

# CUSTOMER RELATIONSHIP MANAGEMENT SYSTEM IN OCCUPATIONAL SAFETY & HEALTH COMPANIES: RESEARCH ON PRACTICE AND PRELIMINARY DESIGN SOLUTION

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## ABSTRACT

One of the most prominent contemporary trends in formation of companies is the approach to development of a customer-oriented company. In this matter, various versions related to the intensity of this orientation are differentiated. Customer relationship management (CRM) system is a well-known concept, and its practice is being studied and improved in connection to various sectors. Companies providing services of occupational safety and health (OHS) mainly cooperate with a large number of customers and the quality of this cooperation largely affects the occupational safety and health of employees. Therefore, it is of both scientific and wider social interest to study and improve the relationship of these companies with their customers. This paper investigates the practice of applying CRM in Croatian OHS companies. It identifies the existing conditions and suggests possible improvements in the practice of CRM, based on experts' assessments using analytic hierarchy process evaluation. Universal preliminary design was created as a framework concept for the formation of a typical customer-oriented OHS services company. Preliminary design includes a structural view, which provides more details through system diagrams, and an illustration of main cooperation processes of a company with its customer.

## KEY WORDS

customer relationship management, occupational safety and health, design, processes, structure

## CLASSIFICATION

JEL: J28, M14

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## INTRODUCTION

Galbraith defines the process of organizational design as the process of harmonising the mission and goals of a company, resulting in identifying the structure of labour division and coordination of organizational units and employees [1, p. 5]. Organizational design is a process by which structural elements and elements of organizational culture are managed and arranged in order for the organization to successfully control key activities for realizing its goals [2, p. 10]. According to the legacy of strategic schools such as resource-based view, the authors [3] recognize that next to several main opportunities at achieving the competitive advantage, there is also market-focused resource integration, where market-facing units borrow resources from functional and product units to organize around market segments and customers. The latest approach in organizational design examines customer centric organizations [4]. An important element, especially in the sphere of organizational processes in customer oriented organizations is the customer-relationship management. Implementation of CRM demands systematic approach and represents a matter of organizational design. According to [5], CRM requires a complex, cross-functional integration of people, processes, operations, and marketing capabilities that is enabled through technology and applications.

Growth of service sector in economy has led to the fact that service firms with intensive customer contacts require specific adjustments in organizational design [6]. Therefore, the term “customer-induced uncertainty”. When (customer) uncertainty is high then organizations must process new information and find creative responses. In this process, design is important and organization structures with more decentralization and less formalization are more capable of processing new information.

Health and Safety Executive’s analysis is concentrated on five organizational functions which are relevant for effective system of safety management. These are: politics (its development and implementation); organization (development of organization for maintaining effective communication and promotion of joint culture which supports health and safety); planning (in order to reduce the risks and set standards); measuring of results; revision and review of execution (all aspects of organizational safety system are the subject of revision which provides feedback) [7, p. 153]. Occupational safety and health as a component of integral safety, demands a whole set of measures which must be implemented by business systems for the purpose of protecting their employees, and occupational safety & health services companies (OHS companies) hold a key role in the implementation process of these measures. Therefore, OHS companies, under the Occupational Safety Act can be authorized for [8]:

- drafting of risk assessment,
- testing of machines and devices with high risk rates;
- testing of working environment (microclimatic factors within the scope of physical and chemical damaging effects – noise, vibrations, air flow velocity, temperature, lighting, moisture, chemical damaging effects etc.),
- training for safe work, and
- issuing certificates on implemented testing and qualification training.

As OHS companies serve a large number of business systems in the Republic of Croatia, increase in the implementation level and application of CRM system in OHS companies would result in increase in the quality of their service, thus bringing better job safety in the whole of Croatia.

Various aspects of practice related to occupational safety and health have been researched in the world through the years, e.g. [9-11]. Awarding of employees for their safe conduct was researched by Lauver and Lester [12, p. 169]. Anttonen et al. [13, p. 259] dealt with the impact of working in cold environment and methods of occupational safety and health in cold conditions. Grama analysed the demands regarding occupational safety and health by associating good practice with the reduction of human suffering, employers' losses and promotion of total organizational efficiency [14, p. 73]. However, when it comes to OHS companies, the subject of implementation of CRM has not been extensively studied, as well as functioning of CRM in practice and organizational design with CRM system. *The first main goal of this paper is gaining insight into the CRM-practise in Croatian OHS companies.*

## **CUSTOMER-ORIENTED ORGANIZATIONS**

Many organizations have spent the last twenty years in an attempt to approach the customers by using the buyer-segment methods, "focus group" and by measuring the customer's satisfaction. However, simply placing the buyer in the limelight of the organization does not make the organization customer-oriented. It is required that the organization undergoes reorganization and that it is literally organized around its customers [4, p. 14].

Well-known "Star model" [15] provides the option to form basic guidelines of organizational design. Primary guidelines arise from strategy which is related to mission and vision, and needs and desires in design process are harmonized through related elements: capabilities, structure, processes, people, and rewards. If an organization oriented towards customers/buyers is being organized, then the stated elements acquire the necessary special meanings.

## **STRUCTURAL AND PROCESS DESIGN**

Organizational structure is the system of relationships among people established for the purpose of executing specific tasks. Each organization and company has its own structure and individual authors favour "anatomy of organization" instead of structure. Structure is a dynamic element of company's organization, which forms the unity of all parts of company and integrates the use of all organizational resources [16, p. 215]. According to [17, p. 2], organizational structure should be realized as "...the sum total of the ways in which its labour is divided into distinct tasks and then its coordination is achieved among these tasks". Basic division of organizational forms, or structures, distinguishes at least two classes, mechanistic and organic [18]. This formulation makes a distinction between management practice, decision-making and formalization. While in organic structures, decision-making is decentralized, communication is less formal, hierarchical development is weak, the opposite mechanistic structures are more rigid, with vertical communication and a large number of strict rules [19, pp. 148-149]. Present types of structures are: simple structures, functional, divisional, project, matrix and other. Considering the fact which bears statistical importance, that most OHS companies in the Republic of Croatia are companies with mostly 10 to 20 employees and that their activities are mostly defined and described through legal regulations, it is evident that they all bear the characteristics of forming *simple or reduced functional* organizational structure.

