The impact of ISO 9001 certification process on Slovenian companies*

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This study aims (i) to investigate the correlation between ISO 9000 quality management system and business success based on data from certified Slovenian companies, (ii) to find out the factors for measuring efficiency of ISO 9000, and (iii) to give suggestions to all involved in the certification process. A questionnaire survey was conducted among all ISO certified companies in Slovenia (more than 600 per September 2000) in order to collect primary data. The basic conclusions, proved by statistical analysis are: (i) the influence of ISO 9000 on business success can not be explained by known benefits as for instance: better management control, improved awareness of procedural problems, improved customer service etc., and (ii) ISO 9000 will influence business success (will be efficient) when it is integrated by the company with general organization, resources management, productivity, profit and innovations, as these factors explain best the influence of ISO 9000 on business efficiency.

Diese Studie befaßt sich (i) mit der Wechselbeziehung zwischen dem ISO 9000 Qualitätsmanagementsystem und dem Betriebserfolg, der auf Daten zugelassener slowenischer Unternehmen basiert, (ii) um die Faktoren zur Meßbarkeit der Effizienz von ISO 9000 zu finden und (iii) um Vorschläge für alle am Zulassungsprozeß Beteiligten herauszuarbeiten. Eine Umfrage wurde unter allen zugelassenen Firmen in Slowenien (mehr als 600 im September 2000) durchgeführt, um Primärdaten zu erhalten. Die grundlegenden Folgerungen, die von statistischen Analysen belegt wurden, waren: (i) Der Einfluß von ISO 9000 auf den Geschäftserfolg kann nicht durch bekannte Leistungen wie bessere Managementkontrolle, verbesserte Sensibilisierung für verfahrensorientierte Probleme, verbessertem Kundenservice etc. erklärt werden; und (ii) ISO 9000 wird den Erfolg (wird effizienter) beeinflußen, wenn es vom Unternehmen in die generelle Organisation, Ressourcenmanagement, Produktivität, Profit und Innovationen integriert wird, da dieseFaktoren am besten den Einfluß von ISO 9000 zeigen.

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1. The reasons for investigation of the ISO 9000 influence on the business success

During the last two decades we have been witnesses to a series of management concepts offering various solutions for business problems in rapidly changing business and social environment conditions such as: Corporate Suggestion Systems, Continuous Business Innovation, Business Process Change, Total Quality Management, Selfregulated Management Teams, Information (Decision) Support Systems, Business Process Reengineering, Business Benchmarking, Project Management, ISO 9000 and Quality Award Models (Ursic et al. 2000).

Although the majority of management concepts proceed from the system aspect of the problem treatment we can state that their theoretical starting-points and the potential results related to them, as a rule, differ from the practical experiences in companies. Therefore the management is in a dilemma as to which concept to use and what they solve in practice. The more rapid the changes are in a business, the more difficult the methodology selection decision is. The lack of business tradition in this area requires analytical assessment of each management concept. At the beginning of the 90-ies ISO 9000 standards released an avalanche of mass interest by Slovene management for contemporary business concepts. A 10-year period allows us to make conclusions on its influence in business practice and international comparability.

Researches that would wholly state the efficiency of the ISO 9000 management concept by Slovene or internationally could not be found. The researches in the first half of the 90-ies have referred to the analyses of typical benefits that companies achieve with the ISO certificate. Later researches were oriented to the analysis of ISO 9000 influences on specific business. An additional reason is also the fact the introduction of the ISO 9000 standards is supported by the Slovene government through the Ministry for Science and Technology, Ministry for Economic Relations and the Ministry for Small Economy and Tourism. When conceiving the research of ISO 9000 on business efficiency we proceeded from the standpoint that the ISO standard can be only an organizational basis and the waymark for introduction of organizational and technological innovations that increase the competitiveness and quality of a product/service and at the same time satisfies all the participants in the company and the wider social community.

2. Previous researches of ISO 9000 influence on business success

Researches on ISO 9000 standards influence on the efficiency of business success that have been published since 1990 have been carried out in various full text data bases: ABI/INFORM Global, Social Science Plus, ProQuestion

Digital Dissertations, OCLC, Electronic Collections Online, EIFL Direc, EMERALD, InterScience, DIALOG: Business Dateline, Wilson Business Abstracts, Gale Group Management Contents, PAIS International, BAMP (Business & Management Practices).

