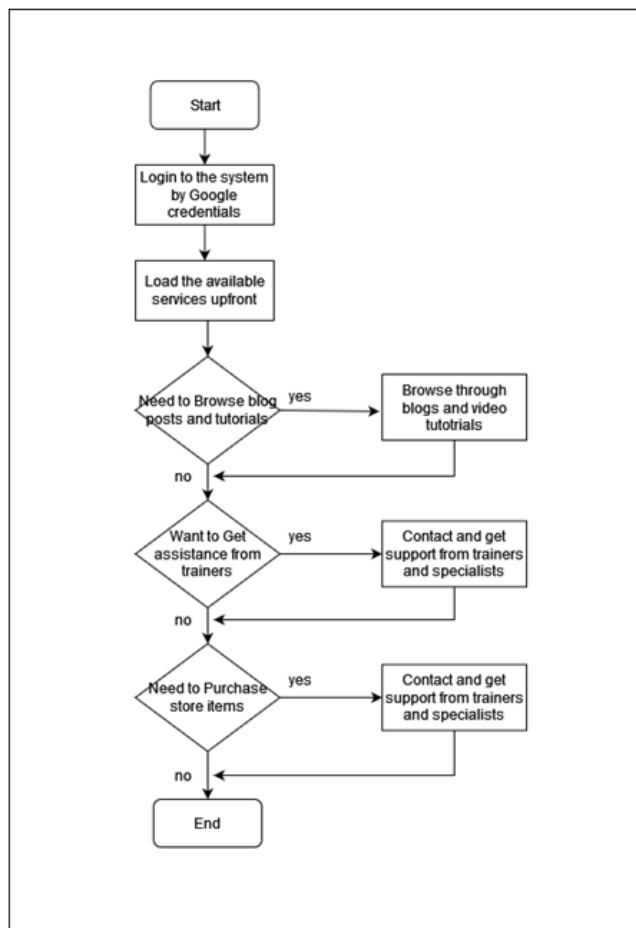

Figure 1: Pathway of a user going through the services provided by the web application

AWS image recognition services are used to perform the image scanning functions when tracking down the foods by their calorie amounts. This is an advanced mechanism which goes beyond the simple image recognition. In addition, several analytical tools are implemented in the backend of the application to make predictions and calculations regarding the parameters fed in to the system by the users. AI and machine learning systems also have been proposed to get an idea on the preference of the users on the mostly referred exercising tutorials and often consultations on the workout matters. The outcome of this is to get a proper understanding on each user and developing the system in a customized format.
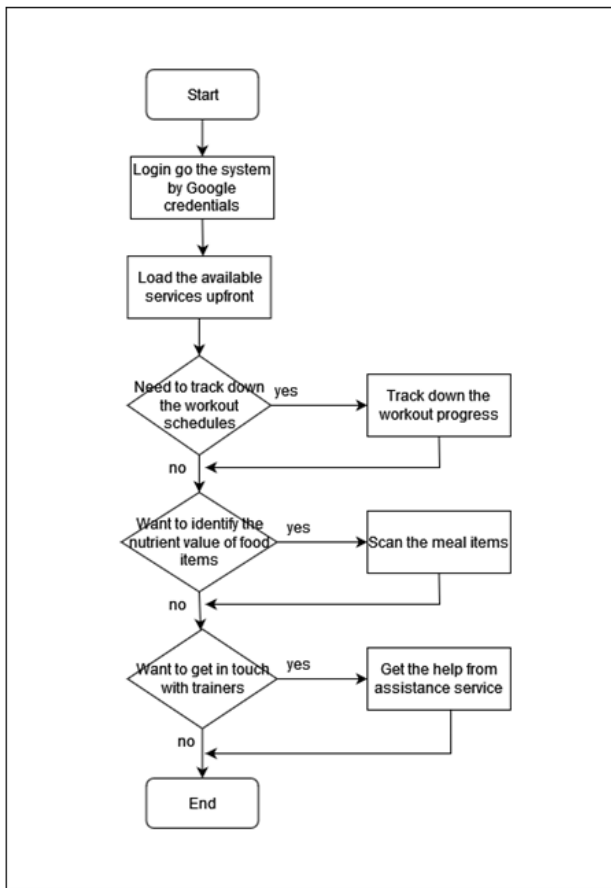
Figure 2: Pathway of a user going through the services provided by the mobile application

Figure 3: Google authenticated login implementation for the web application

Figure 4: Home page of the web application showing the sections categorized under the different functionalities

Figure 5: Blog posts and tutorial interface developed aiming the web application users

