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QUALITY SYSTEM IMPLEMENTATION AND MARKET STRUCTURE: SAMPLE SURVEY OF CROATIAN COMPANIES

The aim of this paper is to study dependence of market structure and quality system implementation in Croatian companies. The survey research was conducted using random stratified sample of Croatian firms. Adequate statistical tests were applied to make conclusions. The results suggest that the structure of clients as well as the structure of markets from which Croatian companies primarily gain their revenues is significantly dependent upon level of quality system implementation. Croatian firms should make stronger efforts to introduce quality system to make faster entrance and to conquer strong positions at the foreign markets.

Key words: quality system, international market, χ^2 -test, MANOVA, Scheffe's test.

Introduction

In this paper the authors analyze the attitude of Croatian enterprises towards the implementation of quality management systems. This is done through research of relationships between the level of implementation of those systems and the selected types of markets on which revenue is gained. Market is in the process divided first on "Croatian" and "export market" ("regional" or ex-Yugoslav, "Eu-

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ropean” or “international”, which could be European and non-European or only non-European); and second, with regard to the type of ultimate clients from which they gain yearly sales revenue: “retail clients” (directly oriented or connected to inhabitants as final consumers); “corporate clients” (as business to business type of clients or wholesale clients); and an undifferentiated group of “other clients” according to the idea that the interviewees have about them.

The goal of this paper is to research the existing orientation of Croatian enterprises towards the adoption of the quality concept, which corresponds to the orientation towards the trends of economic growth and of the growth of the international market competitiveness¹. For this purpose, one should start with the hypothesis that the dominant orientation of Croatian enterprises to the domestic or to foreign markets (regional, European, or wider international) is dependant on quality system implementation, or vice versa, that taking part in international exchange has a stimulating effect on increasing the level of quality culture in the enterprise. The authors think that the acceptance of the quality culture as part of the business orientation signifies making grounds for competitiveness and gaining revenue from exports. The second hypothesis that is being tested is the assumption that the orientation of Croatian enterprises towards a specific type of clients, direct selling to “retail clients” or to “corporate clients” is related to “the level of quality system implementation”.

For the exploration of the relationships of variables, the hypotheses were tested by using results of an originally conducted survey based on a representative sample of Croatian enterprises and telephone interviews of top managers. In the analysis, adequate statistical procedures like: χ^2 -test of independence of categories, multivariate analysis of variance using MANOVA and ANOVA, and post hoc Scheffe’s test, were applied.

¹ According to the research of the World Economic Forum for 2004, see Lopez-Claros (2004), the Croatian Global Competitiveness Index decreased in 2004 compared to 2003, although in other transitional countries it is mainly increasing. According to the Growth Competitiveness Index (GCI), in a group of 104 countries Croatia has fallen from the 53rd to 61st place. According to the Technology Index it is on the 46th place, according to the Macroeconomics Environment Index on the 59th and according to the Public Institutions Index on the 76th place. According to Porter’s Business Competitiveness Index (BCI) which is complementary with the GCI, Croatia takes the 72nd place. At the same time, the sophistication of the operational practice and strategy of enterprises is ranked 72nd, and the quality of the microeconomic and business environment in which national companies compete is placed on the 70th place. In accordance with M. Porter’s theory, the authors believe that without high-quality microeconomic possibilities, the macroeconomic and institutional reforms in Croatia will not succeed.

Review of Previous Research Results

Various definitions of quality can be found in literature². Injac (2002) defines it as measure, an indicator of volume or the use value of a product or service designed to satisfy a specific need at a specific place and in a specific moment, the moment when this product and/or service in the process of exchange becomes recognized as commodity. Lazibat (2005) points out that the quality of a product is an absolute precondition to the market affirmation of the product and to its transformation into commodity. It is also the basic precondition for the survival and the business of any producer.

There are numerous benefits which a company can gain by properly setting up and implementing a system of quality assurance according to internationally accepted standards ISO 9000ff. They are most commonly divided into direct and indirect as well as internal and external. Injac (2002) points out that the gains are directly proportional to successful implementation of quality systems and to the participation of all employees. Direct internal gains because of the introduction of a certified quality system using ISO 9000ff standards are: the increase in the quality of products and/or services, and with this also the protection of the customers' interests, the improvement of the company organization and of the production processes, the decrease in costs and the achievement of the Total Quality Management (TQM³) concept. The most important indirect internal gains can be seen in the creation of quality culture among employees, as well as in the strengthening of healthy interpersonal relationships among employees. As far as external gains of a company with the implemented systems of quality are concerned, the indirect ones pertain to improved image and company perception, as well as to the increase in its competitiveness. The direct external gains can be seen in the fact that those companies which have the certificate are perceived as winners on the world market and there is general belief in the quality of their products and services.