According to available data earlier researches published before 1997 do not treat the influence of ISO 9000 on business efficiency and success. In this period the researches refer to the reasons for the introduction of ISO 9000, the actual influence of ISO 9000 on quality of processes, products or services, the general analysis of the ISO 9000 results and the connection between ISO 9000 and TQM:

1. Vanguard Research 1993 (Gibbon, C. F., 1997) – analysis of 647 certified companies showed the following actual effects of the quality systems in England:

- 15% of companies believe that the expected benefits were achieved;
- 69% of companies confirm the improvement of the efficiency in procedures;
- 25% of companies confirm the decrease of costs;
- 15% of companies confirm the increase of costs.

2. The research in Slovenia 1996 (Topič, 1997) showed that the introduction of the quality system according to ISO 9000 influenced a higher quality of products or services at 44% of investigated companies.

3. Other researches (Barth 1994, Pfeiffer 1996) showed the following typical benefits of introducing the quality systems according to ISO 9000, although they are not equally present in all the companies and all the cases:

- improved quality of products and/or services
- competitive benefit
- smaller number of purchaser's audits
- condition for the existence on a market (condition for entry to open competitions, purchaser's request, promotion value)
- management has a better control (obligatory internal, external audits)
- improved organization (documented processes)
- greater quality awareness by employees
- higher productivity, reduced scrap, enhanced internal communications.

4. Especially the American researches (Barth 1994, Yates 1997) drew attention to the necessity of certifying the companies that want to do business with the European Union.

5. The connection between ISO 9000 and TQM was researched in Turkey (Beshekese, Cebeci 1998) and in Malesia (Idris et al. 1996).

Newer researches (after the year 1997) are more goal oriented. From the data available it proceeds that they were performed in Great Britain (Zaibet, Brendhal 1997), Australia (Brawn 1998), South Africa (Steenkamp 1999), North Ireland (McAdam 1999, M.Y. Ismail 1999), India (Acharya 2000), Turkey (Erdal, Ghosh 1999) and Slovenia (Pivka, Ursic 1999). They analyse:

- the influence of ISO 9000 on small and medium enterprises (SME) (Brawn 1998);
- the influence of ISO 9000 on a special industry, etc. food industry in South Africa (Steenkamp 1999), small and medium enterprises in North Ireland (Mc Adam 1999), processing industry in Ireland (M Y Ismail, M S J Hashmi 1999);
- the influence of ISO 9000 on organizations on a national level in India (Acharya, Ray, Sanjit 2000) and Turkey (Erdal, Ghosh 1997);
- the influence of ISO 9000 on the competitiveness of companies in Slovenia (Pivka, Ursic 1999).

General statements of these researches on ISO 9000 influence on business success of companies, on the reasons for certification, effects of the quality systems etc. are equal to those performed before the year 1997. Typical for the researches after the year 1997 is the following:

1. They state that small and medium enterprises are different in their relation to ISO 9000 than large enterprises (Brawn 1998, Mc Adam 1999, Pivka and Ursic 1999). For a small enterprise the cost of introducing the quality system according to ISO 9000 shall be reimbursed by measurable categories, as follow: keeping the purchaser, higher quality, reduced costs etc.

2. During the first few years after introduction the influence of the ISO 9000 quality system on the company business is greater than four or five years after the certification (M Y Ismail and M S J Hashmi 1999, Pivka and Ursic 1999). This means that the companies pass over to a routine treatment of ISO 9000 (and into stagnation) if new goals are not set, etc. TQM.

3. The formal introduction of the ISO 9000 standard does not guarantee greater efficiency of a company and business success with the increased productivity, quality and satisfaction of all the interested parties (McAdam R. and McKeown M. 1999, Wilson C.R. 1000).

4. ISO 9000 quality system shall be a formal basis for the continuous development of a company in the direction of TQM (Sttenkamp, Rigard 1999).

5. The reviewed researches do not analyse the efficiency of the ISO 9000 quality system. The empirical researches confirm the assumption that only a few companies measure the efficiency of the quality system (Small J.E. 2000).

6. There are also critical aspects of the ISO 9000 quality systems to be found. They originate from the supposition that the documentation of the process does not yet assure a higher quality of products (Ralphs, Stephen 1998). They also pay attention to the fact that the competition for awards for quality is not necessarily connected to the competitiveness of the company (Iaquinto 1999).

7. Gibbon (1999) gives the review of researches (mainly Great Britain, Germany, Sweden, Slovenia) that analyse the influence of ISO 9000 on companies. The research results confirm the supposition that only a few companies measure the efficiency of the ISO 9000 quality system.

