ICT in Sri Lankan Cinnamon Industry: Impact of Language Barriers and Digital Divide

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Abstract— **Sri Lankan Cinnamon is an export agricultural product with the Sri Lankan identity. The significance of this research is to identify the impact of Information and Communication Technology (ICT) and English language on the Sri Lankan cinnamon industry. The main problem investigated in this research is to find the impact of digital divide and language barriers in the Sri Lankan cinnamon industry. The aim of this research is to develop a solution model to overcome the digital divide language barriers in the cinnamon industry to become more competitive, effective and efficient.**

Keyword—ICT in Cinnamon industry; Digital Divide; E-Agriculture; Agronomy; Sri Lankan Cinnamon

I. INTRODUCTION

Cinnamon is the only endemic agricultural product which is exported from Sri Lanka. The scientific name of cinnamon is "Cinnamomum Zeylanicum"(Pittman ,2011). According to Gupta (2007) Sri Lanka had a dominant role in international trade in the early 1st millennium BC due to Sri Lankan cinnamon. Sri Lanka contributes 80% to 90% of the world true cinnamon trade at present (Chomchalow ,2008). The significance of this research is to identify the impact of information technology and the English language on the Sri Lankan cinnamon industry. This will be highly effective when Sri Lanka becomes the hub in Asia in 2020.

II. RESEARCH PROBLEM

The main problem investigated in this research is "what is the impact of ICT and English language in Sri Lankan cinnamon industry". The aim of this research is to develop a solution model to overcome the digital divide and language barriers in the cinnamon industry to become more competitive, effective and efficient. It will gain maximum possible revenue to the country from the cinnamon industry by having effective and efficient product development and promotion. The model covers use of ICT in cultivation, use of ICT in production, use of ICT in standardisation and use of ICT in marketing. It concerns the adoption of new technologies, communication and negotiation abilities and innovative product marketing. The government monitoring authority will use ICT and English knowledge as a strategic tool to link all the stakeholders in the industry. This will directly increase the foreign revenue to Sri Lanka

III. LITERATURE REVIEW

There were many reasons found in literature as draw backs for the cinnamon industry in Sri Lanka. CMA (2007) has pointed out some of them as (1) lack of marketing skills , (2) lack of financial support to develop cinnamon as an industry , (3) low product quality , (4) high production cost , (5) not exporting it as value added product. The Germen Development Institute (2006) has also identified the following drawbacks in the Sri Lankan cinnamon industry.

- Substitute products which come from countries like China, Indonesia, Vietnam and the Philippines producing Cassia cinnamon with very low labour cost with large scale production. These countries are using new strategies to capture the global market. The Sri Lankan cinnamon industry is far behind in the usage of new innovative technologies to promote products in the international market place .
- The market is requesting for innovative products. Most of the Sri Lanka cinnamon goes to the international market as raw products. Mangstl (2008) stated that agro businesses in developed nations enjoy benefits of digital technologies but other countries do not get the same due to the digital divide.

It states that the requirement of the use of innovative technologies in the cinnamon industry is essential. The industry must improve in the areas of cultivation, production, standardization and marketing.

Many countries such as Japan , Philippines , India , Indonesia are using ICT as a strategic tool for development of the agriculture sector.

Mangstl (2008) emphasises that the use of e – Agriculture supports cultivation , quality maintenance and direct access to the market place. The Philippines government has employed a set of people with ICT background Agricultural Extension Workers (AEW) to support adopting farmers in to ICT. They

are equipped with mobile technologies , internet access and laptops. AEWs are visiting farmers regularly and supporting them to get used to ICT. (Barroga et al, 2010). India is a country which uses ICT intensively in agro business. They have implemented many systems to support farmers (Alavion and Allahyari , 2012). Daka and Chayal (2010) say that ICT can be used in the agricultural field as a reliable source of information about best practices , pest , pesticides , fluctuations in the market , methods of production , quality standards. It links farmers , traders , government authorities , risk covering institutes , quality assuring institutes and financial organizations.

Indonesia is a leading agricultural country. They use ICT as a strategic tool to develop the agriculture in the country. (Hasibuan et al., 2012). According to Lee and Purnomo (2010), Indonesian government has employed Agricultural Extension Officers (AEO) to develop the agriculture sector.