IV.   PROPOSED SYSTEM

When it comes to the major functionalities offered by the proposed system, the web application has somewhat different functionalities, thus compared to the mobile application. In the web application, the total aim is to educate the users and find solutions to the problems forwarded. Other than that, there is a marketing side also to promote some quality assured supplement products. As the first step new user can register to the system by his or her Google credentials and subscribe to the blog posts regarding the best health habits, exercising and workout procedures and as well as healthy meals. The knowledge is transferred through the written material and as well as videos shared via the youtube links as well as via the platform itself. The resource persons who will be appointed by the government and non- government authorities can also register with the web application and contribute to these blog posts. There is a possible selection criteria for the resource persons who can contribute for the blog posts, thus to avoid any misleading content being published by some irresponsible personnel.
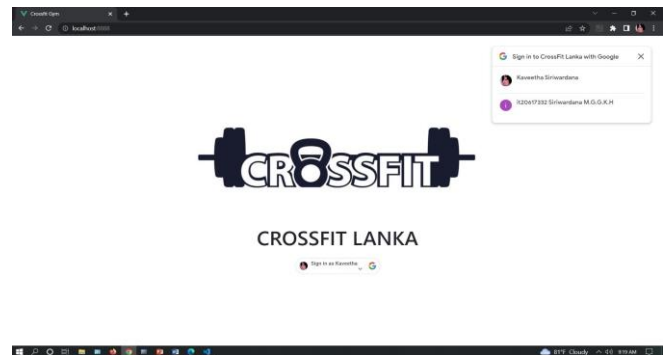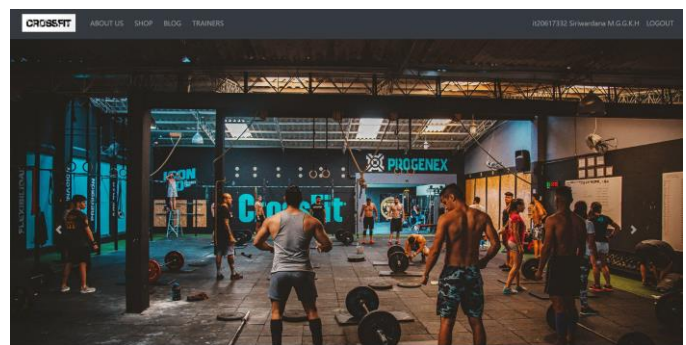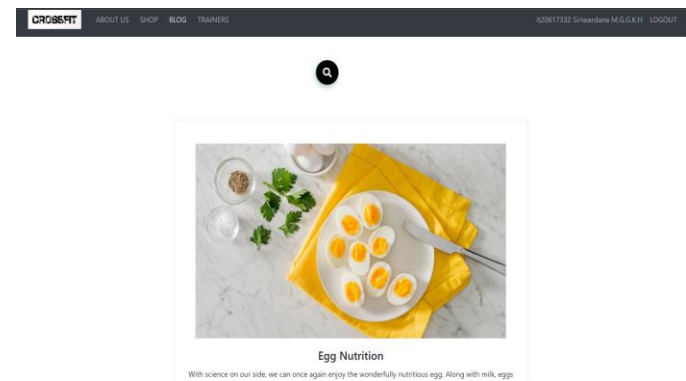
To lower the severe physical pains such as back pain, muscle pain and bone pain experienced by the people who are engaged in workouts, they have been provided the guidance for exercises under the inspection of doctors and personal trainers who are well experienced and had expertise in their fields. For that user might reach the article series under blog post category in the web application and find out the proper exercising methods with the correct poses for each of hese methods, the amount of exercise the

person requires according to their age, weight and height and how many times the exercises should be done with how much weight should be fed to the machine in numerals in order to calculate the requirements.

At present many of the younger generation has used to consume artificial supplements without proper instructions of a doctor or a physical trainer. These users has no knowledge on the ingredients those supplements include or the dose of usage. The store which is operated within the application offers a variety of supplement products and workout machinery for the local customers. These products are offered for the users under the supervision of panel of quality assurance to make sure no any harm is happened by consuming them.
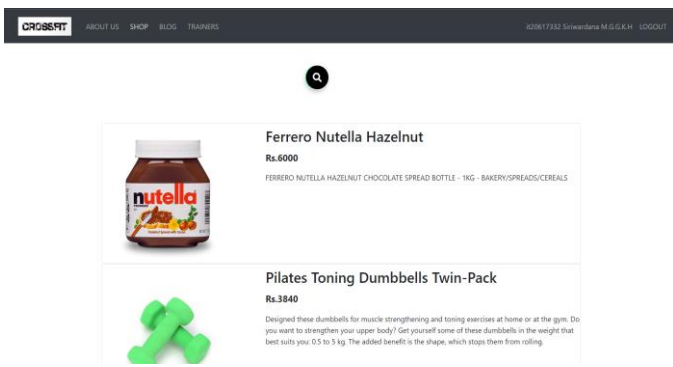

Figure 6: Store interface implemented for the convenience of the purchases made by web aplication users

In the application it has been introduced free and paid workout schedules for every part of the body. Animation videos are played for each tasks in their schedules. Here, the user who is doing the exercises, may start the practices with the video and the counter will give the amount of breaks that should be taken again. [10] This allows the user to do their exercises easily and correctly in a monitored environment. Furthermore a summarized report of how much time the application user used to burn down unique amount of calories is shown here to get a proper idea on planning next workout. With this the assistance comes from the trainers in the support section makes the user to have a greater satisfaction.