3. Research method

During the years 1998 and 1999 a letter survey was performed in all Slovene companies with a valid ISO 9001 or ISO 9002 certificate. A questionnaire was sent to quality managers. We received their names and addresses partly from Slovenian Chamber of Commerce and partly from certification bodies in Slovenia. In 1998 there were over 300 such companies, and in 1999 already more than 500. We received 117 valid responses in the year 1998 (33%) and 216 valid responses (40%) in the year 1999.

As ISO 9000 (1994) only indirectly manifests the request for business success and factors monitoring influencing the quality, the questionnaire was divided into three parts, emphasizing the contents of our understanding of the competitiveness.

In the first part of the questionnaire, quality enablers measurement and the continuous quality improvement program was analysed. In the second part the influence of ISO 9000 on more than 40 enablers of business success was analysed. In the third part the size of companies the year of the certificate acquiring and the certification body was analysed. The questionnaire was tested on a pilot number of companies and all the questions were “closed qualitative questions”. The data from each questionnaire were entered into the LOTUS-NOTES database and from there to EXCEL and SPSS for statistical analysis.

In the continuation we present the most important cognitions on ISO 900 influence on the competitiveness of companies.

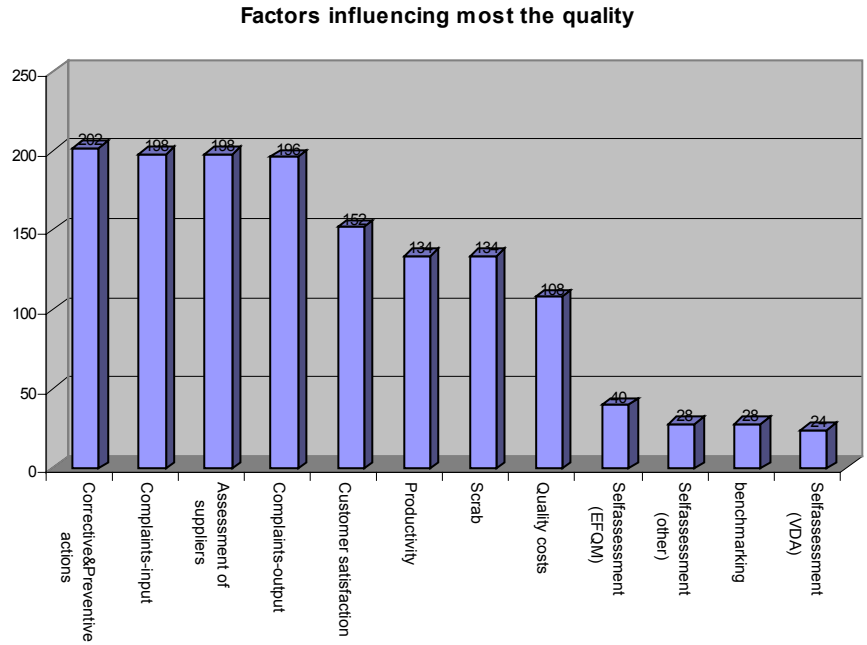
4. Enablers most influencing the quality of products, processes and services

ISO 9000 (1994) indirectly expresses the requirement for the monitoring (measuring, analysing and making provisions) of those enablers and parameters influencing the quality of procedures, products or services and consequently customer satisfaction as well as business results.

The companies were asked if they monitor and analyse such enablers and parameters and if they use them in their business decisions and when had they introduced such monitoring of these parameters. Frequent cases of such enablers (parameters) are: scrap, quality costs, response time, complaints, number of (new, lost) customers, productivity, suppliers' quality, waiting periods, repair time, number of services per x sold units, percentage of returned supplies, percentage of unfulfilled supplies according to the contract, turnover per employee, investigations. The question was:

For which of the stated enablers, influencing the quality of products, processes or services, has your company introduced the system of measuring, analysing and making provisions?