In the process of organizational design, Buble [20, p. 6-7] stresses three basic approaches: *exact formalized approach*, *approach through combining the economic theory and organizational principles and systems approach* which strives to determine and resolve main issues of organizational design through systems analysis. Regarding the design process, some authors promote a set of cascading organizational design tasks and step-by-step process for each task [21, p. 10]. Methods of redesign according to The Center for Organizational Design<sup>1</sup>

include the stages of determining the course, participating and redesign, introduction and evaluation. According to [20, p. 23], four stages of organizational design procedures can be differentiated: *initiating of design procedures, organizational research, organizational design and application of project.*

Our research is focused on the entire sector of OHS companies and the implementation of CRM within them. This enables an insight into the existing condition which represents the starting point of organizational changes. Drafting the project of organization represents probably the most important stage of design, and includes the development of organizational solution through *preliminary design and detailed design.* Preliminary design, which lacks in detail, defines the concept of acceptable organizational solution within the context of design [20, pp. 122-123]. *Drafting of general preliminary design for OHS companies with CRM system represent our second main goal in this paper.*

While designing a production-oriented organization, in comparison with customer-centric company in the *domain of structure*, related to organizational concept, there comes to a switch of special orientation to: customer segments, customer teams, customer profit and loss [15, p. 31]. Of course, for larger companies, this type of modification will be more complicated and demanding.

Business processes are included among the key elements of organizational design. There is a well-known definition [22] of business process as a structured, measured set of activities designed to produce a specific output for a particular customer or market. A process is a specific ordering of work activities across time and space, with defined a beginning and an end, and also clearly defined inputs and outputs. Process is a chain of activities which turns different inputs into different outputs. Process is a construct or a skill for organization of work activities so that they can be executed efficiently and effectively, that they provide potential for competitive advantage, that they can be effectively managed [23, pp. 4-5]. Proper business process management ensures a preview of a complete process, identifies the owners, follows the process on every level until its completion, continually optimizes arranged resources, generates reports and controls and improves different parameters which are used for measuring the process efficiency. Process management implies harmonising of sub-processes, automation of activities, resource optimisation and defining and control of final output.

Business processes can be subjected to the activities of managing, improving, design, modelling and reengineering [24]. Processes change with the purpose of creating a more efficient organization, and what drives companies even more towards better arrangement and management of business processes is greater orientation towards customers. Business process management includes testing of validity of existing work practice (AS-IS image) and justification of potential changes (TO-BE image). Process improvement implies setting of business processes for the purpose of greater efficiency. This is often achieved through: determining the manner the process is currently being realized, understanding how others do it, judging the opportunity for changes including more efficient use of information technologies [25, 26]. Automation of processes is a frequent intervention, not too radical, and includes the use of computer and software as a means of assistance to employees or as their replacement for performing the business process [24]. Design or redesign of process implies large interventions which are undertaken in order to significantly improve the existing process or to create a new business process.

If we were to analyse the transformation of a product-centric company into a customer-centric company, then *the most important process*, which used to be new product development, now becomes customer relationship management and solutions development [15, p. 31]. It should

be noted that solutions options relate to customer's inclination to buy complete solutions from their companies (packages, solutions) instead of fragmented products or service.

## **DESIGN OF CUSTOMER-ORIENTED ORGANIZATION – CRM SYSTEM**

Considering the aforementioned, that CRM system represents the main issue for customer-centric companies; below we present the characteristics of structure and processes in an organization with CRM system. Introducing CRM system in considerable number of cases has a positive effect on business results, as the researches [27, 28] have shown. There is a series of accepted definitions of CRM, and one of the most meaningful was provided by Swift [29] who says that CRM includes efforts of the entire company which are directed towards a better understanding of customer's behaviours and acquiring opportunities to influence such behaviour through various forms of meaningful communication; with the purpose of constant improvement of possibility to attract new customers and keeping the old ones, and rising the level of their loyalty and usefulness.

CRM should be integrated into every activity of the company, therefore a simple product and/or service is not enough to satisfy the needs of a customer; relationship of staff with customers is also important, as well as well-dosed and unobtrusive marketing, post-sales activities within the scope of servicing, and other activities which include the interaction of customer with the person providing products and/or services. According to relevant analysts, CRM could be classified into several types [30, p. 24], or, to put it plainly, CRM consists of three components. These three components of CRM support each other and the success of the entire system demands their proper integration:

- 1) operational CRM-client database,
- 2) collaborative CRM-contact centre, i.e. customer service, web pages designed for customer interaction, communication with clients via available media (e-mail, SMS, telephone, fax, mail, physical contact etc.),
- 3) analytical CRM-expert in CRM in terms of an employee with required knowledge, and various available CRM systems and applicative solutions.

Depending on the concept of understanding CRM, if we observe the problem from tactical perspective, which presents a more narrow point of view, then CRM is primarily about the implementation of a specific technology solution project [30, p. 19]. CRM systems in practice most often include purchase of software and hardware which will enable the company to save important information about certain customers. By studying the past purchases, demography and psychology of a customer, the company gets to know the customer's preferences. In this way, the company can also send specific offers only to those customers with expected high interest for purchase, which brings savings. By using the data carefully, the company can improve attracting the attention of new customers, cross-selling and up-selling [31, p. 35].

