

Theses of University Doctoral (PhD) Dissertation

***POSSIBILITIES FOR QUALITY DEVELOPMENT IN FOOD
TRADE***

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Debrecen, 2010

POSSIBILITIES FOR QUALITY DEVELOPMENT IN FOOD TRADE

1./ AIMS OF RESEARCH

The aim of my theme is multi purpose. On the one hand to unfold the „remedy” for the harmful effects of globalization, and on the other hand to adapt and apply the theoretical remedy, the possibilities in regionalization and quality management, on food-trade concerns. The point of adaptation is the support of food-trade management with various methods.

The first step for this is the cognition of the situation of food-trade undertakings, the unveiling of the status of general food-safety and quality management, and the exhibition of regional specifications of food-trade. Beside this as second step the presentation and examination of a quality management system currently applied by a multinational trade federation, and through these pointing out the faults and weaknesses and their causes. And the final step is to try to perfect these systems and to word suggestions for improving the efficiency of food-trade especially of regional companies those of having Hungarian ownership.

My hypotheses:

- Regionalization includes lots of possibilities not used before for easing harmful effects of globalization,

- ISO quality management and HACCP food safety systems, which can be a support of marketing are not effective enough, so they don't guarantee the distribution of safe food towards consumers or earning their trust. The main reason of this is that there was no change in approach in the management for the effective operation of food-safety and quality management of food-retailers, and workers are not prepared enough for their tasks. The operation of the control systems above can be improved by the preparation of the management, increasing their commitment and by objective calculations, which can help with the more successful operation and survival of concerns.

- In the HACCP system the empirical establishment of critical regulation points by traditional methods (by the most common “decision tree” method) could be eventually improper, thus the focus of actions is not correct in every cases. At the same time the establishment of critical regulation points can be based on facts, objective calculation results.

- Regional undertakings only stand a decent chance for improving efficiency and long time survival, if – with or instead of mass-produced articles provided by multinational trading

concerns – they provide local specialties and/or new business models, thus attain different strategies in Hungary.

2./ ANTECEDENTS OF THE EXPERIMENT

Food-trader undertakings owned by Hungarians, have been suffering from a crisis for 1,5-2 years, clear sign of which is they close one by one. Contrary to this multinational food-trading chains and their hypermarket networks spread like spore.

In my research I was working on ***unveiling the factors*** under the influence of undertakings that contributed to the phenomena above and ***what are the options for improving the chance for survival for these factors, and by them the food-trade retailers.***

I based my research on the examination results of nearly two decades on food-trade undertakings, and my college trainer routines in connection with this. My dissertation ***returns my 5 years of experiment on this subject***, outlining the most significant results.

In the beginning and upon my work I was aiming to know and follow experiments and their results on my subject, out of which I managed to outline the following:

Examination of the status of Hungarian food trade

2.1./ Changes implemented since the change of regime until today

We can experience a drastic change in food trade in the last decade (international and national business-chains gathering ground, concentration, building manufacturers and vendors upon less favorable basis concerning manufacturers). By international investments part of Hungarian food trade has begun falling into line with Western-European standards, but most of the Hungarian trade enterprises are lack of stock small- and middle enterprises. The effect of joining the EU:

- the ***competition improved*** (import competition); national market is the most important for Hungary (80% of the products are sold on the national market); if we can hold the import competition here, also our export competitiveness improves significantly,
- thanks to the practice of multinational food trade ***concerns the only way for competition nowadays is through prices.***
- ***globalization of retail*** is getting more powerful in Central and Eastern Europe.

Expected tendencies in food trade:

- increase in ***market concentration*** is expected,
- international and national networks as well as
- ***procurement companies*** are expected to gain ground,
- ***difficulties for small and independent shops***; it is hard to find a solution, as most of these shops can only maintain their existence already by hustling in the gray market.

Still we cannot say this segment can be written off, as there are – practically unused – possibilities available. These possibilities mostly reside in offering local specialities and competing in “quality- and food safety”.

