

EFFECT OF CHANGING INCENTIVE-BASE OF A FIRM ON ADOPTION OF FOOD SAFETY CONTROLS: CASE OF DAIRY PROCESSING SECTOR IN SRI LANKA

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INTRODUCTION

Three elements are seen to create incentives for food processing enterprises to adopt a food safety metasystem such as HACCP in a firm, including: (1) market forces; (2) food safety laws and regulation, and (3) product liability laws (Buzby *et al.*, 2001). From the developed country perspective, several studies have served to broaden the knowledge of such incentives and highlighted the important role played by such elements in influencing the food safety responsive behavior of firms (Henson and Holt, 2000; Ollinger and Moore, 2008). All this discussion about incentives comes concurrently with an ongoing process of reform of food safety controls, globally, and has even impacted upon the agri-food processing sector of Sri Lanka, necessitating a clearer understanding of these underlying economic forces that induce and control food safety at firm level.

Sri Lankan dairy sector can be considered as one of the few sub-sectors that inherit a dynamic market condition, involving domestic players with diverse operational characteristics and the competition put forward by international marketing by means of significant dairy product imports. Although consumption of dairy products has risen substantially, the domestic dairy industry had not grown in tandem with the rising demand, i.e. less than a quarter of total milk requirements are domestically sourced. In order to cater the domestic market with safer and quality processed milk products and to compete with the multinational companies which import milk products to Sri Lanka, compliance to HACCP is important. This study was, therefore, aimed to examine the role of economic incentives to adopt HACCP in the dairy processing firms and assess the impact of economic incentives on dairy processing firms' decisions on a more "dynamic" perspective i.e. changes in the incentive base for a particular panel of firms in terms of HACCP adoption over a period of time in concern.

METHODOLOGY

The incentives, identified in the study by Jayasinghe-Mudalige and Henson (2006), were chosen to serve as the base of the theoretical formulation. The nine incentives selected were: (1) financial implications/cost (CST); (2) efficiency in human resources (HRE); (3) efficiency in technical procedures (TCE); (4) sales and revenue (SLR); (5) reputation (REP); (6) commercial pressure (CPR); (7) existing government regulation (EGR); (8) anticipated government regulation (AGR); and (9) liability laws (LBL). Scales (attitudinal and likert based) were developed, to derive the degree of importance of each of these incentives for HACCP adoption at firm level and estimate their relative rankings. These were then validated and included into a structured questionnaire. A panel of dairy processing firms (n=26) were selected as respondents and *face-to-face* in-depth interviews were carried out in two stages in two consecutive time periods (stage-one: March – April 2008 & stage-two: February – March 2010). In both stages the respondents would respond to the same questions for purpose of analyzing how their perceptions of economic incentives and state of HACCP adoption had changed during the whole period of concern. Thus, the respondents were also asked to indicate the current situation of the firm with regard to the level of adoption of

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HACCP during time of response; categorized and measured as four different levels of adoption: (1) No plans to implement HACCP; (2) Has plans to implement HACCP; (3) Is in the process of implementing HACCP; and (4) Has already adopted HACCP.

For the nine economic incentives of interest, the comparisons were made using a number of quantitative techniques including Mean Importance Scores (MIS) and Mean Ranks (MR). The MIS for particular incentive demonstrates the relative importance of that incentive to the decision-maker of a firm. In our case, respondents were presented with the list of selected incentives and asked to indicate the importance of each in their own context using multi-point likert scale. The MR derived for each incentive illustrates the relative ranking of the economic element that occupies the decision-makers' mind given the existence of the other incentives as well.

RESULTS AND DISCUSSION

The sample consisted of 16 (61.5%) large-scale firms [>50 employees] and 10 (38.5%) small-scale firms [<50 employees]. The results highlight that the HACCP adoption had increased to 26.9% from 17.6% and HACCP non-adoption has decreased to 73.1% in stage-two from 82.4%. Large dairy processing firms' HACCP adoption has increased by 10.4% while small dairy processing firms in stage-two have neither implemented HACCP nor were in the process of implementing HACCP, however in stage-one, 6.3% of dairy small firms were in the process of implementing HACCP (Figure 1).