The data from recent research show that the orientation towards quality is still not the dominant strategy of Croatian managers, Drljača (2003) and Dumičić

² Matić (2004) states the definition of quality from the regulations prescribed on the basis of the Croatian Standardization Act, according to which it is defined as a feature of a product conditioned by its basic composition, added substance, technological procedure, transport conditions and conditions of storing and preserving it. According to the standard ISO 9000:2000 quality is the level up to which a group of distinctive characteristics (those which serve to distinguish the products) meets the demands (needs or expectations which are implicit or are compulsory), in the process of which the quality can be insufficient, good or excellent.

³ According to Saylor (1992), Total Quality Management or TQM comprises: management leadership and commitment, continuous improvement, total customer satisfaction, employee involvement, training and education and reward and recognition.

(2004), as well as that an intensified education is needed in that direction, Lazibat, Dumičić (2002). The Croatian economy still needs to transform itself into a modern competitive economy which needs to find and strengthen its position in the global business competition (Lazibat and Kolaković, 2004; Lazibat, 2005 and Matić, 2004). Everything that has just been said encourages the authors of this paper to conduct further research.

It has already been emphasized that the quality of goods and services is the key precondition for a successful participation in the market competition. Matić (2004) notices the existence of two parallel trends in the contemporary world. The first is the omnipresent trend of liberalization and globalization of international business dictated and lead by the World Trade Organization (WTO). This opens the markets of all member countries to domestic companies, but at the same time the domestic market opens up to the competition of all interested companies from those same countries. The other trend is the promotion of qualities of goods and services which are being exchanged. Because of this, on the level of WTO general rules have been adopted which must be respected by all member countries and which must be incorporated into national regulations which regulate the quality of imported goods so that those provisions would not turn into its opposite – neo-protectionist measures of restricting commercial flows.

Lazibat and Kolaković (2004) stress numerous means and ways how companies included in the global market expansion create added value, those which are not accessible to companies doing business only on the domestic market. The inclusion into global exchange enables enterprises the expansion of their market, a better coverage of investment costs, the relocation of their production operations to locations with lower costs, and the realization of the economy of scale on the global market. The adoption of a process approach to quality management according to standards ISO 9000ff (or some other business excellence model) is a safe way to do this, compare Skoko (1997, 2000).

The results of the research conducted in the Republic of Croatia in 2000 and 2001, Drljača (2003), show that the highest percentage of certified organizations was in the group of the biggest Croatian enterprises existing in those branches of the economy which are more exposed to competition on the international market (production of electrical appliances, non-metallic products, ship building, production of food and beverages and naval transport). The exposure to international competition and the effort to obtain regular customers are the most important reasons why those enterprises are forced to accept quality as a business philosophy as well as a business strategy. Considering that Croatia has opted for accession to the European Union, in the next few years it can be expected that the number of companies with corresponding certificates of quality will dynamically increase. The results of the already mention research also show a relationship between business success and quality. Thus, the share of certified enterprises in a group of 400 enterprises with

the highest revenue in the observed years was symbolic, although a slight increase was noticed in 2001 in comparison with the year 2000. The percentage of certified enterprises in the group of the most successful exporters was significantly higher than among the most successful importers. Drljača finds the reason for this in the fact that the competition and foreign buyers of Croatian products impose the quality as an imperative, and with its realization they decrease the risk of quality as well as their own costs of import control. The share of certified enterprises in the group of most successful ones significantly increased. Furthermore, in the group of enterprises with the highest share of export in their total revenue, the share of certified enterprises was stable at a relatively high level in observed years. This again asserts the role of quality in the aspiration to be positioned on the international market.