Fig. 1: Factors most influencing the quality



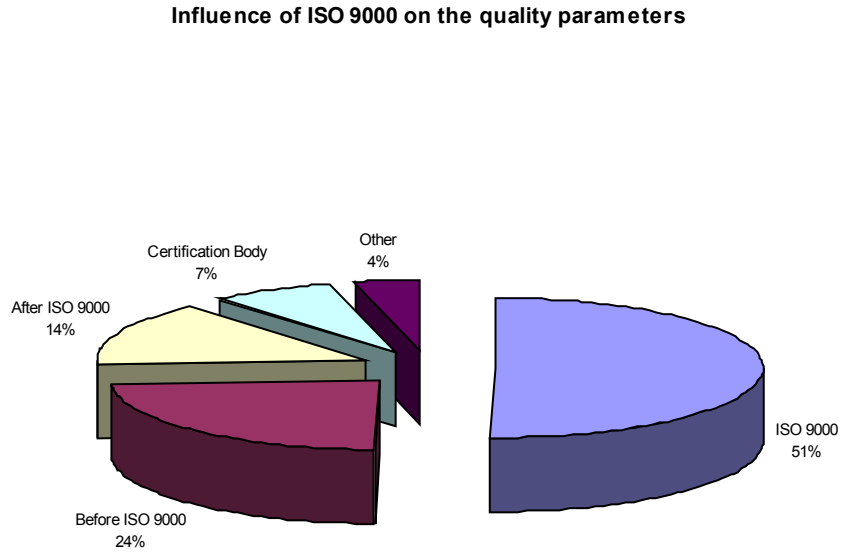
The answers are presented in Fig. 1. Three groups of enablers are evident. In the first one there are corrective and preventive actions, complaints at the output, assessment of suppliers and complaints at the input. *These are typical parameters of quality control*. All these parameters are the direct consequence of the ISO 9000 quality system.

In the second group there are customer satisfaction, productivity, scrap and quality costs. *These are typical parameters of the quality assurance function*.

In the third group there are self-assessment (EFQM, VDA…) and benchmarking. These methods are used by organizations *implementing TQM*.

We were also interested as to what was the influence of the ISO 9000 quality system on the introduction of these parameters. The results are shown in Fig. 2.

Fig. 2: Influence of ISO 9000 on the quality parameters



As is evident, the process of the ISO 9000 quality system introduction has a decisive influence on the search for and the monitoring of enablers influencing the quality of products, processes and/or services. Namely 51% of the companies began to introduce and monitor the quality enablers because of the ISO 9000 quality system. Each fourth company (24%) had implemented monitoring before the implementation of the ISO 9000 quality system.

There are only 14% of such organizations that have introduced quality enablers monitoring after the implementation of the ISO 9000 quality system on their own initiative. The certification bodies have only an indirect role in searching and introducing the enablers monitoring. Only 7% of companies began to monitor the stated enablers on the initiative of the certification body.

5. Continuous quality improvement program

The continuous quality improvement program is a written document defining the goals for quality, conditions and implementation methods. The top management confirms the implementation of this program for the past year and the plan for the next year. Such a program can also be a constituent part of the yearly business plan of a company.

A continuous supplementing of the quality system and thus indirectly also a continuous improvement of products, processes and/or services quality is expressed in all 20 requirements of the ISO 9000 standards, and directly in

Chapter 1, Management review, and Chapter 14, Corrective and Preventive Actions. We were interested if the organizations additionally to compulsory audits (management review and the corrective and preventive actions) introduce and/or perform the program of continuous improvement of their products, processes and/or services. The question was: *"Has your organization already introduced the program of continuous quality improvement of products, processes and/or services (monitoring of quality goals)?"* The organizations could denote one or more answers which best defined the situation in the organization (Table1).

Table 1: Introduction of a continuous quality improvement program

ISO 9000 and Continuous Quality Improvement Program	% of responses
Introduced before ISO 9000	12
Because of ISO 9000	27
On their own initiative after ISO 9000 implementation	11
Certifications body initiative	11
Program in preparation	10
At ISO 9000 implementation and later	12
ISO 9000 model suits	4
Business excellency	7
Others	6

In Slovenia about 12% of the companies had introduced the continuous quality improvement program before the introduction of ISO 9000. Thinking about the continuous quality improvement program – *after the certification* – are organizations, preparing the program (10%), the model ISO 9000 suits them (4%) or they introduce it on their own initiative after acquiring the ISO 9000 certificate (12%). In total 26%.

The certified ISO 9000 quality system had a direct influence on the implementation of the continuous quality improvement program in those organizations that had introduced it because of ISO 9000 (27%) and those having introduced it in the certification process and later (12%). In total 39% of organizations.

6. The definition of the business success

Business success represents in a measurable result the expressed effect of business in terms of relations between the company and its business environment and in terms of relations between individuals and groups within the company. It is about a whole concept of understanding and the implementation of business judgement from the standpoint of company stakeholders.