We would like to point out existence of globally accepted CRM solutions, such as SAP CRM with its functions<sup>2</sup>, Oracle CRM on Demand which consists of several separate units<sup>3</sup> and Microsoft CRM Dynamics programme solution<sup>4</sup>. MCRM as expanded CRM is the latest innovation in the technological domain with the possibility to use mobile media (cell phone, PDA etc), which encourages the user to establish a dialogue with the company via mobile media [32, p. 236]. This personalized communication strengthens the relationship between the company and customers and shows that personalisation plays an important role in raising the quality of customer relations [33, p. 518].

Successful implementation and functioning of CRM has been widely researched in the world, e.g. [34-36]. Payne's research [5, 30] is significant as it reached results about relatively low success of CRM projects. CRM concept is often misunderstood in the minds of certain

managers as an IT addition to business and there is often a lack of active involvement of top managers in the implementation of CRM concept. CRM must be observed primarily as the philosophy of business where other two components of CRM – strategy of business and technological (information) tool-supplement each other.

## **CRM SYSTEM AND SERVICES OF OCCUPATIONAL SAFETY & HEALTH**

Among scientific works from Croatia and surrounding countries dealing with the issue of introducing and/or use of CRM concept in various activities aside the occupational safety and health, we would like to point out [37-39]. Mance I. and E. analysed and processed CRM approach in business activities of integral safety in [15], i.e. activities of OHS companies in Republic of Croatia. After the research, the authors concluded that there were no important signs of CRM approach in the activities of stated companies, although almost all surveyed directors considered that customer relationship management was significant for their business.

### **COMPONENTS OF CRM IN OHS COMPANIES**

In order for the company to realise the CRM system, appropriate *database* must be integrated into the structure and processes. All relevant data which are collected about customers must be integrated into the database, as well as every activity, satisfaction survey, business activity and other client communication on all levels. It is important to collect information on transaction history of every customer. Benefits from collecting the demographic and similar information can be great. For business customers of OHS companies, information regarding jobs, job descriptions, working relations etc. is what is important. Data describing activities can be included, also interests and opinions (activities, interests, and opinions – AIO) of individual customers and the manner how they reach decisions and influence the opinion of others [31, p. 43].

*Telephone/fax communication* is a part of the system that is not necessary to be modified in more detail through CRM implementation, as well as *E-mail communication*. Changes emerge here related to the process arrangement. *CRM internet page*, while respecting the typical size of OHS companies and financial impossibility of certain larger interventions, is identified as an important element of CRM which is desirable to be implemented. Web hosting implies a minor annual expense, and web design itself does not cost much. Unfortunately, in our paper, we have determined that more than 20 % of surveyed OHS companies do not own a web site.

*CRM expert* implies a person with CRM experience and appropriate analytical capabilities. He/she represents the most expensive element in the modelling of CRM system for OHS companies. Although CRM systems available on the market offer a high degree of analytics and data processing, on the other hand, they cannot replace an expert, a person with his/her cognitive capabilities. *Contact person* who might replace a contact centre considering the amount of requests and business activities performed by OHS companies is certainly desirable within the CRM system. He/she would be in charge of various forms of input and output communication with clients.

### **ORGANIZATION OF OCCUPATIONAL SAFETY AND HEALTH IN THE REPUBLIC OF CROATIA**

Occupational safety and health is a collection of technical, medical, legal, psychological, pedagogical and other activities which help to discover and remove the risks which are jeopardizing lives and health of persons at work and which determine measures, procedures and rules to reduce or remove those risks. Purpose of occupational safety and health is to create safe working environment in order to prevent work-related injuries, professional

illnesses and accidents at work [40, p. 8]. Occupational Safety Act [8], as the basic legal document on organization, application and implementation of occupational safety and health, defines all relationships and contents from this domain to the extent that employer in every type of business knows what and how to act in order to perform his activities in a safe manner. Occupational safety is a constituent part of work organization and work process, and it is realized through performing of occupational safety and health services and by applying prescribed, contractual as well as recognized rules of occupational safety and health and measures and instructions stipulated by employers [8].

Departments which are usually formed within OHS companies, out of the need for successful performance of previously stated activities and tasks are: Testing Department, Education Department, and Department for Document Drafting. *Testing Department* performs the necessary testing of machines and devices of high risk regarding the occupational safety and health and testing of stable fire alarm and fire fighting systems regarding fire protection, except for the fire-extinguishers. Testing, maintenance, choice and servicing of fire-extinguishing devices are stipulated by Ordinance on Maintenance and Choice of Fire-extinguishing Devices [41]. These activities can only be performed by an authorized legal person, fire-extinguisher service technician, thus making this not a part of OHS companies' activities.

*Educational Department* conducts all legally prescribed education and training in the domain of occupational safety and health and fire protection. Education is divided into the domain of occupational safety and health - safe working activities, and the domain of fire protection - basic fire protection and professional education. *Department for Document Drafting* is in charge of development and storage of data and managing records on all activities of testing and training. Managing of such records is stipulated by law; qualified personnel must be issued with a certificate of qualification, and upon performed testing, it is necessary to draft and register the records and certificate on testing (certificate is issued with records only if a machine and/or device complies with all legal requirements of validity in the domain of occupational safety and health and/or fire protection).

There are few company reports as well as published research regarding the CRM practice in the domain of occupational safety and health services. One of rare exceptions is [42, p. 68] describing customer-centric services customized for individual customer's needs. Further on, we present a view of our research where, through a collection of survey questions, use, i.e. implementation of specific important elements of CRM system has been identified in OHS companies in the Republic of Croatia. Also, through a team of experts, specific components of CRM have been assigned with special meanings based on their judgements. Method *Analytic Hierarchy Process* (AHP) was used for that purpose.

## **EMPIRICAL RESEARCH**

Research has been conducted on group of 18 companies providing occupational safety and health services in the Republic of Croatia, out of total of 82 existing ones [43]. These are small companies of which only 6 % has more than 40 employees. This circumstance is also important because it is generally evident that CRM adoption rate depends on organizational characteristics such as firm size, organizational strategy, information system, product category [44].