Sample of Companies

In the last trimester of 2003, a survey research on representative national sample of $n=550$ companies⁴ was conducted (details about theory and methods of business surveys see at Cox et al., 1995). Data were collected by CATI⁵ technique. A company was considered to be a sampling unit, and a manager (any one from top management or the owner of a company) was used as a response unit. The main stratification factor was «number of employees», so that three strata could be created. Finally, among companies in the sample there were 37% small firms (with 15-50 employees), 38% medium-sized (51-250 employees) and 25% large companies (with more than 250 employees).

From the total number of certificates in the sample, the largest number was in the hands of medium-sized enterprises (41%), then in large enterprises (33%), and then in the companies with 15-50 employees (26%). From the total numbers of enterprises which received consultation about the introduction of systems of quality there was 38% small, 33% medium sized and 29% large enterprises. Among 205 small enterprises in the sample, 13% had certificates and 14% was preparing to obtain it through consultations. From the total of 210 contacted medium sized

⁴ The framework of FINA selection from 2002 was used. About the restrictions and the importance of the correct use of sampling methods in applied research see Dumičić (1991), while about the control and the indicators of the quality of data in surveys see Dumičić and Dumičić (1989).

⁵ CATI (eng. Computer Assisted Telephone Interviewing) includes automatic input, logical and numerical control as well as the control of the consistency of the entered data. See Dumičić (1990). Collecting of the data with this technique was carried out by using the WebCati software in the research agency Puls.

enterprises 20% had certificates and 12% received consultations. From the total of 135 large companies, 26% had certificates and 18% received consultation of certified consultant companies. According to χ^2 -test of independence of categories, with the significance level $\alpha=0.05$ as well as with the p-value = 0.028, the hypothesis according to which the size of the enterprise and the implementation of the system of quality are two statistically dependent features, compare Dumičić (2004).

In estimating population proportion $p = \frac{M}{N}$, where M is a number of units with a specific feature, and N is the number of all units in the population, an unbiased estimator $\hat{p} = \frac{m}{n}$ was applied, in which m is the number of units in the sample which have a specific feature, n is the size of a simple random sample. Standard error for the proportion estimate may be approximately given by: $\sigma_{\hat{p}} \approx \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \sqrt{\frac{N-n}{N-1}}$, where finite population correction factor $\sqrt{\frac{N-n}{N-1}}$ could be neglected, if the sampling fraction is $f = \frac{n}{N} < 0.05$, and this is the case with small and medium-sized enterprises strata in this survey. The sampling fraction for large enterprises strata is 0.33. For the orientation about precision for large number of estimates Table 1 is given, which shows margins of errors that, with the assumption of normal approximation of sampling distribution of estimator \hat{p} , could be expected for each sample size with 95% confidence level.

Table 1

MARGIN OF ERROR ($\pm z \cdot \sqrt{(\hat{p}(1-\hat{p})/n)}$, $(1-\gamma) = 0.95$)

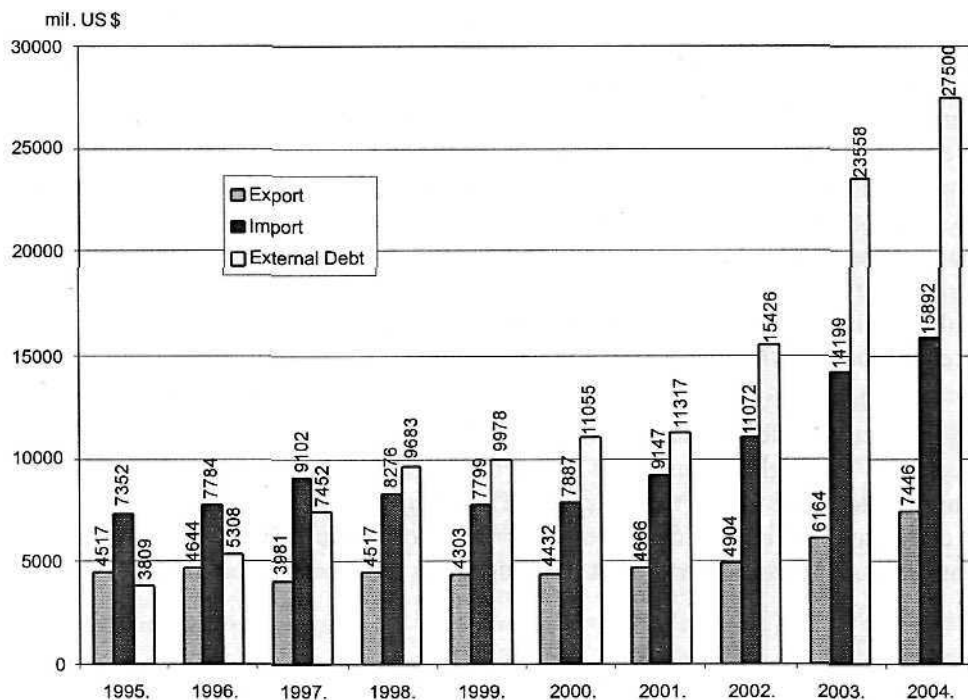
Sample size n	$(\pm 1.96 \cdot \sqrt{\frac{0.25}{n}})$	Sample size n	$(\pm 1.96 \cdot \sqrt{\frac{0.25}{n}})$
30	$\mp 17.9\%$	200	$\mp 7.1\%$
40	$\mp 15.5\%$	250	$\mp 6.3\%$
50	$\mp 14.2\%$	300	$\mp 5.8\%$
75	$\mp 11.5\%$	400	$\mp 5.8\%$
100	$\mp 10.0\%$	500	$\mp 4.5\%$
150	$\mp 8.2\%$	550	$\mp 4.2\%$