2.2./ Survival options of food trade companies

There are a few survival options for food trade companies, one of which is controller systems that can be managed by organization, such as quality assurance and other quality management systems. These systems can positively effect quality and food safety, but can also be used for food processors and traders to force regulations that are often expensive on their suppliers, and if smaller companies, manufacturers cannot afford it, they can be out ruled from the competition. At the same time companies that have introduced the quality certificate system can gain advantage against those who had not taken the chance. Also the question comes up that what is the point of market status until which they stick to the prescribed rules, and also there is a question how consumers appreciate quality certificates. Known certificates may increase acceptance of the product, but in many cases their marketing value is low, but producing companies and traders take the existence of these systems seriously. So the different quality assurance systems can be increasingly considered a threshold of market entry point that does not mean a certain advantage if applied, but its absence is a serious disadvantage for suppliers, and its aim or effect cannot only be quality assuring in certain cases.

2.3./ Food economy and regional marketing

Bigger ventures of the commerce have realized, that regionalism is getting more appealing for customers – accordingly to the more credible granting of food safety – so they concluded that they have to exploit this market option in contrast to centralization.

The insertion of regional product to the supply means another certain risk for food retailers. Because the customers' attitude towards this can hardly be forecasted.

Customer surveys though prove that customers consider regional products a higher rate than mass-produced articles. Thus most of them are willing to pay a higher price for regional products. At the same time they expect regional products to plead the highest standards and be safer.

3./PRESENTATION OF THE METHODOLOGY AND LOCATION OF THE RESEARCH

3.1./ The methodology of the research

The examination of the subject, the development and introduction of solutions requires an interdisciplinary approach. According to this I would like to highlight the following from amongst the applied methods:

3.1.1./ Research of literature and study of trade venture practices

(theory of quality management and food safety and their applied models in food trade).

3.1.2./ Methods of gathering data and information

3.1.2.1./ Microbiological tests that we used to test the modification of food safety in food trade.

The examinations were performed according to the methods in the 3rd book of Hungarian Food Book.

3.1.2.2./Examination through organs

As the properties of organs greatly influence the quality of the product and the choice of the customer through it, the results of these examinations will be discussed in this study.

3.1.2.3./ Brainstorming

We used this method during team meetings when in the need of collecting ideas.

3.1.2.4./ Observation

We ranked the state of shops, the appearance, behavior and competence of the personnel by observation, and we created notes of it.

3.1.2.5./ Questionnaire surveys

We used this method on the one hand when we measured the food safety status of the food trade venture, and on the other hand to adjudged how effectively the food safety system works in certain types of food trade.

We also used questionnaire surveys to obtain customers' opinion. By this we got to know the possibilities to bait them back to Hungarian food trade shops.

A typical application territory of questionnaire surveys is the measuring of satisfaction (e.g.: for measuring the satisfaction of the customer).

The answers in the questionnaires were evaluated by searching for keywords and/or their synonyms.

3.1.3./ Methods for analyzing and rating data

3.1.3.1./ Pros and cons interaction: It was necessary for choosing from amongst the areas in need of improvement, choosing the viable proposals.

3.1.3.2./Statistical evaluation

The parameters received through microbiological examinations done on procedures of the trade process were subjected to statistical evaluation in order to decide whether the changes in critical points and microbiological levels by 2006 in comparison to the critical points established in 2004 are significant, that is to say are the results of the introduced measures.

3.1.3.3./ Comparative analysis

We compared the results of the traditional CCP definition calculated by empirical methods, and the results of the CCP definition we tested that uses objective measuring methods.

3.1.3.4./ The SWOT analysis

By the SWOT analysis we examine the strengths of the organization, its weaknesses (internal specifications), its possibilities and hazards to its further successful operation (external surroundings).

3.1.4./ Teamwork

The adaptation of quality management / food safety systems is a complex task, that requires interdisciplinary approach for successful realization, which requires cross-functional teamwork. The most important professions are present in these cross-functional teams.