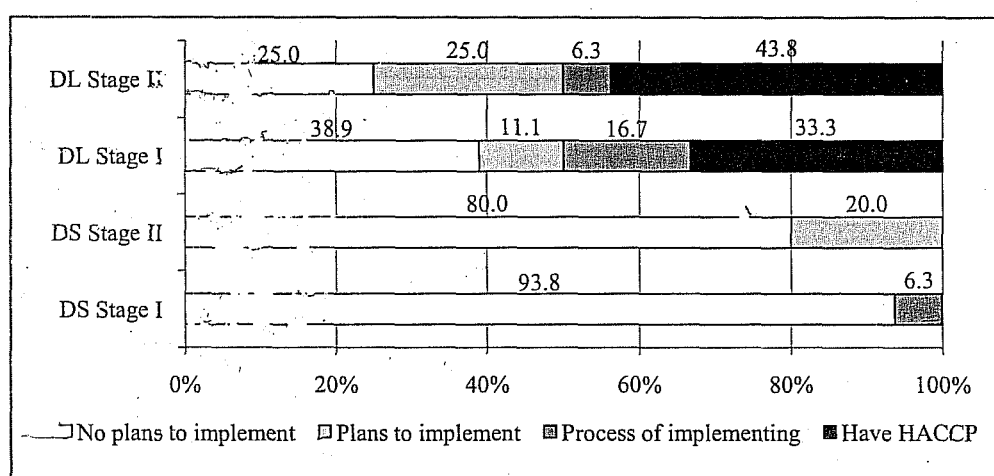


Figure 1. Changes in the level of HACCP adoption among small and large scale firms

An analysis of the matrix of MIS and MR derived for the nine incentives of stage one of the study revealed REP (MIS=4.8; MR=1.8) and LBL (MIS=4.7; MR=2.8) as major economic incentives affecting the adoption of HACCP in the dairy processing firms and EGR (MIS=2.0; MR=7.2), was considered least important. Among HACCP adopters, in stage two, REP (MIS=4.8, MR=1.7) and LBL (MIS=4.8; MR=3.2) still remained as the most important inducers. However, EGR (MIS=2.7, MR=7.7), CPR (MIS=3.0; MR=7.8) and CST (MIS=3.0; MR=5.3) could be considered as the least important drivers for HACCP adoption (Figures 2 and 3).