According to the above literature, Sri Lankan cinnamon is having a good demand internationally. But to sustain it in the international market and get the maximum profit for the product is the issue. Countries which are producing competitive and substitute products use ICT in agriculture sector with extensively government backing. They use communication skills and language competence to overcome barriers in the international market place. Competency in international language such as English makes the technology adoption process faster.

IV. METHODOLOGY

The core constructs of this model have been adapted from the Technology Acceptance Model (TAM), an influential research model in the ICT and theoretical aspects related to e-commerce in agriculture. These theories were used in this research to develop the conceptual frame work and hypotheses. In order to understand the literature behind the study, literature survey and a field survey have been conducted with six categories of study areas including cinnamon farmers ,peelers , intermediate collectors, exporters , certification authorities and buyers.

This section includes a review of the research method and design appropriateness, a discussion of the population and sample. It observed production activities of cinnamon farmers in Kirinda , Puhulwella and Walakanda villagers in Matara district . Some farmers were selected from Batapola and Karandeniya in Galle district. Easy access was the main factor when farmers and peelers were selected. This is due to cultural barriers and most farmers and peelers do not like to do their work under observation. It collected data from traders in the Kirinda , Deyyandara , Uragaha and Karandeniya areas. They were also selected by considering the accessibility . Data were collected using several methods. Interviews, observation, web research and telephone conversation are the techniques used to collect data.

It observed the ability of accessing Internet , use of e-mail, ownership and maintain a website and use of B2B web portal. Above applications are common in the modern business world and it tried to understand the situation of the selected set of farmers.

It interviewed 76 farmers , 98 peelers 54 processors and collectors. 6 exporters interviewed and data of 37 exporters collected by accessing web. There is only one international certification authority interviewed. 4 buyers data collected via interviews , 6 of them get connected via skype and 12 buyers data collected using internet.

According to survey results the use of e-commerce and ICT among Sri Lankan cinnamon farmers ,peelers and intermediate collectors to low. Exporters buyers and certification authorities use ICT in satisfactorily. There are several factors which effect the levels of e-commerce and ICT usage in the cinnamon industry. ICT literacy level, ability of accessing internet , knowledge of English language , communication skills, ability to search the web and ability to handle ICT tools have been identified as factors which influence e-commerce and ICT use among the stakeholders of the cinnamon industry in Sri Lanka.

TABLE 1. USE OF ICT APPLICATIONS

Category	Internet Access	E-Mail	Web Site	Use of Web Portals
Farmers	11	11	2	0
Peelers	0	0	0	0
Traders	13	13	0	2
Exporters	37	37	12	37
Certification Institute	1	1	10	
Buyers	18	18	12	18

TABLE 2. SUMMERY OF ICT USE

Category	Internet Access	E-Mail	Web Site	Use of Web Portals
Farmers	Low	Low	Low	No
Peelers	No	No	No	No
Traders	Average	High	No	Low
Exporters	High	High	Average	Average
Certification Institute	High	High	High	No
Buyers	High	High	High	High

TABLE 3 .SUMMERY OF ICT USERS AND NOT USERS OF ICT

Category	Using ICT	Not Using ICT	Total Sample
Farmers	11	65	76
Peelers	0	98	94
Traders	13	41	54
Exporters	37	0	37
Certification Institute	1	0	1
Buyers	18	18	18

It is showing the use of ICT in the ground level is very low.

It considered the selected set of categories English ability in practice. Most farmers and peelers could understand English words with meanings but they could not read or write simple sentences in English.

TABLE 4. SUMMERY OF ENGLISH LANGUAGE ABILITY

Category	Ability of Handling English
Farmers	Low
Peelers	No
Traders	Average
Exporters	High
Certification Institutes	High
Buyers	High

Since English knowledge is poor among the ground level , it has became a barrier for ICT adoption.

According to literature review, farmers of competitive countries use ICT as a strategic tool. They use ICT in the following areas such as awareness, marketing and standardization.

They have used ICT to cover the above mentioned areas by implementing Education, Allowing direct access to the market ,Maintain quality standards ,Expand the market ,Branding products ,Government influences

Merchants of China, Vietnam and Indonesia use the word “Cinnamon” to market “Cassia” in their advertisement in web portals. According to this competitors use ICT tools to give wrong impression among end users and buyers about cinnamon.