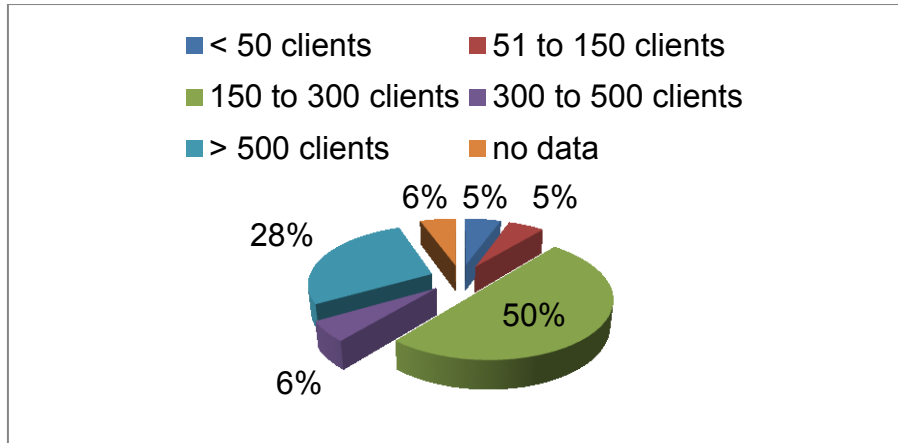


Figure 1. Number of clients per year for OHS companies.

### RESEARCH OF PRACTICE OF CRM USAGE

Figure 1 shows the evidence that companies mainly work with large number of customers, which sets the imperative of good communication and information flow, and considering that OHS companies do business with customers from different industries, company sizes etc., it is important to develop an original preliminary design containing CRM system.

Table 1. Use of CRM elements in OHS companies.

OHS companies	Elements of CRM arranged in groups ( $Q_i$ )															Attendance %	
	CRM expert			Cust. Database	CRM Internet		Contact center		CRM e-mail		Phone/Fax		After-sales		Marketing		
	CRM application $Q_2$ Vr 1	Data analysis $Q_4$ Vr 2	Employee for key customers $Q_6$ Vr 3		$Q_7$ Vr 5	$Q_8$ Vr 6	$Q_{10}$ Vr 7	$Q_{11}$ Vr 8	$Q_{12}$ Vr 9	$Q_{13}$ V 10	$Q_{14}$ V 11	$Q_{15}$ V 12	$Q_{17}$ V 13	$Q_{18}$ V 14	$Q_{19}$ V 15		
1.	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	79,2	
2.	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	77,1	
3.	Y	N	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	N	N	58,3	
4.	N	N	N	Y	Y	N	N	Y	Y	N	Y	Y	Y	N	N	56,3	
5.	Y	N	N	N	N	N	N	Y	Y	N	Y	Y	Y	Y	N	47,9	
6.	Y	Y	N	Y	N	N	N	N	Y	N	Y	Y	N	N	N	39,6	
7.	Y	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	N	77,1	
8.	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N	N	31,3	
9.	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	83,3	
10.	N	N	N	Y	Y	N	N	N	Y	N	Y	Y	Y	N	Y	56,3	
11.	N	N	N	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	N	56,3	
12.	N	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	N	64,6	
13.	N	N	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	N	62,5	
14.	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	N	68,8	
15.	Y	N	Y	N	Y	N	N	N	Y	N	Y	Y	N	Y	N	39,6	
16.	N	Y	N	N	Y	N	N	Y	Y	N	N	Y	Y	N	N	41,7	
17.	Y	Y	N	Y	Y	N	N	N	Y	N	Y	Y	Y	Y	N	64,6	
18.	N	N	N	Y	Y	N	N	N	Y	Y	N	N	N	Y	Y	43,8	
$f(Q)$	7	8	7	13	13	2	2	9	18	7	16	17	15	7	4		



From the collection of 19 survey questions, used primarily for the purpose of determining the existence of certain important elements ( $E_i$ ) of CRM in 18 companies, 15 questions ( $Q_i$ ) was isolated and structured into categories (Table 1). The last column (“attendance”) shows the estimated percentage of use of all presented complex CRM elements for a specific company, where for a CRM expert element, a mean value was provided.

## DETERMINATION OF DESIRED PRACTICE OF CRM USAGE

In order to determine the specific *desired practice* of CRM in OHC companies, we have approached the evaluation of importance of certain main elements which have previously been listed and highlighted in Table 1. For this purpose, we have used the method Analytic Hierarchy Process (AHP) with participation of three experts. Although the methods of multi-criteria decision-making are subjective to a certain degree [45, 46], for a larger number of *organizational methods* like “complex-analytical method” and “method of process functions” [20], experts’ judgement is what is suggested regarding the necessary or desired organization practice determination.

With the help of *Expert Choice*11® tool, comparison was conducted by team of experts<sup>5</sup>, in such a way that every expert entered individual evaluation of importance of elements, by cross-comparing them individually to the extent of how much a specific element is more important in comparison to the other on a scale from 1 to 9.