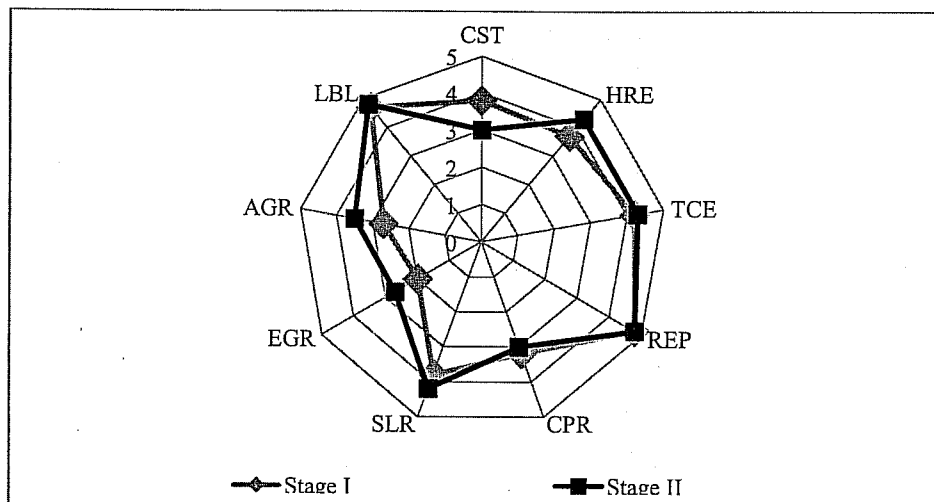


Figure 2. Mean Importance Scores (MIS) for HACCP Adopters

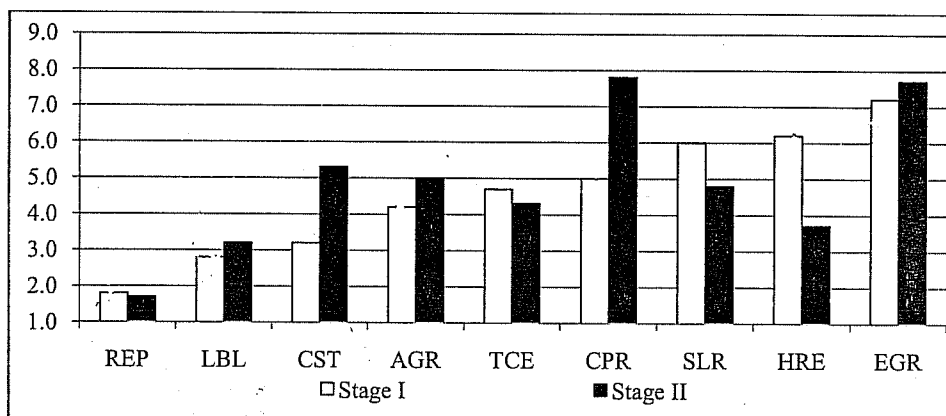


Figure 3. Mean Ranks (MR) for HACCP Adopters

Among the firm that have moved in the positive direction of HACCP adoption, REP, SLR, LBL and AGR were revealed to be the coercive elements. The positive results for reputation suggests, perhaps that firms are more likely to implement enhanced food safety practices if they perceive HACCP certification as an element reflecting their corporate reputation, and believe that this improves the image of the enterprise in the market. The insinuated role of liability laws is also reasonable; dairy processing firms perceive HACCP as a hedge, which reduces their liability should a consumer suffer food product related poisoning.

CONCLUSIONS/RECOMMENDATIONS

Results suggest that reputation and liability laws as the key propellers of dairy product processing firms in Sri Lanka to adopt HACCP. Irrespective of the firm size and state of adoption of HACCP, reputation was the most important incentive to adopt HACCP among dairy processing firms. Further we find that unlike larger firms, small scale processors were least likely to adopt HACCP voluntarily and have over time fallen back in their HACCP adoption commitments. These findings imply the need for developing appropriate market-friendly and regulatory/legal policy instruments for injecting into the process of quality assurance systems the dairy processing sector.

ACKNOWLEDGEMENT

The authors express their gratitude to the National Science Foundation of Sri Lanka for its financial support under the Competitive Research Grant RG/2008/AG/05 and to all respondents in the Sri Lankan Dairy Processing sector.

REFERENCES

Buzby, J. C., Frenzen, P. D. and Rasco, B. (2001). Product liability and microbial food-borne illnesses. U.S. Department of Agriculture, *Economic Research Service Agricultural Economics Report 799*. Washington DC.

Henson, S. and Holt, G. (2000). Exploring incentives for the adoption of food safety controls: HACCP implementation in UK dairy sector. *Review of Agricultural Economics*, 22(2), 407-420.

Jayasinghe-Mudalige, U. K. and Henson, S. (2006). Economic incentives for firms to implement enhanced food safety controls: case of the Canadian red meat and poultry processing sector. *Review of Agricultural Economics*, 28 (4), 494-514.

Ollinger, M. and Moore, D. L. (2008). The economic forces driving food safety quality in meat and poultry. *Review of Agricultural Economics*, 30 (2), 289-310.