COCOS, 2020: **23**: 27-36
Printed in Sri Lanka
https://doi.org/10.4038/cocos.v23i1.5821
RESEARCH ARTICLE

Evaluation of IMM CD program on coconut cultivation; as an e-extension tool

H.D.N.H.Fonseka* and H.M.C.S. Herath

Technology Transfer Division, Coconut Research Institute, Lunuwila, 61150, Sri Lanka.
**Corresponding Author: hemamalafon@yahoo.com)*

ABSTRACT

Various traditional and modern technology transfer tools are used in the Coconut Research Institute (CRI) to educate the clients. *Interactive Multimedia Compact Disc* (*IMM CD) programs on coconut* is one of the modern e- extension tools among them.

This research is aimed at evaluation of *IMM CD-1 on coconut cultivation,* using a quality *(features) evaluation test* and a *utility evaluation test*. Eighty three people who visited to the CRI in three groups for trainings were selected under the Convenient Sampling Technique. The groups represented 22 Agriculture Diploma Students, 21 newly recruited Coconut Development Officers (CDOs) and 40 innovative, volunteer growers.

The first two trainee groups i.e.; Agriculture Diploma Students and CDOs together as a group of 43 were made to evaluate qualities in the IMM CD-1 by allowing them to be at CRI auditorium in two groups; using a questionnaire and formulated the responses into individual satisfaction index values. Considering all the values *Overall clientele Satisfactory Index Value* was calculated and it was 90.38% and this value interpretes the CD being in the highest quality. The satisfaction scores given by the *Agriculture students* were higher than the scores given by the *CDOs* while showing the higher e-exposure and the higher competency of e-technology of students. The *legibility of the text* in the IMM CD has been scored as the best quality.

The grower group was given the opportunity to buy the CD, use it at home and to respond to a questionnaire with open ended questions to test the overall utility *of the CD.* After 02 months responses were collected and formulated the results into a SWOT table. This test revealed that IMM CD-1 was highly accepted by the young growers than elderly growers. The elderly growers were not familiar with the e-technology and it was seen their need of computer training. It was obvious that the importance of translation of this CD into Tamil and English languages and to update the technical content timely.

Key words: E-Extension, IMM CDs, Satisfaction Index, SWOT analysis

INTRODUCTION

The CRI's formal communication with the coconut growing community in Sri Lanka has been started in the year 1955 with the establishment of the *Advisory and Public Relation Division of CRI.* In this era the scientific coconut cultivation was popularized in the country through few simple extension techniques such as *Advisory field visits*, *Advisory services for the visitors and* printed *Advisory Circulars and Annual Reports.* All these measures were especially aimed at the estate sector coconut cultivations.

With the time being due to the expansion of *Advisory and Public Relation Division's* activities, it lead to form another major extension body named *Coconut Cultivation Board (CCB);* the formal network of coconut extension, especially to serve the *small scale coconut sector* of this country in 1971. With this the *Advisory and Public Relation Division* of CRI also was absorbed to the CCB. Later on, to serve for the *estate sector*, CRI formed *Extension Services Division* in 1985 as a new division. (Appuhamy, 2009)

With five decades being from year 1955; due to the accelerated revolutionary achievements in the Telecommunication sector in the world; the new era of Technology Transfer activities with Electronic adaptations was also began to experience by CRI. Initiall launching of the CRI Web Site; www.cri.gov.lk was done in year 2006. Later on, seven video compact discs were prepared and launched.

Two Interactive Multimedia Compact Disc ROMs on coconut were prepared with the collaboration of the Department of Agriculture. The first exposure of IMM CDs in this country (13 years ago) was done by the agriculture sector. Then this tool was introduced to the primary and secondary school educational sector, being a supplementary reading material.

IMM CD -1 on *Coconut Cultivation* was prepared in year 2007 and IMM CD -2 on *Coconut Based Products* was prepared in year 2010.There was an attempt to transfer the CRI technical journal COCOS into an electronic journal, with the collaboration of National Science Foundation in year 2012. In year 2016, *Kapruka SMS service* was also launched. Though the advisory service over the telephone was established in year 1980, it was developed into a quick access (hot line) service, 031-2257688 in year 2000.

Out of all the electronic materials the two IMM CDs were unique, due to its behavior of acting as a complete Electronic Book on coconut. These IMM CDS were produced by using the software of *Macromedia Director.* Within an IMM CD it contains enormous amount of information on coconut in an attractive manner.