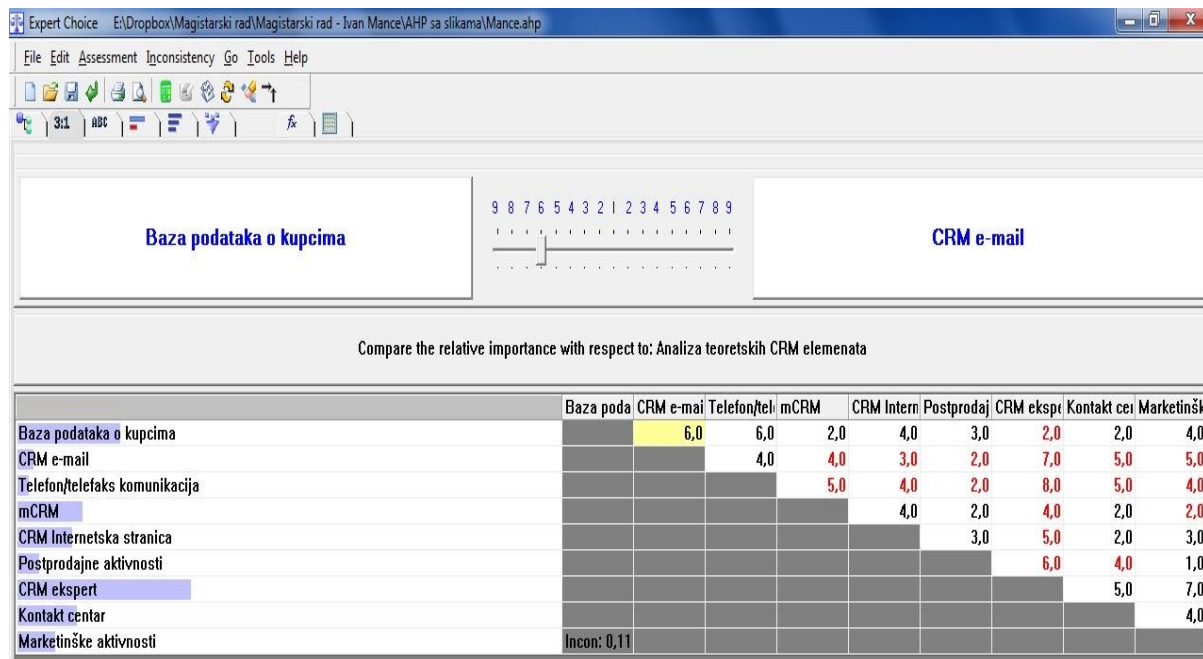


Figure 2. AHP comparison of elements – Expert 1.

Synthesis of individual evaluations of all participants was executed by calculating geometric mean having in mind the presumption used to prove the justification for the use of geometric mean [47]. Obtained values after the AHP procedure are shown in Table 2.

This research was formulated and executed in a manner to present the basis for determining the structure related to CRM system and average existing condition of the processes in companies dealing in occupational safety and health services (AS-IS) and the desired future condition (TO-BE).

**Table 2.** CRM elements priorities – evaluation of experts.

Elements	Geometric mean
Customer Database	0,110
CRM e-mail	0,030
Phone/Fax communication	0,061
mCRM	0,062
CRM website	0,119
After-sales activities	0,123
CRM expert	0,177
Contact center	0,139
Marketing activities	0,075

## RESULTS AND DISCUSSION

Research results shall provide an overview of CRM usage and directions of change of organizational design. This enabled drafting preliminary design for the structure and process for a typical Croatian OHS company which desires to implement CRM system.

### DETERMINATION OF THE USAGE OF CRM AND THE NECESSARY CHANGES

Table 1 shows that in the business of OHS companies in Croatia, client relationship management is usually not systematically arranged and it is practised only partially in best case scenarios. Looking at the representation of main elements of CRM, we can determine that the average situation of implementation  $CRM_{el-impl} = 58\%$  with standard deviation of 15%. Processed random sample of OHS companies is 22 % of the size of the basic group, therefore, it can be said that the stated result is indicative for OHS sector in Croatia.

In the following analytical step, we have assigned value 1 in case when element CRM is present ( $Y$ ), and value 0 if the company is lacking this element ( $N$ ) (Table 1). By pair-wise correlation method among the answers to 15 questions ( $Q_i \rightarrow V_j$ , Table 1) with the level  $p < 0,05$ , we find *statistically significant correlations between the  $V_6$  and  $V_{15}$  ( $r = 0,66$ ),  $V_{11}$  and  $V_{12}$  ( $r = 0,69$ ) as well as between  $V_{12}$  and  $V_{13}$  ( $r = 0,54$ )*. Neglecting trivial relationships, we should stress a significant connection of answers to questions ( $r = 0,66$ ):

- ( $V_6$ ) Is the web site structured in a way that complies with the CRM criteria?
- ( $V_{15}$ ) Do you advertise your services in electronic media?

Results of expert AHP evaluation represent the starting point for guidelines of (re)design of OHS companies regarding the CRM. Table 3 was formed on grounds of practice researches (Table 1,  $Q_i \sim E_i$ ) and by use of results of expert AHP evaluation of priorities of CRM elements  $E_i$  (Table 2). For every  $E_i$  it has been determined the extent to which it deviates (in percentage), according to the average presence of elements in practise (arithmetic mean  $Av = 0,54$ ; Practise  $f(E)$ ; Table 1). Likewise there is deviates of  $E_i$  to some extent, from the arithmetic mean obtained by AHP evaluation of importance of elements ( $Av = 0,10$ ; Required  $E_i$ ; Table 2). The difference between the need for certain CRM element and its presence in the practice is provided in the row “Difference”. The procedure used to determine the differences,  $D_i$ , is given by the following formula:

$$D_i = [(RE_i - Av(RE))/Av(RE) - (PE_i - Av(PE))/Av(PE)] \cdot 100 \quad (1)$$

**Table 3.** CRM elements – the desired practice in comparison with the existing one.

	$E_4$	$E_6$	$E_3$	$E_8$	$E_{10}$	$E_{11}$	$E_{12}$	$E_{13}$	$E_{14}$	$E_{15}$	$E_{17}$	$E_{18}$	$E_{19}$	Av
<b>Practice, <math>f(E_i)</math></b>	8	7	13	2	2	9	18	7	16	17	15	7	4	
<b>Pract., %; <math>PE_i</math></b>	0,44	0,39	0,72	0,11	0,11	0,50	1,00	0,39	0,89	0,94	0,83	0,39	0,22	<b>0,54</b>
<b>Required, <math>RE_i</math></b>	0,18	0,18	0,11	0,12	0,14	0,14	0,03	0,03	0,06	0,06	0,12	0,08	0,08	<b>0,10</b>
<b>Difference, <math>D_i</math></b>	<b>95</b>	<b>105</b>	<b>-24</b>	<b>98</b>	<b>118</b>	<b>46</b>	<b>-155</b>	<b>-42</b>	<b>-104</b>	<b>-114</b>	<b>-31</b>	<b>3</b>	<b>34</b>	