Thus language creates a barrier between the end user and the ground level. It blocks the information flow coming to the ground levels. It causes lack of awareness, restricts use of innovative and modern technologies and making them a socially backward group of people.

V. CONCLUTION

The cinnamon industry is an industry with digital divide. English language acts as a barrier for ground level stake holders to limit their access to smaller scope. Due to this, the bottom line is suffering without information and education on product development and direct market access.

The proposed model links all the stake holders via the ICT back bone. Stakeholders need to have an ability to work in English up to some levels to get the maximum use of modern technologies. It is possible to implement system in their native language, but again it becomes a barrier when they deal with international partners. Therefore it is considering the improvement of English abilities rather than using ICT with native languages.

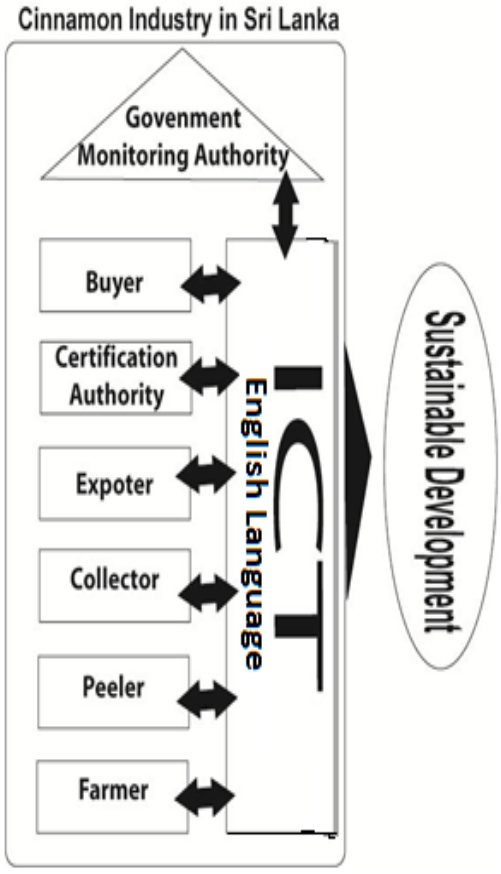

Fig 1. Holistic integrated model for cinnamon industry in Sri Lanka

It is possible to introduce various ICT applications for each category. Farmers can use B2B portals , information and

knowledge managements systems, information systems and mobile technologies to obtain information and direct market to reach the vision. Peelers must be updated with the technologies and market requirements , market trends and standards. Since this is the most critical category in the production process and difficult category for the technology adoption , special attention is required. Collectors are the category who collect cinnamon from farmers , sorting and grading cinnamon. There for they should be updated with market requirements , market trends and standards. They can use knowledge management systems , information systems and web sites to get information to optimize product qualities. Exporters must use B2B portals , interactive webs , informational webs and latest ICT tools for marketing ,promotions and communication. Certification authorities use international standard web sites and ICT tools. But they should be reported to the government authority. Buyers haven't much control over the other parties and government. They can access latest prices , details and can directly communicate with exporters , certification authorities , and other categories on demand via the ICT channels.

Ability of English language is essential in the activation of the above process. It should not be a barrier for the ground level of the industry. It is not easy to standardise the industry without aligning the ground levels to the international standards or closer to those levels. English knowledge will be worked as the communicator or linker between the stakeholders in the industry.

Interrelation among the above six categories via ICT , use of e-systems and technologies and English language abilities will give a competitive advantage to the Sri Lankan cinnamon industry to achieve the sustainable development when Sri Lanka becomes the hub in Asia.

VI. ACKNOWLEDGMENT

There are several farmers and peelers who help in the process of data collection. It may not be possible to get this information without their support. It is to thank the cinnamon farmers who help us in Kirinda , Puhulwella and Walakanda villagers in Matara district farmers in Batapola and Karandeniya villagers in Galle district. They allowed us monitor their production process and permitted to discuss with peelers who did their production. Special thanks must go to Mr. Jagath Keerthi in Balapola and his team , Mr. Nihal Shantha and his team in Kiripedda, Karandeniya and Mr. Chula in Kirinda Puhulwella. Special thanks go to the cinnamon traders who help us by allowing us to monitor their trading activities and providing information.

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