The mobile platform allows the users to keep track of their daily workout sessions including the time keeping with remainders, body weight maintenance and as well as customization of meal plans according to the nutritional requirements recommended by the app by analyzing the data. These unique functionalities helps up the user to engage in his cardio and maintain a proper physical wellbeing in postures.
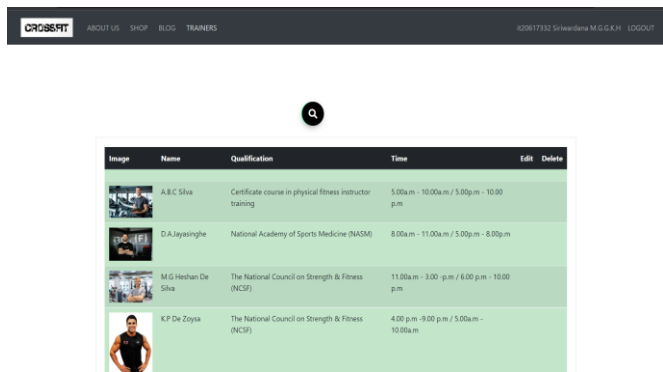

Figure 7: Assitance and supporting interface in the web application for the users to obtain service from trainers

Addition of a BMI calculator to both web application and the mobile app will allow any user to calculate their BMI index. With this calculation, the users get to know about the weight range, in which they are to be categorized namely, over- weight, under-weight and perfect health. It is displayed along with a summary that includes the amount of calories that person requires per day and the amount that should be burnt down in a day.

As another functionality, it is intended to place a food scanner to the mobile application. When the user take a photo of the meal, the calorie amount contained in it is displayed. Concurrently with this scanning functionality, an alert message is sent through the mobile application indicating the user whether to get that meal or not considering the BMI value of the user.

The implementation of a personal daily meal chart in the application, will give the chance for the users to enter the details of food items consumed on that day. And as the output, a summary about the calories had by the user is given and if that amount is not enough for body to perform in a healthy manner, the extra amount of calories and nutrients, that is needed to be taken is displayed and vice versa when there is a higher calorie amount, the amount that should be cutoff is displayed in the message indicator.

V. DISCUSSION

At present most of the people are biased on the technology. So, it is easy to embed something on someone with this approach. Otherwise it will be boring and as well as people won't go for it. The ease of this system is it can be used by an individual without even having much knowledge on workouts and exercises, prior to the situation. In most of the occasions, this system dynamically identifies the user's desired workout preferences, mostly interacted schedules and tutorials. Then it suggests the user what's best for him. The utilization of this system is higher even though, the input is quite small. People don't need to hustle

much hustle with the application interface, as it is decided only for the user friendliness. [11] Another specialty of the system is the ability to go and customize rather than accepting the suggested. The best example is the food and diet plans. This ensures the user getting more attracted to the application which he probably does without any hesitation. The store function acts like a shopping mall, in which it does operates better than a mall. The system identifies what kind of instruments, supplements are needed by the user, by going through his or her records of interactions with other functionalities and offers him the best products for purchase. As the prices are below the average market prices, it eventually get noted by the user. The personal fitness support assistance service helps to keep the privacy of the user and get the support, as people are much likely to have their privacy not exposed. So, it's good initiation for an application which respects the identity and privacy of it's users. Altogether, the both applications including the web application and the mobile application are likely to create a greater impact on someone's life style because, they always interact with the user's daily habits and give the best option for the user in most of the critical points of choices.
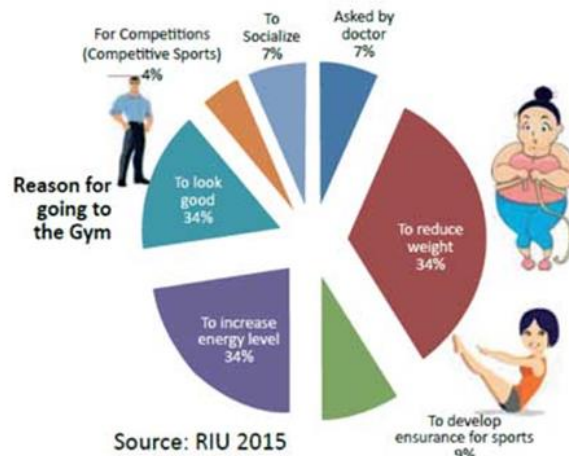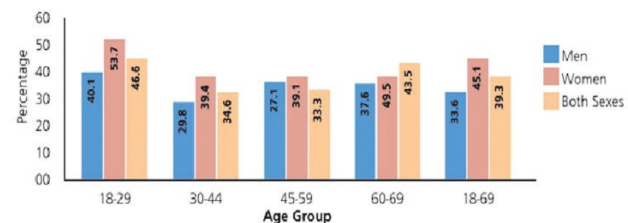
Age Group (years)	Men			Women			Both sexes		
	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI
18-29	289	21.6	15.7-27.5	503	43.4	38.0-48.9	792	32.1	27.8-36.4
30-44	660	22.4	18.5-26.3	1,133	33.3	29.7-36.9	1,793	27.8	24.8-30.8
45-59	675	22.1	18.2-25.9	989	34.9	31.1-38.8	1,664	28.7	25.7-31.7
60-69	361	26.3	21.0-31.5	496	45.8	40.2-51.4	857	36.0	31.7-40.3
18-69	1,985	22.5	19.4-25.6	3,121	38.4	35.5-41.4	5,106	30.4	27.9-32.8