Great positive difference of the desired practice in comparison with the existing one, points to *the need of more frequent implementation* of related CRM elements. This is especially true for questions (elements)  $Q_4$ ,  $Q_6$ ,  $Q_8$ , and  $Q_{10}$ .

Therefore, certain efforts in Croatian OHS companies should be focused towards improving of the existing conditions regarding the following subject matters:

- ( $Q_4$ ) Do you analyse the collected data about your customers for the purpose of creating the customer profile and forming behaviour patterns towards individual customer?
- ( $Q_6$ ) Does your company employ someone in charge of key accounts (Employee for Key Customers)?
- ( $Q_8$ ) Is your company web page structured in a way which complies with the CRM criteria (surveys, multilingualism, on-line ordering etc.)?
- ( $Q_{10}$ ) Does your company provide contact centre services?

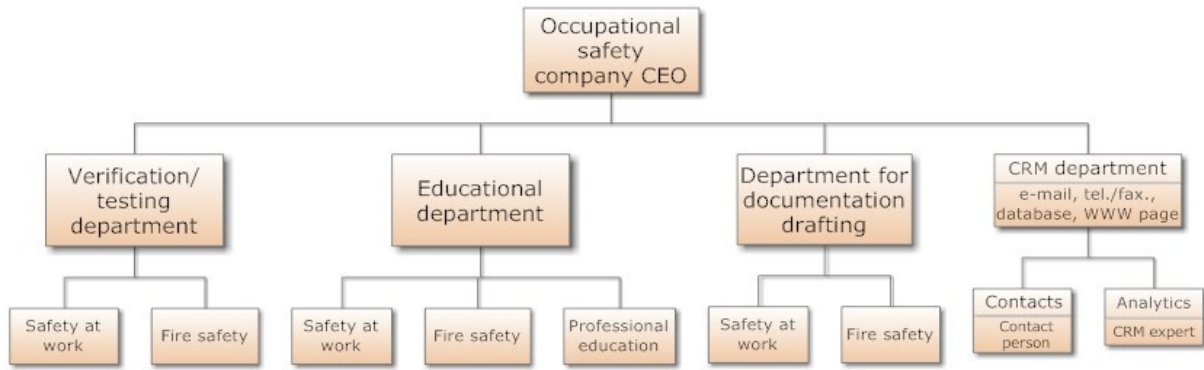
Research results provide directions of change of organizational design for a typical Croatian OHS company which desires to implement or improve CRM system. The results also enable drafting general preliminary design for these companies.

### PRELIMINARY DESIGN PROPOSAL FOR OHS COMPANIES WITH CRM

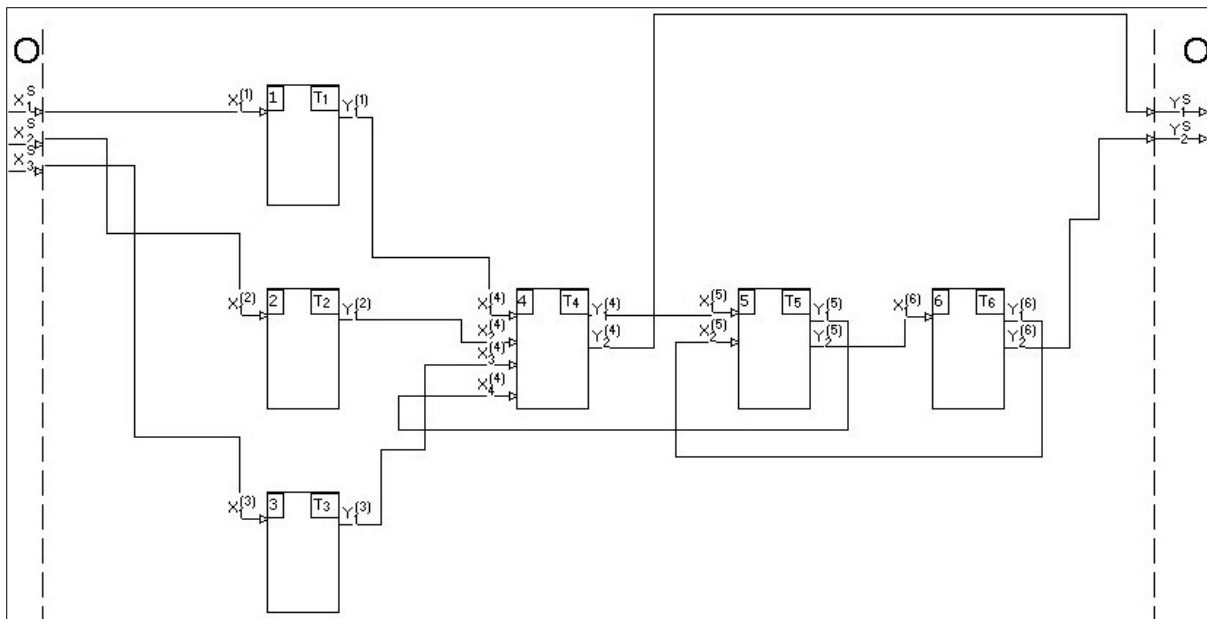
Related to the design of organizations with CRM system, among few works, we would like to emphasise [48], where UML representation of the CRM implementation process was provided. The author identifies and analyses the main advantages of the UML for Business Modelling, for CRM implementation in online retailing companies. A similar paper with useful insights is [49] as well.