The first IMM CD on *coconut*, contains the details on Coconut Planting; coming under different sub topics. They are; Introduction to the coconut sector, Coconut Varieties, Agronomic practices and Coconut Pest and Diseases. The second IMM CD on *"coconut based value-added products*" contains the details about 48 coconut related products. Some research papers are also attached in to this CD. The processing methods are given as texts and some important products are given in video clips also. There is a *content page*, *a map of subject matter* and *a switch* to get the guidance. There is a background music which can be switched off according to the user's wish. (Figure 01)

Up to now more than 2000 number of copies from each IMM CD has been produced and being sold to the different groups related to coconut. i.e.; growers, students, extension workers, lecturers, entrepreneurs and general public etc. Though we sold this e- tool to the clients we didn't get any feedback regarding the utility and the quality of these IMM CDs. On the other hand, we can't escape from the e-revolution of the world. We have to engage more and more to the e-sector activities. Therefore, to expand the use of e-tools in the coconut sector furthermore we have to evaluate the clientele perceptions towards them. Therefore, this study was done to evaluate the user's perception towards the IMM CD ROMs on coconut. In this study IMM CD -1 was evaluated for both its utility and quality.

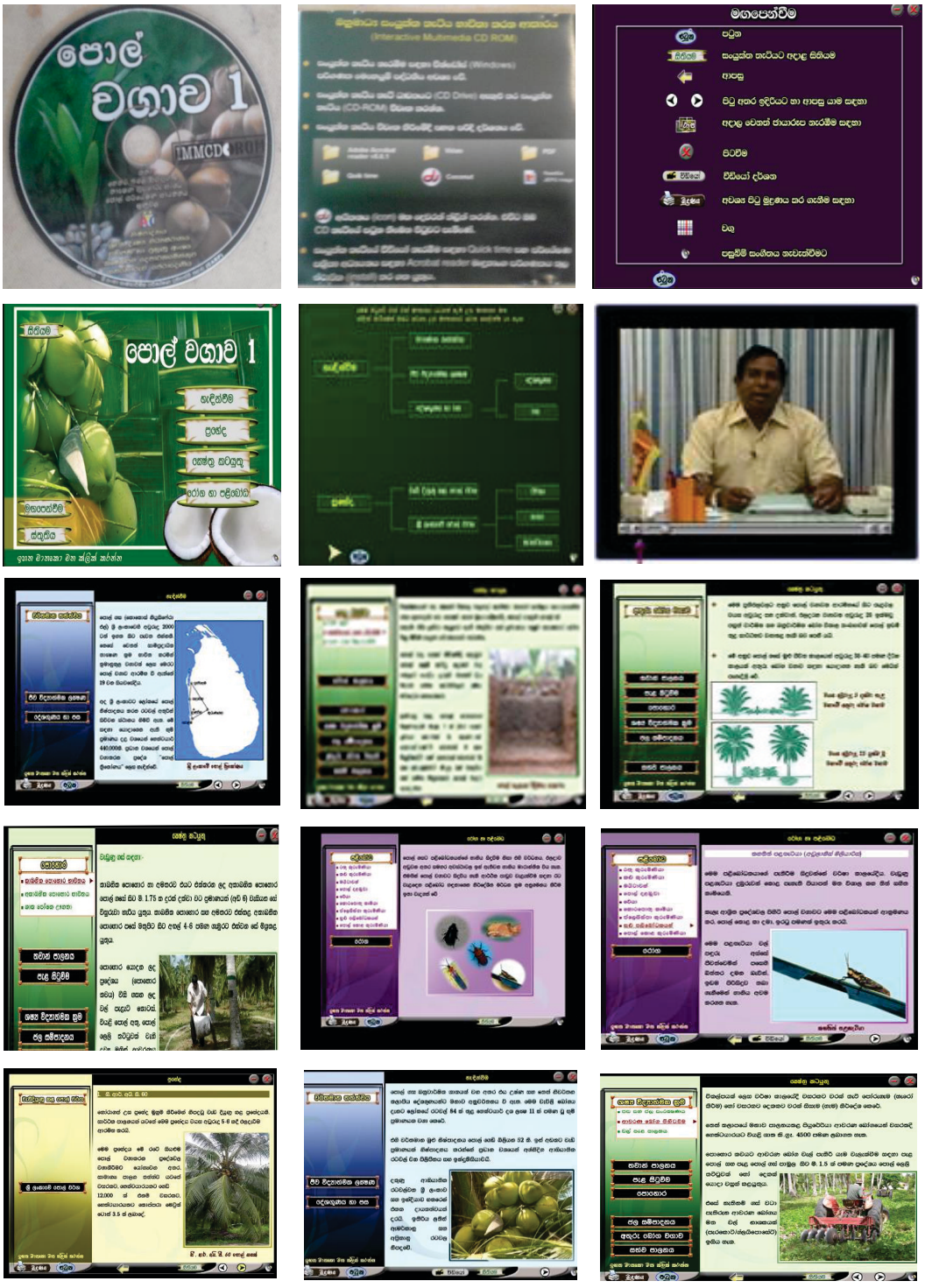

Figure 1. Few pages of CD ROM-1 on coconut cultivation

METHODOLOGY

This research was aimed at evaluation of IMM CD-1 on coconut. Though there were different clients of CRI (i.e.; growers/ researchers/ extensionists/ students/entrepreneurs/ officials of private companies/officials of government institutes/trainees/ non trainees/ visitors/ non visitors etc.) 83 people who visited to the institute were selected under the Convenient Sampling Technique. The above people were representors of 03 trainee groups who visited to follow the training courses conducted at CRI. (1st group- Agriculture Students/ 2nd group- Extensionists (Coconut development officers- CDOs) / 3rd group- Growers).

Two tests were done. The 1st test was done with the trainee group 1 & 2 representing 22 Agriculture Diploma Students and 21 newly recruited CDOs together as a group of 43 were used to *evaluate qualities (features) in the IMM CD-1* by using *Satisfaction Index Value*. The dependent variable for this test was the *Satisfaction of the clients regarding the IMMCD* and it was tested by using 12 indicators. The respondents were allowed to use the IMM CD-1 at the CRI auditorium and their responses on the IMM CD were taken by using a pre tested questionnaire with Five-Point Likert scale and formulated the responses into *a satisfaction index value.