3.1.5./ Internal audit

It has to be performed controlled by written process directions and we have to keep a record of it.

3.1.6./ Revision of food safety systems

We highlighted step 6 and 7 from the process of the introduction of HACCP, procession of which as follows:

3.1.6.1./ The traditional definition of hazard analysis and CCP-s

This method means the well known “decision tree” method and the definition of CCPs through it.

3.1.6.2./ Defining hazard analysis and CCP-s by measurement

The point of this objective method is that we defined the contamination level in the products by microbiological, chemical and by organic examinations in every operational steps of the trade process. We compared the results with legal regulations. If the value measured was below the tolerated level provided in the regulations, then the step (procedure, point) was not considered CCP, otherwise it was.

3.1.6.3./ Comparison of the results of the two methods

The CCP-s we received are compared according to location and amount. Then we compare the costs of CCP supervising systems defined by traditional methods and measurements.

3.1.4./Marketing-mix: supporting the trade of regional food

Food produced regionally with bigger input but better quality - if we want to reach a persistent success on the market with them - require special marketing activities as well.

3.2./ Introduction to the location of the research

We performed our research at one of the multinational food trade chains in Hungary. They provided every help for the research, even where we needed teamwork, they let us join their colleagues. Although they used our results for the improvement of their own quality control / food safety position, they did not let us announce their name or specific information about their department store.

Laboratory examinations were performed in the Innovation Laboratory of Quality and Management KHT. (21. Tokaji str, Nyírtelek, Hungary.). The surveys on the one hand were done at food retailer SMB-s owned by Hungarian people, but the position papers based on the interviews at multinational retailer companies in Hungary. We could study the operating food safety and quality management system at a multinational trade concern more narrowly.

4./ OWN EXAMINATIONS AND THE MAIN STATEMENTS OF THE DISCOURSE

4.1./ Examination of the possibilities by quality management

Towards reaching our aims, confirming or rejecting our hypotheses we performed different examinations listed below.

Quality issue systems in food trade (survey)

Our survey oriented to the following 3 areas: the general state of the commercial unit, the applied quality management and HACCP systems. The surveys were performed in 4 multinational and 12 small Hungarian food retailer ventures.

We also examined the causes of the not quite effective HACCP (and quality management) systems.

The most serious reason is to be sought in the management of the concern.

In smaller shops there's no quality management system, and HACCP system only exists on paper. Hence the following critical survey was only worth performing in case of multinational companies.

4.2./ Critical analysis of the quality control system of the examined multinational concern

On the whole we can state that the quality control system was developed at the examined "multi", covers the main processes and operates them as well. The effectiveness of the system although can be further improved by introducing my suggestions.

4.3./ Criticism of the food security system at the examined multinational concern

The aim of the examination of the food safety system was to examine if there is a weak point in the current HACCP configuration method and the system configured with it, and if there is, to find out how to correct it.

We compared the food safety system configured with the traditional method by the emporium's HACCP team, with as part of it the hazard analysis defined by consensus, based on measurements, and its result.

I realized that though in certain cases the CCP list identified by two different methods match, but at the same time there's a difference between CCP-s defined empirically in teamwork and CCP-s defined by laboratory measurements (based on objective data).

This means a serious problem in the aspect that attention, regulation, control, etc. focuses on the improperly determined CCP-s and not the really critical operational steps. As a result food safety hazards on the undetermined critical points that have not been identified by the traditional method can "untroubledly" destroy the health of the customers, degrade consumers' trust. Thus customers fall away from the commercial unit, as a result of which its efficiency, profit decreases, so it enters the vicious circle out of which the only way is vegetation and then closure.

As the results prove, correctly identified CCP-s (critical points in food safety) – by decent attention and control can be well handled and many times even got rid of. This is what happened at the examined multinational comestible trade company.

The CCPs defined by the mentioned two methods are presented through the examples below (table 1, table 2). It's evident in both cases that CCPs defined in an empirical way with the "decision tree" method in teamwork don't match the critical points defined in an objective way through microbiological examinations. Hazards of this situation are described above.