Implementation of Quality System and Foreign Markets Orientation

According to the information of the Association Hrvatski izvoznik (the Croatian Exporter), there are almost 69 thousand active enterprises from which only 6,700 are exporters and 3,144 enterprises managed to export goods and services in 2003 in the value higher than a million kunas.

Figure 1

EXPORT, IMPORT AND EXTERNAL DEBT OF CROATIAN COMPANIES 1995-2004



Source: Association Croatian Exporter, according to <http://www.tportal.hr/gospodarstvo/poslovnivodic/page/2005/01/19/0331006.html> (visited: 4 February, 2005)

Through comparison with other transitional countries it can be seen that the growth of the Croatian export in the period from 1995 to 2002 was the slowest in the region. In terms of export in general, as well as in terms of growth trend in the last ten years, Croatia is surpassed by the Czech Republic, Slovakia, Hungary, Bulgaria, Romania and Slovenia. Hungary has achieved the most dynamic growth and has surpassed all the others, while Bulgaria has remained on the level closest to Croatia.

However, trends in exports in 2004 are somewhat encouraging. In the first eleven months the export of goods rose by 28% (to 7.3 billion dollars), while import rose at the rate of 5.7 percent (to 15.03 billion dollars). This signifies that the Croatian export per capita could grow to around \$1,500 per inhabitant. However, in order for Croatia to catch up with other competitive countries in the region, the growth of export will have to be significantly faster.

In the mentioned data collected from the survey in 2003, from a sample of 550 enterprises in total, 105 of them (or 19%) introduced a quality management system⁶ (ISO or another one⁷) while 75 (or 14%) was going through the phase of consultations, compare Table 2. According to Dumičić (2004) 17% of surveyed enterprises did not think about introducing a system of quality while 37% of the surveyed Croatian enterprises was, in one way or another, preparing to introduce the system. There was 14% of companies in the sample which were going through consultations to introduce a quality management system, 6% had made a decision to start the process, and 17% had only begun discussing the possibility of introducing the system. The conclusion can be drawn from this that the level of quality culture is still unsatisfactory and that by the end of 2003 the Croatian economy was only starting some more serious preparations for qualitative changes which are a precondition for the international market game.

Furthermore, on the basis of tests, the hypothesis about the dependence of “quality culture development” and the “main activity” of Croatian enterprises was accepted. The highest number of ISO certificates (51%) can be found in manufacturing enterprises (from those surveyed), among which 29% of enterprises have a certificate, 14% is going through a process of consultations and only 11% of enterprises of this industry is not thinking about the introduction of any system of

⁶ The mentioned percentage of 19% is larger than the total percentage of certified enterprises in Croatia. This result can partly be attributed to a greater readiness of managers in companies with a higher level of quality culture to take part in the survey. The primary goal of the survey was not to evaluate those percentages but to investigate the dependence between (non)implementation of quality management systems within the company and the chosen characteristics of the enterprise.