* The *total satisfaction score of each and every respondent* was calculated based on their scores obtained for above 12 indicators. The marks given by the respondents for each indicator (feature) was known as *Individual Satisfaction Index*. This was calculated separately to get strong and weak points of this IMMCD. All the 12 indicators were compared each other. Then all the above values were calculated into *Clientele satisfaction index which* was calculated by using the formula given in Table 2. Therefore, in this quality evaluation test, the data were analyzed by using *mean values, percentages and satisfactory index values*. The questionnaire used for *quality evaluation* through the Satisfaction Level of the IMM CD-1 on coconut is given in Table 01.

Table 01. Questionnaire used to assess the *Satisfaction Level* of the IMM CD-1 on coconut

Indicator of Satisfaction	Response and score				
	Response; Always agree 100% Score = (4)	Response; Mostly agree 75% Score = (3)	Sometimes agree 50% Score = (2)	Rarely agree 25% Score = (1)	Not at all 0% Score = (0)
1. Effectively provides Information 2. Subject matter is highly understandable 3. Easy access to the subject matter 4. Sufficiency of subject matter content 5. User friendliness 6. Clarity of the text 7. Attractiveness of the text 8. Legibility of the letters 9. Attractiveness of the video clips 10. Clarity of the video clips 11. Attractiveness of the photos and the line drawings 12. Photos and line drawings supports the message					
Sum of the scores of all indicators					

Table 02. The clientele satisfaction index

$$\frac{\text{Sum of total scores obtained by all indicators by all the respondents}}{\text{Sum of maximum possible scores of all indicators}} \times 100 = \text{Clientele Satisfaction Index}$$

The second test was done with an innovative, volunteer 40 growers. They were given the opportunity to buy the CD and use it at home and to respond to a questionnaire including open ended questions on the *utility of the IMM CD-1.* After 02 months responses were collected and formulated the results into a SWOT table.

RESULTS

RESULTS OF TEST 01- ASSESSMENT OF QUALITIES OF IMM CD-1

Individual Satisfactory Indexes (SI) of features in IMMCD-1 on coconut:

According to the results, the *mean of the mean satisfactory index* value for all the indicators given by the students (95%) is higher than the value given by the CDOs (85.7%). That means the student group has shown more pleasant and positive attitude towards the IMMCD than the extension officers. It shows students are more attracted to this e-technological tool than the working elder groups.