In the terms of understanding the efficiency of the quality system in the company, we were especially interested in the role of management and other employees in the evaluation of business success. Our research has shown that the management concept ISO 9000 has mostly influenced the transition process of the Slovene companies in the nineties (Ursic et al. 2000). With this concept the Slovene business practice particularly exposes personal, group and organisational advantages in comparison to competition. This orientation on one hand exposes the standpoint of modern management approaches to evaluation of the business results and, on the other it arises from influencing factors of the Slovene business practice.

Our definition of business success is therefore based on three basic areas, which are defined by the answers to the following questions:

1. Why is business success from the view of the management concept ISO 9000 important for the company. The answers to this question were searched for in:

- strategic advantages and deficiencies in the company's business
- manager connection to different significant influential management concepts, that played a significant role in the transition of the Slovene economy
- influence of the results of the management concept ISO 9000 on changes in the business practice in companies involved in the research.

2. What do we understand by the term business efficiency. On the basis of our research about Slovene economy, we based our statements(Ursic, 1996) on:

- development of trends in companies from the standpoint of their competitive business position,
- above all the management understanding of the foundations of the business efficiency
- actual and measurable results of business operations in Slovene companies
- benefits for the company stakeholders, managers, other people employed and the wider social community.

How to choose a criteria which enables argumentable and complete inference about trends in the development of business success from the viewpoint of the

content of the first two questions (Freeman, 1999). We set out a model with more than 20 parameters, in which business success is dealt with from the standpoint:

- strategic concepts and planned action of the company; (Organisation's written strategy, Business plan of the organisation, Monthly plans of organisation units, Customer satisfaction, Suppliers satisfaction, Acquisition of new purchases, Loyalty of existent purchases, Quality of after sales services),
- Organisational changes; (Overall organisation, Efficiency of performing procedures/processes, Productivity, Reduction of operation costs),
- Quality management; (Quality of management, Information resources management, Financial resources management, Material resources management),
- Motivation of employees; (People satisfaction),
- Development orientation business; (Innovations of business processes, Innovations of product and /or services, Quality of products/services) and
- Benefits for owners, managers and other employees; (Business results).

On the basis of such a defined concept of business success in the continuation is shown the results of the research on the influence of the quality system on business success of Slovene companies.

7. Influence of the quality system on the business success

With the next group of questions we wanted to state how ISO 9000 quality system influenced the typical business success parameters. The company on a 7 Point Likert scale assessed each business success parameter:

Likert scale measuring of the ISO 9000 influence:

1. the situation has considerably worsened
2. the situation has worsened
3. the situation has minimally worsened
4. the situation is unchanged
5. the situation has minimally improved
6. the situation has improved
7. the situation has considerably improved

If the company does not monitor and analyse any of these parameters, it could denote one of the following reasons:

- the parameter has not been monitored

- there are no data or they are unreliable
- some data are collected but not analysed
- the parameter is useless for us
- other reasons

The question was:

Assess how the below quoted parameters (enablers) of the business success were influenced by the ISO quality management system in your company. Each of them shall be assessed with 1 to 7 points. If you can not assess the parameter, denote it with one or more reasons.

Unfortunately the organizations did not give reliable responses for reasons why they do not monitor and analyse certain parameters. Therefore we can not give the analysis of reasons for not monitoring and not analysing the parameters. This problem will have to be solved with further investigations.

In Table 2 the assessments of individual parameters of business success are given (Assessment 99) and the percentage of those companies that had not answered the question concerning this parameter (% of Non-responders). For a comparison with the previous year columns with the results from 1998 (Pivka, Ursic 1999) were added. The parameters Productivity, Overall Organization, Business results, Financial resources management and Material resources management consist of several criteria. All together the company assessed more than 40 criteria. From Table 2 it can be seen that:

1. The results from the years 1998 and 1999 are comparable. This confirms the research method.

2. The mean value of all parameters in the year 1998 is 5,35; in the year 1999 it is 5,21. Because of a larger population and a better sample in the year 1999 we are of the opinion that the assessment for the year 1999 is nearer the actual position than the assessment from the year 1998.

3. The following characteristics are outstanding:

- low range between the highest mark (for parameter Efficiency of performing procedures/processes) and the lowest one (for parameters People satisfaction and Financial resources management) shows that the marks are concentrated around average;
- a great number of organizations have not assessed the influence of ISO 9000 on some parameters of competitiveness;
- outstanding are low marks for ISO 9000 influence on innovations and innovativity, people satisfaction and financial resources management.