Simple acceptable *organigram* for smaller companies providing occupational safety services which are customer-oriented is shown in Figure 3. Certain additional departments for performing some of the classic business functions are possible, and while observing the larger companies in this segment, which are less than 5 % in Croatia, new departments would be necessary in the structure. Testing department and educational department in the CRM structure, hand over the communication with clients to the newly formed department. Department for document drafting transfers all the data on drafted documents as well as other data on clients to the newly formed department. CRM department is divided into the activities of Contacts and Analytics.

Many years ago was found that general system theory is capable of giving exact definitions for concepts like organization, by putting them to quantitative analysis [50]. By using the systems approach in representation and modelling, we will elaborate the preliminary design of the subsystem CRM in an OHS company. Organizational system (S) consisting of sub-systems and elements has its own mission or function (F). System has its own structure (R) with elements (E) that are intertwined and have influence on system behaviour [37, 51]. Basic system diagram (BSD) or block-diagram shall be used to represent the system structures, the information flow and other relevant system characteristics. We consider here the diagram of CRM subsystem (Figure 4).



**Figure 3.** Organization chart: preview of structure of a smaller OHS company with implemented CRM.



**Figure 4.** Basic system diagram of CRM subsystem (made by SW-tool “Dijagrami sustava”).

Information from the environment enter as  $X_1^S$ ,  $X_2^S$  and  $X_3^S$  into element 1 which implies e-mail communication, element 2 which implies telephone/ fax communication and element 3 which implies communication via CRM internet page. All forms of CRM communication with client appear as  $Y_1^{(1)}$ ,  $Y_2^{(1)}$  and  $Y_3^{(1)}$  to the element 4 or contact person. The contact person enters the data in the form of  $Y_1^{(4)}$  into the database (element 5) and forwards the tasks into the environment (to the testing and/or education subsystems) as  $Y_1^{(S)}$ . Data from database is analysed by CRM expert (element 6) and he/she enters this analysis into the base itself, in order for the contact person to be able to see and use the analysed and processed data. CRM expert forwards the information on client status into the environment as  $Y_2^{(S)}$  and to the OHS company director.

*Flowchart* of processes for the entire company with included and modelled CRM system is shown in Figure 5. Relevant elements of CRM are integrated into the structure, and are coloured yellow. Client’s request comes in and is forwarded to the contact person, who enters the data into the database. CRM expert analyses the data as required, and the data return in the form of CRM structured data to the contact person who forwards them to Testing Department or Education Department. Testing is divided into the Occupational Safety and Health and Fire Protection, and education into Occupational Safety and Health, Fire Protection and Professional Training. The Process is further consistent with Figure 5.