Table 03. Individual Satisfactory Indexes (SI) of features in IMMCD-1 on coconut cultivation

Indicator of effectiveness	SI given by the students	SI given by the CDOs	Mean SI	Rank
Effectively provides Information	94%	88.1%	91.1%	06
Subject matter is highly understandable	96.4%	86.9%	91.7%	04
Easy access to the subject matter	97.5%	86.9%	92.2%	02
Sufficiency of subject matter content	94.3%	78.6%	86.45%	12
User friendliness	97.5%	82.1%	89.8%	09
Clarity of the text	91.25%	89.3%	90.3%	07
Attractiveness of the text	90.9%	82.1%	86.5%	11
Legibity of the letters	96.59%	90.5%	93.5%	01
Attractiveness of the video clips	92.9%	88.1%	90.5%	08
Clarity of the video clips	94.3%	84.5%	89.4%	10
Attractiveness of the photos and the line drawings	95.5%	86.9%	91.2%	05
Photos and line drawings supports the message	98.9%	84.5%	91.9%	03

Mean of the mean score of all indicators of students = 95%
Mean of the mean score of all indicators of CDOs = 85.7%

The user's preferences towards different features in the IMM CD-1:

According to the results, the rank received by each and every feature separately were compared. The best feature was the *legibility of the letters of the text* of CD. That means the text written in the whole e-book can be easily read and the users are satisfied the most with this feature. The Mean satisfaction Index value given by the whole clients (i.e. both Coconut Development Officers and the students together) was 93.5%. Then *Easy access to the subject matter;* 92.2% has been evaluated as the second. The *sufficiency of subject matter* was at 86.45% the lowest satisfaction level. That means the subject matter should be improved in the future; both by the amount of content and the updated information.

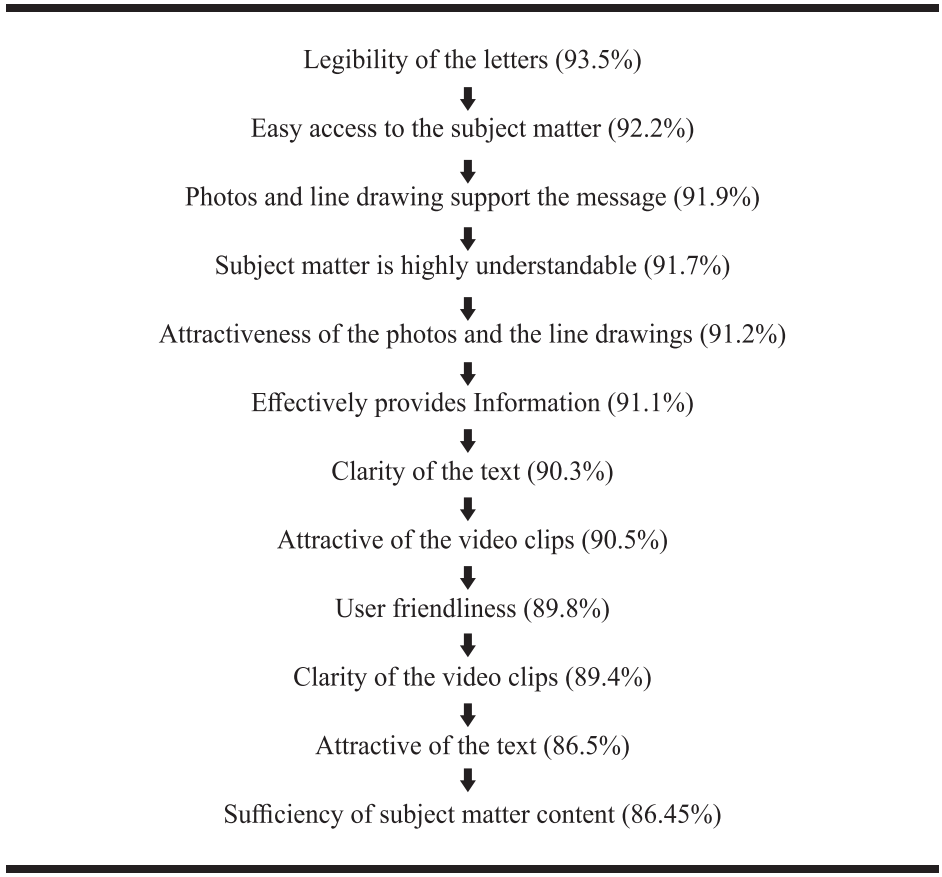

Figure 2. The user's preferences towards different features in the IMM CD-1

Overall Satisfaction Index:

The sum of total score given for all the 12 indicators by all 43 respondents was 1833. The sum of maximum possible score for all 12 indicators by all the 43 respondents was 2028. The overall satisfaction Index value was 90.38%. This means the clients have given the highest satisfaction scores to this IMMCD.

Table 04. Overall Clientele Satisfaction Index

Sum of total scores obtained for all indicators	Sum of maximum possible scores	Overall Clientele Satisfaction Index
1833	2028	90.38%

RESULTS OF TEST 02- Assessment of utility of IMM CD-1 on Coconut cultivation

Growers. attitudes towards the overall use of IMM CD-1 was assessed through this test. As we received both positive and negative attitudes they were grouped as in the Table 06.