Table 2: Assessment of business success parameters in the years 1998 and 1999

PARAMETER	Unassessed 1999	Unassessed 1998	Mean 1999	Mean 1998
Efficiency of performing procedures/processes	6%	7%	5.79	5.82
Quality of products – services	2%	4%	5.58	5.65
Customer satisfaction	7%	13%	5.36	5.49
Suppliers satisfaction	17%	23%	4.92	4.96
People satisfaction	33%	23%	4.72	4.84
Productivity	8%	28%	4.98	5.6
Acquisition of new purchasers	7%	13%	5.18	5.34
Organisation's written strategy	7%	14%	5.53	5.55
Business plan of the organisation	7%	12%	5.51	5.48
Monthly plans of org. units	12%	17%	5.34	5.36
Overall organization	10%	48%	5.45	5.62
Quality of management	18%	38%	5.25	5.38
Information resources management	13%	21%	5.29	5.43
Business results	3%	38%	5.29	5.58
Loyalty of existing purchasers	6%	15%	5.24	5.34
Reduction of operation costs	5%	19%	4.99	5.04
Financial resources management	14%	42%	4.61	5.23
Material resources management	4%	37%	5.20	5.43
Quality of after sale services	30%	44%	5.46	5.48
Innovations of business processes	28%	32%	4.86	4.89
Innovations of product and/or services	20%	27%	4.88	4.92

4. We conclude that the influence of the ISO 9000 quality system on the measured parameters of business success in Slovenia is such that the situation has minimally improved in comparison with the situation before acquiring the certification.

8. Factor analysis

The factor analysis is a multitude of mathematically statistical procedures, that make it possible to separate from a greater number of measured variables,

among which a certain connection exists, a smaller number of variables (factors) that can explain the mutual connection among the measured variables.

Table 3: Total variance explained

Factor	Factor Name	% of Variance	Cumulative %
1	Organization and management	12.182	12.182
2	Financial resources management	10.084	22.266
3	Productivity	6.295	28.561
4	Profit	5.343	33.904
5	Customers' loyalty	5.306	39.210
6	Innovations	5.199	44.408
7	Business planning	4.129	48.537
8	Suppliers' satisfaction	4.030	52.567
9	Quality of management	3.836	56.404
10	Business results	3.759	60.163
11	Quality of products/services	3.746	63.910
12	Claims/debts and credits	3.471	67.380
13	Logistics	3.439	70.820
14	Undefined criteria of competitiveness	3.437	74.257
15	Purchase	3.421	77.678
16	Efficiency of procedures/processes	2.890	80.568
17	After sale activities	2.831	83.399
18	Employees' satisfaction	2.669	86.068
19	Quality of suppliers	1.965	88.033

In our case we wanted to use the factor analysis to reduce the great number of measured parameters of ISO 9000 influence on the business success (49 in total!) to a smaller number of independent factors, which would explain well enough the studied phenomenon. From the rotated matrix of factor loading it follows that 88% of the total variance is explained by 19 factors. These are given in Table 3, from which it is evident how individual factors were named and the % of variance they explain. Due to space limitation the Rotated Component Matrix of factor loading is not shown here.

From the factor analysis the following can be concluded:

1. The ISO 9000 influence on the business success can be explained by 16 factors, thereby losing only 20% of the explained variance. With the parameters, as for instance Better management control, Improved awareness of procedural problems, Use of standards as a promotional tool etc., (Gibbon 1997, 1999) by which the organizations explain the benefits acquired by the ISO 9000 registration, the ISO 9000 influence on the success can not be explained. Neither can it be explained by the improvement of procedural efficiency, error rates, customer satisfaction etc., which are contributed by ISO 9000 certification (Gibbon 1999).

2. The influence of ISO 9000 on the business success can not be generalized with the two highest assessed criteria Efficiency of performing procedures/processes and Quality of products/services. Those two criteria explain the studied phenomenon only with 2,9% (factor Nr. 16) and 3,7% (factor Nr. 11).

3. With the ISO 9000 quality system the company can influence the business success in such a way that it is integrated into the general organization, resources management, productivity, profit and innovations (factors explaining best the studied phenomenon).

4. Concerning the business success ISO 9000 directly influences only the following factors: Customer's loyalty, Customer's satisfaction, Quality of products/services and Efficiency of performing the procedures/processes. These factors explain only 16% of the ISO 9000 influence on business success.