Table 1: Loose culinary and confectionary products

MŰVELET MEGNEVEZÉSE	ERZÉKSZERV VIZSGALAT		MIKROBIOLOGIAI VIZSGALAT						CCP team-munka	CCP mért
	Fizikai veszélyekre	Kémiai veszélyekre	Salmonella	Staphyloc. aureus	E. coli					
MEGTURTI SZINT	Szemmel láthatóan nem szennyezett		0/25 g	1x10 ⁶ /g	1x10 ⁶ /g					
Vásárlás	Szemmel láthatóan nem szennyezett		0/25 g	2,2x10 ⁶ /g	0/g					
Töltés (újra csomagolás)	Szemmel láthatóan nem szennyezett		0/25 g	6,1x10 ⁶ /g	1,3x10 ⁶ /g					X
Araképzés	Szemmel láthatóan nem szennyezett		0/25 g	6,7x10 ⁶ /g	1,4x10 ⁶ /g					
Raktározás	Szemmel láthatóan nem szennyezett		0/25 g	1,9x10 ⁶ /g	1,4x10 ⁶ /g				X	X
Kiosztás az üzletbe, illetve visszarakodás a szőlőbe	Szemmel láthatóan nem szennyezett		0/25 g	2,9x10 ⁶ /g	1,6x10 ⁶ /g					
Utolsó tárolás	Szemmel láthatóan nem szennyezett		1/25 g	3,1x10 ⁶ /g	1,8x10 ⁶ /g					X
Hűtőszekrénybe érkeztetés	Szemmel láthatóan nem szennyezett		1/25 g	3,9x10 ⁶ /g	1,9x10 ⁶ /g					
Önkiszolgáló értékesítés	Szemmel láthatóan nem szennyezett		3/25 g	4,4x10 ⁶ /g	2,3x10 ⁶ /g					
Előcsomagolás	Szemmel láthatóan nem szennyezett		4/25 g	4,9x10 ⁶ /g	3,4x10 ⁶ /g				X	

Source: own edition

Table 2: Products available in salad-bar

MŰVELET MEGNEVEZÉSE	ERZÉKSZERV VIZSGALAT		MIKROBIOLOGIAI VIZSGALAT						CCP team-munka	CCP mért
	Fizikai veszélyekre	Kémiai veszélyekre	Salmonella	Staphyloc. aureus	E. coli	C. perfringens				
MEGTURTI SZINT	Szemmel láthatóan nem szennyezett		0/25 g	1x10 ⁶ /g	1x10 ⁶ /g	1x10 ⁶ /g				
Vásárlás	Szemmel láthatóan nem szennyezett		0/25 g	0/g	0/g	0/g				
Töltés (újra csomagolás)	Szemmel láthatóan nem szennyezett		0/25 g	0/g	0/g	0/g				
Araképzés	Szemmel láthatóan nem szennyezett		0/25 g	2,0x10 ⁶ /g	0/g	1,0x10 ⁶ /g				
Raktározás	Szemmel láthatóan nem szennyezett		0/25 g	3,0x10 ⁶ /g	0/g	4,0x10 ⁶ /g				
Darabolás, szeletelés	Szemmel láthatóan nem szennyezett		0/25 g	6,0x10 ⁶ /g	0/g	4,0x10 ⁶ /g				
Előcsomagolás	Szemmel láthatóan nem szennyezett		0/25 g	9,0x10 ⁶ /g	0/g	6,0x10 ⁶ /g			X	
Utolsó tárolás	Szemmel láthatóan nem szennyezett		0/25 g	2,9x10 ⁶ /g	1,0x10 ⁶ /g	8,0x10 ⁶ /g			X	X
Kiosztás az üzletbe, illetve visszarakodás	Szemmel láthatóan nem szennyezett		0/25 g	2,2x10 ⁶ /g	4,0x10 ⁶ /g	8,0x10 ⁶ /g			X	
Előcsomagolás	Szemmel láthatóan nem szennyezett		0/25 g	1,1x10 ⁶ /g	1,4x10 ⁶ /g	1,8x10 ⁶ /g			X	X