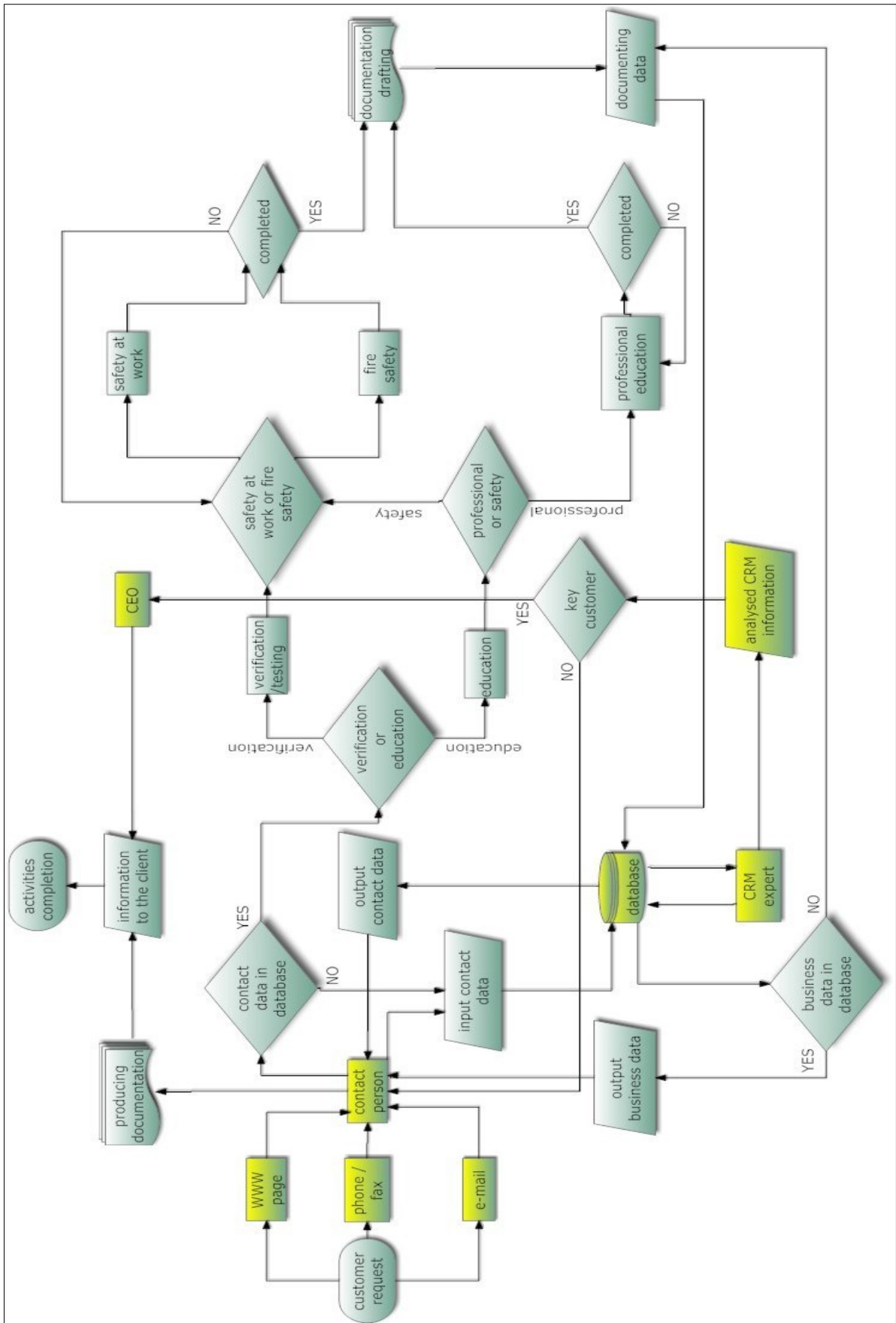


Figure 5. Flowchart of processes in OHS companies with CRM system.

CRM expert forwards the prepared data, suggestions, proposals and necessary CRM activities to the director of OHS company, if they concern the key account, and the director is then able to properly react regarding the demands and/or satisfaction of certain key account. The director of the OHS company in this model also stimulates the person in charge of key accounts. If there is no key account involved, the CRM expert in the analytical part of CRM forwards the information to the contact person, who communicates with client in the end. This model ensures that CRM expert while working with the database is involved in every course of the process and every business activity, by processing the information arriving from the customer and collecting the data about the customer. This improves the quality of communication with numerous clients. At the same time, OHS company gets insight into the activities which are underway and acquires professional opinion of CRM expert on the necessary activities with certain clients and/or group of clients.

Universal concept design in the creation of a smaller Occupational Safety and Health Services Company with CRM usage is presented in Figures 3-5. They represent the overall structure and main process solution. General preliminary design can be broken down in the form of detailed design for specific cases. According to [52] once the organizational framework, customer strategy and customer satisfaction assessment have been defined, the next step is similar to a reengineering project. It involves redesigning the business processes of the customer-oriented company (marketing, sales and after-sales) to achieve the objectives that have been previously defined and to improve customer satisfaction and loyalty.

## CONCLUSIONS

Business activities of OHS companies are under special imperative of social responsibility. Practice of communicating and interaction of these companies with their clients, numerous organizations of various profiles and size, should contain certain level of standard regarding frequency of interactions, education, adjustment towards clients and influence on customers. Conducted research established the existing practice and limitations in applying the principles of orientation towards customers in Croatian OHS companies. It is established that certain important elements of CRM are not sufficiently present in practice and CRM is implemented only partially (Table 3; CRM expert, CRM web page, contact centre services). The obtained results provide guidelines for the redesign of OHS companies.

General preliminary design was created for smaller OHS companies with implemented CRM system (Figures 3-5) in enough details to comply with the demands of various customer categories. Application of the proposed structural model should guarantee better relationships of OHS companies and their customers and this implies improvement of occupational safety. Reduction in the number of work-related injuries is useful for the community, in the economic and humane aspect.

Since research of this and related subjects is fairly rare according to the set goals, we believe that appropriate scientific contribution was realized. Further research would be directed towards the verification of presented preliminary design, similar as in [53], by measuring the performances while identifying which CRM objectives are actually met using the implementations.

## REMARKS

<sup>1</sup>COD, <http://www.centerod.com>, accessed 11<sup>th</sup> May 2011.

<sup>2</sup><http://www.sap.com/solutions/business-suite/crm/featuresfunctions/index>, accessed 20<sup>th</sup> March 2011.

<sup>3</sup><http://crmondemand.oracle.com/en/products/index.htm>, accessed 20<sup>th</sup> March 2011.

<sup>4</sup><http://crm.dynamics.com>, accessed 20<sup>th</sup> March 2011.

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<sup>6</sup>Damir Ivan Konjevod is author of software-tool “Dijagrami Sustava 1.0”.

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# SUSTAV UPRAVLJANJA ODNOSIMA S KUPCIMA U TRGOVAČKIM DRUŠTVIMA ZA ZAŠTITU NA RADU: ISTRAŽIVANJE PRAKSE I IDEJNO RJEŠENJE DIZAJNA

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## SAŽETAK

Jedan od istaknutijih suvremenih trendova u vezi oblikovanja tvrtki je prisup dizajniranju poduzeća orijentiranog prema kupcima. Pri tome se razlikuju inačice vezano za intenzitet ove orijentacije. U suvremenom poslovanju prihvaćen je engleski pojam sustava *Customer Relationship Management* (CRM) te se njegova praksa izučava i unapređuje vezano za razne sektore. Trgovačka društva koja pružaju usluge zaštite na radu pretežito surađuju s velikim brojem klijentima, a kvaliteta suradnje u značajnoj mjeri utječe i na sam pojam sigurnosti i zaštite na radu djelatnika. Stoga je od znanstvenog ali i šireg društvenog interesa izučiti i unaprijediti odnos ovih kompanija s klijentima. U ovom radu istražuje se praksa primjene elemenata sustava CRM u hrvatskim trgovačkim društvima koja pružaju usluge zaštite na radu. Utvrđuje se postojeće stanje i sugeriraju moguća poboljšanja u praksi sustava CRM, sukladno prosudbama eksperata uz korištenje metode *Analytic Hierarchy Process*. Kreirano je univerzalno idejno rješenje dizajna, kao okvirni koncept za oblikovanje tipičnog kupcu orijentiranog poduzeća za pružanje usluga zaštite na radu. Idejno rješenje obuhvaća strukturni prikaz, detaljiziran sustavskim dijagramima te prikaz glavnih procesa suradnje poduzeća sa svojim klijentima.

## KLJUČNE RIJEČI

upravljanje odnosima s kupcima, CRM, zaštita na radu, dizajn, procesi, struktura