Table 05 - SWOT Andysis for IMM CD-1 on coconut cultivation

Strengths	Weaknesses
1. As this is a modern cyber based technology transfer material, it's attractiveness being a technology transfer tool is very high to the modern society. 2. A big mass of subject matter can be included in a small CD. 3. Saving time- due to the ability of quick access to the information. 4. This can be used for any kind of grower training program i.e.; for group training or an individual training etc. 5. Provides information through different features / effects (audio, video, text, photos and animation). 6. Today we find cyber extension facility all over this country. Therefore, any trainer or trainee can be easily benefitted by this facility.	1. Elderly people have less ability to operate e-tools. They prefer traditional extension tools. 2. As the technical recommendations update continuously, the technical content has to be updated with the time. 3. Listening facility (of the content in the text) is not available. 4. This can be used only by the people who have the computer facility.
Opportunities	**Threats**
1. Transferring the CDs into other languages such as English and Tamil. 2. Making available the listening facility.	1. Elderly people's attraction goes to the traditional extension tools than the modern tools when it is used as a self-learning tool.

DISCUSSION

This evaluation study brings us satisfactory results towards the IMM CD.

The first test *on the quality of the features included in the CD*; reveals that the clientele groups (both; agriculture diploma students and coconut development officers) have declared their highest satisfaction towards the features in it.

Twelve features in the CD were tested by using satisfactory index value. Hence two groups were used in this test; mean index value of each group for each feature was considered and ultimately overall satisfaction index was calculated. The resulted *Overall Clientele Satisfaction Index of the IMM CD-1-* on *coconut cultivation*, was 90.38%.

In the comparison of all the features, the *legibility of the letters* received the *highest mean satisfaction index* (93.5%). The *easy accessibility to the subject matter* received the second while receiving 92.2%. *Support of the*

photos/drawings to the message received 91.9%, while *understandability of the subject matter* received 91.7%. The *attractiveness of the photos and the line drawings* was at 91.2%. *Effective provision of Information* was 91.1%. *Clarity of the text* was at 90.3%. *Attractiveness of the video clips* was 90.5%. *User friendliness* was at 89.8%. *Clarity of the video clips* was at 89.4%. *Attractiveness of the text* was 86.5%. *Sufficiency of subject matter content* was 86.3% and received the lowest rank.

It's obvious that the behavior of above two clientele groups was similar, with a bit difference.ie; the students showed an eager attraction towards the IMMCD than Coconut development officers and have given their best marks to this CD. It shows the future trend of the learning tools. Though extension officers showed their attraction towards it, younger people were attracted to it more.

The second test with coconut growers; on assessing overall utility, showed that the young growers were keen and highly attracted towards this e- tool. It was obvious that; the elderly people preferred traditional technology transfer tools as they were not much convenient with the e-extension tools. Anyway, with the socio-economic changes in the world, we have to go for the e-government concept. Therefore, taking necessary actions to implement computer trainings for the coconut growers who are in maturity ages. (E.g.; 60 years or more) will be applicable to uplift the sector.

While assessing this CD, some Tamil speaking CDOs who participated to the training were helpless due to their inability to manage with *Sinhala medium*. As they couldn't take part to this work, they highly urged on preparing the IMM CDs in Tamil language. Therefore, it highlights the importance of translating the IMMCDs in to other languages in order to facilitate the Tamil speaking community specially in the north and eastern areas in the country. The students of higher education institutes may be more benefitted if it is in English language also.

With the continuous changes in the communication sector in the world, the demand for this e -tools increases day by day. Therefore, it should be grateful to the policy makers and authorities to be more concern to take actions on facilitating more infra-structure and more trainings on electronic based extension tools in this country to support the sustainable development of the coconut sector.

AKNOWLEDGEMENT

The assistance given by Dr. C.S. Herath; Head, Technology Transfer Division, Dr. C.S. Ranasinghe; Director of the Coconut Research Institute, Dr. Lalith Perera, (Deputy Director Research), Dr. Priyanthi Fernando; (former Director of CRI), Dr. Ananda Thennakoon; (former Deputy Director Research) of CRI, Dr. Rohan Wijekoon (Pioneer of the IMM CD Programs in Sri Lanka & former Director General of the Department of Agriculture), Mr. Henry Nimal (former Head of Teachnology Transfer Division), Dr. Pramuditha Waidyarathne and Mr. Prasad Sanjeewa (former Technical Officer), is acknowledged.