⁷ Around 2% of respondents said that their company has some other model of quality management, not ISO.

quality. The worst situation is in retail trade in which 11% of 45 chosen companies has an ISO certificate, 18% is going through consultations about systems of quality and as much as 40% of companies are not thinking about quality as an approach at all. Only 5% of all ISO certificates can be found in the companies of this sector, and 11% of companies going through consultations are in this sector. Since hotels and restaurants make up only 2% of all certified enterprises and 11% or all of those which are going through consultations, since from 36 contacted enterprises there is 6% of those certified, 22% is going through consultations and 22% is not thinking about systems of quality, the total information can be considered somewhat better for this activity than the one obtained in the research conducted in 2001, Drljača (2003). By a further analysis of sample results, on the basis of grouping the activities of enterprises into only four categories, it was shown that 65% of ISO certificates can be found in the industry sector, 14% in trade, 18% in services and 3% in other activities.

According to the conducted survey, the majority of 385 enterprises, i.e. 70% of the surveyed enterprises, see Table 2, was primarily oriented to the domestic market while the other 165, i.e. 30% of the surveyed enterprises gains most of their revenue on foreign markets. From the other group of enterprises, 50 of them or 30% of exporters (9% of the total number of interviewees) placed their goods and services primarily on the markets of the ex-Yugoslav countries. 82 enterprises, i.e. 50% of exporters (15% of the total number) made their sales on the European market and 33 or 20% (which is 6% of 550) gained the sales revenue primarily on the European or non-European markets. It can be seen in the survey that the highest number of surveyed enterprises – 264 of them or 48% are in the group of those enterprises that are primarily oriented to the domestic market and do not care at all about introducing a system of quality.

Table 2

WHICH IS THE MARKET ORIENTATION OF THE ENTERPRISE
 CONSIDERING THEIR SALES? -% OF ANSWERS*

No. of interviewees/ companies		Implementation of quality standards			Total
		Have ISO standards certificate	Consulting for ISO standards implementation	Other companies	
Market	Total	105	75	370	550
Croatian	385	12%	10%	48%	70%
Regional (Ex-Yugoslav)	50	2%	1%	6%	9%
European	82	3%	2%	10%	15%
International (European and non-European or only non-European)	33	2%	1%	3%	6%
Total	550	19%	14%	67%	100%

*Only one answer was possible

Furthermore, Table 3a shows that from 105 surveyed enterprises with ISO standards, the majority of 62% primarily gains their revenue on the domestic market, and from 75 companies which took the first steps toward obtaining an ISO certificate, as much as 75% still has a primary orientation towards the Croatian market. The situation is also similar in enterprises which currently are not planning to introduce a system of quality, among which 71% primarily does business on the domestic market, and 29% primarily gains revenue from export, although without a system of quality it is questionable how long they will be able to do it. Thus, in all mentioned groups of enterprises, notwithstanding the implementation of systems of quality, the revenue was gained from their primary export orientation in the average of 30% of cases. It should be taken into account that among the companies which have an ISO certificate the percentage of this type of exporters is above average, 38% (40 enterprises of 105).

Table 3a

STRUCTURE OF ENTERPRISES ACCORDING TO MOST IMPORTANT MARKET AND IMPLEMENTATION OF ISO STANDARDS (N=550)

Market	Implementation of quality standards		
	Have ISO standards certificate	Consulting for ISO standards implementation	Other companies
No. of interviewees/ companies	105	75	370
Croatian	62%	75%	71%
Regional (Ex-Yugoslav)	10%	7%	9%
European	15%	16%	15%
International (European and non-European or only non-European)	13%	3%	5%
Total	100%	100%	100%

Table 3b

STRUCTURE OF ENTERPRISES ACCORDING TO MOST IMPORTANT MARKET AND IMPLEMENTATION OF ISO STANDARDS (N=550)

Market	No. of interviewees/ companies	Implementation of quality standards			Total
		Have ISO standards certificate	Consulting for ISO standards implementation	Other companies	
Croatian	385	17%	15%	68%	100%
Regional (Ex-Yugoslav)	50	21%	11%	67%	100%
European	82	18%	14%	6%	100%
International (European and non-European or only non-European)	33	39%	6%	55%	100%

From 385 companies which primarily gained their revenue on the domestic market, only 65 (17%) has an implemented system of quality. Also, from the remaining 165 enterprises which are primarily oriented to foreign (any export) markets, 40 (24%) of them have implemented systems of quality.