5. In Slovenia the traditional management concept prevails. This concept treats ISO 9000 as a technical problem of introducing the project into practice, but it unsatisfactorily considers the function of employees. This confirms the factor Employees' satisfaction (factor 18 in Table 3) that only with 2,669% explains the company competitiveness from the aspect of ISO 9000.

9. Characteristics of companies regarding measured business success factors

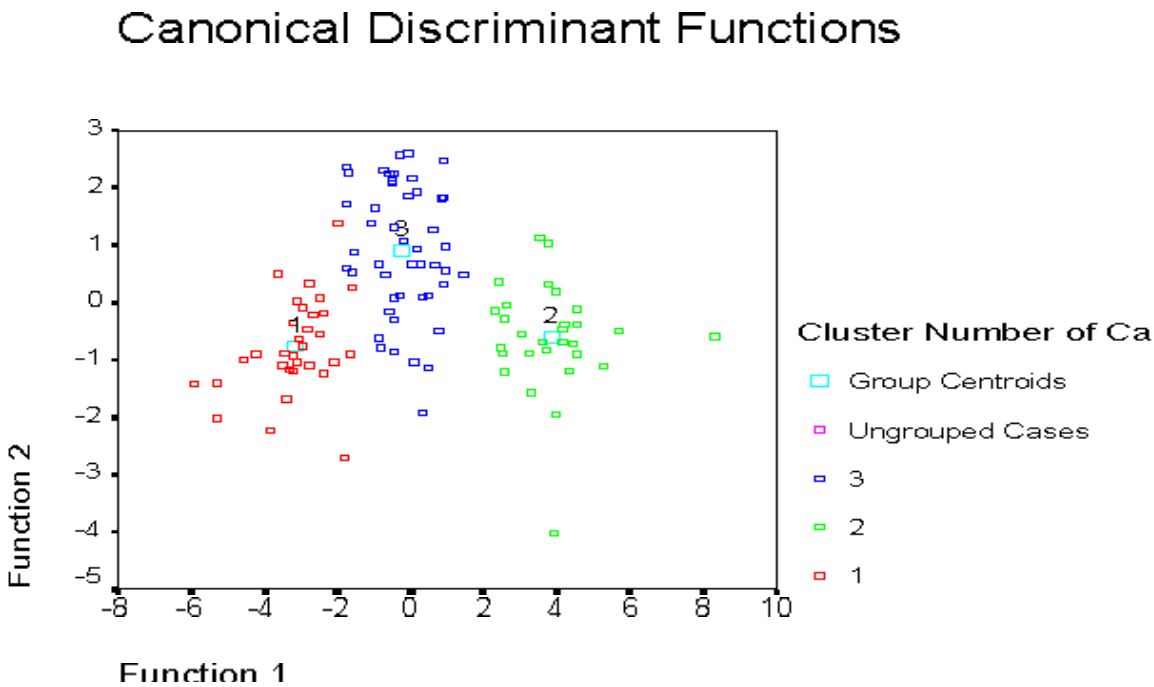
We wanted to investigate the possibility of classifying the observed organizations into homogeneous groups regarding the business success parameters and to investigate which are the success parameters contributing most to the distinction between the groups.

With the cluster analysis the organizations were divided into three groups (clusters), after that the differences among them were analysed with the discriminant analysis (Fig. 3: Canonical Discriminant Functions).

In the first cluster the companies (30% of the sample) are attributing the smallest influence to the measured business success parameters. In the second cluster (27% of the sample) the companies are attributing ISO 9000 the greatest

influence on the measured parameters. In the third cluster (43%) the organizations are being neutral**. The measured parameters explaining best the differences among these clusters are Financial resources management, Business planning, Organization and Innovations.** The differences among the typical mean values among the clusters are greatest for these measured parameters. This is confirmed also by the ANOVA test. The greatest and the smallest differences among the medium values for individual business success parameters are on the same parameters.

Fig.3: Canonical Discriminant Functions



We were also interested as to whether there were any differences among the clusters regarding the number of employees, the year of certification and certification bodies.

Appurtenance to individual cluster regarding the number of employees is shown in Table 4. Number of employees/Cluster number. The majority of the micro organizations belong to the first cluster. The majority of organizations in other Appurtenance to individual cluster regarding the number of employees is shown in Table 4. Number of employees/Cluster number. The majority of the micro organizations belong to the first cluster. The majority of organizations in other categories of employees belong to the third cluster. **Organizations with more than 250 employees are most equally distributed among the clusters.**

The individual cluster regarding the year of certification is shown in the Table 5 Certification year/Cluster number. **The longer the enterprise has the certificate, the lower it assesses the influence of ISO 9000 on the business**

success. This statement is confirmed also by the research on quality management in the Irish processing industry

(M Y Ismail and M S J Hashmi 1999).