Distribution of those who are physically inactive by sex and age groups

(Source – The Non-Communicable Disease Rick Factor Survey Sri Lanka - 2015)

Distribution by work-related physical inactivity (Source - The Non-Communicable Disease Risk Factor Survey Sri Lanka – 2015)

Distribution by transport-related physical inactivity (Source - The Non-Communicable Disease Risk Factor Survey Sri Lanka – 2015)

Figure 8: Physical inactivity of Sri Lankans categorized by the age groups and sex type according to survey data collected in the year 2015

Figure 9: Reasons for going to the gym according to the perspectves of Sri Lankans on data collected in 2015
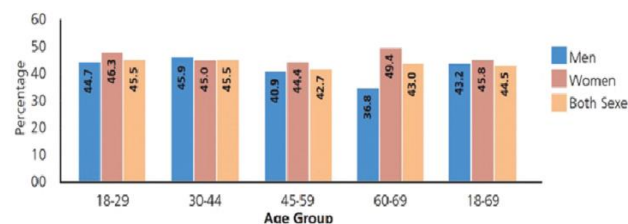
VI.   CONCLUSION

Due to the unavailability of proper guidance, resources and as well as time, the people have lost their interest in maintaining the proper physical fitness. This has led to the rapid increase of non0communicable diseases in the country in excessive rates, thus making almost a majority of the country people sick and lethargic ones. As the health and wellbeing is a major index on determining the development of a country, this issue has to be addressed in a way that get the attention of the subjective parties. These health problems often happens with the inappropriate and uncontrolled meal habits, following up exercises and workouts without having proper knowledge on them, not getting enough rest mentally and physically, inadequate consumption of mineral water, and other nutrient components etc. To avoid this major problem on the existence of people, this properly executed platform has been introduced. This web application can be used as a source of advice for the interested people by referring the daily updated blog posts on good health and wellbeing. The people who need private assistance, can get it by directly contacting the relevant trainers, coaches and physicians without any hesitation. [12] There is no any fee incurred here, and people can go through the videos and other tutorials uploaded in the web platform, free of charge and follow up them to get more benefits. The store marketplace comes with a variety of items on sale including exercising equipment, supplements, workout tools, fitness clothing that can be readily bought for a good price. These items are delivered to the doorstep of buyers where as they don't need to waste their valuable time for going shopping. The mobile platform allows one to set goals on a fitness schedule and keep track on it to make sure he or she follows up it properly according to the instructions. The records

entered to the system regarding the body weight, height etc. are analyzed by the application and personally customized workout sessions are introduced. These both web application and the mobile application will make a greater contribution for making a huge difference in the livelihood of Sri Lankans who are being the subjects of unmonitored bad health habits. This will be a turning point in life changing moment for majority of Sri Lankans who haven't received this kind of support to enhance their physical wellbeing. The people won't be needing to go after different institutions which don't have any kind of quality standardization to guide them throughout their workout journey. With the gained health benefits a nationwide transformation will emerge, such that making the country up again in global health and fitness recognitions. [13] This will eventually prevent the non-communicable disease trends and make the nation a strong one. The local economical stats also may increase up with a strong workforce in the country. The country will again make it's way to the top ranks generating higher domestic income levels. The technology associated with the keeping of proper health among individuals will be the most influential reason for this. Good or bad, the technology finds it's way through the circumstances and serve people on their most crucial occasions.

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