χ^2 -test of independence of two variables shown in Table 2 with p-value = 0.013 and significance level $\alpha=0.05$ was conducted. The hypothesis that the level of implementation of the quality management system and the orientation to a specific market, domestic “Croatian” and “export”: “regional” (ex-Yugoslav), “European” or “international” (European and non-European or only non-European) are statistically dependent variables. However, if the modalities of the “market” are reduced only to domestic “Croatian” and “export market”, i.e. if the enterprises are divided into those which primarily gain revenue from the placement on the domestic market and those which primarily export, then the χ^2 -test of independence about the implementation of quality standards would lead to a conclusion that those characteristics are not statistically dependant even with the significance level of 10% (p-value = 0.120).

Quality System and the Main Clients of Enterprises

According to another hypothesis, the orientation of Croatian enterprises towards a specific type of clients, “retail clients”, “corporate clients” or “other clients” is related to the level of quality system adoption. From the planned 550, 524 answers to the question about the orientation of sales of the enterprise to specific segments

of potential customers were collected⁸. The interviewees were asked to assess the percentage of sales revenue which comes from particular clients.

By observing 524 enterprises, according to Table 4, the average share of corporate clients as contributors to sales revenue is 63%, while the average share of retail clients is 31%. The remaining 6% pertains to other clients.

Table 4

AVERAGE PERCENTAGE OF SPECIFIC TYPES OF CLIENTS IN GAINING REVENUE

Clients	Structure
No. of interviewees/ companies	524
Corporate clients	63%
Retail clients	31%
Other clients	6%
Total	100%

It can be seen from Table 5 that among enterprises with an implemented quality management system the average percentage of total yearly revenue from sales to corporate clients is 77%, while in the group of enterprises which are preparing to introduce this system the percentage is somewhat lower at 60%. Among other enterprises the average share of corporate clients in total sales is also 60%.

⁸ It is assumed that the main reason for not responding to this question by the managers can be found primarily in their insufficient knowledge of the structure of sales revenue in their enterprise. About business sample survey nonresponse problem see Willimack et al. (2002).

Table 5

AVERAGE ESTIMATES OF REVENUE STRUCTURE OF SPECIFIC TYPES OF CLIENTS FOR ENTERPRISES WITH VARIOUS LEVELS OF QUALITY SYSTEM IMPLEMENTATION (N=524)

Clients	Implementation of quality standards		
	Have ISO standards certificate	Consulting for ISO standards implementation	Other companies
No. of interviewees/ companies	100	72	352
Corporate clients	77%	60%	60%
Retail clients	16%	33%	35%
Other clients	7%	7%	5%
Total	100%	100%	100%

In the group of enterprises with an implemented quality system the average percentage in the total revenue arising from retail clients is 16%, while the share of this type of clients in the group of enterprises preparing to introduce the system is higher at 33%. In the group of other enterprises which have done nothing concerning the introduction of quality systems, the average proportion of retail clients in total revenue is 35%. In order to determine if these differences are statistically important, multivariate analysis of variance (MANOVA) was applied, Table 6. In the analysis the independent variable is the level of quality standards implementation. In other words, the enterprises are clearly divided into one of three categories with regard to the application of quality management systems. The dependent variable pertains to three types of clients (“corporate”, “retail” and “other clients”), and every interviewee provided the information about the share of clients in the revenue.

Table 6

MULTIVARIATE ANALYSIS OF VARIANCE (MANOVA)

Source of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Types of clients	600485.830	2	300242.915	209.782	.000
Interaction	50224.536	4	12556.134	8.773	.000
Error (types of clients)	1491323.941	1042	1431.213		
Implementation of quality standards	1.097E-12	2	5.485E-13	.841	.432
Error	3.398E-10	521	6.523E-13		

Empirical F-ratio for types of clients (Table 6) is statistically significant at significance level $\alpha=0,01$ ($F=209,782$; $p\text{-value}=0,000$), which means that it is possible that certain specific types of clients do not have the same significance for the total value of the realization of the enterprise. F-ratio for interaction tells us whether there are differences among enterprises which differ in the structure of dominant clients which are statistically significantly considering the status of the standard implementation. With $F\text{-ratio}=8.773$, $p\text{-value}=0.000$, and the significance level $\alpha=0,01$, it is possible that enterprises have different percentage shares of specific types of clients as dominant sources of revenue depending on the status of quality system implementation. Details are tested in the following tables with ANOVA procedure and Scheffe's post-hoc test.