Source: own edition

4.4./ SWOT analysis of the food trade ventures and the possible strategy

I diagnosed that we can find the application of modern organization improvement systems amongst the possibilities at both types. Small food retailers need this as they practically miss these systems. Though multinational food trade concerns have these kinds of systems, but many cases with not full efficiency. (Small ones are not cost-effective, multinational food trade concerns are not customer centric at all, etc.)

The total absence of the application of marketing describes small shops, while it's a given option for multinational food trade concerns as well to improve marketing activity e.g. by special offers.

As a result of our SWOT analysis we realized that multinational food trade concerns food trade companies apply an outbreak strategy, and within this they increase the use of effectiveness improving quality management systems, and within this the correspondence to hygienic and food safety requirements. At the same time small Hungarian retailer companies suffer corresponding o hygienic and food safety requirements, and though the application of efficiency improving quality management systems would be practical, they don't do so. Which in turn would mean the realization of a defensive strategy meaning survival for them.

4.5./ Marketing-mix, the support of the region's food trade

In this topic I examined the possibility of the application of "Geographical goods-markers", the regional adaptation of "Traditions, Flavors, Regions" program and joining the "Regularly supervised outstanding Hungarian products".

5./ NEW AND PATENT RESULTS OF THE DISSERTATION

5.1./ The support of trade necessitates complex solutions, that have two possibly important part, exploiting the possibilities of regionalism and the effective operation of the quality management / food safety system.

Globalization namely is a process above countries and governments. Forestalling this process is only possible by exploiting the chances offered by regionalism. As the result of the production / service appears on the market, thus besides global markets we have to maintain and even protect markets of regional products. This can be achieved by exploiting the confines of regionalism and taking the chances – complex support of trade.

Regionalism is the only remedy that can effectively compensate the harmful effects of globalization. It's highly advised for small Hungarian food retailers to take every chances (local specialities, quality-contest, etc.) regionalization provides, for the sake of the survival of their business.

5.2./ Quality management / food safety systems are not adequately effective:

- The management of food trade ventures is not committed enough

As a result of the Ishikawa analysis we have established there are more reasons of formal or inefficient operation of quality and food safety management systems. Part of these reasons fall out of the ventures they can be traced back to the in-deliberate acts of the supervising authorities, consultants, etc., and the management cannot or can only partly control. Their most serious failure is the general education that involves everybody, which would introduce the agents of food profession to not only the mysteries of HACCP and ISO 22000 system, but it would also form the necessary sense of liability in them, thus result a change in aspect and deferrably increase the morale of society.

The other part of the reasons can be traced back to the unconcern and lack of commitment of the management, which destroys the natural sense of liability that may arise in the co-workers.

Control systems and their level is very different in multi and small Hungarian food trade ventures:

- The ISO quality control system and food safety systems beyond HACCP were only introduced by multinational food trading chains, but every examined food trade unit has HACCP food safety system.
- Only multinational trade companies have working food safety system adapted on food trade units.
- The completed survey shows, that in small Hungarian food trade units the food safety system is only formal, it's not operated in practice. This can be due to people not being aware of neither of its significance nor the method of its operation, and their sense of liability is gappy.

5.3./ The current practice of HACCP system configuration has disputable weak points, which mean a risk for the safety of the food. These weak points are the following:

- Risk analysis is the part of the configuration of HACCP and ISO 22000 system that requires most of the profession, attention and decent method, because every steps, actions following the definition of the so called critical points (CCP-s) endangering the safety of the food, will only focus on those operations that are critical, so marked out for CCP.
- If we marked out the endangered operations (CCP-s) incorrectly, then it can happen that we only pay special attention to these operations, supervise these, correct them, focus all our efforts on them, and at the same time we get by procedures, steps or leave them without attention which by the way define the safety of the food. This will lead to contamination to or in the product harmful for health at unmonitored points.