Table 4: Number of employees / Cluster Number

Number of employees * Cluster Number of Case Crosstabulation

			Cluster Number of Case			Total
			1	2	3	
Number of employees	<20	Count	12	4	8	24
		% within Number of employees	50,0%	16,7%	33,3%	100,0%
	21 to 50	Count	4	4	12	20
		% within Number of employees	20,0%	20,0%	60,0%	100,0%
	51 to 250	Count	28	28	48	104
		% within Number of employees	26,9%	26,9%	46,2%	100,0%
	>250	Count	18	20	22	60
		% within Number of employees	30,0%	33,3%	36,7%	100,0%
Total		Count	62	56	90	208
		% within Number of employees	29,8%	26,9%	43,3%	100,0%

Table 5: Certification year / Cluster Number

Certification year * Cluster Number of Case Crosstabulation

			Cluster Number of Case			Total
			1	2	3	
Certification year	1996	Count	6	10	22	38
		% within Certification year	15,8%	26,3%	57,9%	100,0%
	1997	Count	8	12	22	42
		% within Certification year	19,0%	28,6%	52,4%	100,0%
	1998	Count	26	10	22	58
		% within Certification year	44,8%	17,2%	37,9%	100,0%
	1999	Count	6		10	16
		% within Certification year	37,5%		62,5%	100,0%
Total		Count	46	32	76	154
		% within Certification year	29,9%	20,8%	49,4%	100,0%

The individual cluster regarding the certification body is shown in Table 6 Certification body/Cluster number. We can see that in Slovenia the certification bodies have approximately the same percentage of organizations in individual clusters. **The certification bodies have no influence on how the organizations assess the influence of ISO 9000 on the measured parameters of business success.**

Table 6: Certification Body / Cluster Number

Certificatin Body* Cluster Number of Case

			Cluster Number of			
			1	2	3	Tota
Certificat orga	SI	Coun	20	16	30	66
		% Certificate	30,3	24,2	45,5	100,0
	TU	Coun	10	12	20	42
		% Certificate	23,8	28,6	47,6	100,0
	BVQ	Coun	32	20	42	94
		% Certificate	34,0	21,3	44,7	100,0
Total		Coun	62	48	92	202
		% Certificate	30,7	23,8	45,5	100,0

10. Conclusions and proposals

Many researches of ISO 9000 influences on organizations confirm the known benefits and traps of the ISO 9000 certification system. This research discovers the following basic cognition:

The influence of ISO 9000 on business success can not be explained only by the mostly cited criteria such as Efficiency of performing procedures/processes, Customer satisfaction, Quality of products/services and Error rates. This complex technological, organizational and management problem is explained (measured and therefore controllable) with factors named in Table 3. Those factors can be generalized as: General organization, Resources management, Customer – Supplier relationships, Business results, Product realization, Quality management System and some others. The efficiency of ISO 9000 can be analysed only indirectly by measuring the influence of ISO 9000 on the organization, innovations, productivity, management of all kinds of resources and business results.

This cognition sets (at least) the following new challenges to all the participants of the ISO 9000 certification system:

A more active role of accreditation bodies on the certification bodies with the emphasis on linking ISO with business success, auditors training and specialization.

The third party auditing, performed by the certification bodies, will have economic value added only if the auditors are trained for assessment of the conformity and efficiency of ISO quality systems. This requires new knowledge and the specialization of auditors. The formal basis for it are the requirements in ISO 9001: 1994, Chapter. 4.1. The management responsibility, and in ISO/DIS 9001: 2000 the requirements in Chapter. 5 Management responsibility, and in 8.4 Analysis of data.

The company management shall be aware of the fact that the ISO 9000 quality system is only an organizational basis and orientation for the introduction of technological innovations. Together with the standard requirements they increase the competitive position and the quality of products and services, and satisfy all the participants in the company and the wider social community. The first party auditing will have to assess not only the conformity with the standard (conformity auditing) but first of all the implementation of business goals. The model "Write what you do, do as you have written, prove it" has a value-added only in organizational technological changes, when the company prepares for certification. After a year or two the maintenance of the certificate becomes routine and the conformity audit has no value-added more.

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