Testing the shares of specific types of clients considering the implementation of quality systems is implemented by using ANOVA procedure. Table 7 shows that enterprises which have various levels of implementation of quality systems also have various shares of corporate clients in their sales value. The difference is statistically significant with $\alpha=0,05$ ($F=8,583$, $p\text{-value}=0,000$).

Table 7

ANOVA – «CORPORATE CLIENTS»

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22900.442	2	11450.221	8.583	.000
Within Groups	695038.556	521	1334.047		
Total	717938.998	523			

Scheffe's test (Table 8) shows with precision among which groups there is a statistically important difference concerning the share of corporate clients in the revenue. The enterprises with an implemented quality system have a significantly larger share of corporate clients than the enterprises from the group of those that are only preparing to implement systems of quality with $\alpha=0,05$ ($p\text{-value}=0,013$), and in the group of other companies with $\alpha=0,01$ ($p\text{-value}=0,000$).

Table 8

MULTIPLE COMPARISONS, DEPENDENT VARIABLE:
 «CORPORATE CLIENTS» -SCHEFFE'S TEST-

		Mean Difference	Std. Error	Sig.
Have ISO standards certificate	Consulting for ISO standards implementation	16.67	5.65	.013
	Other companies	16.85	4.14	.000
Consulting for ISO standards implementation	Have ISO standards certificate	-16.67	5.65	.013
	Other companies	.19	4.72	.999
Other companies	Have ISO standards certificate	-16.85	4.14	.000
	Consulting for ISO standards implementation	-.19	4.72	.999

Furthermore, ANOVA shows (Table 9) that enterprises which in various degrees implement quality systems also have various shares of retail clients in the total sales. The difference is statistically significant at $\alpha=0,01$ ($F=10,951$ p-value = 0,000).

Table 9

ANOVA – “RETAIL CLIENTS”

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27028,414	2	13514.207	10.951	.000
Within Groups	642924,676	521	1234.020		
Total	669953,090	523			

Scheffe's test (Table 10) shows with precision among which groups of enterprises, considering the level of implementation of ISO standards, there is a statistically significant difference concerning retail clients as a dominant source of their total revenue. The percentage of companies that have adopted a quality system and gain their revenue dominantly from retail clients (as customers from whom they primarily gain their revenue) is significantly different (larger) than the percentage of companies that have taken consulting for ISO standards implementation and the majority of revenue from the same kind of clients (conclusion at significance level $\alpha=0,01$, $p=0,009$, as well as comparing to percentage of other companies with this source of revenue (also with $\alpha=0,01$, p-value=0,000).

Table 10

MULTIPLE COMPARISONS, DEPENDENT VARIABLE: «RETAIL CLIENTS» -SCHEFFE'S TEST-

		Mean Difference	Std. Error	Sig.
Have ISO standards certificate	Consulting for ISO standards implementation	-16.80	5.43	.009
	Other companies	-18.51	3.98	.000
Consulting for ISO standards implementation	Have ISO standards certificate	16.80	5.43	.009
	Other companies	-1.71	4.54	.932
Other companies	Have ISO standards certificate	18.51	3.98	.000
	Consulting for ISO standards implementation	1.71	4.54	.932

ANOVA procedure shows (Table 11) that enterprises with various levels of implementation of quality systems do not have significantly different shares of the group of other clients while forming their total revenue ($F=0.502$, $p\text{-value}=0.605$).

Table 11

ANOVA - «OTHER CLIENTS»

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	295.681	2	147.840	.502	.605
Within Groups	153360.708	521	294.358		
Total	153656.389	523			

Table 5 also shows that in all categories of enterprises considering the status of implementation of quality systems there was an equally low average percentage of realized total revenue from the group of other clients. Thus, for the category of enterprises which has ISO standard certificates the average share of other clients is 7%, and also 7% with enterprises which are going through consultations for ISO standards implementation, and only 5% for other companies.

Conclusion

The article presents the research findings of authors concerning: 1. The dependence of the level of implementation of quality systems in Croatian enterprises and the dominant orientation in gaining sales revenue on the domestic or foreign

markets; and 2. The relationship of the level of implementation of quality systems and the orientation of enterprises in gaining sales revenue to specific types of clients, corporate or retail. The conclusions are based on an original empiric survey conducted on a representative sample of Croatian enterprises at the end of 2003.