5.4./ The critical points in the operation of food trade concerns - in the aspect of food safety – can be determined by objective measurements

In certain operations of the processes typical of food trade – by the comparison of the results of repeated microbiological, chemical, physical examinations with the relevant medical regulations, CCP-s can be defined in an objective way. Moreover the method is even eligible for measuring quickly and almost at once the effect of certain provisions, interactions on CCP-s. CCP-s defined by the ***objective method*** often differ from CCP-s defined by empirical method.

As the comparison of the results of our measurements and the critical points of the previously configured HACCP system proves that CCP-s defined empirically often do not match CCPs defined with objective methods.

5.5./ “Decision tree” method is only available for marking out CCPs with certain possibility of mistake

Comparing the objective results by measurements to the empiric results by the “decision tree” method we found out that the “decision tree” method is only available for marking out CCPs namely critical operations mostly endangering food safety in a limited way with certain possible mistakes.

The use of the “decision tree” method – at least according to the practice we got to know – is formal. The members of the team only presume if a process endangers the safety of the food seriously or less, and they do not look for objective proof. In most of the cases they vote whether certain operational steps on the flowsheet are critical or not.

5.6./ Marking out CCPs based on objective results cannot be replaced by the “verification of CCPs”, as:

- on the one hand it's not performed when processing HACCP system, and is disregarded afterwards,
- on the other hand if it was performed, it would only be on CCPs already marked out eventually incorrectly.

At the same time it's true that if the team has already neglected an operation from amongst the CCPs at the risk analysis, namely they have not marked it out as CCP will not be – except maybe serious tragedies – reinvestigated in a matter of time, namely no monitoring or verifying measurements will be performed. Hence most critical part of the configuration of HACCP and ISO 22000 food safety system is risk analysis, which according to the above should get attention beyond usual practice.

5.7./ Food trade concerns of regional importance have their chance of long term survival if they present a different strategy than that of multinational networks’.

6./ PRACTICAL UTILIZATION OF RESULTS

The results I achieved during my research can well be applied in practice as well as in multiple aspects:

1./ Attention can be directed on to the possibilities within regionalism, which helps small Hungarian food trade concerns achieve the “defensive strategy”. The essence of this is that they don’t offer the same mass products offered by multinational commerce concern-national trade, but local specialities of guaranteed safety and high level of value instead (or at the same time as well). Only this way - concerning quality and safety - can they compete with multinational commerce concern-national food trade concerns who only compete in prices, and this can mean the long term survival for them.

2./ Directs the attention of the leaders of domestic food retailer concerns to the importance of the preparedness, increase of the management, the importance of quality- and food safety awareness.

3./ In addition (instead of) the “decision tree” method, often used mechanically I tried an objective way of defining critical points (CCP) based on proofs, spreading, distribution of the application of which would noticeably make Hungarian food safer, thus increasing their competitiveness. Besides it could prove the makeshift quality and eventual hazards of food originating from abroad (e.g.: China) often covered by beautiful wrapping, which again would ensure customers about the value of locally produced food, thus make a vantage point for local food.

4./ The provability of quality- and food safety would make food producer concerns used to prove the quality and safety of foods produced and distributed by them in an objective way. This would prevent events similar to the “paprika affair of Kalocsa” from happening again, where the good quality and safe Hungarian paprika was mixed with cheap unexamined paprika (which was by accident proved to be extremely contaminated with carcinogenic mold-fungi-toxins later).

*5./ The objective verification of safety and quality of food can brake the practice of multinational food trade concerns that they only compete with their prices, “educating” the same to the masses of consumers. My work proves that besides the competition of prices it would be worth to make the quality and safety of products compete, which **would give the local concerns currently in competitive disadvantage a new “weapon of competition”**.*

7./ PUBLICATIONS AND LECTURES IN THE TOPIC OF THE THESIS

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