According to the research, if the market is dichotomously divided only to domestic and export, then there is a somewhat higher percentage of companies with an implemented quality system in export oriented enterprises than in enterprises which are not primarily export oriented, although the relationship between export orientation and the characteristic of the implementation of quality system is not statistically significant. Notwithstanding the quality culture, the revenue of the average of only 30% of enterprises was gained primarily from export, and in the enterprises with an implemented quality system the percentage of such exporters is 38% and this is above average. There is a somewhat higher percentage (24%) of export oriented companies with an implemented system of quality than those which primarily gain revenue on the Croatian market (17%).

The level of implementation of quality systems in enterprises and a dominant orientation to a specific market: domestic, regional, European or wider international, from which the analyzed enterprises primarily gain their revenue, are statistically significant dependent characteristics. The fact that 264 of the total number of surveyed enterprises, what is even 48%, are primarily oriented to domestic market and do not take care about quality system adoption at all is really worrying.

The level of implementation of quality systems and the structure of average shares in the total revenue gained by certain types of clients, corporate or retail, are related categories. The enterprises with an implemented ISO quality system have a significantly higher share of corporate clients (average of 77%) as a source of total revenue than the enterprises which are going through consultations about the implementation of quality systems (60%) and other enterprises (60%). In comparison with the remaining two groups of enterprises, those with an implemented ISO quality system are less oriented to retail than others and this difference is statistically significant. The enterprises going through consultations to implement quality systems and companies which do not care about that are not significantly different with regard to retail as a source of revenue.

The most important results of the research presented in this paper suggest that the vast majority of Croatian enterprises did not accept quality culture as a strategy and that they need to make a maximum effort to implement quality management system, ISO or other, as quickly and as efficiently as possible in order to become and stay competitive, or to be able to get into the international market and be strongly positioned there. This of course goes with the precondition of a suitable definition of strategic national goals and with the build-up of their common perception and understanding of the way they are achieved.

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IMPLEMENTIRANOST SUSTAVA KVALITETE I STRUKTURA TRŽIŠTA – ANKETA NA UZORKU HRVATSKIH PODUZEĆA

Sažetak

Članak prikazuje istraživačke nalaze autora temeljene na izvornom anketnom istraživanju provedenom na reprezentativnom uzorku hrvatskih poduzeća koncem 2003. godine. Rezultati vode do sljedećih zaključaka: 1. Ako se tržište podijeli na domaće i izvozno, nešto je veći udio firmi s uvedenim sustavom kvalitete kod izvozno orijentiranih poduzeća (24%) nego kod ovih drugih (17%), iako povezanost izvozne orijentacije s implementiranošću sustava kvalitete nije statistički značajna. Bez obzira na razinu kulture kvalitete, stjecanje prihoda je tek kod prosječno 30% poduzeća došlo prvenstveno od izvoza, s tim da je kod firmi s uvedenim sustavom kvalitete postotak takvih (38%) iznad prosjeka. Međutim, stupanj usvojenosti sustava kvalitete u poduzećima i dominantna orijentiranost na određeno tržište: domaće, regionalno, europsko ili šire internacionalno, od kojeg analizirana poduzeća primarno stječu prihode, su statistički značajno ovisna obilježja. Posebno zabrinjava da blizu polovice istraživanih poduzeća posluje samo na domaćem tržištu i uopće ne mari za sustave kvalitete. 2. Stupanj kulture kvalitete i struktura prosječnih udjela u ukupnom prihodu ostvarenih od pojedinih vrsta klijenata, korporativnih ili maloprodajnih, su povezane kategorije. Poduzeća s uvedenim sustavom kvalitete imaju statistički značajno veći udio korporativnih klijenata kao izvora prihoda nego poduzeća koja primaju konzultacije za uvođenje sustava kvalitete i ostala poduzeća. Firme s uvedenim sustavom kvalitete su manje okrenute maloprodaji nego ostale i ta razlika je statistički značajna. Poduzeća koja primaju konzultacije za uvođenje sustava kvalitete i firme koje za kvalitetu ne mare, međusobno se ne razlikuju statistički značajno glede proporcije prihoda od maloprodaje.

Ključne riječi: sustav kvalitete, međunarodno tržište, χ^2 test, MANOVA, Scheffeov test